

Waterfowl Identification

Jack Payne¹ and Ronald A. Howard Jr.²

Objectives

Participating youth and adults will:

1. Differentiate among various types of waterfowl.
2. Learn to identify local waterfowl species.
3. Learn to use key features to identify waterfowl.
4. Understand federal and state waterfowl regulations.
5. Have fun while learning.

Roles for Teen or Junior Leaders

1. Prepare and discuss the use of a wing board.
2. Assist participants in identifying live birds, wings or other specimens.
3. Assist with projection equipment.
4. Assist with the use of identification aids.
5. Discuss personal experiences with field identification.
6. Assist in setting up or removing teaching equipment.

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders."
2. Arrange for or provide teaching sites.
3. Arrange for or provide transportation.
4. Collect wings for wing boards or wing bees.
5. Teach portions of the lesson.
6. Share personal experiences with waterfowl.
7. Arrange for or provide optical equipment for participant use.
8. Arrange for or provide refreshments.

Best Time: Early fall to spring

Best Location: Classroom and/or managed waterfowl area

Time Required: 1 to 6 hours

Equipment and Materials

waterfowl specimens
slides or other images
projection equipment
waterfowl wing board
identification aids

References

Ducks, Geese, and Swans of North America. Bellrose, F.C. 1976. Stackpole, Harrisburg, PA. 544 pp.

The Audubon Society Master Guide to Birding, Volume 1: Loons to Sandpipers. Farrand, J. ed. 1983. Alfred A. Knopf, New York. 447 pp;

Ducks at a Distance. Hines, B. 1963. US Fish and Wildlife Service. US Government Printing Office, Washington. 22 pp.

Field Guide to the Birds or Field Guide to Western Birds or Field Guide to the Birds of Texas. Peterson, R. T. Houghton, Mifflin Company, Boston.

Birds of North America. Robbins, C.F., B. Bruun, H.S. Zim, and A. Singer. 1983. Golden Press, New York

¹ Wildlife Specialist, Texas Agricultural Extension Service, Texas A & M University System, currently with Ducks Unlimited

² Professor and Extension Specialist, 4-H Youth Development, Texas Agricultural Extension Service, Texas A&M University System, College Station, TX

Waterfowl ID

Teaching Outline

Presentation

- I. Reasons for learning to identify waterfowl species
 - A. Legal reasons
 1. Closed seasons
 2. Species bag limits
 3. Point system
 - B. Sporting reasons
 1. Concentrating on species with higher limits or lower point values
 2. Having more hunting time
 - C. Culinary reasons
 1. Differences in table value
 2. Differences in chemical loads
- II. Waterfowl and other water birds
 - A. Characteristics of waterfowl
 1. Webbed feet
 2. More or less flattened beak
 3. Long neck, short tail
 4. Relatively short legs
- III. Major groups of waterfowl (Anatidae)
 - A. Whistling ducks, swans, and geese (Subfamily Anserinae)
 1. Whistling ducks (Tribe Dendrocygini)
 2. Geese and swans (Anserini)
 - B. Ducks (Anatinae)
 1. Wood duck (Carinini)
 2. Dabbling ducks (Anatini)
 3. Bay ducks (Aythyini)
 4. Sea ducks and mergansers (Mergini)
 5. Stiff-tailed ducks (Oxyurini)
- IV. Whistling ducks
 - A. General characteristics
 1. Long legs
 2. Long neck
 3. Goose-like stance
 - B. Fulvous whistling duck
 - C. Black-bellied whistling duck
- V. Swans
 - A. General characteristics
 1. Long neck
 2. Large body size
 - B. Tundra (whistling) swan
 - C. Trumpeter swan
 - D. Mute swan
 - E. Whooping swan

Application

ASK: What are some of the reasons we might want to learn to identify various waterfowl? Try to have participants list those here and any others. Use waterfowl regulations to show some of the reasons. Discuss taste differences in local birds. If any toxic chemical problems exist in your area, discuss them as well.

ILLUSTRATE differences between waterfowl and other birds found in waterfowl habitat. Try to get participants to use key characteristics to **DIFFERENTIATE** between waterfowl and other wetland species. Let participants "build" a duck, goose, or swan.

REVIEW major characters of the waterfowl tribes listed. Tell the participants why knowing the groups of waterfowl may be helpful to them in learning.

In the following outline stick to species that are likely to be encountered in the area of interest. Cover other species only in a general way so they understand the breadth of species that may be found around the country. **USE** slides, films, videos, mounted specimens, wings, or any other type of teaching aid to get the points across. Have each participant **USE Ducks at a Distance** as each species is being described.

STRESS species that are restricted or protected and be sure to review each one carefully.

BE SURE that names used by waterfowlers are used to make participants familiar with them

Waterfowl ID

VI. Geese

- A. General characteristics
 - 1. Shorter necks than swans
 - 2. Longer legs than swans
 - 3. Much variation in body size
- B. Greater white-fronted goose
 - 1. Synonyms: speckle belly, white-front
- C. Snow goose
- D. Ross goose
- E. Emperor goose
- F. Canada goose
- G. Brant

VII. Puddle ducks

- A. General characteristics
- B. Wood duck
- C. Green-winged teal
- D. American black duck
- E. Mottled duck
- F. Mallard
- G. Northern pintail
- H. Blue-winged teal
- I. Cinnamon teal
- J. Northern shoveler
- K. Gadwall
- L. American widgeon

VIII. Bay ducks

- A. General characteristics
- B. Canvasback
- C. Redhead
- D. Ring-necked duck
 - 1. Compare to Tufted duck
- E. Greater scaup
- F. Lesser scaup

IX. Sea ducks and mergansers

- A. General characteristics
- B. Common eider
- C. King eider
- D. Spectacled eider
- E. Steller's eider
- F. Harlequin duck
- G. Oldsquaw
- H. Black scoter
- I. Surf scoter
- J. White-winged scoter
- K. Common goldeneye
- L. Barrow's goldeneye
- M. Bufflehead
- N. Hooded merganser
- O. Common merganser

REFER to lesson narrative if you need assistance in picking out the key characteristics used in identifying each species.

NOTE that field marks and field behavior are the most important ones to waterfowlers, who must identify the birds before shooting.

Waterfowl ID

- P. Red-breasted merganser
- X. Stiff-tailed ducks
 - A. Ruddy duck
 - 1. Compare to Masked duck
- XI. Review of common and specially controlled species

INCLUDE at least these species: mallard, black duck, wood duck, hooded merganser, canvasback, redhead, greater and lesser scaup, blue-winged teal, green-wing teal, and northern pintail. Include others that may be locally abundant or locally regulated. Have participants learn to tell these species from similar ones.

Summary Activity

Pass out current state and federal regulations and have young people develop the list of criteria for telling the species of special concern apart. Review those slides or photographs. Try watching "*Watching Wild Wings*" or a similar film that shows the birds in action. Stop the action to see if they can identify the species shown.

Lesson Narrative

Waterfowl hunting is a complex sport involving many species of game. Populations of various species may vary from year to year, and trends in populations may result in changes in the hunting regulations. As a result, the well-prepared waterfowler must know how to identify both the species of waterfowl likely to be encountered and how to tell the sexes apart. Like many other skills, this one is relatively easy - once a few basics are learned.

Reasons for Learning to Identify Waterfowl

There are many reasons to learn how to identify waterfowl: legal, sporting, culinary, and personal. Legal reasons are mainly associated with being able to identify birds that may be taken legally and in keeping within established bag limits, whether they are restrictions on the number of birds of any given species that may be taken or point values when operating under the point system. In either event, some species may be completely protected (the season is closed) while others are considered abundant (sometimes that may result in bonus bag limits). Only the waterfowler who can identify birds in the air can take advantage of those bonuses while avoiding birds that are more restricted.

A waterfowler who can identify birds in the air has the option of increasing either the food value or the sporting value of their day afield by selecting the birds they attempt to take. From the manager's point of view, having selective hunters permits larger bag limits. If hunters are not selective, the manager must restrict the total bag limit to the conservative limit the least abundant species can stand. If they are selective, the manager can impose limits that reflect the status of each species. From the hunter's point of view, selectivity can result in more time afield, increased amounts of hunting, and more personal satisfaction.

Any waterfowl hunter can attest to the fact that mallards and pintails taste better than common mergansers. The diets of the birds have a strong influence upon their table value (although nearly any bird can be made palatable if some effort is extended). In addition, where waterfowl are contaminated with toxic or noxious chemicals, those contaminant levels often differ between species. One state agency recommends that mergansers not be eaten unless they were first skinned to remove the fat.

Waterfowl ID

Even then, they recommended eating only one meal per month. Those birds had been found to contain significant levels of PCBs. Wood ducks had very low levels of the same contaminant, and mallards and black ducks were similarly low.

Most experienced waterfowlers take pride in their ability to identify ducks and geese. They spend substantial amounts of time afield outside the waterfowl season, observing and studying the birds that they like to hunt for a few days each fall and winter. That time afield extends their recreation and brings personal satisfaction while making them better waterfowlers when they do take shotgun in hand and head for the blind.

Distinguishing Waterfowl From Other Birds

Almost any child can tell us what a duck or a goose looks like. It has webbed feet. It has a more or less flattened beak. It has a relatively long neck and a short tail, so it appears to have the wings set relatively toward the rear of the body when in flight. On land, even the agile species (puddle ducks, whistling ducks, geese, and swans) are relatively slow moving. They are swift flying species with a relatively rapid and shallow wing rhythm that can be used to distinguish them from long distances.

Ducks, geese, and swans are not the only birds found in good waterfowl habitat, however. They share their preferred habitats with many marsh and wading birds, several species of raptors (birds of prey), and a number of songbirds. Very few of those other species are legal game animals. Thus, the waterfowler must make identification on several levels. First waterfowl must be separated from other groups. Then they must be identified to species. The wise waterfowl hunter will spend some time becoming familiar with herons, egrets, and bitterns, with harrier (marsh hawk), peregrine falcon (duck hawk), osprey (fish hawk), and bald eagle, with various shorebirds, rails, kingfishers, and songbirds (like blackbirds). These animals, too, add to the richness of one's experience afield; but they do so only if the hunter appreciates them.

Major Groups of Waterfowl

All ducks, geese, and swans belong to the family *Anatidae*. Biologists divide that family into several smaller groups. They recognize two subfamilies which include seven tribes. The *Anserinae* include whistling ducks (*Dendrocygini*) and geese and swans (*Anserini*). The *Anatinae* include the wood duck (*Carinini*), dabbling ducks (*Anatini*), bay ducks (*Aythiini*), sea ducks and mergansers (*Mergini*), and stiff-tailed ducks (*Oxyurini*). Those names may seem to be a mouth full, but knowing the general group to which a species belongs can be helpful in remembering how to tell them apart. Like other types of biological groupings, these groups share fewer and fewer characteristics as they get smaller, until only the species remains with its unique identifying characteristics.

Whistling Ducks

These birds were formerly known as tree ducks. They are more closely related to geese and swans than to other ducks. They have long legs and a long, goose-like neck; and their stance is very goose-like as well. In flight, they seem to have a deliberate wing rhythm with deep strokes of relatively rounded wings. Their long neck is matched by the long, trailing legs, suggesting the flight of an ibis. They fly in irregular flocks or small groups. Two species are present in North America, the fulvous and black-bellied whistling ducks. Black-bellied whistling ducks are true to their former name, usually nesting in tree cavities; but fulvous whistling ducks usually nest on the ground. In the United States, both species are found primarily on the Texas coastal plain, with the primary breeding range in Mexico.

Fulvous Whistling Duck - Both sexes of this species are similar in plumage characteristics. The birds are light tan to cinnamon brown below and dark brown above. A distinct whitish border separates the dark back from

Waterfowl ID

the lighter flanks. A light “V” lies between the dark back and tail. Their bill, feet, and legs are gray. Their call is often given in flight. It is a two-note, squealing whistle.

Waterfowl ID

Black-bellied Whistling Duck - In general appearance this species is similar to the fulvous whistling duck. In flight, the sharply contrasting wings are a good field mark. They are black below and white with black tips and trailing edges above. The breast, neck, crown, and back are cinnamon brown, with a black belly and sided and a black stripe on the back of the neck. The bird's upper neck and head are gray. Its feet and legs are pink, and the bill is reddish. They call often in flight, using a three-note whistle.

Swans

Four species of swans are found in North America, and three will be included here. Two native species, the tundra swan and the trumpeter swan, breed here. The mute swan is an escaped exotic species that has become established in the wild in many areas. Finally, the whooping swan, is an Asian species that visits Alaska's Aleutian Islands. Swans are the largest of all waterfowl, with a very long neck, large body size, and relatively short legs. Adults of all four of these species have pure white plumage, although the head and neck may be stained a rusty color.

Mute Swan - This huge white bird holds its neck in an S-curve when at rest on the water. It is most easily distinguished by its orange bill with a dark knob at its base. Young birds have a grayish head, neck, and back. The bill of a young mute swan is gray to reddish gray.

Trumpeter Swan - This species has a neck the length of its body. Usually it is held erect or in a slight curve. The head and upper neck may be stained a rusty color from minerals in the marsh soils where the birds feed. Trumpeter swans have a black bill. Their best distinguishing feature is their call, a deep, horn-like note. Young trumpeter swans keep their gray plumage into the spring or early summer of their second year. Many biologists consider the Whooping Swan, a visitor from northern Asia to Alaska, to be the same species as the trumpeter swan.

Tundra Swan - Formerly called the whistling swan, some of these birds can be told from trumpeter swans by a yellow spot at the base of the bill. Lack of the yellow spot makes them difficult to distinguish from the previous species. Young tundra swans are brownish gray with a reddish bill and pinkish feet and legs that darken to black. Tundra swans tend to travel in larger flocks than do trumpeter swans, and they are easily told apart by their calls. Tundra swan calls are higher pitched and often quavering, with an accent in the middle. The call is similar to, but more musical than, the calls of snow geese.

Geese

Six species of geese, including many subspecies or races, form the majority of the geese found in North America. Geese range in size from nearly swan-like proportions in the giant Canada goose to slightly larger than a mallard (the cackling Canada goose). They have long necks, although shorter than those of swans. Their legs are relatively longer than swans, but shorter than those of whistling ducks. Geese have relatively short, heavy beaks adapted for grazing. In addition to the geese described below, occasionally waterfowlers or bird watchers will observe stray birds from Europe. Both greylag geese and pink-footed geese are seen from time to time on the Atlantic coast.

Greater White-fronted Goose - These birds are often called specks or specklebellies by waterfowlers. At a distance, this species seems to be uniformly brownish; but at closer ranges their features can be seen. The breast is marked by dark blotches, and adult birds have white or whitish patches at the base of the bill. Immature birds share the adults' yellow feet and legs. The yellow bill of the immature bird changes to a pinkish one in the adult. White-fronts have a sharp, two-note call that has given them the name "laughing geese" in some areas.

Waterfowl ID

Snow Goose - Adult snow geese have two color phases, white and dark. The white phase bird is white with black wing tips. The dark phase bird, formerly called a blue goose, is gray with some lighter feathers at the shoulders. They have the same dark wing tips and a white head and upper neck. In both color phases the head may be stained a rusty color from the minerals in marsh soils. The legs and feet are reddish, and the bill is pink with a dark elliptical patch on its sides. That patch makes the bird seem to be grinning. Young light phase birds look dingy gray or smoky white. Dark phase young are browner with the same dark wing tips. Both color phases have darker legs, feet and bills than the adults. In flight, when landing, or when they are about to take off, these birds call a lot often sounding like the barking of many small dogs. They are known to waterfowlers as snows, blues, brant, and wavies. The latter name comes from their tendency to fly in large flocks spread over a range of altitudes with a somewhat undulating flight pattern. The proportion of light and dark phase birds varies with the region of the country.

Ross's Goose - Ross goose looks very much like a small snow goose with a stubby neck. They lack the "grinning patch" of the snow goose; and their bills are shorter, often having warty lumps at their bases. The legs and feet are lighter pink than those of snow geese, too. They fly with a more rapid wing beat and have a higher pitched call than do snow geese. Juveniles are much whiter than young snows. Ross' geese are mostly restricted to the Pacific flyway.

Emperor Goose - Regarded as one of the most beautiful geese by many ornithologists, this species is seldom seen in North America outside Alaska. In flight it is somewhat similar to a blue goose except that the underside of the white head and upper neck is dark and it has blue-gray rather than white under tail coverts. It is a heavy bodied, short necked bird of the Bering Sea. Its back is covered by bluish feathers bordered with black and having nearly white edges. Those feathers form wavy light bands on the back and flanks.

Canada Goose - Probably the most familiar goose of North America, Canada geese range in size from the *maxima* race (Giant Canada Goose), a bird weighing up to about 12-13 pounds, to the *minima* race (Cackling Goose), weighing about 2-3 pounds (roughly the size of a mallard). Canada geese, called honkers, Canadas, or Canadians by shooters, have gray-brown to brown backs and wings, gray to brown breasts and flanks, white under tail coverts, a white chevron at the base of the tail, and black tail feathers and primary feathers. Their most easily recognized feature is the black head and neck with the white chin patch. Only the Brant could be confused with smaller Canadas, and Brant have a broken neck ring rather than a chin patch. Their familiar call is a ker-honk that varies considerably among the subspecies. The Barnacle Goose, an accidental species in North America, has a black stocking on its neck extending up onto the crown of its head, but the sides of the head are creamy white.

Brant - Brant are short-necked, sea geese. They roughly resemble a small short-necked Canada Goose, although the dark phase has a black breast and belly. Brant have a black head and neck with a necklace of white (at close range it may seem to be streaked) just behind the head. The East Coast population is lighter than the Pacific coast population. Pacific birds are called black Brant or Pacific Brant by gunners. Atlantic birds are called sea geese, Brant geese, or white-bellied Brant. Brant have a barking call similar to some of the smaller Canada Geese races. They breed in the far North and are known for having large fluctuations in reproductive success.

Puddle Ducks or Dabbling Ducks

For our purposes, we will include the wood duck with this group of birds, even though it has some characteristics that distinguish it from others in the group. These birds have relatively large wings for their body size, making them very maneuverable in flight. They tend to flush straight up from the water without the need for a running start. Nearly every species in the group has some iridescence or brightly colored

Waterfowl ID

plumage on their wings, usually on the secondary feathers. Their legs are near the middle of their bodies, making them relatively agile on land. The hind toe is not lobed. Although they are capable of diving under the water, they usually up end on the surface (tip up) to feed. They feed primarily in shallow water areas, but some species may spend considerable time feeding in grain fields.

Wood Duck - In flight, wood ducks seem to have their wings situated near the middle of the bird, unlike most other waterfowl where the wings seem to be toward the rear of the bird's total length. The relatively long, squared tail is another good field mark. Both sexes have crested heads and show white bellies in flight. Male wood ducks have a distinctive white facial pattern, even when in eclipse. Females have a tear drop shaped white patch around the eye. The speculum is a rather diffuse metallic violet-blue with a trailing white edge. They are most easily confused with widgeon, which also have a white belly. Woodies have a larger, crested head, a thin white trailing edge on the wings, and a long rectangular tail. Widgeon have a smaller appearing head, white on the leading edge of the wing, and a short, wedge-shaped tail. Female woodies are quite vocal with a quavering, ascending squeal (wheeeep, wheeeep, wheeeep). Males call rarely, using a goldfinch-like note. Other names for the wood duck include woodie, summer duck, acorn duck, swamp duck, or squealer in some areas.

Green-winged Teal - The smallest of the ducks and one of the fastest, green-wings resemble large bumble bees in flight. Flocks may appear as loosely packed balls, filled with twisting and darting birds. The best field mark on green-wings aside from their size and behavior is the speculum. It is two-tone metallic green and brownish with a buff or rusty leading edge. There is no light patch on the leading edge of the wing as in the blue-winged teal.

American Black Duck - Also called a black mallard, black, blackie, or red leg, the black duck is a sooty brown bird about the color of scorched cork. In flight the light under wing linings contrast sharply with the sooty body. The speculum is dark blue-violet with black edges on the leading and trailing edges. A thin white line may occur on the trailing edge of the speculum in some birds. Under some light conditions the lighter colored heads and necks contrast sharply with the sooty body, but in poorer light that contrast is not dependable. Black ducks often mingle with mallards and other dabbling ducks. Flocks of black ducks tend to be smaller than mallard flocks, seldom exceeding 20-25 birds. They often circle many times before dropping into a decoy rig, giving them a reputation for wariness.

Mottled Duck - Very similar to a mallard hen in appearance, the mottled duck can be distinguished by its blue-green speculum with a black leading edge and a mallard-like black and white trailing edge. The birds are somewhat darker than mallard hens, but lighter than black ducks. The bills are very similar to those seen in mallards: the hens have an orange bill speckled with black, and the drakes have an olive-green bill.

Mallard - The mallard is an easily recognized species, yet hen mallards are often confused with several other species. Both sexes have a violet-blue speculum with white edges on both the leading and trailing edges of the speculum. That field mark assures sure identification. Hens are straw colored with dark brown streaks or speckles. They have a brown, speckled head with a dark line extending through the eye. Males have an iridescent green head, a white neck ring, chestnut upper breast, light gray breast and flanks, and a darker back. The under tail coverts and the rump feathers are black and the tail feathers are white. Overhead the drake is dark in front, light in the middle, dark toward the rear, and white on the tail. The female is dusky with a white tail. Gunners often refer to the drake as a greenhead and to the hen as a susie. Mallards are very vocal, with a wide variety of quacks and chuckles that are the basis for much duck calling.

Northern Pintail - In flight pintails have a sleek appearance, long and thin with slightly sickle-shaped wings. The pointed tails of the drakes are obvious, giving them the name "sprig." Flocks are often organized in long, curved lines. Like woodies, pintails seem to have their wings somewhat centered in the body. Pintails have

Waterfowl ID

long necks and a slender appearance. Drakes have a rusty brown and white neck. Hens are mottled tan and brown. The hen has a non-iridescent speculum that is brown-green to green with a buff streak on the leading edge and a white on the trailing edge. Drakes have a more iridescent black and green or green speculum, similarly bordered. Pintails communicate with whistled notes, often used by hunters in areas where they are abundant. Hunters call pintails sprig, sprigtail, spike, and spiketail and refer to drakes as "bulls."

Blue-winged Teal - This species and the following two all have large powder-blue patches on the bases of the leading edges of their wings. In bright light the wing patches may appear to flicker almost white as the birds fly. Blue-winged teal are small ducks. They fly in fairly small compact flocks, often low to the water with much twisting and turning. Often the flock looks like it is having difficulty deciding which way to go. Blue-wings migrate very early, and early in the fall both drakes and hens are drab brown birds, darker above and paler, speckled brown below. In addition to the waxy-looking, pale blue wing patch, both sexes have a green speculum. In males it is separated from the blue shoulder patch by a white margin. In late fall and winter drakes are easily recognized by the distinctive white crescent on the front of the head, between the base of the bill and the eye. Blue-wing hens "quack" softly. Drakes call with a whistled "peep." In flight, the birds communicate with twittering calls that may identify the birds before they are seen.

Cinnamon Teal - The pale blue shoulder patch of the cinnamon teal has a more chalky appearance than those of blue-winged teal, but for practical identification hen and eclipse drakes are nearly impossible to distinguish from blue-wings in flight. Drakes in breeding plumage are easily recognized by their cinnamon brown heads, necks, and bodies. Most cinnamon teal are seen west of the Rio Grande valley in Texas, while most blue-winged teal are seen on the Great Plains or further east. Their flight patterns are similar to those of blue-wings, but they tend to fly in smaller, family groups and are much less vocal in flight. Drakes have a chattering call, and hens quack faintly. Even in the hand, hen and immature cinnamon teal are difficult to separate from blue-winged teal. Drakes have red eyes, dull brown tail feathers, and a black bill in contrast to the brown eyes, black tail feathers, and a blue-black bill in the blue-wing. Hunters may refer to this species as a red teal or red-breasted teal.

Northern Shoveler - Called shovelers, spoonbills, spoonies, smiling mallards, and many other names by waterfowlers, northern shovelers have a very distinctive bill that can be used as a field mark almost as far away as the bird can be seen. The bill is slightly longer than the head and expanded at the tip into a spoon shape. The blue shoulder patch, similar to that of blue-winged teal and cinnamon teal is not always present. In early fall both sexes have plumage similar to that of hen mallards. Drakes gradually take on breeding plumage throughout the fall, eventually having a dark green head, white upper breast, and chestnut belly. The bright green speculum is separated from the blue shoulder patch by a wide, tapering white stripe. Both the wings and the bill can be used for identification. The steady, direct flight of small flocks becomes twisting and teal-like when the birds are startled.

Gadwall- Gadwalls are also known as gray ducks or gray mallards to waterfowlers. In flight they are slimmer than mallards, but more heavy-bodied than pintails. The speculum is black and white, bordered at the front by rusty brown and black. The birds show a white belly in flight like widgeon. In contrast to widgeon, however, they have white on the speculum (trailing edge of the wing), rather than on the shoulder area. Both sexes have brownish heads. Hens and immatures have a gray breast and flanks and a brown back. Drakes have gray body feathers and a white belly. Gadwalls have slender bills: gray-black in the drakes and dusky yellow with black dots in hens. Gadwalls whistle and quack.

American Widgeon - In flight both the American and European Widgeon have white bellies with a darker head and neck. Their wings have a white patch on the leading edge with a green speculum. Males have a light patch on their crowns, leading to the name "baldpate" used by gunners their overall gray-brown appearance on the water leads to another commonly used hunter's name: "gray duck." In American widgeon

Waterfowl ID

that patch is nearly white, while European widgeon have a yellowish or buff top knot. Widgeon fly with a deep, rapid wing beat in compact flocks. In addition to being found in shallow waters, widgeon may be seen in mixed flocks with bay ducks where they feed by stealing the diving birds' food. Widgeon have a pintail-like, three note whistle with an accent on the middle note. Pintails have all three notes on the same pitch.

Bay Ducks

Birds in this group have smaller wings than do dabbling ducks. They fly with a faster wing rhythm, are somewhat less maneuverable, and need a taxiing run on the surface to get airborne. These birds have a lobed hind toe and relatively larger feet than dabbling ducks. They usually feed in somewhat deeper water, diving completely below the surface to seek plant or animal foods. Their legs are placed more toward the rear of their bodies, and they are somewhat awkward on land. Their wings are without iridescent plumage, but all of these species have either gray or white patches or strips on the trailing edges of their wings.

Canvasback - In flight canvasbacks tend to be the most dabbling-like of the bay ducks. They often fly at considerable heights and come to decoys from some altitude rather than buzzing them at the wave tops. *Cans* also tend to fly in organized lines or Vs, much like mallards. Drakes appear to be dark on both ends and white in the middle, much like a mallard drake when seen overhead. The major difference is that *cans* have black tail feathers, while mallards have white tails. Hen *cans* are brownish with paler color on the head and at the base of the bill. The bill itself is one of the best field marks on a canvasback. It is wedge-shaped; seeming to start from the top of the head and tapering steadily toward the tip. It can be used as a field mark any time the bird can be seen from the side. On the water or in the hand, drakes have a bright chestnut-red head and neck, a wide black band around the body at the base of the neck, very pale gray back, flanks, and belly, and a black rump and tail. In good light they seem to be dazzling white. Females are generally brown with a lighter brown head and neck. They may be flecked with patches of gray on the back and flanks. Both sexes have a gray speculum.

Redhead - Redheads, too may be mistaken for mallards under some light conditions. They have about the same body shape and the same pattern of light and dark coloration. The dark head, neck, and upper breast and the dark rump and tail are separated by a lighter gray mid section. Like canvasbacks, redheads have dark tail feathers. Female redheads are relatively plain brown with light brown at the base of the bill, in general, they look like a bleached out version of the drake. Both sexes have a bluish bill with a black tip set off by a single white line. Their wings are dark gray or brownish with a gray speculum. The birds purr or meow like a cat and respond to both mallard calls and the burring call used for scaup. In poor light conditions the dark rusty head may appear to be black, so careful identification is needed to avoid shooting the wrong species.

Ring-necked Duck - Ring-necked ducks follow the same dark-light-dark pattern of the "can" and the redhead when viewed from below. Above, the drakes are black on the back. Their wings are very dark with a gray speculum. The tips of the secondary feathers (speculum) are dark with a thin white line at their tips. In flight, the drakes have a light triangle below the leading edge of the wings. Hens are mottled brown with a white belly. Drakes have bluish beaks ringed with two white lines, one at the base and another behind the black tip. Hens lack the line at the base of the bill. Those white lines are the source of the gunner's names, ring-billed duck or ringbill. The dark back is the source of another: "blackjack." Both sexes have a slightly crested, angular head which can be used to distinguish hens from similar species with round heads. Drakes have a black head with purple iridescence. The neck, upper breast, back, rump, and tail are also black. A faint rusty ring on the neck, the source of the name "ringneck" or ring-necked duck, is often hard to see even in the hand. The sides and flanks have gray vermiculations (wavy lines), and the belly is white. Females are generally mottled brown, like a dark redhead hen, having a white belly and light brown at the base of the bill.

Waterfowl ID

Ring-necks are much more likely to be found on small marshes, ponds, open areas of swamps, and small bottomland lakes than the other members of this group.

Greater Scaup - Known as a broadbill or bluebill to waterfowlers, greater scaup tend to be found most frequently on salt water bays, but they mix with lesser scaup on inland waters as well. Greater scaup are chunky, robust birds with rounded heads. Built on the now familiar dark-light-dark pattern, these birds show a white stripe toward the trailing edge of the wings when in flight. In greater scaup the white stripe includes all the secondary feathers and extends about halfway out the primary feathers. Females are dark mottled brown with a white belly and a nearly white patch around the face between the base of the bill and the eyes. Drakes have black heads, necks, upper breasts, rumps, and tails. The heads show a green iridescence in good light. The flanks, sides, and upper back appear gray with heavy, dark vermiculations. In very good light, the backs may seem to be white, unless a canvasback is nearby for comparison. Both sexes have a blue bill with a black nail. Greater scaup tend to fly directly and fairly low to the water in tight groups or lines.

Lesser Scaup - Generally found in freshwater, the lesser scaup or bluebill is slightly smaller than the greater scaup. The main distinguishing characteristics are the shorter white stripe on the wings, covering only the secondary feathers, and the purple iridescence on the black heads of the males. The heads of lesser scaup are less rounded and the bills slightly narrower than those of greater scaup. Lesser scaup fly in closely packed groups, often having 25-50 birds. The flights are rapid, but erratic: twisting, turning, rising and whirling as they move from place to place. The birds make a burring trill in flight ("brrrrrrp") that is easily imitated and useful as a general diving duck call.

Sea Ducks and Mergansers

Mergansers are easily recognized by their long, narrow beaks which have many tooth-like processes. Like the other members of this group, they have relatively small wings. Their wing rhythm is extremely fast, and their flight is straight and direct. Many of these birds dive deeply to feed, primarily on animal foods, like mollusks and fish. They have large feet with a lobed rear toe. Their feet are placed near the back of the body in most cases; making them very clumsy on land (goldeneyes, buffleheads, and hooded mergansers are exceptions). Most of these birds have relatively short, heavy beaks. Their plumage is variable, but the vast majority of the species have large blocks or patches of white on the wings.

Common Eider - All the eiders are large, heavy bodied sea ducks. They are seen infrequently in the inshore haunts of most other ducks and are hunted by a group of specialists around off shore islands. Only occasionally will an eider of any kind find its way into the bag of the average waterfowler. Common eiders fly in ragged lines very low to the water, often in the troughs of the waves. Their flight alternates flapping and gliding and seems labored. Drakes are black and white: white on the head, neck, chest and back and black on the breast, sides, belly, rump, and tail. Their wings are white at the base with a white patch extending to the middle of the leading edge of the wing and black at the tips with black extending onto the secondary feathers. The drake also has a black crown. The head and nape of the neck are tinged with green and the upper breast is tinted with pink or orange. Females are brown with darker brown barring. Like other eiders, these birds have a sloping bill with a Y-shaped shield that extends up almost to the eye.

King Eider - King eiders fly abreast in wavering line just a few feet above the water. Drakes appear white from the front of the wings forward and generally black from there back. The wings are marked with white triangles from the base, the triangles surrounded by black. The black on the lower flanks is interrupted by a white spot just in front of the tail. The hen is brown, barred with crescent shaped dark brown markings. Both the drake and the hen have a fairly small, orange bill that extends up to form an orange shield on the front of the head. At close range, the male has a bluish crown, a green wash to the sides of the head, and a

Waterfowl ID

black V at the throat. Females usually have unstreaked throats, but some are streaked like those of common eiders.

Spectacled Eider - Limited to coastal Alaska, this bird travels in very small flocks or alone, flying low over the water. The white of its fore parts extends onto the middle of the back and along the upper flanks, blending with the white triangle on the leading half of the wings. The breast, belly, and tail are black, but a band of white extends around the belly just in front of the tail, separating the belly and the tail. The large, pale green head is marked with large white spectacles around the eyes. At close range the thin line of black feathers around the spectacles becomes obvious. Females share the spectacles of the male, although they are tan rather than white. Both sexes have feathers covering the base of the upper part of the beak, unlike other eiders.

Steller's Eider - Like the spectacled eider, Steller's eider found only in Alaska. It is the smallest and fastest of the eiders. Drakes have a white head, forewings, and back. The back is marked by a central black strip that extends forward to the base of the neck and joins to form a necklace and a black chin patch. The breast, belly, and flanks are cinnamon brown. The tail is dark brown. The feet and beak are blue-gray. The white head is marked by a black spot around the eye and a greenish, rounded crest at the back of the head. Males have a blue speculum with a white trailing edge. Females seem to be more mottled than barred, and they have a mallard-like blue speculum with white edges fore and aft. Steller's eiders fly with a wing whistle similar to that of common goldeneyes.

Harlequin Duck - Harlequin ducks are uncommon, usually seen alone or in very small flocks. The drakes have a gray blue body decorated with white stripes, crescents, and spots, most of which are bordered by thin black edges. The head is marked with a broad crescent between the base of the bill and the eye, a spot behind the eye, and a long crescent from the base of the skull down the neck. Additional white lines around the base of the neck, in front of the wing, and along the back at the top of each wing give the drakes a very striking appearance. Their flanks are rusty. At a distance they appear to be nearly black. In flight their wings show none of the white patches seen in buffleheads and goldeneyes. Females are generally dark with a light belly. Their dark wings and three white spots on the head (on the cheek, in front of the eye, and near the "ear") distinguish them from other ducks. Harlequin ducks have a relatively long tail that is often raised while at rest on the water.

Oldsquaw - Known to shooters as long-tailed duck, sea pintail, or cockertail, this black and white bird is one of the deepest diving ducks. In flight both sexes seem to have white heads, breasts, and bellies with a dark upper breast, wings, and tail. In drakes the dark areas are black. Hens and immatures are gray-brown in the dark areas. Their backs are dark, colored like the wings. Only drakes have the long, pointed tail. Oldsquaws fly swiftly and low to the water in flocks that change formations constantly. They frequently twist and turn in flight, flashing black and white as various parts of their bodies are exposed to view.

Black Scoter - All scoters are called "coots" by coastal gunners who hunt them. The black scoter is also called the American scoter, common scoter, black coot, sea coot, and black duck in some parts of its range. Drake black scoters are the only all black duck in North America. Their black bill carries an orange knob at its base. Females are sooty brown-black with a lighter head. Both sexes have a silvery wing flash when in flight. Black scoters fly in lines, irregular flocks, and organized wedges.

Surf Scoter - Also known as skunkhead, coot, or sea coot, the surf scoter is more common than the black scoter. Surf scoters are nearly all black except for white spots on the forehead and the back of the head. The long, heavy bill is orange, white, and black in drakes. Both sexes have all black wings. Hens are dark brown to nearly black with two whitish spots on the sides of their head below the eye. The spots are separated by a dark band running through the eye. Surf scoters usually fly in irregular formations.

Waterfowl ID

Waterfowl ID

White-winged Scoter - Called coot, sea coot, and white-wing, this species can be identified by its white speculum (secondary feathers). Drakes also have a curved, tear-drop shaped white patch below the eye. Hens share the two white spots on the head seen in surf scoters. The front spot on white-winged scoters meets the base of the bill. White-winged scoters fly in irregular flocks or, more often, in long, undulating lines.

Common Goldeneye - The drake common goldeneye or whistler is a study in black and white. The black head features green iridescence and a small, nearly round, white spot at the base of the bill. The neck, breast, and belly are white. The back has a central strip of black flanked by white or streaked black and white, leading to a black tail. The black wings have large white blocks that extend from the secondaries nearly to the leading edge of the wing. Hens have a rusty head and a white neck. The body is gray above and white below. The wings feature a white speculum that is twice divided by lengthwise dark streaks, leaving three white patches from the front to the back of the wing. Whistlers fly in small groups, swiftly, directly, and low to the water. Their wings produce a strong whistling sound that gives them their waterfowler's name.

Barrow's Goldeneye - Barrow's goldeneye has a much more restricted range than the common goldeneye. Drakes have a black head with purple iridescence marked by a crescent shaped white spot in front of the eye. The throat, breast, and belly are white. A central black strip on the back is flanked by streaked areas of black and white. The tail and wings are black with a white speculum. At close range a thin dark-line may be seen at the tips of the secondary coverts, dividing the white patch on the wings into two distinct regions. Females are almost identical to hen common goldeneyes. The white patches on the wings are less prominent on the coverts, but that feature is difficult to see in a flying bird. Flight is swift, direct, and low; and it is accompanied by the pronounced wing whistle that gives the gunner's name whistler or Rocky Mountain whistler to the birds.

Bufflehead - Buffleheads are tiny, chunky ducks known to many waterfowlers as "butterballs." They have large heads, which in the drakes are iridescent black with a large wedge of white extending from behind the eye to the crest of the head. The neck, breast, and belly are white. The black tail is long for a diving duck, and the back is white in front of the wings and striped black and white from there to the tail. The black wings feature large white patches that extend nearly to the bend of the wing as an irregular triangle. Hens are gray with white wing patches, a white spot behind the eye, and black wing tips and tail. Buffleheads fly in small flocks, often only two or three birds. They are very fast and usually fly low to the water.

Hooded Merganser - All mergansers are known as sawbills or fish ducks. They typically fly low and swiftly with very little twisting and turning. Mergansers appear to be quite slender, with thin, pencil-like bills. Drake hooded mergansers have a white crest that is sleeked in flight to show as a white patch on the rear half of the iridescent black head. The black neck blends into a black back and tail. The birds have a white breast and belly, with chestnut flanks. Their wings are black with a light patch on the leading edge and a streaked black and white speculum. Hens have a rusty head. They are generally brown above and dusky on the flanks and upper breast with a white belly. Their wings share the black and white streaked speculum of the male.

Common Merganser - Aside from the names used for other *mergs*, the common merganser is also known as the American merganser or goosander. Hens, immatures, and eclipse drakes are gray backed, rusty-headed, white bellied birds. The rusty head contrasts sharply with the white chin patch and the white throat. The belly is entirely white and the back is gray. The speculum is white, bordered by black on both sides and on the leading edge. A black band partially divides the white patch along the length of the secondaries. Drakes in breeding plumage have a rather smooth, black head that shows green iridescence. The throat, breast, flanks, shoulders and outer portions of the back are white. A central strip of black on the back blends into a

Waterfowl ID

gray tail. The inner parts of the wings are white, and the outer parts are black. Common *mergs* fly low, directly, and swiftly, often in lines.

Red-breasted Merganser - The female red-breasted merganser looks like a slightly smaller, slimmer version of the common *merg* as do immatures and eclipse drakes. These birds have a brown head that blends into the lighter neck and upper breast. The flanks and breast are dusky. The back is gray and the belly is white. The speculum is black at the outside, white on the inside of the secondaries. Drakes in breeding plumage have a black head with green iridescence. The head appears crested or shaggy in all plumages. The black back extends forward onto the neck. A white throat patch is separated from the white breast and belly by a band of rusty feathers speckled with black. The rump and tail are gray as are the flanks. In flight, the birds are direct and swift, flying in lines close to the water. Drakes show white inner wings with black tips. Hens are white only on the trailing edge of the inner wings. The white speculum is both divided and outlined by black. The white chin patch of the hen red-breasted merganser blends into the brown head while that of the common merganser shows a sharp division between the colors. Similarly, the head blends into the neck rather than contrasting sharply as it does in the common *merg*.

Stiff-tailed Ducks

These birds are small, large-headed, chunky-bodied ducks with relatively short wings, very large feet, and long tails. At rest, the males often hold their tails at about 45° to the water. They fly only under severe pressure, and in flight look like large bumble bees. The ruddy duck is the major North American species in this group. The masked duck, a West Indies bird appears fairly regularly along the Texas and Louisiana coasts. They dive to feed, and often dive rather than flying to escape danger.

Ruddy duck - During the fall and early winter ruddy ducks of both sexes are basically gray-brown. Drakes have a light colored spot on the cheek. Hens have a light brown cheek marked with a single, darker brown streak. Drakes often hold their tails at a 45° angle to the water when at rest. Both sexes have uniformly dark wings. (Masked ducks have a white speculum.) Ruddies are called butterballs and bull-necked teal in some areas. Their flight is usually low and fast in compact flocks. At times their flight may seem jerky and uneven in pace.

Review of common and specially controlled species

Many birds besides waterfowl live in waterfowl habitat, so the wise duck or goose hunter needs to be able to tell the legal game birds from those that are protected. Except in unusual circumstances any bird that is all white is protected. Some geese are in short supply or erratic breeders, so the waterfowler must be able to identify white-fronted geese, Ross geese, and Brant in particular. Species limits or points make it necessary to identify ducks in the air or at least in the hand. Those of particular concern include: wood ducks, with their long rectangular tail, crested head, and metallic blue-violet speculum; mallards, with the blue speculum bordered front and back by white; black ducks, with a violet or violet-blue speculum faintly bordered at the rear by white; canvasbacks, with their sloping bills and gray speculum; redheads, a darker, chunkier, round-headed version of the canvasback; and scaup, chunky divers with white stripes on their wings. Teal, pintails, and others may enter into the bag heavily in some areas; and regulations change from year to year. The waterfowler needs to stay abreast of the regulations to practice his or her identification to extract the most pleasure from their sport. Use a bird guide, live birds, Ducks at a Distance, or other resources to keep your identification sharp. That, alone, can become a rewarding hobby.

Waterfowl ID

Exhibit and Sharing Suggestions

1. Construct an educational poster or posters illustrating the identification characteristics of local waterfowl species.
2. Consider holding a waterfowl identification clinic with the help of experienced waterfowlers in the area.
3. Spend some time observing waterfowl during the off season, studying their behavior and flight habits. Record your observations and share them at a group meeting or some other appropriate meeting or gathering.
4. Study the biology and management of one species of interest and develop an educational exhibit or illustrated talk on it. Share your information in an appropriate way with other 4-H members, youth groups or sportsmen's organizations.
5. Illustrate the migration patterns of selected species, showing their nesting grounds, wintering areas and migratory corridors between the two areas. Share your findings in an appropriate meeting or educational event.
6. Develop a wing board or feather collection that can be used to identify local waterfowl.

Fact Sheet - Waterfowl Wings

Making a Waterfowl Wing Board

Jack Payne¹ and Ronald A. Howard Jr.²

A wing board is an excellent teaching tool for waterfowl identification. Interested members and local waterfowlers could easily assemble one or more for use in 4-H and in instructional programs for local sportsmen's organizations or conservation education programs. Very little equipment is needed, and the wings are very easily prepared. The major concern is to get them thoroughly dry and to protect them from insect or rodent pests.

Procedure

1. Obtain clean, dry (not soaked in water or blood) wings from local waterfowlers.
Cut the wing free from the carcass at the first joint (comparable to the elbow), leaving the primary and secondary feathers intact. Alternatively, the wing may be severed at the shoulder; but that may result in difficulties in drying the wing.
2. Carefully spread the wings in a natural, open position and allow them to air dry.
If you wish, you may remove most of the flesh from the wing bones by carefully cutting into the underside of the wing. Take great care to keep the feathers in a natural position, and use liberal amounts of powdered borax or a mixture of equal parts of borax and alum on all exposed flesh areas. Drying should be complete within about a week or two.
3. Attach the wings to a board, some other display surface, or build an insect resistant box to hold the specimens.
Wings may be tied, clamped, or screwed to the surface of the display board. Try to arrange them in some logical order, so easy comparisons with other species can be made. Keep the use of the display in mind when building it. Will it need to be transported or will it be stationary? Size of the display will have a great influence on its portability.
4. Attach clear labels or some form of legend to the specimens to aid a user in identifying them.
If the wings are to be used as a teaching aid, the best labels may be letters or numbers. A key to them should be provided, but having the names too easily available may result in very little learning. Some interpretive information might also be helpful, e.g. description of the key features on the wing.
5. Protect the specimens from insect and rodent pests by covering them securely and adding naphthalene crystals or moth balls to the cases.
Wings that are not placed on the display boards could be stored in tight containers and used as later replacements or specimens for "wing bees," where the group identifies a large number of duck wings at one sitting.

¹ Extension Wildlife Specialist, Texas Agricultural Extension Service, currently with Ducks Unlimited

² Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System, College Station. TX.

Hunting Boats

Choosing and Using Hunting Boats

Tom Davison¹ and Ronald A. Howand, Jr.²

Objectives

Participating young people and adults will:

1. Recognize different types of boats and their uses
2. Practice selecting boats for hunting
3. Practice selection boats for various conditions
4. Practice proper use of boats and canoes
5. Successfully complete the state boater safety course
6. Recognize safety concerns boating hunters
7. Have fun while learning.

Roles for Teen and Junior Leaders

1. Demonstrate various boats and means of propulsion
2. Review personal floatation devices and their use
3. Discuss fall/winter water safety and survival
4. Assist participants in field exercises
5. Discuss or demonstrate specialized hunting boats
6. Share personal preferences in hunting boats

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide boats, canoes and other needed equipment
3. Arrange for or provide access to sites needed
4. Discuss personal preferences in boats for various purposes
5. Arrange a decision making exercise on boat selection
6. Arrange for or provide transportation
7. Arrange for or provide refreshments

Best Time: Any time when boating is pleasant

Best Location: Classroom or field location, e.g. boat yard, marina, lake, pond, river or stream, estuary or bay

Time Required: 1 hour or more

Equipment/Material

canoe
pirogue
jonboat
semi-vee boat
pontoon boat
tri-hull boat
specialized hunting boats
outboard motor
oars
paddles
personal floatation devices
flare kit
compass
fire extinguisher
anchor
anchor line
Boater Safety Manual
Red Cross Canoe Manual

References

Boater Safety Manual, available from your state wildlife and fisheries agency

Red Cross Canoe Manual. American Red Cross

Smallcraft Course Manual, U.S. Coast Guard (contact the local Coast Guard Auxiliary)

¹ Assistant Director of Extension, 4-H, Texas Agricultural Extension Service, Texas A&M System (retired)

² Professor and Extension 4-H Youth Development Specialist, Texas Agricultural Extension Service, Texas A&M System

Hunting Boats

Lesson Outline

Presentation	Application
<p>I. Choosing a hunting boat</p> <p>A. Use guides choices</p> <ol style="list-style-type: none">1. Purpose(s) for the boat<ol style="list-style-type: none">a. Transport to a hunting areab. Service as a gunning platform,c. Concealmentd. Jump shooting boate. Single purpose or multiple uses2. Type of water conditions<ol style="list-style-type: none">a. Depthb. Currentsc. Wind and wavesd. Channel widths3. Distances covered and speed required<ol style="list-style-type: none">a. Propulsion typeb. Displacement or planing hull4. Loads to be carried<ol style="list-style-type: none">a. Minimal loads - one or two huntersb. Modest loads - gunners and gearc. Heavy loads - camping equipment and other gear5. Access type<ol style="list-style-type: none">a. Improved boat rampb. Unimproved launch sitec. Carrying to the water6. Cover types<ol style="list-style-type: none">a. Open water<ol style="list-style-type: none">1) Rivers and streams2) Sheltered ponds, lakes and bays3) Unsheltered marine or inland sitesb. Marshes, coastal or inlandc. Swamps and beaver flowages7. Type of hunting<ol style="list-style-type: none">a. Waterfowlb. Upland gamec. Big game <p>B. Local conditions or traditions</p> <p>C. Personal preference</p>	<p>Ask participants to LIST some of the uses they might have for a hunting boat and the conditions under which those boats might be used. Be sure to INCLUDE all the listed uses and any legitimate ones beyond those outlined.</p> <p>Have participants DISCUSS the differences in conditions that might be faced in their hunting areas; emphasizing the tightest of shallow water conditions and the most demanding of open water uses that they might face. Have them OUTLINE the safety and other considerations in selecting a boat for the contrasting circumstances.</p> <p>DISCUSS the differences between displacement hulls and planing hulls relative to the speed of travel and efficiency of response to paddles, oars, motors or sails. RELATE these considerations to locally occurring conditions.</p> <p>Have participants COMPARE the load limits of various boats by looking at the Coast Guard capacity ratings of each one. Have them DISCUSS the utility of each boat for a variety of conditions based upon the listed capacity.</p> <p>POSE several scenarios about launching conditions or access conditions. Ask the participants to SELECT a boat from those shown to fit those conditions if possible. DISCUSS the reasons for their selections and how the use might determine the type of boat selected.</p> <p>NOTE that hunting often takes place during the coldest and stormiest parts of the year. Ask participants to DISCUSS the types of boats best suited to the types of waters in the vicinity of their hunting areas.</p> <p>Ask participants to DISCUSS the differences in boating needs for hunting waterfowl, float tripping for squirrels and taking a wilderness hunt for big game. Prompt them to SELECT boats for hypothetical situations given the types of water and hunting conditions presumed.</p>
<p>II. Hull Characteristics and behavior</p> <p>A. Bottom design</p> <ol style="list-style-type: none">1. Flat2. Rounded or arched3. Semi-V4. Deep-V	<p>ILLUSTRATE and DISCUSS each of these designs relative to their ability to carry a load; handle rough water, provide a stable shooting platform and navigate in shallow draft conditions. Be sure to DISCUSS the difference between displacement and planing hulls and the impacts of those hulls</p>

Hunting Boats

- 5. Tri-hull
 - B. Soft or hard chined sides
 - 1. Rounded (soft chined)
 - 2. Straight
 - 3. Flared
 - C. Freeboard

 - D. Bow shape
 - 1. Square
 - 2. Rounded
 - 3. Pointed
 - 4. Wedge
 - 5. Short wedge
 - E. Stern shape
 - 1. Pointed
 - 2. Tapered square
 - 3. Square

 - F. Rocker
 - 1. Flat
 - 2. Arched
- III. Matching boats and conditions
- A. General purpose
 - 1. Compromise among uses
 - a. Most frequent use
 - b. Most frequent conditions
 - c. Most demanding use and conditions
 - 2. Adequacy important
 - a. May require selecting conditions
 - b. May not work for some uses
 - B. Special purpose boats
 - 1. Excellent for set purpose
 - 2. Limited utility for others
 - C. Design
 - D. Size and weight
 - E. Costs and benefits
- IV. Safety afloat
- A. Using your head
 - 1. Lack of forethought dangerous
 - 2. Rational assessment of danger
 - 3. Discretion where required
 - 4. Avoiding overloading
 - B. Safety equipment
 - 1. Personal floatation device
 - a. Adequate for task
 - b. Worn to be effective
 - 2. Navigation equipment
 - a. Simple compass, even on small waters
 - b. Loran or GPS systems
 - c. Flashlight

NOTE that the shape of the boat's sides affects its stability, seaworthiness and capacity. **COMPARE** different hull shapes and the listed capacities of various boat designs.

DISCUSS the interaction with the height of the boat's sides and its profile relative to its ability to carry a load, withstand rough conditions and provide for easy concealment.

NOTE that the shape of the bow determines, in part, how the boat responds to rough water, either slicing through waves, smashing into waves or pounding in rough water.

NOTE that boats that are to be paddled, poled or rowed in rough water or river conditions are often pointed both fore and aft for greater maneuverability and response to wave action. Boats designed to be sailed or power driven often have a square or tapered and squared stern.

DISCUSS the "agility" of boats (particularly canoes) with considerable curvature or rocker to the keel and the relatively more sluggish response to control of a nearly flat keeled design.

POSE a series of decision making situations or conditions and have the participants **SELECT** a boat from those available for those circumstances. Ask them to **DISCUSS** their reasons for selecting that particular boat and not selecting others. Be sure to **DISCUSS** both advantages and disadvantages of each option for the purpose selected.

NOTE that thinking ahead can be one of the most important safety considerations for any water activity, particularly those that take place in the fall and winter months. **EMPHASIZE** the fact that circumstances must be taken seriously and risks minimized.

DISPLAY several types of PFDs and review the label characteristics listed. Note that they are not useful if they are not being worn at the time.

ASK why it might be important to have some type of navigational equipment and a light when using even small lakes and ponds. **DISCUSS** the answers, noting that waterfowling often takes place early and late in the day, under stormy conditions or when fog or other low visibility situations prevail.

Hunting Boats

3. Signaling equipment
 - a. Flares
 - b. Mirror
 - c. Whistle or air horn
 - d. Radio
- C. Hazards and avoiding them
 1. Wind and waves
 - a. Know your limitations
 - b. Wise boat handling
 2. Wind and cold
 - a. Avoiding hypothermia
 - b. Compounding effect of being wet
 - c. Disabling effects on equipment
 3. Navigational hazards
 - a. Underwater structures
 - b. Rapids, rips and other currents
- D. Hunting from boats
 1. Hunting laws
 - a. Boating laws and regulations
 - b. State hunting and wildlife laws
 - c. Federal laws
 - d. Local or, agency regulations,
 2. Basic hunting safety
 - a. Handling firearms safely
 - b. Loaded firearms in motor vehicles
 - c. Zones of fire
 - d. Ice as an obstruction
 3. Shot selection for safety
 - a. Danger to others
 - b. Danger of capsizing

DISCUSS various signaling devices as appropriate for your area and conditions. Note that lights may be required and **DISCUSS** all state laws applicable to the types of watercraft being used.

DISCUSS the types of hazards that might be encountered when hunting on the water. **STRESS** the importance of being prepared, knowledgeable and cautious when using boats as hunting vehicles.

REVIEW all regulations that apply to various types of boats and hunting in your area. **CONSULT** with local conservation law enforcement officers, Coast Guard Auxiliary or other agency enforcement staff for assistance.

STRESS the fact that all safe gun handling and other hunting safety principles apply in hunting from boats (where that is legal). **NOTE** the critical importance of maintaining safe zones of fire when in boats or canoes, with only the person in the bow or the shooting position having a loaded firearm or bow. **NOTE** also that ice can form in and on firearms with the potential of causing a bore obstruction.

DISCUSS the fact that shot selection can have a significant impact on safety, both because of the potential of swinging toward another shooter or shooting in directions where the background is unknown and because of the potential for capsizing or swamping a boat because of recoil and body reaction to it.

Summary Activity

Stage a boat selection and trial event where participants get an opportunity to handle several types of boats and canoes, both powered by wind or motors and paddled or rowed. Hold a "consumer decision making" event, in which the participants select a boat or canoe for a particular type of hunting under specific water conditions.

Lesson Narrative

Hunting Boats

Many different types of boats are used in hunting, from small canoes and priogues to large, stable boats capable of handling rough seas. The purpose for which the boat is to be used normally dictates the type of boat and its design. Many factors enter into that selection. Some boats are used mainly to transport hunters into an area where they are going to hunt. Others might be used as a gunning platform as well. Many boats serve both purposes, requiring that they handle the load to be carried while providing relatively easy concealment for the shooters. Some boats are designed primarily as jump shooting boats, where a quiet,

Hunting Boats

stealthy approach is required. Others are used primarily as a shooting platform, where the main requirements are stability and easy concealment. Most hunters use their boats for a wide variety of purposes rather than being able to dedicate the boat to any single use.

Water conditions, like depth, currents, wind and wave action, and channel widths are part of the choice as well. A narrow canoe that is ideal for sneaking along narrow creek channels would be much less useful on large bodies of water where wind and wave action require a larger, more sea worthy craft. Deep water with big waves might call for the wave slicing ability of a deep-V hull, while shallow water conditions might dictate a flat-bottomed design that draws less water.

Distances to be covered may influence the type of propulsion and the speed necessary to reach hunting areas in a reasonable length of time. Some boats are easily rowed or paddled for modest distances, while others require sail or motor power to be efficient. Generally, displacement hulls are slower in the water because they have more surface in contact with it. Planing hulls offer more speed, but they require adequate power to reach planing speed and the efficient skimming of the water surface. They may tend to pound in a choppy sea, while the displacement hull plows through chop.

The loads to be carried also influence the type of craft. If only one or two hunters are to be carried, the minimal load can be handled by a relatively small boat. Modest loads that might include one or more gunners, gear and a dog require a bigger boat capable of handling the load without taxing its capacity. Where heavy loads must be carried for considerable distances, e.g. camping equipment, food and other supplies plus hunters and hunting gear, a large capacity boat or several smaller ones may be needed for effective and adequate transportation. It is critically important that boats be loaded within their rated capacity limits, since overloaded boats are much more susceptible to accidents.

Access type is also important. If access is by way of an improved boat ramp, even at some distance from the hunting site, a heavy boat and trailer can be used. If the launch site is unimproved, the boat may need to be carried a short distance in order to get it launched. Under many conditions, the boat will need to be carried modest to long distances or carried around obstacles several times. In that situation, a light, easily transportable boat, like a canoe, is an excellent choice.

Cover types also may influence the choice of boats. Open water areas like rivers, streams, sheltered ponds, lakes or bays may be covered with many types of boats. Unsheltered marine or inland lakes may require much more boat for safety. Marshes, both coastal and inland, tend to have numerous narrow channels and abundant vegetation that would impede the movement of broad-beamed boats. Canoes, pirogues, poke boats and similar craft are ideal selections for these conditions. Swamps and beaver flows also require a smaller more agile boat. Rough water is seldom a problem, but getting around in tight spaces is a requirement.

The type of hunting being done also has an effect on boat selection. Waterfowling, with its demand for gear and dogs, may dictate a more spacious boat rather than using a boat to get into an area to hunt small game or upland birds. Big game hunting might demand a cargo capacity large enough to move the hunter and a bagged animal to camp or a pick up point.

Finally, local conditions or traditions and personal preference enter into the decision on which type of boat to use for hunting. Some people would not be caught dead in a light canoe. Others feel that the canoe is the most versatile hunting boat ever. Often local traditions are the result of trial and error in adapting to local conditions and hunting methods. They are often worth considering when picking a boat for hunting purposes.

Hunting Boats

Hull Designs and Behavior

The shape of the bottom, sides, bow and stern as well as the amount of freeboard and rocker in the keel all have an impact on the behavior of the boat under a variety of conditions. Flat bottomed boats tend to pound in rough water, but they are quite stable and able to carry large loads. Rounded or arched bottoms tend to roll more easily, but they slice through waves more effectively with less pounding than do flat bottoms. Semi-V boats combine the features of the flat bottom and arched designs. They are better big water boats, capable of carrying substantial loads with modest amounts of draft (depth of water required for floating). In all but the choppiest of seas, they tend to cut through waves without excessive rolling or rocking. Deep-V hulls require considerably more water for operation. They are very good at handling waves and chop, although they may tend to rock. Heavy loading may make them sluggish and less responsive, and shallow water may stop them short of a destination. Tri-hulls are usually placed on heavy, fiberglass hulls. These hulls resemble two deep-V hulls connected by a flat-bottom or arched hull. They tend to be extremely stable, but to pound in choppy seas. They have an outstanding ability to carry heavy loads, but they may require considerable power and an improved ramp.

The sides of the boat may be either soft or hard chined. That means that they may flow smoothly from the bottom to the gunnels or they may have a hard angled joint with the bottom. Hard chined boats may have straight or sharply flared sides. Many skiffs are fairly straight sided as are many jon boats. The shape of the sides has a strong influence on the carrying capacity of the boat, as can be seen by comparing similar sized boats with different hull shapes. The height of the sides determines the amount of freeboard, the distance from the waterline to the gunnels of the boat.

Bow shapes come in a variety of designs that tend to blend into each other. Square bow boats offer a stable platform forward, but they tend to pound heavily in even a modest chop. They are also difficult to push through vegetation. Narrowly pointed hulls are at the opposite end of the spectrum. They slide easily through vegetation, but offer very little in stability or buoyancy. Many hulls are rounded or wedge shaped at the bow, compromising the characteristics of the pointed and flat or square shapes. Some broad beamed boats have a short wedge shaped bow to aid in handling choppy conditions without sacrificing the stable fishing or shooting platform on the bow.

Stern shapes are similarly variable. On craft that are to be poled or paddled, having a pointed or narrowly square stern and bow makes handling easier. Tapered, square sterns tend to be more streamlined for movement through the water, while broadly square sterns tend to add stability and load-bearing capacity. Rounded sterns may be found on some sailing craft.

Rocker refers to the profile of the bottom of the hull from stem to stern. Craft with very little rocker are excellent for carrying capacity and stability, as well as minimal draft in shallow areas. Adding rocker makes the craft more easily maneuvered. Lake canoes, for example, are often flat; while those intended for use in rivers are curved for quick turning.

Matching Boats and Conditions

General purpose boats are most often a compromise among a variety of uses. Some of them are selected for the most common or frequent use and the most frequently encountered conditions. These will be at their best for these purposes and conditions but less useful when either the conditions or the purpose change. Others may be chosen for the most demanding use or conditions, perhaps being "over-built" for the more common ones or even restricting some fairly common activities because of design elements for the most rigorous conditions or uses anticipated. It is essential that the boat be adequate for the use in any case. The boat selected for commonly encountered activities or conditions may require the user to select the conditions under which to use the boat. In addition, it may not work well for other potential uses. A 14 foot jon boat with a 15 horse motor is not an ideal selection for towing skiers, but it might be just the ticket for

Hunting Boats

fishing in lakes or rivers, ferrying decoys and a couple of hunters to a blind or drifting a river for squirrels. The big, gaudy ski-boat on the other hand, might be a little heavy for unimproved launch sites, hard to hide near the duck blind and much too heavy for maneuvering among the rocks in a river.

Special purpose boats are usually ideal for the purpose for which they are intended. The pumpkinseed-shaped Long Island Scooter or layout boat is a wonderful gunning platform for waterfowl. It has a low profile and amazing stability, but it is nearly impossible to row, paddle or motor to a hunting area. It requires another boat to tow it to the hunting site and to serve as a tender. A light weight canoe is an excellent choice for small creeks and marshes where it must be carried to the water and slipped quietly through narrow channels. Heavily loaded in heavy waves or a strong chop, it may be a very poor selection as a water craft. Two hunters, a hundred decoys and a Lab may be a maximum load, even for a big freighter canoe.

Basic boat design enters into the selection process. The construction materials and the design determine the handling characteristics of the craft. They also contribute to the size and weight of the vessel, which determines when, where and how it can be operated. All of these things also contribute to the cost of the boat. While a fully equipped sport fisherman designed for offshore operation might be great for hunting big game fish, it is not likely to give back its cost in benefits to the landlocked hunter who is interested in working relatively small rivers and marshes for waterfowl. Consider the uses and the costs as selection takes place, and you will have the best choice from among those available for your purposes, area and enjoyment.

Safety Afloat

Boating accidents claim more lives every year than do hunting accidents. The key to accident prevention when using water craft is the same one necessary when using firearms. It all starts with, using your head. Forethought is one of the most vital components in avoiding accidents or problems afloat. Make sure that you use a rational approach to assessing the potential danger of the conditions and likely changes in those conditions. Whenever possible, elect to, avoid potential danger rather than planning on coping with it. Where conditions are excessive for your equipment, find something else to do or a different approach that will not expose you to those conditions.

Make sure that you avoid overloading the boat. Trying to get too much gear or too many people into a boat is an invitation to a boating accident. Where that accident takes place under the conditions common to hunting, merely getting wet can pose a life-threatening problem. Most boats contain a Coast Guard plate listing the capacity of that boat. Do not exceed it.

Balancing the load is also vital. Properly loaded, the boat should float level with ample freeboard. The balance of the load affects handling, steering, ability to adjust to waves and much more. Remember, too, that water or ice in or on the boat adds considerable weight to it and has a major impact on handling characteristics.

Safety Equipment - Safety equipment for the boater begins with a personal floatation device or "life jacket" for every person on board. That device should be Coast Guard approved for the size and weight of the individual and in proper functioning condition. Fiber filled vests should be checked to make sure they have not become waterlogged, and any PFD selected should hold your head above the water. Closed cell foam vests have the added advantage of adding a layer of insulation next to the body. In cold waters, that can make the difference between survival and death to hypothermia. Regardless of the type of PFD chosen, it must be worn to be effective. Cushions crammed under the seats or vests buried under a sack of decoys do little good if a sudden ducking takes place. Make it a practice to wear your PFD when under way or in a situation where going into the water is a possibility.

Safety does not stop with a PFD. Wise boaters will include adequate navigational equipment when it is called for. Navigation equipment can be as simple as a compass and a map on small waters or as complex as Loran

Hunting Boats

or GPS systems on larger ones. When landmarks are the key to navigation, fog or other weather can leave you without reference points. In that situation, the compass or other navigational aide can be vital. A flashlight or lantern is also critically important if the trip will include any early or late movement. Not only can it be used to read the compass or locate landmarks, it can also serve as a visual signal to other boats.

Some vessels are required by law to carry signaling equipment. Others are not. Even for canoes, jon boats and other small boats, carrying some type of signaling equipment can be very important. The flashlight or lantern can serve as a visual beacon, but flares, are much more effective when the situation calling for them arises. A mirror makes an excellent signaling device when the sun is shining. A whistle or air horn might be a life saver in dense fog, snow or other conditions where visibility is limited. The sound can alert others to your presence and help in avoiding collisions. Finally, those who venture onto larger lakes, bays and coastal areas may want to have a marine band radio so they can communicate with other boats and shore stations in the event of an emergency.

Hazards and Avoiding Them - The air and the water combine to create several of the major hazards encountered by the boating hunter. Cold air and water combined with wind and the resultant waves can pose serious threats, to both safety and enjoyment. In handling wind and waves; each person must know their limitations and those of their boat. Learning to handle the boat needs to take place under less trying conditions, not when cold, wind and waves conspire to make mishandling dangerous. Cold, particularly when combined with wind and water, poses a real threat of hypothermia. Staying dry and shielding the body with waterproof clothing while staying out of the wind as much as possible can reduce that threat to a minimum. These elements that impact our bodies can also have a disabling effect on equipment. Freezing conditions can disable motors once they are shut off by allowing ice to form in the shaft or lower unit of the motor.

Navigational hazards also must be recognized. Underwater structures like reefs, sandbars, rocks, hidden stumps or rubble can bring a trip to a halt in a hurry. Knowing the area and consulting charts can keep such surprises to a minimum. Falls, rapids and other hazards of moving water may seem too obvious to deserve mention, but too many hunting boaters do not consider them before plunging into the currents. If any doubt exists, move the boat through the obstacle using ropes or carry it around the obstacle. Where rips or other currents exist, be aware of their potential to influence the movement of the boat or to create powerful turbulence, even on calm days. Further, coastal hunters should be aware of tides and tidal currents as they influence water depth and current conditions.

Hunting From Boats

Hunting from boats requires understanding of numerous laws and regulations. All boating laws and regulations must be met. All state hunting and wildlife laws must be understood and followed. Federal laws must be followed when migratory birds or other federally protected species are involved. In addition, agency or local regulations may impose additional requirements. You are responsible for knowing and obeying all those regulations and laws. Note, too, that many of these laws may not translate from one state or locality to another. Drifting for ducks, for example, is against the law in some states while being a technique of choice in others. An unwary hunter who crosses state lines may not realize that a favorite technique is forbidden in the neighboring state. Federal laws forbid shooting waterfowl from boats that are under the influence of sail or power operation until all motion from those power sources ceases. They also prohibit harassing or hazing waterfowl with a boat in order to stir them up for hunters. Normal movement by boat to get to and from blinds or to fish is fine, but motoring into rafted waterfowl to force them to fly or to push them toward hunters is illegal.

The basics of hunting safety are just as important in hunting from boats as they are in any other type of hunting. In fact, the confined space of boats may add some considerations for the hunter. All the fundamentals of safe firearms handling must be followed, including keeping the firearm empty until it is ready to be used, keeping the muzzle pointed in a safe direction at all times and keeping the finger off the

Hunting Boats

trigger until you are ready to fire. In drifting or similar situations, only the forward person should have a loaded firearm. The other person is just the means of propulsion and cannot safely shoot. Where regulations prohibit the possession of a loaded firearm in a motor vehicle, firearms must remain unloaded (preferably cased) while the boat is under power. Only after it is stationary can it be used as a shooting platform. Getting into and out of boats is sometimes a bit tricky. Firearms should be unloaded and handled as in any other hazardous area during that process. Zones of fire must be carefully outlined and rigorously followed in any boat or blind. Finally, the hunter must recognize the potential of ice as either an obstruction or a gun jamming influence. Mud, sand and similar materials can have the same influences under warmer conditions.

Shot selection and shooting positions can have a strong influence on safety. Shooting in canoes and similar narrow craft must be done from a seated position. Shots may be taken standing and abeam of the boat only when it is carefully secured to prevent capsizing. Taking an unbalanced shot, standing in a canoe to shoot or similar actions can subject you and your hunting partner to a quick and very unwanted ducking under conditions where it can range from an inconvenience to a life threatening situation.

Boats can greatly increase hunting opportunity. With that opportunity there comes the responsibility to exercise necessary caution and wisdom in the use of boats, firearms and wildlife resources. If all of them are combined, the experience for the hunter can be both positive and fruitful.

Exhibit and Sharing Suggestions

1. Visit a boat yard or boat sales facility. Identify, examine and discuss different types of boats and canoes and the usefulness of each one. Share your findings with your club or another group.
2. Select a craft for waterfowling use on a local lake, marsh, river or bay. Discuss your reasons for selecting that craft and how the decision was made to reject other types.
3. Construct a display or poster showing a variety of hull shapes and their advantages and disadvantages under various water conditions. Use the poster to present an illustrated talk to your group or another appropriate audience.
4. Demonstrate how to load a boat safely for hunting use, taking care to balance the craft properly.
5. Plan a small craft, boater safety or canoeing course for your group, arranging to have appropriate instructors to present the material.

Determining Eye Dominance

Ronald A Howard Jr. and James V. Peter, Jr. *

Eye Dominance

Most people have a dominant eye, just as they have a dominant hand or foot. When a person looks at an object with both eyes, the dominant eye aligns directly with the object unless an obstruction interferes with a clear line of sight. Under normal conditions, when a finger is pointed at an object, or two or more objects are aligned visually, the dominant eye determines the alignment. Just as some people are truly ambidextrous, a very small number of people have indeterminate eye dominance. The majority, however, have a dominant eye. In most cases eye dominance and hand dominance are on the same side, but many people are cross-dominant. That is, their handedness and eyedness are on opposite sides.

Humans have binocular vision – they get slightly different images from each eye and blend them in the brain to yield one image and a sense of depth or distance. With both eyes open, you have a wider field of vision with more peripheral vision and better motion detection. In shot, you simply see better when both eyes are used. Experience shows that shooting skills are learned more easily and often better developed when a shooter learns from the dominant eye side. Where eyedness and handedness are on the same side, new shooters easily use the dominant side. Cross-dominant shooters have a greater challenge, but

they do better when they learn to shoot with the dominant eye.

Some shooters, particularly those with successful experience in shooting with the non-dominant eye, are reluctant to switch. The switching process usually involves a brief period of reduced success and frustration, followed by improved skill levels beyond their original level. Some experienced shooters have learned to shoot one-eyed, closing the dominant eye or obstructing it with a shield, blinder, spot of tape or a small object on the lens of the shooting glasses. Others have learned to override their dominant eye through practiced concentration or to compensate in some other fashion. Fewer than 1 percent of all shooters must shoot one-eyed because of dominance switching. In most cases, the shooter learns to use both eyes and shoot from the dominant-eye side. Learning one-eyed or with the dominant eye obstructed or closed increases stress and fatigue, and reduces concentration and quickness. Results indicate reduced performance levels, increased frustration for the shooter and slower learning.

Learning to shoot well is a challenge. You need every advantage to meet that challenge effectively. Learning from the dominant-eye side is a major advantage.

How to Determine Eye Dominance

Four basic methods for determining eye dominance are described. Those that provide a check for “cheating” are more effective in an instructional setting. Regardless of the method selected, the exercise should be repeated several times. Instructors should remain alert for eye-dominance related problems with shooting performance.

Coach-pupil Method

Shooters should get into their coach-pupil pairs, standing several arm-lengths apart and facing each other squarely. The “pupil” should place one thumb over the other, then cross the fingers of the top hand over those of the bottom one. This leaves a small, triangular opening. Raise the hands, keeping both eyes open, and center the “coach’s” nose in the triangular opening. At this point the coach should note which eye is visible in the opening. Then the “pupil” should bring his or her hands slowly back to the face, keeping the “coach’s” nose in the opening. The hands should come to the dominant eye. Coaches must watch closely for wavering between the eyes, an indication of “cheating” or forcing the hands to a predetermined eye. The exercise should be repeated several times to confirm original results with both partners checking their eye dominance.

Option: Shooters could cup their hands together, leaving small openings between the bases of the little fingers and the thumbs. A card or a sheet of notebook paper with a small hole centered in it could also be used.

Distant-object Method

Use any of the methods of making an aiming device outlined above. Center a distant object in the opening. Make sure both eyes stay open and face the object squarely.

Finger-point Method

With a pointing method, a distant object or a partner is used. The finger is pointed naturally at the object with both eyes open and the face square to the object. The eyes are covered or closed alternately. When the dominant eye is closed or covered the finger appears to jump away from the original location.

Tube Methods

Kaleidoscopes, toilet paper tubes and similar objects can be used with many young people to determine eye dominance. When the person is not aware of being tested for eye dominance, the tube will almost always be

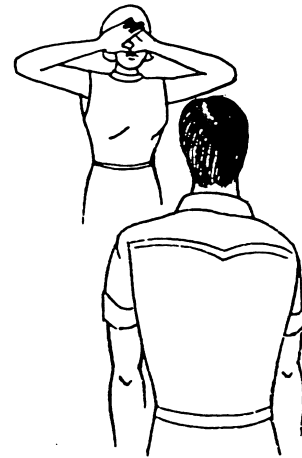
brought to the dominant eye. This also occurs with spotting scopes, telescopes and similar tools where one-eyed viewing is needed.

Troubleshooting for Coaches and Instructors

Some shooters will bring the opening back to their own noses because they are looking at the paper or their hands rather than at the target. Those who use the finger-point method will see two fingers if they focus on their hand rather than on the target. If inconclusive results are obtained, try another method. Make note of that shooter, however, and watch for evidence of switching dominance in the act of shooting. Consistently missing to one side of the target usually indicates an eye-dominance related problem.

A Note of Caution

Vision problems can have a serious impact on shooting ability. Often they go undetected by the shooter or those around them. Unless you are an ophthalmologist or optometrist, avoid “diagnosing” vision problems, but be aware of the types of problems a



shooter with vision problems may face. Discuss any potential problems you observe with the shooter and his or her parents. Like teachers who notice reading problems or other vision related difficulties, the shooting instructor may notice things that even the shooter misses.

Finally, be sure that all shooters are wearing adequate eye protection while they are on or near the firing line. Some people recommend the use of shooting glasses even for archers. Eyes are precious and vision is vital to shooting. Let's do our part in protecting them.

Sighting in a Rifle

SIGHTING IN A RIFLE

Ronald A. Howard Jr.¹

The purpose of the sights on a rifle is to align the bore with your eye. Once that alignment has been achieved, the aligned system can be oriented to a target in order to hit that target with the bullet. Aligning the sight system with the bore and the eye is called sighting in. The best conditions for sighting in a rifle involve a stable bench and adequate sandbags or other supports to hold both the forearm or fore end and the butt in a solid position. The rest or sandbags should be adjusted to place the aligned sights or the reticle of the telescopic sight on the aiming point of the target. At the outset, it is often wise to fire a few shots at approximately 25 yards, even if the sights have been "bore sighted" either by eye or by means of a collimator. At that short range, you are almost entirely assured of hitting the target; and once the bullet has been located the sights can be adjusted to put the bullet on the aiming point. With high power rifles, the shooter can move to a 100 yard range to complete the process.

Fire a minimum of three shots, taking ample time between them to prevent the barrel from heating excessively. Single loading and making notes between shots often helps to pace the shots better. Some shooters even time their shots to about 1 ½ to 2 minutes. Take careful note of where the sights or the reticle were on the target at the moment the rifle fired. If the shot was pulled off the aiming point, make a note of it. If it is where you called it, discount that shot. Ideally the three to five shots fired will form a nice tight group.

Use the center of the group as the point of-impact and calculate the vertical (elevation) and lateral (windage) distances to the center of the aiming point or the desired point of impact on the target. This allows you to make adjustments to bring the point of impact to the desired location. The basic rule of sight adjustment with a rifle is to move the rear sight in the direction you want the hits to move. With telescopic sights, the type most hunters use, those adjustments are made with the knobs or dials on the scope body or the mounts. Words and arrows will direct you in selecting the direction to turn the adjustments. Your scope manual will indicate the amount of adjustment in minutes or angle per division or "click". Many scopes have quarter minute adjustments. Since a minute of angle equals one inch at 100 yards, a quarter minute adjustment is ¼ inch at 100 yards. It is also 1 inch at 400 yards or 1/16 inch at 25 yards. After determining the number of divisions or clicks the scope must be moved to correct both windage and elevation, make the adjustments needed, and fire another group of carefully aimed and timed shots. If the center of the group is on the intended point of impact you are finished. If not, continue to make adjustments until you have moved the group center to that point.

¹ Professor and Extension 4-H Specialist, Texas Agricultural Extension Service, Texas A&M University System

Sighting in a Rifle

Selecting a point of impact at 100 yards is the subject of much debate. Some people advocate putting the bullet right on or slightly above the point of aim at that distance. For hunters who spend most of their time in dense cover and have shots of 150 yards or less, that makes good sense. For those shooting high velocity rifles and hunting in open country where 200 to 300 yard shots are common, Jack O'Connor, late firearms editor and champion of the .270 Winchester, promoted the 3 inches high at 100 yards approach. With many rifles, that puts the dead-on point at between 275 and 325 yards, leaving the bullet about a foot to 18 inches low at 400 yards. Its highest point in the trajectory curve is around 4.5 inches at about 200 yards. In order to use this system effectively, you must practice with the rifle at a variety of ranges until you know its trajectory with the bullets and powder charge you are using. O'Connor liked this system because he did not need to hold off most big game animals out to 400 yards. After thousands of rounds at woodchucks and paper targets and lots of others at a variety of big game animals, I like the system, too.

If you are not a good enough shot to put the bullet on the kill area of the animal at 300 to 400 yards or your rifle and cartridge combination is not capable of firing tight groups at 100 yards, you are wasting your time sighting in this way. Concentrate on putting the bullet on or near the point of aim at the ranges where you are comfortable. Every ammunition manufacturer offers ballistics charts that will help you to determine how to sight in your rifle for optimal performance under your hunting conditions with your skill level. Be sure to check those tabulated figures against actual performance, however. Your rifle may behave a bit differently from the one that provided the tables.

Remember, the variation in your aiming and holding ability is compounded by the variation in the rifle's precision. A rifle that is capable of firing one inch groups at 100 yards should be able to hold four inch groups at 400 yards. If your wobble area at 100 yards is four inches, it will be about 16 inches at 400 yards. Clearly, that combination of about 20 inches of variability in impact point should dictate against shooting at that range. Stick to the ranges where you are absolutely sure you can make clean kills with well-placed bullets.

Wise hunters check the zero of their rifles frequently. Weather changes, even simple changes in temperature, can make a significant difference in the point of impact, either because of changes in the dynamics of the barrel, changes in the stock fit, or changes in the performance of the powder-bullet combination. A load that was on the money at 90° in July at sea level may hit in a very different place at 20° at 10,000 feet in December. Travel can also impact the sight settings. A quick check could save a shot of a lifetime.

Sight your rifle in. Sight it in for you and your hunting style. Shoot it often to maintain your familiarity with its performance, and it will perform well when you ask it to do so.

Fact Sheet - Sighting Exercise

Sighting Exercise

Ronald A. Howard Jr.¹

Shooters differ in their ability to align various types of sights precisely. This exercise is designed to show the difference in sighting precision using optical sights and metallic sights under hunting conditions. It may be performed as a live demonstration or accomplished ahead of time with the aid of a couple of teens or parents. It requires a stable rest. A good, but inexpensive one for this purpose can be made by cutting two notches in a cardboard box. Alternatively the rifles can be sandbagged or otherwise held in place so they will remain in a stable position. Some array of sights including an open sight, a receiver sight, and telescopic sights of low (2-4X) and moderate (6-8X) power should be used.

1. Align each rifle with a plain sheet of paper set at approximately 100 yards. Be sure the action is open and the rifle is empty before proceeding further.
2. While one assistant marks the "hits," have another "shoot" three to five shots by directing the downrange assistant to move the marker to the proper location for a perfect shot. The downrange person then marks through the center of the "bull" to show the hit location.
3. Have the same person "shoot" all the rifles, making sure the marks are small enough not to be seen through the higher powered scopes.
4. Compare the precision (group size) in hit placement among the different types of sights.
5. Discuss the variation in sight alignment and sight picture among the various sighting devices.

Remember, the various devices should be equally precise provided that all of them were aligned perfectly. Since optical sights are internally aligned, except for parallax problems, they should produce tighter groups when the rifle is held firmly in place for a series of simulated shots. Having fewer alignment errors and a magnified field of view aids in precise and accurate shot placement. As a variation, try placing a large sheet of roofing asphalt paper in front of the various rifles on a bright day to generate a mirage. Test the impact of the "heat waves" on accuracy of alignment. Have the shooter discuss the appearance of the marker through the mirage.

Use your imagination to create other conditions or variables that can be used to compare the utility of the various sights. Young people should conclude that their sight choice depends upon a number of factors, including cost, intended use, need for versatility, and hunting conditions.

¹ Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System, College Station, TX

Fact Sheet - Sighting in a Bow

SIGHTING IN A BOW

Ronald A. Howard Jr.¹

Many archers shoot "instinctively." That is, they do not use sights or reference points consciously. The vast majority of hunting archers today use some type of sights to help them concentrate on a spot and to increase their precision and accuracy. Some use a string peep in conjunction with a pin or aperture bow sight, while many others use only the anchor point and a consistent shooting position to establish the location of a rear "sight," their dominant eye.

Since the relationship of the dominant eye to the anchor point establishes the rear sight position either with or without a string peep, all adjustments are made by moving the front sight or sights. Some shooters prefer a single sight pin, and some forms of shooting limit the shooter to a single sight pin. Other shooters, including many 3-D shooters and some bowhunters, prefer to use several sight pins set for specific ranges. Each of those pins can be sighted in at that specific range, just as the single pin is sighted in.

Start by selecting the range for which the bow is to be sighted in. Set the sight pin about even with the edge of the limb or riser and approximately the distance from the anchor point to the center of the eye above the arrow rest. This amounts to "bore sighting" the bow for its pointblank range. Using a large target and proper shooting form, shoot an arrow at the center of the bull or a small aiming dot. If the first arrow strikes fairly on the target face, shoot two more to confirm the location. Make sure that you continue to hold on the aiming dot or bull while shooting these confirming arrows.

Correct for errors in sight adjustment by chasing the hits with the sight pin. If your arrows hit high, raise the sight pin. If they hit to the left, move the tip of the sight pin to the left. If they hit low, lower the sight pin. Record the number of turns or the distance you moved the pin up or down, and shoot another group of three arrows. Continue making corrections and shooting groups until the group centers on the point of aim. Once satisfied with the adjustment of the sight, mark the vertical position and lock the horizontal adjustment in place. If you have other pins to sight in, continue with each one in a similar fashion until they have been set to your satisfaction.

It is vital that the same shooting form and anchor point be used for all shooting, regardless of the orientation of the shooter. One of the primary reasons that shooters shoot high from tree stands is that they alter their shooting form. These shooters have a tendency to lower their bow arm position rather than bending from the waist and keeping the relationship between the arms, shoulders and head constant. This raises the "rear sight" and causes the arrows to fly above the mark. At bowhunting distances, the impact of the changing the orientation of the arrow's flight to gravity has a minor impact. A bowhunter shooting a fast bow (200 feet per second) from a stand approximately 15 feet above the ground at a deer approximately 32 yards from the base of the stand would only see a difference of about 3 or 4 inches in the total drop of the arrow (over 2 feet). This would require holding slightly low, perhaps less than the diameter of the sight pin tip, to compensate for the angle. A change in form is much more dramatic.

¹ Professor and Extension 4-H Specialist, Texas Agricultural Extension Service, Texas A&M University System

Fact Sheet - Sighting in a Bow

Proponents of the single sight pin point out that it can be adjusted to hit dead on at a modest distance, requiring only minor hold-over or hold-under to hit a mark from the bow to the maximum distance at which reasonable archers take a bowshot. It prevents the possibility of using the wrong pin in the excitement of making a shot. Like the use of multiple pins, however, the use of a single pin requires the bowhunter to judge distances accurately. Concentrated practice at judging distances and developing consistent and proper shooting form are essential to successful bowhunting.

Fact Sheet - Patterning a Shotgun

PATTERNING A SHOTGUN¹

Ronald A. Howard Jr.²

Shotguns are versatile firearms. They are designed primarily to deliver a cloud of shot on moving targets, but some are used in rifle fashion with a slug or in rifle-like fashion with a dense shot charge to hunt turkeys or squirrels or to clobber still board or pie plate targets. In patterning shotguns for rifle-like use, the shooter should aim just as they would when shooting at the real thing. For wing shooting applications, however, the shotgun should be pointed a mark on the pattern sheet as though that mark were a target.

Patterning shotguns reveals both the dispersion and the location of the shot cloud relative to the pointing or aiming spot. Standard pattern tests for all gauges of shotguns are measured in a 30 inch circle at a distance of 40 yards. The .410 bore shotgun is patterned at 25 yards. Tests performed by a shotgun hunter using these conditions allow comparison with the standard tests, but nothing dictates that the hunter must use the 40 yard distance for pattern testing. The shooter can adjust the distance to determine pattern densities and distributions at any distance of interest. Adjusting the distance to the actual ones expected in the use of the ammunition and shotgun gives validity to the test for field use. A turkey hunter, for example, may want to know if there are any turkey-head-sized holes in a charge of number 5 shot at 35 yards or how far out a turkey can be without degrading the pattern to the point where sure kills are not certain. A quail or woodcock hunter may want to see if their pattern has any overly dense or thin spots at 20 to 30 yards, while a waterfowler may want to see whether BBB or T shot yields the best goose-stopping patterns at 50 yards. No matter what your purpose, the patterning process is approximately the same.

Start by selecting the loads, either commercial or handloaded, that you wish to test. Note that comprehensive testing could require up to a box of shotgun shells with at least five of them being taken apart to count the shot they contain. Some protocols call for weighing each cartridge then selecting the lightest and heaviest ones along with three that are near the average weight. Others merely suggest selecting five cartridges at random from the box and counting the pellets they contain. Calculate the average number of shot per cartridge and record the total, number of shells opened and the average in your notebook.

Several shots are required to assess consistency and average pattern characteristics for the load(s) selected. I prefer to fire only one shot per pattern sheet, using several sheets for each test. Others fire several shots at one sheet before averaging the hits per shot. The process is relatively simple, but somewhat tedious and time consuming.

¹ Based in part on information extracted and used by permission from *Steel Shot for Waterfowl* (Federal Cartridge) developed by Bill Christy (Christy Enterprises, Inc. Blacksburg, VA).

² Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System

Fact Sheet - Patterning a Shotgun

Set up your pattern sheets at the distance(s) you have selected. Professionals may have access to painted plate steel pattern sheets, but several safer and more easily obtained alternatives are better for our purposes. A frame faced with light plywood, roofing felt, cardboard or some similar material is helpful, but the facing is not absolutely necessary. The pattern sheets can be commercially produced ones or made from one of several acceptable alternatives. Since the sheets are from about 40 to 48 inches squares wide craft paper, paper table cloth, material, refrigerator box cardboard or ends of newsprint rolls make excellent pattern sheets. Place an aiming or holding point that is large enough to see easily in the center of the pattern sheet. A three to four inch dot is usually big enough. Write the data for the load being tested, the shotgun and choke combination, the firing distance and the date on the pattern sheet. If you are trying to save paper, by shooting more than one shot at the sheet, include the number of shots to be fired.

Fire one or more shots at pattern sheets for each load being tested. While many people call for a minimum of 10 shots for analysis, five shots may be adequate if the patterns are fairly consistent. If the shotgun is being used in rifle-like fashion, aim the shots. If not, start with the gun in a gun ready position, mount it and fire just as you would at a real target – NO AIMING! Continue this process until all the loads, chokes or other elements you plan to test are recorded on labeled sheets.

Now the real work begins. Scribe a 30 inch (diameter) circle around the densest portion of the pattern (the area that contains the most hits), regardless of where that dense area is located. For more precise work, you may want to use the same center point to draw an additional concentric circle 21 ¼ inches in diameter inside the first one, then bisect the circles vertically and horizontally into four equal quadrants. Then, count the hits in each of the regions (one to eight, depending upon your desires), marking each hit as it is counted and recording the number of hits on the appropriate sector of the pattern sheet. Before counting any sector, determine how you will handle pellets that fall on a line, treating those pellets consistently for each quadrant. If multiple pattern sheets have been used, sum the data from corresponding areas of each pattern sheet and divide by the number of sheets to obtain an average number of hits in each sector.

Dividing the average number of hits per shot by the average number of pellets in each shotshell determines the percentage of the shot contained in that 30 inch circle. Moving the decimal point two places to the right (multiplying by 100) yields the percentage of hits in the 30 inch circle, a measure of the shotgun's efficiency in putting its pellets on the target area at that distance. This is often called pattern density, although dividing the number of hits by the area of the circle would be a more accurate way to determine density.

Dividing the number of pellets in the inner circle by the number in the outer ring yields a measure of the degree to which the pattern concentrates in its center. The higher the number, the more concentrated the pattern. The uniformity of the pattern can be assessed by comparing the average number of hits in the best-hit quadrant to the average number in the least-hit quadrant. A completely uniform pattern would have equal numbers of hits in all segments. Finally, templates of quarry species vital areas could be placed on the patterns to determine the average number of hits per shot. This measures the coverage or saturation of the pattern.

Fact Sheet - Patterning a Shotgun

These data, plus the location of the pattern center relative to the index point or aiming point on the pattern sheet give the serious shotgunner information that can make them both better and more effective game or target shots. Knowing where a shotgun shoots relative to where it is pointed is a help to any shotgunner. It is critical to tight-patterned shotguns used in hunting wild turkeys, and many turkey hunters have elected to put receiver sights on their shotguns in order to make sure it puts its shot charge right on the point of aim at a pre-selected distance. Others have continued to pattern their shotguns at increasing ranges until the pattern fails to offer sure-kill hits on the head and neck area with pellets of sufficient size to cleanly kill one of these tough birds. That helps determine their maximum sure-kill distance, making it possible for them to restrict themselves to shots' within that range.

The effort and expense of patterning a shotgun can bring dividends to the shooter. It gives him or her a good idea where their gun shoots with their individual shooting style. It frequently reveals that a shotgun "likes" one brand, loading or shot size much better than another. A skeet gun of my acquaintance, for example, consistently patterned 82 to 85 percent with 1 3/8 ounces of number 5 shot and a specific powder and wad combination. With all other loads it behaved like a normal skeet gun. In those pre-steel days, the baby magnum load of 5s became my waterfowling, turkey and back-up pheasant load, saving the expense of a new barrel for several years. Another shotgun demonstrated a pattern with a consistent hole in it with one brand of ammunition. Switching brands eliminated the hole, but changing the hold point on turkeys allowed the original brand to be used successfully as well.

Get to know your shotgun better. Pattern it.

Table 1. Nominal Pattern Densities for Standard Chokes³

Full	-65 - 80 percent
Improved Modified (JA choke)	- 65 - 70 percent
Modified (Ill choke)	- 55 - 65 percent
Skeet 2 (1/4 choke)	- 50 - 55 percent
Improved Cylinder	- 40 - 50 percent
Skeet (Skeet 1)	- 35 - 40 percent
Cylinder (no choke)	- 25 - 40 percent

³ Although various choke borings are regarded as standards for the shooting community, the shooting industry shows several such standards. Each manufacturer may determine the level of performance for its nominal chokes. Those listed here are within the ranges used by several manufacturers. SAAMI, the Sporting Arms and Ammunition Institute, does not list performance data for nominal choke borings, hut is concerned with safety related standards , including standards for the length of chokes (including forcing cones) and the amount of restriction permitted.

Fact Sheet - Optical Tricks for Teaching

Optical Tricks for Teaching Observation Skills

Ronald A. Howard Jr.

The three phrases below are displayed on individual posters as part of the vision and the hunter session in the International Bowhunter Education Program. Set up as they are, even excellent observers will usually read them as "Bird in the hand," "Once in a lifetime," and "Paris in the spring." The repeated word is usually overlooked because the brain interprets the extra article actually seen as unnecessary. Each poster or flash card should display one complete phrase set up as these are to make the observational or interpretation error easy. You could easily design your own signs using similar trickery.

**BIRD
IN THE
THE HAND**

**PARIS
IN THE
THE SPRING**

**ONCE IN A
A LIFETIME**

If your group contains mostly beginners, you can leave the signs on display and ask a volunteer to read them aloud. If the observational skills are a bit better, flashing the cards for a few seconds, then asking what each one said is a better technique. Either approach should produce useable results with almost every audience.

Nearly any elementary health book or beginning psychology text contains examples of optical illusions. Many of those illusions can be used effectively to test or develop observational skill. The example used below depends on the human tendency to focus on central portions of the page or dark objects. Some people will immediately see a white vase in the center of the drawing. Others will see two dark human faces facing each other with white space between. Only rarely will someone who has not seen this diagram before describe both possibilities. Try other illusions if you like. Kids find them fun, and they are effective teaching tools for this section.

Observational Skills

Building Observational Skills for Hunters

Ronald A. Howard Jr.¹

Objectives

Participating young people and adults will:

1. Learn to sharpen their observational skills
2. Increase awareness to environmental cues
3. Increase their ability to detect wildlife and wildlife signs
4. Learn the value of keeping field notes
5. Have fun while learning

Roles for Teen and Junior Leaders

1. Conduct stalking activity
2. Conduct scent activity
3. Conduct caramelita hunt activity
4. Lead small discussion groups
5. Guide other participants in observation
6. Support and assist members who feel insecure in being alone during observation time

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders"
2. Participate in activities as a group, making their own observations for comparison with youth
3. Bring personal experiences into youth discussions
4. Arrange for or provide teaching site
5. Arrange for or provide transportation
6. Arrange for or provide teaching materials
7. Arrange for or provide refreshments

Best Time: Any time

Best Location: Mix of indoor and outdoor settings

Time Required: 1-3 hours

Equipment and Materials

paper
pencils or pens
wrapped candy pieces
oil of cinnamon
clear bowl or glass
vanilla extract
stones
water
"Please Observe" sign
"Ah, Awareness!" sign

References

Environmental Awareness, 4-H Leader's Guide NE19, Cornell University, Ithaca, NY 14853

Supplement to the 4-H Wildlife Manual: Outdoor Skills, Howard, R. A., Jr., 1987. 4-H 647A Purdue University, Cooperative Extension Service, West Lafayette, IN

¹ Professor and Extension Specialist, 4-H Youth Development, Texas Agricultural Extension Service, Texas A&M University System, College Station, TX

Observational Skills

Teaching Outline

Presentation

- I. Selecting sensory input
 - A. Humans as visual animals
 1. Observing more than seeing
 2. Sorting out "important" stuff
 - B. Relearning to use other cues
 1. Learning to observe
 - a. An acquired skill
 - b. Practice essential
 - c. Concentration and comfort required
 - 1) Feeling at ease afield
 - 2) Being well prepared
 - 3) Appropriate clothing
 - 4) Attentiveness
 2. Sensing the significant
 - a. Defined by situations
 - b. Valuable observations
 - c. Recording observations
 3. Contributes to safety
 - a. Target identification
 - b. Situation awareness
 4. Contributes to quality
 - a. Unexpected encounters or observations
 - b. Appreciation of nature
 - c. Adds richness
 - C. Value of hearing
 1. Broader coverage than sight
 2. Advance notice of game
 3. Cues to game behavior
 - D. Value of smell
 1. Human sense of smell
 - a. Not in dog's league
 - b. Better than we think
 2. Smell as a hunter's tool
 - a. Detecting game
 - b. Adding richness
 3. Using a dog to help
 - a. "Nose-brained" animal
 - b. Training essential
 - E. Coordinating senses for better hunting
 1. Smell, sound contribute while watching for game
 - a. Value to still hunters
 - b. Value to stand hunters
 2. Past observation helps with interpreting new situations

Application

USE the "Ah, Awareness" game from the *Observational Games* activity sheet to introduce the lesson.

ASK: How many of you noticed the signs on the door? Expect that a few honest people will admit they did not notice. Read some of the visual descriptions.

Ask older youth or adults to **SHARE** an observation that can illustrate any of these points, for example a chickadee landing on a deer hunter's hat or shoulder.

USE the *Stalking Activity* (see activity sheet) here. Try it with several types of ground cover. **DISCUSS** why the results differ.

USE the *Scent Activity* (see activity sheet) with several types of scents. **DISCUSS** differences in ability to sense them. **SUGGEST** the gun dog lesson.

USE a variation of *Caramelita Hunt*. (see activity sheet) **COMPARE** success rates before and after knowing what to look for. **OR** Use the *Numbers Game* activity sheet.

Observational Skills

- II. Specific searching images and the hunter
 - A. Searching images and predators
 - 1. Predators use particular cues to locate their prey
 - a. Hunters are predators
 - b. Sensory cues and hunting success
 - 2. Too much input confusing
 - a. Sifting data for importance
 - b. Finding dependable cues
 - c. Subtle or obvious
 - 1) Roundness of eyes
 - 2) Shapes out of place
 - d. Actions of trained eyes and mind
 - 3. Key material filtered from background without losing value
 - B. Expectations and observations
 - 1. Expectations cloud observations
 - a. Early blur
 - b. Looking for the right cues
 - c. Factoring out unexpected information
 - d. Learning to make sure
 - 1) Familiarity with species
 - 2) Familiarity with area
 - 3) Taking time to make sure
 - 2. Role in safety - target 10
 - 3. Role in success - seeing game
 - C. Silhouette, Movement, Pattern
 - 1. General size and shape
 - a. Where to look
 - b. What to expect
 - 2. Patches of color or lines that do not fit the pattern
 - a. Horizontal line of back.
 - b. Angled line of ears
 - c. Legs and bellies
 - d. Colors not matching background
 - 3. Whole or parts
 - a. Whole animal seldom seen except in open country
 - b. Obvious parts or things out of place
 - 1) Eyes, ears, noses, tails or other parts
 - 2) Breaks in a pattern
 - 4. Movement and flashes
 - a. Moving game - obvious
 - b. Twitches and other subtle movements
 - c. Flashes from antlers or horns
 - d. Flashes of color
 - e. Condensed breath

- III. Writing it down - value of field notes

ASK: Have you ever lost something only to find in plain view by changing your point of view? **POINT OUT** that the change can make objects recognizable.

ASK: What do you key in upon when hunting deer horizontal lines , eyes , motion, ears , light flashes , noses, legs - what?

USE signs from *Optical Tricks* fact sheet to show how this works. Have someone **READ** one aloud, then **ASK** if it was read accurately. **NOTE** that their expectations caused the error.

USE diagram from the *Optical Tricks* fact sheet. Ask participants to **DESCRIBE** what they see (a vase or two human faces).

Use photographs or other illustrations to **STRESS** these points.

ISSUE small spiral notebooks to each youth. **SHOW**

Observational Skills

- A. Ink and memory - ink more durable
 - 1. Value as a record
 - 2. Value as recreation
 - 3. Value for learning to observe
 - 4. Demonstrate setting up a page
- B. Asking questions to find answers
 - 1. Curiosity helps observation
 - a. Learning process
 - b. Beginning of woodsmanship
 - 2. Sharing ideas helps
 - a. Listening to other observers
 - b. Reading/studying
 - c. Reviewing your observations
- C. Collections and visual records
 - 1. Keeping samples
 - a. Tracks or casts of tracks
 - b. Hair or feather samples
 - c. Scats
 - d. Other signs
 - 2. Photographs and sketches

an example of field note style (see *Field Notes* fact sheet). **HELP** each participant start a page;

ASK participants if they have ever wondered about the habits of (any game animal) and let them **DISCUSS** their interests.

DISCUSS whether anyone got any new ideas during the sharing period.

DISPLAY examples or **COLLECT** some of the real items for exhibit.

Summary Activity

Have each participant spend a minimum of 15 minutes (30-60 minutes is better) observing an area or animal either at the end of this session or before the next one. Let them discuss what they observed or collected and share their experiences with the group. Younger observers may need to have some help from older youth to feel secure in the field or to complete the collections. Make everyone feels that their observations were valuable, but point out ways that they could be improved. See Field Notes fact sheet for follow up ideas.

Lesson Narrative

Senses and the Hunter

Human beings, like most other kinds of animals, tend to select the kinds of inputs from their senses that they view as important. For sighted people, the most extensively used sense is vision. We really believe what we see, but we seldom really see all that the eye captures. We tend to sort "important" information from "unimportant" information on the basis of our experience, expectations, and the context of our observations. Human babies and very young children seldom have that ability to select information. They taste, touch, smell, listen to, and look at objects that are unfamiliar. In many ways, learning to be a skilled observer requires the sense of wonder and curiosity of a small child, coupled with the analytical mind of an adult. It requires sensitivity to the abundant sensory information around us, ability to sort that information for significance without losing its richness, and development of enough experience to draw accurate conclusions from the data. Practice is essential. Fortunately practice in observation can take place at any time and in any place.

Observational Skills

In order to be a good observer, a person must be adequately prepared. They must be comfortable, both physically (adequately clothed and protected from the elements) and mentally (feeling at ease in the outdoors). That permits them to carry on the activities needed to make their observations, whether that be remaining perfectly still or vigorously climbing rugged terrain, and to be alert and attentive to the things going on around them. Being cold and miserable or constantly swatting at biting insects makes observation very difficult.

Although all observations involve filtering information, the difference between the significant and the insignificant depends on both the situation and the observer. Although some people measure their hunting success in body counts or size of antlers, most mature hunter's measure success in the experiences gained. Many of them would regard having a golden-crowned kinglet or a chickadee land on their shoulder, a chance to watch two red foxes playing in a basin full of new snow, or a weasel stopping on the toe of their boot with a "you're in my way" look in his eyes as an experience that makes a day, or even a season. Those things are even better when they are recorded to be remembered many times over the years.

Not only does the ability to observe make hunting a richer experience, it also makes it both more successful and safer. A skilled and alert observer is more aware of the situation around them: where their companions are, what lies beyond a hedgerow, where a bullet or a charge of shot may stop, etc. They are also better at identifying targets accurately, assuring that they shoot at only what they intend to bag. They will see more game, catch more game unaware, take better shots, and recover more game than will less observant hunters with otherwise equal abilities.

Good hearing is very important to the hunter. (That is one of the reasons you always wear ear protection when on the range.) Hearing covers a broader area than sight. It can give you advance warning of the approach of game. That warning may come as a whirl of wings, a squirrel's bark, a rutting white-tailed buck's pig-like grunt, a blue jay's scolding, a breaking twig, or the whistle of wings behind the blind. Sometimes the sound even gives cues to the identity and the behavior of the game animal. A drumming turkey, for example, is displaying either for a real hen or the fake one you are trying to be. He is also close!

Aural observations (hearing) are best interpreted in the context of experience. The gaits of squirrels, foxes, and deer have very different rhythms. Under noisy conditions, a wise hunter may try to sound more like one of them than the two-footed, stealthy predator he or she is.

Some people feel that the human sense of smell is so poor it is worthless. That is far from the truth! While we are not even in the same league as our nose-brained helpers, the gun dogs, we can gain plenty of information from our sense of smell. Characteristic odors can help in detecting game that is hidden, and may give an observant hunter with good olfactory senses an edge. The odors of the hunt also add to the richness of experience. The odor that quickens your pulse may be that of decaying marsh vegetation, wet maple and apple leaves in an abandoned orchard, the pungent dusty smell of sagebrush, or the clean scent of pines. No matter which it is, the world would be poorer without it.

There is no doubt that a well trained dog can add immensely to your understanding and use of scent in hunting game. The dog should be fitted to the type of hunting and properly trained. An untrained dog may be worse than working alone.

Observational Skills

All the senses should be tuned together when hunting. Smell and sound contribute to detecting unseen game or situations while the eyes remain actively attuned to clues. No matter what type of hunting technique you prefer to use, the tuned set of senses is better than a simple reliance on anyone sense. Remember that the experiences of the past are a major part of your understanding every new experience.

Specific Searching Images

Most vertebrate predators form specific searching images or patterns of expectations and cues to help them locate their prey. Hunters are no different from those other predators. We collect, sort, analyze, and interpret input from the senses to draw conclusions about the game we seek. If too much information is available, it can become confusing. That causes us to focus on certain types of data to locate game. Those things may be obvious or very subtle, but we usually try to select the ones that are more or less dependable. A good white-tail deer hunter will see every horizontal line in a patch of woods. One of them might be a deer's back. Pronghorn hunters see every white spot and check it for life. It may lead to the buck of their dreams. The round button of an eye may reveal a rabbit crouched in its form. Shapes that do not quite fit the landscape, sounds that are out of the ordinary, the musky odor of elk in a mountain meadow - all of these are part of some hunter's searching image.

Usually the key to sighting wildlife is an ability to recognize parts, rather than the entire animal. Eyes, ears, antlers or flashes of light from them, legs, tails, or small movements of these parts will often be the key to finding a partially concealed animal. A shiny black spot may turn into a wet nose on closer inspection, and usually the wet nose will be attached to the animal to which it belongs. Key information is filtered by experience from all the data the senses supply. That is a process of trained senses and a trained mind.

Expectations may cloud observations, and that may cause misinterpretation of sensory data. "Early blur" may cause stumps to grow magnificent antlers, a deadfall to strut, or tufts of marsh grass to swim toward the decoys. The mental confusion over target identification may last several seconds after an unbiased observer can plainly see that an error has been made. That situation can become dangerous unless every hunter takes enough time to make sure target identification. On the other hand, the inexperienced observer may factor out information that is very important. The awful-sounding turkey hunter that keeps chasing you from ridge to ridge, for example, is more likely to be a jake who has not yet gotten his gobble down. Familiarity with the species and the area and taking the time to make sure of your identifications will make any hunter more successful and safer in the field.

What features of the animal give its presence away to a good observer? Many different cues are useful. Size, shape, and color pattern are good general references. The deer hunter looking through a forest stand for rusty brown animals at eye level will miss most deer. They are not as tall as horses and steers, and their color is more gray to gray-brown. Habitat preferences can be useful too, but under some conditions the preferences may break down causing some animals to appear in odd areas. Preferred habitat is a signal to look and listen harder. The senses must be set for anything that is unusual or out of place - horizontal or angled lines in a vertical environment, a stem that gets thicker as it rises rather than getting thinner, a puff of steam, roughed up patches in the leaves, a stump or log that was not there on the last trip, a flash, a patch of color that does not match the background, an odd sound. All of them can signal wildlife close at hand.

Observational Skills

Writing Field Notes

The palest ink is stronger than the best memory. The things you record in the time spent afield will enrich your memory, providing additional pleasure over time. They help the observer to get better at the task by providing a comparison with earlier observations. They show the development of your mind, your sense of value; and your appreciation of the outdoors. Properly recorded field notes may have scientific value as well.

Curiosity is the foundation that builds woodsmanship. It starts the learning process that lasts a lifetime. Sharing observations with others is an excellent way to expand your own base of knowledge. Reading, attending workshops or seminars, and reviewing your own work are all good ways to build your observational skills. You can also collect casts of tracks, photographs, sketches, or other items that help you analyze your observations. Many of those items would make excellent exhibits or displays. Try to increase your observational skills each day. They will reward you with unexpected pleasures, increased success, and a richer life afield.

Sharing and Exhibit Suggestions

1. Study a site or an animal of interest, including all of your observations in your field notebook or sporting journal. Summarize your observations and present them to your group or to another appropriate audience.
2. Exhibit your field notes at a fair or similar 4-H function.
3. Observe a site over the course of a year, comparing seasons and activities noted on that area.
4. Select a game species in an area you would like to hunt and pattern the use of the area by individuals of that species. Develop a hunting plan based upon your observations and predictions of the best times and places for success.
5. Observe the behavior of a selected species. Condense your observations into an ethogram or behavioral profile of the species. Share your profile through a science fair, report to your club, or similar outlet.
6. Prepare a demonstration to increase observation skills and present it as a demonstration activity.
7. Prepare an illustrated talk about observational skills or observations that you have made.

Activity Sheet - Observational Games

Observational Games

Ronald A. Howard Jr.¹

Using All Our Senses

This exercise tests the ability of the participant to use all the available senses in describing an observation. It stresses the fact that humans tend to be visual animals, placing little value on what we smell, hear, or touch in most contexts. The leader should be prepared to ask questions to bring out hidden observations using those senses. For example: When asked if the sign made any noise, the observer may reply, "no." They did not state that it was silent, however. When asked how they knew the fabric was felt, another person may answer that it felt fuzzy to them. The combination of all senses and reporting of negative observations should be stressed to develop skill in accurate observation.

Expect that a few observers will miss even the large signs. Most will give an adequate to excellent visual description, and some will give extremely detailed information. Very few will feel the material, still fewer will list its silence, and almost none will report the odor until you request that they smell the sign.

Procedure:

1. Before the meeting make two signs.
 - a) Make a large one approximately 18-24" square or a similar sized rectangle using cardboard or poster material. In large letters (marking pen is adequate) write the words "please observe" and draw an arrow that will point to a smaller sign.
 - b) Make a smaller sign approximately 3x5" to 5x7" in area of poster board or a similar material. Glue a slightly smaller piece of felt or similar material to the front surface of the sign. Turn it over and glue several strips of poster board to the opposite surface. These spacers should leave small gaps to permit air circulation. If desired, glue a small piece of sponge or foam rubber in the center of the back side of the sign. On the felt side, affix a small strip of paper bearing the typed or printed phrase, "Ah, Awareness!"
2. Before mounting the "Ah, Awareness!" sign in the teaching area, saturate the sponge or the back side of the poster board with oil of cinnamon, oil of wintergreen, or a similar essential oil. Be careful not to let the oil strike through to wet the felt. The visual cue may give your deception away.
3. Mount the sign with dry mounting tape or similar material so that it is approximately nose high for the average participant in your group. The entry door is an excellent location for this purpose.
4. Mount the larger, "Please Observe" sign in an obvious place, pointing to the smaller one.

¹ Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System, College Station, TX

Activity Sheet - Observational Games

5. Have all participants enter the teaching area by a route that forces them to encounter the signs. A door frame is an ideal location for the larger sign and a door is an excellent site for the smaller one.
6. When everyone is in the room and seated, hand each person a piece of paper and a pencil and ask them to describe the object on the door. Do not allow anyone to go back for a second look.
7. Note anyone who seems totally lost. They may be people who failed to notice either sign on the way in. Ask if anyone failed to notice the objects in the door area. (Usually they will be adults or couples who entered together and in conversation.)
8. After a few minutes either collect the descriptions or ask volunteers to read some of them. Allow others to add to the description or to dispute the content.
9. After the visual content has been discussed ask questions to bring out what may have been missed, e.g. silence, texture, position or orientation of the signs, odor, etc. You may want to send someone to check each feature if time permits.
10. Use the experience to demonstrate that people tend to filter the cues available to them, selecting only those which seem to be most important. Point out that good observers use all the information at their command to remain aware of their environment.

A Wet Alternative

A similar activity uses a clear jar, glass or beaker, some tap water, a generous shot of vanilla extract, a few pebbles, and perhaps a leaf or a couple pieces of duck weed to create an illusion of pond water. Follow essentially the same procedure used above, asking the participants to describe the contents of the container. (I have had mysterious animals observed under these conditions on several occasions.) Females are more likely to discover the vanilla, although males seem to be nearly as oblivious to it as they are of the cinnamon oil in the other exercise. With a little thought, you can come up with similar activities that will be a challenge to the young people in your group.

Fact Sheet - Parallax

Parallax Exercise

Ronald A. Howard Jr.¹

Parallax is the tendency of an object to seem to change positions when viewed from different locations or angles. In shooting, it accounts for the differences in sight settings between shooters and some aiming errors in using telescopic sights. Most telescopic sights are set to be "parallax free" over a certain range of operating distances; and a few, primarily target and varmint scopes, are designed to be focused or parallax compensated for the distance over which the shot is being made. It can be illustrated several ways.

1. Use a wide sighting area, such as a ruler or a thin strip of wood. Have each member look down the strip at a blank piece of paper. Using a very light pencil (e.g. HHHH) mark the spot where each one says the stick is pointing with a small dot and their initials. Try standing next to the "shooter" on their dominant eye side to force them to look from a slight angle. Observe the horizontal and vertical scatter of the points. Discuss how the apparently straight line to a point on the target led to several different points.
2. Alternatively, have one person do the same thing several times, making them change their position slightly between sightings. Follow the procedure above obtain adequate discussion material.
3. Cut notches in a cardboard box to support a rifle (action open and empty) aimed at a blank piece of paper. You may even want to tape the box in place to keep the rifle absolutely stable. Have a member of the group sight right eyed, left eyed, head back to maximum eye relief, head forward to minimum eye relief, cheek to the stock and off the stock. Mark the appointed spots with fine pencil dots. Using a low power (e.g. 4X) big game scope at its minimum focal length should give an effective illustration. Try the same exercise with the "target" at 100 yards. Compare the difference in the two results. Try the same process with a 1" .22 scope of the same power or a scope with variable parallax correction. Was there any difference in them?

¹ Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System, College Station, TX

Fact Sheet - Broadhead Demonstration

Broadhead Action Demonstration

Ronald A. Howard Jr.¹

This exercise demonstrates the importance of using sharp broadheads in bowhunting. Rubber bands simulate the tough and elastic nature of blood vessels. Plenty of thin bands require more work to set up the demonstration, but the result is more graphic. Using a pair of frames can let the demonstration stand for later observation and discussion. A handy tool for the demonstration is a short length of shaft, equipped with a handle and a screw-in adapter. Those hopelessly bent or broken shafts you saved from kills or traumatic misses are fine for this purpose.

1. Construct a square wooden or wire frame approximately 4-6 inches on a side. If it is relatively thin it will be easier to apply the rubber bands.
2. Using rubber bands that are slightly smaller than the frame, crisscross the frame to make a dense net (like a child's potholder) of rubber bands. Tightly stretched bands may break with even a dull broadhead, but modestly or slightly stretched bands will usually allow a dull broadhead to simply slide by them.
3. Carefully push a dull broadhead through the net of rubber strands. The majority of them should slide or roll out of the way without being cut.
4. Repeat the process with a razor-sharp broadhead. The bands should explode away from the frame as they are cut.
5. Use this graphic demonstration as a springboard for discussing the importance of having extremely sharp broadheads. Drawing parallels to trying to cut meat (or large blood vessels) with a dull knife versus a very sharp one can aid discussion.

An excellent follow-up activity is to have the participants break into small groups and practice sharpening broadheads. Relatively mild steels sharpen more easily for beginners than do the harder steels with more durable edges.

¹ Professor and Extension 4-H and Youth Development Specialist, Texas Agricultural Extension Service, The Texas A&M University System, College Station, TX

Hunting Mule Deer

HUNTING MULE DEER

Tom Davison¹, Jim Knight², and Ronald A. Howard Jr.³

Objectives

Participating young people and adults will:

1. Identify mule deer
2. Understand mule deer behavior as it applies to hunting
3. Identify mule deer habitat and preferred foods
4. Practice successful mule deer hunting strategies
5. Understand fundamentals of mule deer management
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Assist with demonstrations
2. Assist with small group discussions
3. Provide personal experiences with mule deer or equipment
4. Assist with setting up and cleaning work area
5. Teach specific portions of the lesson

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching specimens or materials
3. Arrange for or provide teaching space
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Share personal mule deer hunting experiences

Best Time: Summer or early fall

Best Location: Mule deer habitat and quiet teaching area

Length: 1 ½ to 15 hours

Materials/Equipment

deer photographs or mounts
topographic maps
rifles and archery equipment
dummy rounds
binoculars
spotting scope
plant and tree field guides

References

Basic Hunter's Guide. National Rifle Association, Fairfax, VA.

State Hunter Education materials

¹ H. Tom Davison is Associate Director Emeritus for 4-H at the Texas Agricultural Extension Service, and the former chair of the National 4-H Shooting Sports Committee

² James Knight is Professor and Wildlife Specialist, Montana State University, Bozeman. MT

³ Ronald A. Howard Jr. is Professor and Extension 4-H Specialist, Texas Agricultural Extension Service, Texas A&M University System, College Station, TX

Hunting Mule Deer

LESSON OUTLINE

Presentation

- I. Identification
 - A. General characteristics
 1. General color brown to blackish gray
 2. Tail rounded
 - a. White
 - b. Black tip or upper surface
 3. Pale rump patch
 4. Large ears
 5. Bucks with dichotomously branched antlers
 6. Contrast between light "face" and darker crown
 7. Large metatarsal glands, no tarsal gland
 - B. Size
 1. Generally about 140 to 250 pounds
 - a. Bucks larger than does
 - b. Record in excess of 450 pounds
 2. Weight varies geographically
 3. Weight varies with subspecies
 - C. Stotting when disturbed
 1. Bouncing, pogo-stick run
 2. Display and mobility functions
 - D. Contrasts with whitetails
 1. Antlers with dichotomous forks
 2. Light rump patch
 3. Small, black-tipped white tail
 4. Large, mule-like ears
 5. Stotting
 6. Absent or inconspicuous tarsal gland in mule deer
 7. Large, prominent metatarsal gland in mule deer
- II. Habitat preferences
 - A. Generally open to semi-open habitats
 1. Grasslands with broken terrain
 2. Desert shrub lands
 3. Montane forests and patchy woodlands
 4. Krummholz and montane tundra
 5. Agricultural lands
 - B. Blacktails in denser habitats
 1. Coastal rain forest

Application

DISPLAY photographs, drawings or skins/mounts of mule deer and white-tailed deer, having the participants **DISCUSS** the key differences they observe among them. **REINFORCE** their observations if necessary, to provide a sound foundation for field identification. **NOTE** that black-tailed deer, natives of the Pacific Coast, are considered a subspecies of the mule deer. These animals are smaller and darker, with relatively shorter ears, measuring approximately 6-7 inches in length long. They are found in chaparral, coastal rain forest and managed timber stands along the coastal ranges from California to Alaska.

If possible, have participants **OBSERVE** live specimens or full body mounts of these species in fall pelage. Ask them to **COMPARE AND CONTRAST** the characteristics that identify each one. Substitute preserved materials, photographs and drawings where necessary to illustrate the physical differences.

OUTLINE the range of the mule deer and blacktailed deer in North America from Baja California and northern Mexico east to West Texas, north through the western edge of the Great Plains through the Dakotas and along the Rockies to Coastal Alaska. **DISCUSS** the variety of habitats used by mule deer and blacktails in these areas.

DISCUSS habitat use by mule deer in the local areas or areas where young people are likely to hunt; emphasizing the types of cover preferred at different seasons and their movement patterns during the year.

2. Chaparral

Hunting Mule Deer

- C. Vertical movements common in mountainous areas
 - 1. Daily movements
 - a. Between food and cover
 - b. Between food or cover and water
 - c. Use of habitual trails if undisturbed
 - d. Normally bed down when the sun hits their location
 - 2. Seasonal migrations
 - a. Higher elevations during summer
 - b. Lower elevations during winter
 - c. Movements dictated by snowfall and spring melt
 - D. Cover use
 - 1. Protected areas
 - a. Wind
 - b. Sun
 - 2. Steep slopes, bluffs or broken terrain
 - 3. Positioned to used scent, sight and hearing for protection
 - 4. Cover use varies with cover density
 - a. Distance as predator avoidance
 - b. Dense cover as predator avoidance
 - 5. Bedding areas
 - a. Concealment
 - b. Good view of area
 - 1) Base of bluff
 - 2) Cliff edge
 - 3) Head of canyon
 - c. Watch horizons and downhill
- III. Food habits
- A. Selective browsers
 - 1. Select high value forage when available
 - a. Forbs
 - b. Leaves and tender twigs
 - c. Fruits and hard mast
 - d. Alfalfa and crops
 - B. Specific forage varies with region and elevation
- IV. Hunting techniques
- A. Sight and stalk hunting

NOTE that mule deer will use habitual travel routes frequently if they are not disturbed. If the participants are used to whitetails, note that mule deer are less predictable in their daily movements and have larger home ranges than do whitetails.

If participants are familiar with mule deer, ask them to **DESCRIBE** when the animals are most active. **NOTE** that they are normally less active during the day than are whitetails.

If vertical migrations take place in your area, **DISCUSS** those movements and the conditions that promote them.

Ask participants to **DISCUSS** the reasons for using protective cover under a variety of conditions - hot weather, cold, high winds. **CONTINUE** by asking what senses mule deer use to detect and avoid predators. Reinforce the notion that these animals are much more dependent on their sight and hearing than are white-tailed deer, even though scent is still their primary sense.

If possible, **OBSERVE** mule deer that have been disturbed. Ask participants to **DISCUSS** how the deer reacted to the disturbance. **NOTE** that open country mule deer often use distance as a primary means of avoiding predators and that they may move considerable distances when disturbed. Blacktails and whitetails often move into dense cover and sneak around predators or hunters.

Try to **LOCATE** several bedded mule deer or use slides or photographs to point out likely bedding areas for mule deer in typical habitat. **NOTE** that approach from above is often easier than approaching from below as long as the hunter avoids skylining himself or herself.

DISPLAY a variety of preferred browse plants from the local area, showing young people how to identify them. If possible, **LEAD** them on a field trip in suitable habitat to **IDENTIFY** the types of plants used during the hunting season by mule deer in your area.

Hunting Mule Deer

1. Open areas ideal
2. High vantage point before dawn
3. Glass area systematically
 - a. Good binoculars or spotting scope
 - b. Locate moving or bedded deer
4. Plan a stalk to get within gun range
- B. Trail watching
 1. Locate heavily used travel lanes
 2. Position downwind of area
 3. Wait for moving deer
 - a. Upward movement in early morning.
 - b. Downward movement in late afternoon
- C. Still hunting
 1. Stalking through quality deer cover
 - a. Frequent pauses
 - b. Extensive use of binoculars
 2. Careful movement
 - a. Watching wind direction
 - b. Avoiding exposed areas
 - c. Trying to stay above spots holding deer
- D. Silent driving
 1. Still hunters moving toward watching standers
 2. Excellent mid-day strategy in patchy cover
 3. Walking canyons and broken country
 - a. Two or more hunters on opposite sides of cover
 - b. Moving alternately
 - c. Throwing stones into dense patches of likely cover
 4. Taking moving animals
- E. Combination of methods often best
 1. Match technique to time of day
 2. Match technique to deer activity
 3. Match technique to hunting intensity
- V. Shooting, guns and ammunition
 - A. Potential shots highly variable
 1. Short range, moving animals
 2. Long range (up to 400 or more yards)
 3. Shot selection very important
 - a. Shots within your capability
 - b. Shots within the arm's capability
 - c. Shots where sure kills are assured
 - d. Know proper shot placement
 - B. Rifles
 1. Best rifle one you can shoot well

If possible, have participants try using several techniques in good mule deer habitat. Use small, hunting party sized groups to simulate real hunting conditions. Have them evaluate their success with the various techniques as well as their satisfactions with using them.

If possible, have participants **TRY USING** several techniques in good mule deer habitat. **USE** small, hunting party sized groups to simulate real hunting conditions. Have them **EVALUATE** their success with the various techniques as well as their satisfactions with using them.

CHALLENGE participants to **ESTIMATE** distances from a few yards to 500 yards or more. **LAY OUT** a course they can walk in varying terrain and use a range finder, triangulation or pacing to measure the distances after they have estimated them. **REINFORCE** the notion that estimating distances in open habitats is more difficult than in those with abundant structure.

USE a life-sized deer posters or deer models as tools for young people to try shot placement at various angles. **NOTE** that shots fired toward the far shoulder should pass through the vital areas of the animal.

Hunting Mule Deer

- a. Accurate
- b. Comfortable to shoot
- c. Fitting shooter well
2. Action type
 - a. All actions are useable
 - b. Most prefer bolt actions
 - 1) Accuracy
 - 2) Reliability
3. Chambering and cartridge selection
 - a. 6mm's about minimum
 - b. .270-.30-06 class most common
 - c. Belted magnums not necessary
4. Bullet selection
 - a. Penetration
 - b. Expansion
 - c. Terminal energy at longest range anticipated
- C. Sights
 1. Telescopic sights most common by far
 2. Minimum of 4X desired
 3. Variable power scopes often preferred
 4. Reticle choice personal
- VI. Mule deer management
 - A. More complex and difficult than for whitetails
 1. Later age of first breeding
 2. Lower productivity
 3. Rough country
 - a. Large land areas involved
 - b. Difficulty in manipulation
 4. Separation of winter and summer ranges
 - a. Infringement on winter range
 - b. Limiting in either location
 - B. Complex habitat use
 1. Wide variety
 2. Importance of agricultural lands in some areas
 - C. Regulating harvest
 1. Optimum stocking
 2. Avoiding negative impacts
 - a. Range conditions
 - b. Human interactions
 3. Predator control
 - a. Limited effectiveness
 - b. Helpful in some areas
 - 1) Low populations of mule deer
 - 2) Predation losses greater than production

Have several experienced hunters **DISCUSS** their preferences in action types for hunting mule deer in your area. Give the participants a chance to ask questions and enter into the discussion. If time and space permit, give them an opportunity to **FIRE** rifles in several calibers and action types to aid in their selection process.

Use manufacturer's ballistics tables to assist in **SELECTING** an appropriate cartridge for mule deer hunting. **NOTE** that deer-size animals do not require huge cartridges to effect killing shots. If members of the small-bullet-high-velocity" and "huge bullet-modest velocity" schools are present, have them **DISCUSS** the reasons for their selection **EMPHASIZE** that personal preference and the extremes of performance demanded are significant factors in selection.

FIRE selected bullets of different calibers and weights into wet newspaper bales or similar backstops at various distances to observe penetration and bullet performance. Have participants **RECOVER** the bullets to determine these factors.

SEE the **HUNTING OPTICS** teaching plan for assistance with scope selection. **EXAMINE** various scopes under field conditions, allowing members to **COMPARE** their features, magnification, clarity and cost.

If a local wildlife manager is available, ask them to **DISCUSS** mule deer management with the group. This could be used as a club program in itself as well.

D. Future strong and secure

Hunting Mule Deer

Summary Activity

Have participants plan and execute a mock hunt in suitable habitat. Let them select their hunting tools and methods and complete a hunt from a few hours to a few days in length. After the hunt is completed, get the entire group together to compare their observations and "successes." Consider using the "Camera Hunt" activity as a means of capturing the events on film.

Lesson Narrative

Mule deer are abundant in much of the western United States, Mexico and Canada. Hunting them can be extremely rewarding for young people who live in their range. They tend to be found in open country where they are more readily seen and hunted successfully than are the whitetails that are found in denser cover in lowland areas. This greater opportunity of success makes mule deer hunting one of the most rewarding types of big game hunting for youngsters.

Description

Mule deer are generally brown to blackish gray in overall color. Both bucks and does have a pale rump patch with a rope-like white tail with a black tip. Blacktail deer (closely related to mule deer) have a black upper surface to their tails. Mule deer have large ears, similar to those found in mules. In younger animals, the long ears may give their heads an appearance similar to a three-bladed propeller. Mule deer have large metatarsal glands, but their tarsal glands are inconspicuous or absent. Fall and winter animals frequently show a contrast between their relatively light muzzles and cheeks and a darker crown. Mature bucks usually have antlers that are dichotomously branched. That is, the tines tend to fork after they have emerged from the main beam.

Mule deer vary considerably in size, but their general body weights range from about 140 to 250 pounds. A record animal from Montana weighed 453 pounds. Their weight varies with the subspecies as well as geographically. Coastal blacktails tend to be smaller, while northern Rocky Mountain mule deer are usually largest in weight.

Mule deer have a peculiar, bouncing gait when disturbed. Stotting, as this gait is known, shows a pogo-stick-like bouncing that has all four feet off the ground at one time. It serves both as a display to other deer and an excellent and fast means of traveling in rough, broken terrain. It allows the animals to change direction very rapidly, even while they are airborne!

Mule deer can be distinguished from whitetails by their antlers (dichotomous branching), light rump with a small, black-tipped white tail, large mule-like ears, stotting gait when disturbed, absent or inconspicuous tarsal gland and large, prominent metatarsal gland. In contrast, whitetails have large and conspicuous tarsal glands and small metatarsal glands, shorter ears, antlers that branch from the main beam, and a large tail that presents a white "flag" when disturbed. Both their ranges and their habitat use overlap in some areas, but mule deer tend to frequent more open country than do the cover-loving whitetails. Blacktails, found along the Pacific coast from California to Alaska, are mule deer that frequent dense cover types like those preferred by whitetails. They have shorter ears (six to seven inches long) and a dark upper surface to their tails. Otherwise, they resemble other mule deer in most characteristics.

Hunting Mule Deer

Habitat Preferences

Mule deer are found from Baja California through the mountains and deserts of northern Mexico east to west Texas. Their range includes the western edge of the Great Plains through the Dakotas and along the Rocky Mountains and their foothills to coastal Alaska. Individuals have been seen as far east as Minnesota and western Iowa, but those are exceptional records.

Mule deer use a wide variety of habitats over their range. They are found above the timber line in western mountains, feeding on the edge of the Krummholz and on montane tundra. They frequent desert shrub lands and grasslands with broken terrain. Many mule deer have learned to live successfully on the edges of agricultural lands as well as in the parklands and patchy woods of western mountains. Blacktails range from the chaparral of California's Pacific coast to dense coastal rain forests along the coastal mountains from Oregon to southern Alaska. Except for the blacktails, most mule deer occupy more or less open habitats.

Classic mule deer habitat is mountainous. They make use of mountain sides, steep ravines and canyons, bluffs, rock slides and other protective areas. Much greater wanders than whitetails or blacktails, mule deer may make fairly long daily movements between food or water and cover. In broken or mountainous country, those movements are often vertical. Although they are not as predictable in their movements as woodland whitetails, they do use habitual trails during their daily and seasonal movements, and the hunter can exploit these trails to advantage. Mule deer will often feed down to food and water sources in the late afternoon (usually after the sun has left their locations) and move back upward toward bedding sites around dawn. They tend to bed down about the time the sun hits their position.

In many areas mule deer exhibit seasonal migrations from higher summer habitat to lower elevation wintering habitat. Often, these movements are triggered by snowfall or spring melt. Even where they do not migrate seasonally, mule deer may change their habitat use seasonally.

Regardless of the season, mule deer tend to bed in protected areas where they have shelter from chilling winds or hot sun. They usually select bedding sites where they can observe any potential predator coming toward them from below. Steep slopes, bluffs, ledges in ravines, rock piles or canyon headers are all excellent bedding sites. With rising air currents during the day, these sites allow the deer to rest while watching the area below, listening for any signs of danger and testing the wind for unseen predators. Although they use scent as their primary defense, mule deer use their vision and hearing much more independently and effectively than do whitetails. Skylined hunters are seldom successful.

Escape cover use is often dictated by the density of the cover available. Confidently concealed animals will often allow a hunter or other predator to pass by them without moving. Disturbed animals in open habitats will usually use distance as their primary defense, sometimes moving miles before finding a new resting site. Mule deer often stop and look back after running a little ways from a disturbance. This characteristic can be used effectively to the hunter's advantage if he or she is prepared. Those in heavy cover may simply disappear into the cover.

Hunting Mule Deer

Food Habits

Mule deer are primarily selective browsers and secondarily grazers. They eat a wide variety of foods including forbs, tender twigs and leaves, fruits and hard mast. Alfalfa and other agricultural crops are eaten when they are available, but mule deer subsist primarily on native plants that offer high nutritional value. They avoid foods with high concentrations of essential oils which interfere with their ruminant digestion. Private lands in some portions of their range may be very important wintering areas for mule deer. Preferred browse species vary with the region, and the wise hunter will learn to recognize those preferred plants.

Hunting Techniques

Mule deer behavior and habitat allows the hunter to use a full range of techniques. Often using several techniques to match the time of day and conditions will result in better success. Open country is ideally designed for sight and stalk hunting. Hunters try to locate a high vantage point and get into position before dawn. Using good binoculars or a spotting scope, they glass the area being observed systematically, looking for deer or parts of deer. Once a moving or bedded deer is located, the hunter plans a stalk to get within good shooting range of the animal.

Trail watching can be used successfully as well. During migrations, under heavy hunting pressure, or during normal early morning or late afternoon movements watching travel lanes or escape trails can be very effective. Success depends upon remaining still, quiet and undetected by drifting scent. In addition to prevailing winds, the watching hunter must be aware of swirling eddies of wind current caused by the structure of the area and drift caused by heating or cooling air. After the sun rises, warmed air tends to drift uphill. Similarly, cooler air tends to sink downhill toward valleys after the sun leaves the area being hunted. While movement in nearly any direction could take place, typical movements of undisturbed deer will be toward higher ground during the early morning (around dawn) and toward lower feeding and watering areas around dusk. Trail or travel lane watching may be successful at any time of day during migrations or under heavy hunting pressure, but it is primarily a dawn and dusk technique under other conditions.

Many hunters prefer to still hunt mule deer, at least during the middle of the day. This technique consists of stalking carefully through quality deer cover, pausing frequently to study every possible location for bedded, standing, or moving deer. Good still hunters make extensive use of quality binoculars to assist them in locating mules before they are spotted by their quarry. A still hunter must be able to move carefully and quietly through cover while remaining aware of wind direction and movement constantly. With visually aware animals, like mule deer, the still hunter must avoid being skylined or sticking to the easy walking of open areas where they are easily seen by the deer. Often it is wise to stay above potential mule deer cover or to work the opposite side of a canyon or other cover while watching for bedded animals on the far side. This technique is particularly effective for teams of hunters working opposite sides of canyons or breaks together.

Hunting Mule Deer

Silent driving, either by cooperating hunters or by using other hunters as unwitting cooperators, can be an effective strategy as well. It works particularly well in patchy cover or in areas where natural funnels for deer movement are formed by the terrain and cover. Hunters using this technique may loop around each other, alternately watching for deer being pushed by their partners and attempting to move deer toward them. The moving hunter may stalk along quietly in anticipation of a shot. In some cases, throwing stones or deliberately drifting human scent through a dense cover patch is effective in moving deer out of areas where they cannot be seen or taken effectively. Properly executed this technique will create standing or slowly moving shots, but running shots may be encountered as well-often at relatively close ranges.

Under ideal conditions, any of these techniques used alone will produce shots at mule deer; but better mule deer hunters are able to use a combination of techniques. They select the technique by personal preference as well as by assessing the time of day, level of deer activity and hunting pressure. Using a combination of methods can make the entire day productive and provide a wider range of wildlife encounters than sticking to one technique regardless of conditions.

Shooting, Arms and Ammunition

The potential types of shots provided to mule deer hunters varies with technique, terrain, equipment being used, and circumstance. They range from short shots at either standing or moving animals to long range shots up to 400 yards or more. The types of shooting equipment and the demands placed on both the equipment and the shooter vary with the types of shots that will be taken.

Regardless of the shot being taken, shot selection and precise shot placement are the keys to quick, sure kills. In general that means that the hunter must know where to place the shot for maximum effect, which shots to avoid, and how their arm and ammunition perform at a variety of ranges. Ethical shots are taken only within the conditions and ranges where the hunter is sure of their shot placement and the effectiveness of that shot. They must be within the capability of the shooter as well as the equipment being used.

Although many mule deer are taken with centerfire pistols, archery equipment or muzzleloading equipment, the vast majority of all mule deer are taken with centerfire rifles. Recommending a rifle for nearly any game animal is an excellent way to start an argument, but most would concede that the best rifle is one that the shooter can shoot well. For the open country where mule deer are often found, the rifle should be accurate, well fitted to the shooter and comfortable to shoot from all positions.

Most action types can be seen among mule deer hunters, but bolt actions are by far the most common. The bolt actions are reliable and inherently accurate, allowing precise placement of shots at longer ranges. They are also available in a wide variety of chambering, giving the hunter a wide array of choices to suit their wants and needs.

With body sizes from about 150 to 450 pounds, mule deer do not require a heavy magnum cartridge

Hunting Mule Deer

for clean kills. The 6mm cartridges like the .243 Winchester and 6mm Remington are minimally adequate rounds with larger, well-constructed bullets out to about 250 yards. Most serious hunters use rifles in the .270 Winchester to .30-06 Springfield class with considerable numbers using rifles in the 7mm Magnum class. Some use .30 caliber to 8 mm belted magnums, but these cartridges are significantly heavier than is required for most situations. Selection of a rifle and chambering for mule deer should be dictated by the extremes of conditions the hunter expects to encounter. If shooting ability or hunting terrain limit shots to 100 to 150 yards, investing in a flat-shooting, long range rifle makes very little sense. On the other hand, the hunter who shoots well enough and often enough to hit consistently at 400 yards may want to use more guns to deliver killing shots at extreme ranges.

Bullet selection, in this situation as in others, is a compromise between expansion and penetration. Deer sized animals do not demand massive, monolithic bullets designed for the heaviest game. Generally bullets in the optimum weight class for their caliber will perform well. Ballistics tables and manufacturer's data sheets can help in selection. Handloaders should seek an accurate load that delivers adequate terminal energy and performance at the longest range anticipated without bullet failure at shorter ranges.

Although metallic sights can be used in hunting mule deer, particularly in dense cover, most hunters use telescopic sights. The majority of hunters prefer scopes with a minimum of 4X magnification, often using quality variable power scopes. This permits the use of higher magnification for longer shots in good light and lower magnification under darker conditions or when moving shots are being attempted in dense cover. Reticle design in scopes is a matter of personal preference, but crosshairs or tapered (duplex) crosshairs are by far the most common. Some hunters prefer to use scopes with dual crosshairs that permit range estimation. Others feel that they complicate matters more than they help, preferring to estimate range through experience and practice.

Many experienced hunter's sight in their rifles to strike about three inches high at 100 yards. With rifles in the classes discussed above, that permits a dead-on hold on the center of a mule deer's chest from the muzzle to about 275 to 325 yards. Sighting in charts supplied by manufacturers are an aid in setting up your sight arrangement, but there is no substitute for checking your rifle and load combination on the range. Live firing at extended ranges or varmint hunting with your deer rifle can make you a much better and more consistent shot on deer as well.

Mule Deer Management

Mule deer management is more complex and difficult than management for whitetails. Mule deer are usually somewhat older than whitetails at their first breeding, and their productivity over their life span is lower than it is for whitetails. In addition, the animals live in rough country with winter and summer ranges separated by some distance. As a result, infringement on winter range can have severe impacts even though the summer range remains in good condition. Mule deer have undergone nearly range wide declines that have not been adequately explained on several occasions, and many parameters of mule deer management are still inadequately understood.

Mule deer use a wide variety of habitats, including wilderness areas, dense forest, open desert shrub lands, and broken prairies. Most of these habitats are large and difficult to manipulate although agricultural land is an important factor in some mule deer populations, providing critically important space and food during the winter.

Hunting Mule Deer

Mule deer management frequently depends upon regulating harvest rates to maintain stocks at desired levels to provide abundant hunting and viewing opportunity without excessive pressure on the range or undesirable human interactions, like crop damage. In some areas, predator control can be an important part of mule deer management as well. That is usually only necessary and beneficial in areas where mule deer populations are low enough that predators can eat them faster than they can reproduce. Although the range of the mule deer has shrunk westward since agricultural humans invaded the prairies, the future appears to be both strong and secure for this highly desired and abundant western big game animal.

Exhibit and Sharing Suggestions

1. Make a collection of mule deer food plants or photographs of those plants. Display that collection for your club, at a county fair, or in another suitable event.
2. Use a collection of plants to present an illustrated talk on mule deer food habits at a club meeting or in another suitable event.
3. Interview several successful mule deer hunters to discuss their hunting tactics and methods. Summarize your findings and present them to your club or another interested group.
4. Observe mule deer behavior in a nearby area. Record your findings in a field notebook or on film, and share what you have discovered with interested people **in** your club or at home.
5. Study the range of mule deer (and blacktails) in North America, outlining the ranges of the recognized subspecies on a map. Discuss what you have found with at least one other interested person or share the findings with your club.
6. Participate in a mule deer hunt, recording your experiences in a journal and in photographs. Share your story with your club or another interested group or display your journal and selected photographs in a suitable forum.
7. Photograph mule deer in various seasons and create a photo story of mule deer in your area.
8. Do your own thing! Study something about mule deer that interests you. Develop a paper or presentation that can be shared with others and deliver it to at least one other interested person.

Pronghorn Hunting

Hunting the Pronghorn Antelope

Jim Knight

Objectives

Participating young people and adults will:

1. Practice identification of pronghorns
2. Relate pronghorn behavior to hunting tactics
3. Understand habitat and habitat use by pronghorns
4. Practice pronghorn hunting techniques
5. Understand management practices unique to pronghorn antelope
6. Have fun while learning.

Roles for Teen and Junior Leaders

1. Assist in setting up or breaking down teaching area
2. Lead small group activities
3. Assist in field exercises
4. Demonstrate equipment and camouflage clothing
5. Set up demonstration blinds and repair site after use
6. Assist younger members with questions
7. Teach selected portions of the lesson
8. Introduce guest speakers or leaders

Potential Parental Involvement

1. See " Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching sites
3. Arrange for or provide transportation
4. Arrange for or provide refreshments
5. Discuss personal choices and experiences with pronghorn hunting
6. Arrange for or provide mounts for judging quality

Best Time: Summer

Best Location: Open area or pronghorn habitat

Time Required: 1 to 12 hours

Equipment/Materials

photographs or mounts of pronghorns
decoys

suitable rifles/dummy cartridges

suitable bows

camouflage clothing

field dressing equipment

spotting scope

binoculars

blind building materials

References

"Bowhunting the Pronghorn Antelope", video tape.

The Art of Hunting Big Game in North

America, Jack O'Conner, Outdoor Life Books.

The Pronghorn Antelope and its Management.

A. S. Einarsen. 1948. The Wildlife Management Institute. Washington, D.C.

Pronghorn Hunting

LESSON OUTLINE

Presentation

- I. Identification
 - A. General coat color
 1. Tan to rusty overall
 2. White flanks, rump and belly
 3. White cheeks and throat markings
 - B. Males
 1. Black cheek patch below ear
 2. 7 to 20 inch horns
 - a. Recurved with a forward facing prong or paddle
 - b. Horn sheaths shed annually
 - c. Bony inner core retained
 - d. Unique among horned animals
 - C. Females
 1. Lighter overall color
 2. No dark cheek patch
 3. Horns small
 - a. Too short to be visible in the field
 - b. Maximum of 4 to 9 inches
- II. Behavior
 - A. Open country animal
 1. Vision very important
 2. Relies on speed and distance for escape
 3. Flare white patches as warning signs
 - B. Curious
 1. May investigate unusual items in habitat
 - a. Waving hat, handkerchief...
 - b. Predator call
 2. Alert when approaching
 3. May investigate a hunter seen at close range
 4. May stand within gun range to observe
 - C. Gregarious and territorial
 1. Use of decoys
 - a. "Rival male"
 - b. Female
 2. Use with caution
 - D. Social animals
 1. Males herd females during rut
 - a. Male-male interactions strong
 - b. Herd males round up females
 2. Males with females during fall and winter

Application

Ask participants to **DESCRIBE** a pronghorn antelope either by observing real animals or by viewing photographs or video footage of the animals. **EMPHASIZE** the general markings first, then as for specific differences between males and females.

NOTE that this uniquely American animal is the only horned animal in the world that sheds the outer core of its horns and grows a new one each year. If participants are interested, **DISCUSS** the elements that are used in measuring pronghorn antelope horns for trophy purposes.

NOTE the absence of the male's black facial markings and the relatively small or inconspicuous horns on the females.

Using pronghorn habitat or photographs that show it, **ASK** participants what kinds of environments these animals prefer. When they conclude that the animals live in open environments, ask them to **SPECULATE** on the types of senses and predator avoidance behavior they might predict for the animals.

NOTE that American Indians and pioneers used curiosity as a means of luring pronghorns into range of their bows or guns. **ASK** them to think about the state of the animal when it comes to an unusual sight or sound. **LEAD** them to conclude that the animal is alerted and wary as well as curious.

DISCUSS both the potential value of decoys and the safety considerations that must be taken into consideration when using them, particularly on public lands.

NOTE that pronghorns are seldom found alone except for non-dominant bucks during the rut. They are social animals with herd instincts and communications.

3. Males in bachelor groups in spring and summer

Pronghorn Hunting

- E. Seek distance or "heavy" cover when disturbed
 1. Escape routes and travel routes well defined
 2. Scouting trail locations helpful
- F. Daily trips to habitual watering sites common
 1. Usually at least once daily
 2. Usually to same water hole
 3. Pit blinds and towers used near water holes
- G. Use of senses
 1. Eyesight exceptional
 - a. First line of defense
 - b. Comparable to 10X binoculars
 - c. Depth perception not great
 - d. Distant hunters may be watched for long periods
 - e. Walking bent over may reduce attention
 2. Sense of smell well developed
 - a. Secondary defense
 - b. Usually attempt to confirm with vision
 - c. Attention to wind direction wise
 3. Hearing good
 - a. Secondary defense
 - b. Usually attempt to confirm with vision
 - c. Avoid unnecessary noise during stalks

III. Habitat use

- A. Prefers open areas
 1. Prairie grasslands with strong forb component
 2. High deserts with mixed grasses and sage
 3. Patchy grasslands or desert with dense cover or breaks
- B. Large area requirements
 1. Pastures of one section or more
 2. Net wire fence inhibits movements
 - a. Prefers to crawl under or through fences
 - b. Seldom jump fences
 - c. Habitual travel paths to gaps or crawl spaces
- C. Tall shrubs or breaks used as escape or winter cover
 1. Wind protection important
 2. Breaks used in herding does during rut

IV. Hunting pronghorns

- A. Pre-season scouting valuable
 1. Determine concentrations
 2. Determine escape routes
 3. Evaluate potential trophies

NOTE that "heavy" cover is relative to the available types of cover. Distance is always available to the animals except in captivity, but dense cover for a pronghorn might be a bit of sage along a shallow wash or drainage.

Water holes are favored places for bowhunters to ambush pronghorns when watering areas are scarce. Decoys are often used in conjunction with a water hole blind.

COMPARE a pronghorn's eyesight to that of a human. **NOTE** that their eyes are their first line of defense. Movement is detected very easily, and a potential predator might be watched for extended periods of time. Peripheral vision covers about 270 degrees, making movement hard to accomplish unless the animal is facing straight away from the hunter. Walking doubled over may satisfy the animal that you are not a predator and allow you to continue a stalk after being caught. Both scent and hearing are well developed, and wise hunters will be cautious about ignoring them during a stalk.

NOTE that home ranges of pronghorn herds are relatively large requiring large areas of open land. Where land is broken into fenced pastures, pasture sizes of one section (640 acres) or more are best for pronghorn management.

NOTE the strong influence of woven wire fences on pronghorn movements. **DISCUSS** the potential impact of those influences on hunting strategies for pronghorns.

DISCUSS the importance of pre-season scouting in success.

Have participants **PRACTICE** using spotting scopes and various binoculars to evaluate pronghorns if they are available. Pay particular attention to the

- a. Spotting scope extremely useful

Pronghorn Hunting

- b. High powered binoculars vital
 - 1) 8X about minimum
 - 2) Use highest magnification you can handle
 - 3) Light gathering usually not critical
- B. Hunting techniques
 - 1. Adapt hunting techniques to the tools being used
 - a. Rifle hunters want accurate, flat shooting rifles
 - b. Bowhunters need close, standing shots
 - c. Pistol or muzzle loader hunters intermediate
 - 2. Spot and stalk
 - a. Cover large areas
 - 1) Drive or walk to vantage points
 - 2) Glass area for pronghorns
 - 3) Evaluate potential trophies
 - 4) Determine stalking or intercept route
 - b. Stalk to shooting range or intercept point
 - 1) Camo clothing helpful where legal
 - a) Must blend with terrain
 - b) Light colored in grassy areas
 - c) Gray-green in sage
 - 2) May be able to continue after being seen
 - a) Stalk at an angle to the animal
 - b) Walk doubled over
 - c) Drop from sight and move through low cover
 - 3. Stand hunting
 - a. Concealment important
 - b. Intercepts along travel routes
 - 1) Saddles
 - 2) Escape routes
 - 3) Fence crossings
 - c. Water holes
 - 1) Pit blinds
 - 2) Brush blinds
 - 3) Windmill or tower blinds
 - d. Use of decoys
 - 1) Full-bodied
 - 2) Silhouette
- C. Handling after the kill
 - 1. Antelope spoil easily
 - a. Retain heat unless field dressed and skinned
 - b. Hunting in warm weather common
 - 2. Avoid touching hair prior to touching meat
 - a. Musky secretion on skin during rut
 - b. Imparts strong flavor/odor to meat

effects of heat mirage on optics with higher magnification. **REFER** to the *Hunting Optics* lesson if additional activities are desired.

DISCUSS how changing tools for the hunt might change the strategies being used or the demands on the hunter for proper shot placement.

Have successful pronghorn hunters, who use this technique **DISCUSS** their reasons for it and the ways they use it in your area. **NOTE** that the driving hunter is restricted by the layout of roads and trails, while the walking hunter is restricted by ability to cover distances. **STRESS** the fact that hunting the animals from vehicles or using vehicles to herd pronghorns is unethical.

Have students **INTERVIEW** successful antelope hunters and **REPORT** to the group hunting strategies used and hunting recommendations the hunter might like to share.

If possible, allow participants to **TASTE** some well-handled pronghorn meat and **SMELL** a hide taken during the rut with its burden of secretions. **STRESS** the importance of careful and quick cleaning and skinning to allow the carcass to cool. **EMPHASIZE** the importance of proper field care in having a quality animal for the table. **DEMONSTRATE** field handling if a suitable animal is available and legally obtained. Be sure to **INCLUDE** legal requirements for the animals imposed by the state conservation agency.

- c. Minimize contact between hair and flesh
- 3. Cool as quickly as possible

Pronghorn Hunting

- 4. Protect from dirt and flies
- 5. Pronghorn meat excellent if well handled
- V. Pronghorn management
 - A. Populations impacted by severe winter weather
 - 1. Inability to reach sheltered areas
 - 2. Inability to reach buried food
 - B. Passes in net wire fences vital
 - 1. Allow movement between pastures
 - 2. Permit shifting activity to sheltered areas
 - C. Little dietary overlap with cattle
 - 1. Cattle primarily grazers
 - 2. Pronghorn antelope eat primarily forbs and browse
 - D. Predators may significantly affect fawn survival
 - 1. Some areas impacted heavily others very little
 - 2. Predator management potentially useful in high impact areas
 - E. Management frequently demands cooperation with livestock operators

If one is available in your area, **INVITE** a wildlife biologist or manager familiar with pronghorn management to **SHARE** his/her thoughts on management in your state.

Summary Activity

If suitable range is available, take small groups of participants into good antelope range for a mock hunt. Consider using the *Camera Hunt* activity as a way of collecting an antelope. If that is not possible, allow them to select their hunting tools (using broom sticks or similar items for firearms and bows) and impose restrictions on the participants relative to their tools. Allow them to select a site and a method. After the hunt, have the participants report on their successes, challenges, failures and adventures with these unique animals.

Lesson Narrative

Pronghorn antelope are uniquely American animals with some unique characteristics. Hunting pronghorns can be enjoyed across much of the West. Antelope hunting is an excellent choice for a first hunt for big game because numerous opportunities are commonly presented and there is a high probability of success. While an antelope hunt could be a simple process of driving into suitable habitat locating an animal and shooting it, the hunter can select the level of skill and challenge required by selecting the types of equipment used. With easy access, low standards, and an accurate, flat-shooting rifle, pronghorns may not allow you to use many of the skills you have developed. Covering a lot of country to locate these animals with a final stalk to the shot is the most common method used by pronghorn hunters.

Pronghorn Antelope Characteristics

Pronghorn antelope are tan to nearly rusty with white on their flanks, rump and belly. The head features a dark muzzle with white patches on the cheek and neck. Males only have a black "cheek" patch head below the ear.

Pronghorn Hunting

Males have 7 to 20 inch horns that are curved backward with forward-facing prongs or paddles. Unique among horned animals, American pronghorns shed the outer sheath of their horns each year, leaving only the bony core. The bony core continues to grow, producing larger horn sheathes each year. This process differs from both all other horned animals and from antlered animals that shed the entire bony structure each year. Females may have horns up to 4 to 9 inches in length, but many does (or nannies) have inconspicuous horns. Females are paler in overall color than the bucks and lack the dark cheek patch.

The behavior of antelope is shaped by their adaptations to open country and the use of visual cues to assess their habitat. Pronghorns can be very curious animals, investigating unusual sights or sounds in their environment. That characteristic can sometimes be used by hunters to attract an antelope through the use of decoys, predator calls, or a hat or handkerchief waved above the cover. Sometimes antelope, because of their curiosity, will not flee even though they spot hunters at close range.

Antelope are very social animals. The males are found with the females during the fall and the winter, and males are in bachelor groups during spring and summer. Females and young stay together throughout the year. When they are disturbed, antelopes seek escape in distance or "heavy" cover, although their definition of "heavy" might seem pretty sparse to a hunter more experienced with deer. They frequently use habitual trails to escape cover, and locating these escape routes prior to the season may be helpful in locating prime places to hunt. During dry periods, pronghorn antelope go to water. They water at least once daily, frequently using the same water hole. Pit blinds are sometimes used with permission of the land owner on private land to allow bow hunters to get in close proximity to antelope. These pit blinds may be placed at water holes or in some cases they are placed along fences the antelope follow during their daily movements.

The eyesight of the antelope is exceptional. It has been compared to ten power binoculars. They notice movement quickly and readily, but their depth perception is relatively poor. They are able to see over approximately 270⁰, so movement anywhere but directly behind them may be spotted. Both their hearing and their sense of smell are very well developed, but the pronghorn treats them as secondary to its vision in detecting and avoiding predators. Wise hunters will avoid unnecessary noise. and pay attention to wind direction when stalking pronghorns.

Habitat use by antelope varies slightly with the structure of their habitat. They prefer open habitats, primarily grasslands and high deserts with low shrubs. Forbs are a major part of their diet and much preferred over grasses. They are selective feeders that may cover a considerable area foraging for preferred food items. Brushy areas and breaks are used as escape cover and winter cover in most areas, but densely wooded areas are avoided. Where pasture lands are used, antelope prefer rather large pastures (at least one section). Since they rarely jump, woven wire or net-wire fences greatly inhibit their movements.

Hunting Antelope

Pre-season scouting is one of the most important elements in antelope hunting success. Scouting allows the hunter to locate concentrations of antelope, observe escape routes, sense the wariness of the populations being observed, and evaluate potential trophies. Spotting scopes and high powered binoculars are critically important in this process. They permit the hunter to observe and evaluate the animals effectively from a distance. Spotting scopes are best-once a given animal has been located, but the strongest binoculars that can be used effectively will be best for general scouting. In the open habitats pronghorns prefer, light gathering is usually not too critical, but power of at least 8X is minimal, with more being better if the user can

handle the higher powers. Where mirage is a consideration (most of the places where pronghorns are hunted), moderate power often provides better resolution than maximum power on spotting scopes.

Pronghorn Hunting

Hunting techniques are best adapted to the tools being used. Where a hunter with an accurate, flat-shooting rifle may be close enough at 300 yards, a bowhunter may need to get within 30 yards of an antelope for a good shot. Pistol and muzzle loader hunters will need to be closer to the bowhunting, range than to the rifle range in most cases. Those limitations tend to dictate the type of hunting, technique that is most effective for the tools being used at the time.

The spot and stalk technique is one of the most popular ones for hunting pronghorns. Either afoot or using a vehicle, the hunter achieves a series of vantage points and glasses the area for antelope. If acceptable animals are located, the hunter plots a course to either get within range of the animal or to intercept it as it moves to another location. Camouflage clothing, where it is legal, can be very helpful to a stalking or ambushing hunter. In order to be effective, however, it must blend with the terrain. In grasslands, the camouflage must blend with the colors of fall-cured grasses. In high deserts, sage-colored camo might be effective.

When stalking antelope, a hunter may be able to approach more closely even if he or she has been spotted. Bending low and providing a non-human profile may be enough. Angling the approach can sometimes be effective, too. Dropping from sight and remaining still until the animal stops watching your location can also be effective, although the wait may be a long one with wary animals. Some hunters scoot along in a sitting position, taking advantage of any available cover, while others opt for a low crawl while keeping a wary eye out for rattlesnakes and cactus. Dyed elbow and knee pads can be helpful under these conditions, and gloves used by football linemen can be helpful in keeping cactus spines out of the hands.

Stand hunting is another popular technique for hunting antelope. This requires good concealment if the animals are to be taken at close range. Water holes, saddles, fence crossings, or escape routes are excellent places to sit. The use of pit or brush blinds is popular with bowhunters, with or without the use of decoys. Rifle hunters may elect to use a windmill or tower stand to increase their ability to spot the animals in broken cover to sit. Fence crossings can also be successful places to hunt. Some people like to use decoys when hunting antelope. Both full-bodied and silhouette decoys are useful in attracting bucks to an area or drawing them close enough for a shot. Hunters using decoys should remember, however, that what fools an antelope may fool another hunter as well. As a result, decoys should be placed so the hunter is not in a direct line of fire if an unprincipled person should take a shot at them from a road or vehicle trail.

Field Handling

Antelope require some special handling after the kill to retain their best table quality. Their hollow hair is an excellent insulator. Combined with the often warm temperatures that accompany the antelope season, spoilage can be a problem unless the animal is field dressed and skinned quickly and allowed to cool. It is also important to avoid (as much as is possible) touching the hair prior to touching the meat. Antelope have musk glands that secrete a waxy and pungent musk. Contact between the flesh and this musky secretion can impart both a strong odor and a strong taste to the flesh. Properly handled, pronghorn meat is excellent.

Hunting under warm conditions requires that some method of cooling the animal be provided prior to the hunt. Some hunters freeze jugs of water and place them in large coolers so they can get the animal cut up and on ice as quickly as possible. If cutting up the animal in the field, make sure that all state regulations for game handling, storage and transportation are followed completely. If the skinned carcass is to be air cooled,

make sure that it is adequately protected from dirt and flies by using a meat sack, liquid meat sack or black pepper.

Pronghorn Hunting

Managing Pronghorn Antelope

As with other species, management of pronghorn antelope revolves around maintaining populations at appropriate levels for their habitat. High quality habitat carries high population levels, but pronghorn populations can be drastically reduced by severe winter weather. Deep snows or inability to reach either sheltered areas or areas where food is within digging range can cause high mortality in both fawns and adults. Passes in woven or net wire fences are extremely important to allow movement from summer to winter ranges or for allowing animals to reach sheltered areas.

There is little dietary overlap between cattle and antelope. Pronghorns feed selectively on forbs and soft browse, while cattle are primarily grazers - grass eaters. Properly grazed pastures stimulate forb production by removing older grasses, creating better habitat for antelope. In some situations, predation can significantly reduce fawn survival. Under those circumstances, predator management in the areas where fawning occurs can provide some benefit. Most management of antelope habitat requires cooperation of land owners and livestock operators so that both of these land uses might be done in a manner conducive to both good antelope habitat and good livestock management.

Sharing and Exhibit Suggestions

1. Study pronghorn antelope habits, habitat, or management in the scientific literature. Write a summary of your findings and prepare an illustrated talk or report on the topic. Share your information in an appropriate setting.
2. Study the big game records showing where record book antelope have been taken, and select an area that is likely to yield trophy animals for a hunt. Share your findings with your club or another interested group.
3. Select a matched set of equipment and techniques that could be used in hunting antelope in your area. Discuss your choices with a parent, friend or other interested person.
4. Lead your group in making meat sacks, cross sticks or some other equipment that could be used in pronghorn hunting.
5. Prepare a dish using antelope and enter it in a food show or cooking contest.
6. Develop a photographic record of an antelope hunt and share it with another interested party or as a photography exhibit.
7. Record your observations of antelope in your area, writing them in a field journal or hunting journal. Summarize those observations and share them with some other interested person.

Elk Hunting

Elk hunting is the ultimate trophy hunting challenge for many hunters in North America. It demands effective use of a wide array of hunting skills to harvest one of the most challenging and beautiful big game animals on the continent. Elk live in beautiful and remote country, and they seldom are taken without earning them. All of this adds to the quality of the experience.

Elk hunters share a many responsibilities. They must learn the animal's habitat, behavior and habits, as well as its anatomy. They must develop their hunting skills from basic woodsmanship and land navigation skills to calling. They need to sharpen their scouting and sign reading ability and their awareness of what is happening around them. In many cases, they need to have well developed camping skills as well.

Most elk hunting experiences require substantial pre-hunt preparation. Potential hunting areas must be considered. Licenses and permits must be applied for or obtained. A significant amount of logistical planning must take place. Most of us need to get into condition to take on the terrain, and equipment must be prepared and its use mastered before the hunt. This lesson is designed as a primer for the beginning elk hunter.

Identification

The elk or wapiti is one of the largest of North American deer with bulls reaching about 750 pounds and cows growing to about 440 pounds. Elk are generally tan to brownish in appearance with a cream colored rump patch and a much darker head and neck which are darker brown to chocolate colored. The neck is somewhat shaggy.

Bulls have antlers that angle back from the head bearing from one to eight up-turned points per side. Mature bulls will usually have 6 or 7 points per antler. Mature Rocky Mountain elk bulls may have antlers that reach to their rump. Elk, like other members of the deer family shed their antlers and grow a new set each year.

Several subspecies of elk are recognized, but most of the hunting is for Rocky Mountain elk or Roosevelt elk. The Roosevelt Elk is limited to the mountains of the Pacific Northwest. It is larger in body size, but has smaller antlers than the Rocky Mountain elk. The Rocky Mountain elk formally extended into the Great Plains, with records as far east as Minnesota, but its primary range now includes the mountainous areas of the West. Populations are established in the mountains or West Texas, Oklahoma and the Dakotas with isolated populations in Michigan and Pennsylvania and some southern states. The Rocky Mountain elk is normally found in somewhat more open habitat than the Roosevelt elk.

Elk Behavior

Elk are relatively intolerant of human disturbance. Their current range includes primarily remote, usually mountainous, terrain. They have large home ranges, often divided into discrete summer and winter ranges with migration corridors connecting the higher summer range to the lower altitude winter range. Elk will not normally tolerate human disturbance and will try to get into areas that do not have much human activity.

Elk are primarily crepuscular and nocturnal in habit, being most active early in the morning and late in the evening. They frequently bed in dense cover during the day except during seasonal migrations. Elk social systems are matriarchal. Elk herds are made up of cows, calves and young bulls with older cows providing leadership for the herd. Ranges and routes are learned, and cows lead the way when reacting to danger. Even during the herding behavior of dominant bulls, cows control herd movement when danger threatens in contrast to the cow-calf herds, older bulls are solitary or members of small bands of mature bulls except during the breeding season or on winter concentration areas.

Elk communicate using all their senses. They have excellent eyesight and readily detect movements or silhouettes of exposed predators, including humans. They use a variety of visual displays, particularly

during the breeding season. Their sense of smell, typically of the deer family, is outstanding. They are adept at using air currents to detect predators at a distance in plenty of time to avoid them. Their sense of smell is also important in social communication with a variety of glands, as well as urine and droppings carrying information to other elk.

Vocal communication is also important to these herd animals. Cows "bark" out an alert call when questionable dangers are detected. General herd talk includes a variety of chirps or mews that seem almost out of place for an animal so large. The chirp sounds like a brief, throaty whine, while the mew sounds like a musical, suppressed grunt. Both of these calls are useful to the hunter, particularly in bringing in reluctant bulls that hang up just out of good shooting range.

Bulls "bugle" during the breeding season. A bugle is a squealed series of blended notes. The first tones rise to a sustained one before the latter ones descend in pitch. Often a bugle is followed by a series of grunts, slurred descending notes that sound like air being sucked forcefully into a tightly sealed throat. These calls are used to challenge rival bulls both before the actual mating season and during the breeding season itself.

Bulls establish their dominance early in rut by challenging other bulls, using visual displays that emphasize their size and strength, sparring or fighting seriously with their antlers. They also establish wallows. These are shallowly scraped pits in moist earth. The bulls urinate in the pits, then roll in the urine soaked mud. They also create rubs by whipping saplings with their antlers or sparring with saplings and shrubs.

Mature, dominant bulls (herd bulls) establish harems of cows and defend them against other adult bulls. Although they will often respond to a challenging bugle, they seldom stray far from their cows because rival bulls may attempt to appropriate some of them or to breed with any estrous cows. Herd bulls are constantly trying to keep their harems together, defend them from other bulls, and mate with any cows that are in heat. This amounts to defense of breeding rights to the cows he has managed to secure. Challenging bulls take out their frustrations on each other, continue to look for opportunities to challenge the herd bulls, and seek out any opportunity to breed.

Elk Sign

Elk tracks are similar in size to those of a domestic calf. They are heavy enough to leave tracks in most soils, even when it is relatively dry. The wallows and rubs described above are easily observed. Wallows can often be smelled as well as seen, since they have a musky odor. Elk droppings are like very large deer droppings - dark, oval pellets about an inch in length and one-half inch in diameter.

Habitat Use

Elk prefer wooded areas interspersed with meadows or other openings. They are selective feeders, concentrating on higher quality forage. Primarily grazers, they will eat browse plants when quality browse is available. Lush slopes with actively growing grasses and forbs are preferred feeding sites. Meadows are also used as display and herding areas and as sites for wallows during the rut.

Having dense timber in close proximity to their foraging areas provides nearby escape cover. These interspersed cover types are much preferred by elk. Heavy timber is also used for shelter from inclement weather, as bedding sites, and as shady retreats during hot weather.

In most parts of the West, elk are now being found at lower elevations than would be expected. Instead of being found only in ponderosa pine grasslands and higher mountain meadows, elk are now found down into the pinion-juniper areas and edges of large plains. In areas being farmed, elk will use most crops when they are available.

Elk need standing water daily during dry periods, and they will reduce their activity to a convenient distance from water under those conditions. Watering areas can be excellent hunting sites, but hunting access or egress trails is often preferred over hunting the water holes themselves.

Pre-season Scouting

Pre-season scouting is very important to successful elk hunting. The hunter must know what sign to look for during those scouting trips to make them effective. Elk tracks and droppings are clear signs of elk using an area. Rubs from the previous year should be visible on summer scouting trips, and fresh rubs, scrapes or wallows should be evident on early fall trips. Of course, sightings of animals are the ultimate in scouting reports.

In addition to visible sign, scent can help in locating elk areas. Elk have a strong, musky odor similar to the smell of cattle. That scent lingers in recent bedding areas or in wallows. The elk themselves can be detected by scent if you are upwind of a herd and reasonably close.

Hunting Equipment and Shot Selection

Elk are large, hearty animals that require using adequate equipment and careful shot placement for quick, clean kills. The hunter must know elk anatomy well enough to place the arrow or bullet where it will be most effective, with the heart-lung area being a preferred shot.

The .270 Winchester with 150 grain bullets of stout construction is about the minimum that should be considered for elk, although many have been taken with lesser calibers. Many serious elk hunters prefer heavier rifles in the .30-06 class (180 grain bullets preferred) or in one of the belted magnum calibers from about 7 mm to .338. These calibers with their heavier bullets and higher velocity allow a bit more margin for error if the hunter can shoot them accurately and precisely. Good hunting optics are used by almost all rifle hunters in elk hunting. Muzzleloader hunters consider the .50 caliber with heavy bullets about the minimum for elk, with many preferring to use .54 or larger guns. These firearms are excellent for elk provided the hunter can get within range and place a bullet properly.

Archers should consider using a bow drawing at least 60 pounds. A debate over small diameter, light arrows and heavier arrows still exists; but there is no debate over the need to put a razor-sharp broadhead through both lungs and both body walls. Shots that collapse both lungs result in much quicker recovery times and shorter blood trails than do those that fail to get complete penetration.

Still-hunting for Elk

Nearly every big game hunting method can be used in hunting elk. Human activities may disturb elk so still hunters usually expect action at least one-half mile away from camp. Frequent and careful use of good binoculars and/or a spotting scope is extremely important to the still hunter. Glassing areas carefully will often reveal elk that were missed in a more casual scan. Although they are big animals, elk are hard to see when they are in thick timber or bedded down. The binoculars can be a partial equalizer for the hunter.

Still-hunting elk can be a real challenge because elk are herd animals. With the extra eyes, ears and noses spread over a large area, a herd is harder to approach than a solitary animal.

Your ears can be a good hunting tool for elk by taking advantage of their behavior. Listen carefully for sounds made by the herd. Rolling rocks or breaking brush may be evidence of elk on the move. Cow and calf talk can pinpoint a herd that is not visible, even with binoculars. The bugle or grunt of a bull is a sure indication elk are in the area.

The still-hunter must pay very careful attention to both the wind direction and to drifting air currents. Success depends upon hunting into or across the air flow. One vagrant puff of wind carrying your scent to an elk can blow hours of careful still hunting, so be aware of even minor changes. Remember that the warmed air of the morning usually carries some uphill flow in mountainous country, while the cooled air of the evening tends to send currents drifting down the slope. Keep your sense of smell working, too. Even though your nose is not as good as an elk's, drifting elk scent can help you locate your quarry.

Standing for Elk

Hunters using a standing technique also must consider the wind and air currents when setting up. In addition, they should pick a stand that disrupts or conceals their silhouette. If possible, pick a stand that

allows you to look from shaded cover into more sunlit areas. Excellent stand sites include high meadows or other openings, trails through saddles on ridges, trails between feeding and bedding areas, trails between water and bedding cover, or in "pinch points" along migration routes from summer to winter ranges. Regardless of the site, it is extremely important to be on the stand before daylight and to approach it very quietly.

Driving for Elk

Some experienced elk hunters like to use driving techniques as part of their elk hunting system. Intimate knowledge of the terrain and the habits of the local elk herd is essential for successful drives. Careful scouting can lead to success with a combination of standing hunters on likely escape routes and crosswind still-hunters working holding cover below them. Elk are easier to drive if they are able to move uphill. Posting sites for the watchers or standers are much like those outlined for stand hunting. Edges of openings, dense strips of cover leading to higher ground, well-established game trails, trails leading to known escape cover, or saddles along ridge lines are all excellent locations. Drivers should work their way downwind to move the elk ahead of them. Weaving from side to side can create a wider flow of scent to move the animals. Still-hunters working cross-wind below elk and posted standers can create effective drives. Drivers should always be watchful for animals sneaking back through them or lying low and waiting for them to pass.

Calling

Calling elk is one of the most satisfying and exciting ways to hunt them. It is a seasonally effective technique useful primarily in the pre-rut and rut. The basic calling technique can be learned with plenty of off-season practice, and the process can either locate bulls that can be stalked or bring the animal to the hunter. Hunters who stalk bugling bulls must be careful to make sure that they are stalking bulls, NOT other hunters who are trying to call in bugling bulls themselves.

Bulls use bugles and grunts to challenge other bulls. Using them can lure a bull into very close range under ideal conditions. Cow and calf talk can be used in conjunction with bugling to lure a bull into joining the "other bull's" herd. For reluctant bulls that hang just out of range, these calls can be the final convincer.

Types of Calls

There are five basic types of elk calls. Flutes, whistles and the pigtail or gas pipe calls are the easiest to use. Tube calls, either reed or rubber diaphragm types, are gaining in popularity with elk hunters. The best quality sound can be produced using a combination of a diaphragm mouth call and the voice, usually in combination with a grunt tube. All of these calls have been used successfully. They require differing levels of skill and learning. Each type has its advantages and disadvantages, including freeing the hands and minimizing movement and simplicity in use. Learning to call elk is easiest when an experienced caller can offer advice and criticism. Instructional tapes and videos are also readily available. Perhaps the best experience with what calls should sound like, however, comes from listening to the elk themselves.

Calling in an Elk

Premium elk bugling time starts at dawn. You should be in position and ready to issue a challenge then. Begin bugling at dawn. When a bull answers move toward him staying downwind. Stay alert and keep silent until you are within 100 yards of the bull or until you can see him. Pick a calling location where you are free to move your gun or bow and your outline is disrupted. The site should have clear shooting lanes in as many directions as possible. Once you are set up, begin to bugle every 5 minutes or every time the bull bugles. Be careful not to call too much or you may have a bull just calling back and forth with you and not challenged to come in. If you don't get an answer, be patient. Often a bull will come in silently. As a convincer, you might try using a large branch to thrash trees or brush, breaking branches and sounding like a bull sparring with a bush. Cow and calf calling might be helpful also. In fact, some hunters don't bugle at all. Instead they try to lure the bull in to a stray group of cows and calves. Once you see the bull coming, stop calling to avoid giving away your exact position. You want the bull to come in looking for you.

Elk Management

Elk management involves both habitat management and population management. Habitat management focuses on creating and maintaining a diversity of habitat types in close proximity to each other. Elk need a combination of forest openings and meadows near forested escape cover. Maintaining uneven aged forest cover is very important as well. Small patch cuts are useful to produce preferred browse species early in regeneration and to provide valuable escape and bedding cover as the area regenerates. These clear-cut's are designed to take advantage of natural clones of aspen stands which provide excellent browse for elk. In areas where dry weather restricts elk use of habitat, water development can increase the use of all potential range.

Elk are capable of causing severe damage to their habitat if excessively high populations are not controlled. They very seldom become excessive on summer range, but winter ranges are often stressed when elk concentrate in those areas. Population management is normally accomplished through hunting. Hunting pressure can be selectively managed by using a permit system that allocates hunting opportunity in proportion to the number of animals the manager wishes to remove from the population. Equipment or seasonal restrictions can also influence harvest rates. Cow elk management can be used as a population manipulation tool, either to reduce the size of the herd by permitting cow harvest or to increase the size of the herd by protecting cows. Trophy bull management requires allowing bulls to reach full maturity and harvesting only a portion of the trophies. As a result, areas managed for trophy hunting usually have limited harvests of bulls by restricting the number of bull licenses.

Concluding Remarks

Elk hunting can be one of the most challenging and satisfying experiences in a hunter's lifetime. It takes place in spectacular country. It provides a wilderness atmosphere. It is demanding of the hunter and the hunter's equipment. It requires an array of skills and tests those skills to the limits. Elk hunting demands preparation by the hunter, determination and persistence. It offers an opportunity to meet a magnificent big game animal on its home ground and to meet the challenge of hunting that animal in a responsible and respectful manner.

Exhibit and Sharing Suggestions

1. Collect examples of preferred elk foods. Press and dry them, and make an exhibit that can be used in teaching or displayed at a fair or some other suitable event.
2. Participate in an elk scouting experience. Record your observations in a field or sporting notebook and share your findings with your club or another interested group. Consider exhibiting your notes with photographs in a fair or other suitable event.
3. Prepare an illustrated talk or demonstration about elk hunting methods, management or calling. Present that talk or demonstration in a suitable forum.
4. Go on an elk hunt. Record the hunt in pictures and develop a photo story using them.
5. Study the impacts of elk hunting on your state or locality. Prepare a report on that impact to be given to your club.
8. Consider holding an elk recipe cook-off as a foods and nutrition activity.

Quail Hunting

HUNTING NORTHERN BOBWHITE

Jack Payne¹ and Ronald A. Howard Jr.²

OBJECTIVES

Participating youth and adults will:

1. Identify and describe northern bobwhite
2. Relate bobwhite behavior to hunting tactics
3. Identify habitat requirements of bobwhite
4. Explore techniques used for quail hunting
5. Have fun while learning

ROLES FOR TEEN AND JUNIOR LEADERS

1. Distribute quail for field dog demonstrations.
2. Handle gun dogs in the dog demonstrations.
3. Demonstrate and discuss shotguns for quail.
4. Demonstrate shooting techniques for quail.
5. Prepare pattern sheets for choke and gauge selection.
6. Collect crops for food sample analysis.
7. Assist with food sample activity.
8. Collect wings and assist with aging and sexing activity.
9. Assist with field dressing activity.
10. Assist in site preparation and clean-up.

POTENTIAL PARENTAL INVOLVEMENT

1. See "Roles for teen and junior leaders" above.
2. Arrange for or provide field dogs and quail
3. Arrange for or provide field locations
4. Arrange for or provide birds for field dressing
5. Discuss personal choices in guns, ammunition, dogs and hunting gear.
6. Discuss quail hunting etiquette.
7. Arrange for or provide transportation
8. Arrange for or provide refreshments

BEST TIME TO TEACH: Any time nesting birds will not be disturbed

BEST LOCATION: Classroom and field

TIME REQUIRED: 1 hour

EQUIPMENT AND MATERIALS

pointing dog
flushing dog
kennel or dog crate
dog handling equipment
wild or pen reared quail
shotgun(s)
brush or snake chaps
brush pants
hunting vest(s)
hunting coat
boots
hunting vehicle (optional)
fresh quail (*Coturnix* acceptable)

REFERENCES

The Bobwhite Quail. N. Dey and J. Sinn, Nebraska Game and Parks Commission. Lincoln, NE.
Beef, Brush and Bobwhite Quail Management in Cattle Country. Golden Banner Press, Inc. Corpus Christi, TX.
Habitat Development for Bobwhite Quail on Private Lands. R. T. Dunke, Wisconsin Department of Natural Resources, Technical Bulletin 128, Madison, WI. 1982.
Bobwhite in the Rio Grande Plain of Texas. Lehmann, V. W. Texas A&M University Press. College Station, TX, 1984.

¹ Wildlife Extension Specialist, Texas Agricultural Extension Service, Corpus Christi, TX (presently with Ducks Unlimited)

² Professor and Extension Specialist, Texas Agricultural Extension Service, College Station, TX

Quail Hunting

LESSON OUTLINE

PRESENTATION

- I. Northern bobwhite identification
 - A. Small, chicken-like
 1. Compact build
 2. Generally mottled brown
 3. Short tail fanned in flight
 4. Short, rounded wings
 - a. Rapid acceleration
 - b. Burst of rapid wing movement
 - c. Glide after accelerating
 - d. Whirring wing noise on flush
 - B. Sexual differences
 1. Males
 - a. White throat patch
 - b. Broad white facial stripe extends to neck
 - c. Fine black lines on the wing feathers
 2. Females
 - a. Buff to orange throat patch
 - b. Buffy facial pattern
 - c. Broad gray lines on wing feathers
 - C. Age differences
 1. Adult birds
 - a. At least one year old
 - b. Outer primaries rounded at the tip
 - c. Primary coverts uniform in color
 - d. 7th greater primary covert without tip markings
 - e. Lower mandible supports weight of bird
 2. Juvenile birds
 - a. Less than one year old
 - b. Outer primaries pointed at the tip
 - c. Primary coverts tipped with light color
 - d. 7th greater primary covert with tip markings and ragged in appearance
 - e. Lower mandible breaks when bird is suspended by it
- II. Hunting related behavior
 - A. Nesting
 1. Open ground cover preferred
 2. Brushy cover nearby
 3. Dispersed nests
 - B. Post-nesting
 1. Formation of coveys
 - a. Family groups
 - b. Larger aggregations
 2. Remain in coveys until breeding season
 3. Disturbed coveys try to re-form

APPLICATION

DISPLAY a mounted bird, photographs or other clear and accurate illustrations of a northern bobwhite. **DISCUSS** the basic characteristics of the bird and its relationship to other gallinaceous birds.

EXHIBIT specimens, wings, and/or accurate mounts, photographs or illustrations of bobwhite males and females. **ASK** the participants to comment on any differences they see in the sexes and **COMPARE** their observations to the ones used by biologists.

Using wings collected by hunters (spread and dried), have participants **AGE** and **SEX** the birds. Be sure to provide assistance to younger members and to have them compare easily distinguished groups of wings.

In spring or early summer sessions participants may **CONDUCT** a whistling count to see where actively breeding males are located and **DISCUSS** the types of cover found.

If call-back quail are used or coveys have been broken up by dog work, **LISTEN** for the covey call and have participants put it into an acronym that helps them to remember what it sounds like.

Quail Hunting

- a. Covey call (coo-lee' or per-deet')
 - C. Foraging behavior
 - 1. Two feeding periods
 - a. About 3 hours each
 - b. Sunrise to mid-morning
 - c. Mid-afternoon to sunset
 - 2. Loafing between feeding periods
 - a. Brushy or woody cover
 - b. Dusting areas
 - c. Escape cover nearby
 - D. Behavior on disturbance
 - 1. Freezing or hiding
 - a. Remaining still when threatened
 - b. Some more tolerant than others
 - 2. Scattering in flight to dense cover
 - a. Most fly at the same time
 - b. Wing whir disturbing to predators
 - c. Multiple targets hard on hunters and other predators
 - d. Quick acceleration to full speed
 - e. Glide to cover
 - f. Some usually break late
 - 3. Assembly after disturbance
 - a. Covey or assembly call
 - b. Importance of covey
 - 1) Predator avoidance
 - 2) Huddling for heat
 - 4. Singles holding for dog
 - 5. Wild flushing in disturbed birds
- III. Habitat requirements and preferences
- A. Open grasslands with mixed woody cover
 - 1. Agricultural lands with brushy edges
 - 2. Rangelands
 - 3. Forest lands with grassy understory
 - 4. Interspersed patches of bare soil
 - 5. Plenty of seed bearing forbs
 - a. Wild grasses and forbs .adequate
 - b. Crop residues used where available
 - B. Escape cover and shelter
 - 1. Low, dense cover
 - a. Dense shrubs
 - b. Brambles
 - c. Dense vines and grasses
 - 2. Marsh or swamp edges
 - 3. Brushy hedge or fence rows
 - 4. Wooded areas
- IV. Hunting techniques
- A. Following pointing dogs
 - 1. Methods vary with locality
 - a. Small parties working afoot
 - b. Following dogs on horseback

If wild quail are being worked during an appropriate time of the year, **LOCATE** birds during prime feeding and loafing times and have participants **COMPARE** the structure of the habitats being used at those times of day. **DISCUSS** the importance of an interspersed of habitat types for high quail densities.

Relate the freezing or hiding habit with the species tendency to "hold" for a pointing dog. If possible, have the participants **OBSERVE** the work of a trained pointing dog on wild or planted birds.

Have one or two participants **FLUSH** the birds from the point, with the others **OBSERVING** the actions of the "shooters" and the behavior of the birds. **ASK** them to describe the covey rise, flight of the birds and any implications for the hunter. **DISCUSS** these observations and any that were not demonstrated.

DISCUSS the importance of the covey to the survival of the birds. **LISTEN** for the assembly calls after the covey is broken up. Have participants **SPECULATE** on the values of the covey to the individuals in it.

NOTE that singles often hold much better for the dog, at least on a second flush. **REMINDE** participants that hunting down all singles from a covey is unwise and unsporting. **NOTE** that birds that are heavily hunted or repeatedly harassed may tend to flush wild or take to extremely dense cover.

If participants have experience with quail, have them **SHARE** their observations of the cover types that attract and hold quail. If not, try to **EXPOSE** them to good quail habitat to give them an idea of its structure.

If participants have been observing wild quail worked by dogs, have them **DESCRIBE** the types of cover in which the quail took refuge or to which they flew when disturbed. **NOTE** the importance of having all needed type of cover in relatively close proximity.

Quail Hunting

- c. Using a hunting vehicle
 - 1) Horse-drawn wagons
 - 2) Powered vehicles
 - 3) Guns loaded after leaving vehicle
- 2. Importance of high visibility clothing
 - a. Helping you be seen
 - b. Keeping track of partners
 - c. Meeting local legal requirements
 - d. Important with all methods
- 3. Use of chaps or snake boots
 - a. Turning briars and brush
 - b. Preventing snakebite
- 4. Dog breeds used
 - a. English pointers and setters traditional
 - b. Many other breeds used
 - 1) Brittanies
 - 2) European breeds like Shorthairs
 - 3) "Pointing" Labrador retrievers
 - c. Must be well trained
- B. Using flushing dogs
 - 1. Walking likely cover
 - 2. Springer spaniels traditional
 - 3. Many other breeds useable
 - a. Other flushing spaniels
 - b. Upland-trained retrievers
 - c. Small hounds
 - 4. Requires cooperation between dog and handler
- C. Walking up birds
 - 1. Individual or group hunting
 - a. Stalking through likely quail cover
 - b. Frequent changes of direction and pauses
 - c. Walking line abreast in a group
 - 2. Demand for precise marking of fallen birds
- D. Baiting
 - 1. Check legality
 - 2. Ethical questions
 - 3. Used to concentrate birds
- V. Quail guns and loads
 - A. Shotguns for quail hunting
 - 1. Any gauge adequate
 - a. 410 an experts gun
 - b. 12 and 20 gauge guns most popular
 - 2. Open chokes preferred
 - a. Close range shooting
 - b. Skeetch6kes often best
 - c. Cylinder or improved cylinder good
 - d. Doubles
 - 1) Skeet/skeet

DISCUSS the differences in localities and traditions for quail hunting. **STRESS** the types of hunting used most often in the local area. Where vehicles are used, **EMPHASIZE** the need to follow all basic firearms safety rules, including keeping all guns unloaded until the shooters are in the field.

STRESS the importance of using easily seen clothing, whether required by law or not. See the Camouflage Game for an exercise demonstrating the value of blaze orange or similar clothing.

STRESS the need for snake protection in country where encountering poisonous snakes during the quail season is likely.

If possible, have participants **EXPERIENCE** the way pointing dogs work a piece of quail cover. Have local quail hunters **DISCUSS** their preferences in dogs and the reasons they have for choosing and using those breeds. **NOTE** the relationship between the type and temperament of the dogs and the type of hunting or terrain being hunted.

If wild birds or call-back birds and a gun dog of this type are available, allow participants to **OBSERVE** or **EXPERIENCE** the process of hunting with a flushing dog. If local hunters who use these techniques are available, have one of them **DISCUSS** the reasons for their use of this method.

Have a group of participants **PRACTICE** this method in a small patch of cover. **NOTE** that birds may flush at any time and unexpectedly. **DEMONSTRATE** ways of marking a bird's fall to make recovery more likely. **REINFORCE** the importance of making every effort to recover every bird shot.

If it is legal in your area, **DISCUSS** the use of baiting as a means of concentrating birds. **NOTE** that some ranchers bait roadways, and then drive the roads until a covey is located before using one of the methods above. **STRESS** the importance of restraint and staying strictly within the local laws. Allow participants to **EXPLORE** ethical questions associated with baiting wildlife.

DISPLAY pattern sheets fired with a variety of chokes and gauges with several shot sizes. Have participants **DECIDE** which loads and chokes give the best performance at normal quail hunting distances of 25 yards or less.

Quail Hunting

- 2) Improved cylinder/modified
 - 3. Good balance and fit
 - a. Quick pointing needed
 - b. Light for easy handling
 - B. Loads for quail
 - 1. Target or field loads adequate
 - 2. Shots sizes 71h or 8 preferred
 - 3. Move up a shot size late in season
 - a. Feathers heavier
 - b. Ranges may be longer
- VI. Field care and preparation
- A. Drawing birds in the field
 - 1. Cut around vent
 - 2. Extend cut sideways
 - 3. Insert finger
 - 4. Extract internal organs
 - 5. Remove crop
 - a. Strong or bitter foods
 - b. Not essential otherwise
 - B. Plucking or skinning
 - 1. Plucking preferred by many
 - a. Keeps flesh moist in cooking
 - b. Keeps dirt off flesh
 - 2. Easy when cold or fresh
 - a. Remove feathers in small bunches
 - b. Pluck to base of neck
 - c. Pluck to first joint on wings
 - C. Dressing for the table
 - 1. Remove legs at the heel
 - 2. Remove wings at the first joint
 - 3. Remove neck at base
 - 4. Remove any feather wads or shot
 - 5. Clean thoroughly
 - 6. Prepare for cooking
 - a. Leave whole
 - b. Split up the back
 - c. Split in half
 - d. Match intended cooking style
 - 7. Freeze if held more than 273 days
- VII. Quail management
- A. Setting succession back
 - 1. Controlled burning
 - 2. Disking
 - 3. Patch clear cutting
 - B. Providing escape cover or shelter
 - 1. Living brush piles
 - a. Half-cutting some species
 - b. Planting shrubs or vines
 - c. Releasing desired shrubs
 - 2. Building brush shelters
 - a. Large logs or rocks at base

Have each participant **DRESS** a quail (domestic quail or freshly bagged wild bird) if birds are available. Japanese quail are an excellent substitute. **STRESS** the importance of making the carcass look as good as possible and matching commercially available birds.

DEMONSTRATE as many examples of these management practices as possible at the sites you have available.

DISCUSS possible ways the participants could enhance quail habitat in the sites being used or in a site that is known to the group.

DEMONSTRATE or **CONSTRUCT MODELS** to show how these methods can be used.

Quail Hunting

- b. Smaller material on top
- C. Increasing food supplies
 1. Disking
 2. Burning
 3. Establishing food plots
 4. Maintaining feeders
- D. Increasing water availability
 1. May be critical in arid country
 2. Watering boards
 3. Guzzlers

REMEMBER to caution participants about the legality of using feeders and the wisdom of using them under conditions where food supplies may be limiting.

EMPHASIZE the greater potential of food plots or food-cover plots over simply feeding the birds.

SUMMARY ACTIVITIES

1. Hold a panel discussion on quail and quail hunting with local quail hunters and the members participating. Include the array of information that has been covered during this lesson and encourage the participants to reach some conclusions on the best techniques, guns, loads and dogs for their purposes.
2. Conduct an on-site activity appropriate to the time of year, like a whistling count, food plot planting, brush pile construction, or working dogs on wild birds.
3. Hold a hunting dog field trial, allowing members to work gun dogs they have trained on planted or wild birds.

LESSON NARRATIVE

Identification

The Northern bobwhite is known by a number of names across the country. It may be called quail, bobwhite quail, "partridges" or just "birds." Biologists know the bird as *Colinus virginianus*, the Northern bobwhite. Quail are gallinaceous or chicken-like birds. They are relatively small and compactly built, weighing about half a pound. They are generally brown and mottled in color with a short tail that is fanned when in flight and short rounded wings. Like other birds in this group, their wings and breast muscles are adapted for a short burst of speed and relatively short flights. They accelerate rapidly with a burst of very fast wing movement then glide to a landing point. In longer flights, they may include one or more additional bursts of wing flapping. The rapid burst of wing movement produces a fairly loud whirring sound when the bird is flushed.

Males are slightly larger than females. They have a white patch on their throats and a white facial stripe that extends onto the neck. In addition, their wing feathers are laced with fine black lines .

Females are similar in size and shape, but their throat patch and facial pattern are buff to orange. Their wing feathers are marked by broad gray lines. The differences between male and female wings, are used in sexing specimens by biologists.

Quail usually can be aged by their outermost primaries. Adult birds, those at least one year old, have primary feathers that are broadly rounded at their tips. Juvenile birds have pointed tips on the outermost primaries. In addition to these characteristics, several others may be used to classify the birds as adults or juveniles. In adults, the primary coverts (the feathers that cover the bases of the primary feathers) are fairly uniform in color and the seventh greater primary covert lacks markings on its tip. The seventh greater primary covert has a distinct color break at the tip and is ragged in appearance in juveniles. In addition, the primary coverts are tipped with a band of light color. Finally, if a dead bird is picked up by its lower mandible its weight

Quail Hunting

usually can be supported if the bird is an adult. In most young birds, the lower mandible will break or collapse when the bird is suspended from it.

Behavior Related to Hunting

Northern bobwhite nest on the ground. They prefer sights that are relatively open, with modest amounts of bare soil and clumped vegetation. Brushy cover nearby is used as escape cover during the nesting seasons, and the birds rely on dispersed nests to avoid predators. Males advertise their nesting territories by whistling their familiar "bob white" call. Young birds are tiny, but precocial. They leave the nest and forage with the adults almost immediately.

After the nesting season, the adults and juveniles form family groups or gather into larger groups known as coveys. Once formed, the coveys frequently stay together until the following breeding season. The birds roost together at night, sharing body heat and predator detection; and they feed or loaf together during the day, again sharing in predator detection duties. When they are disturbed enough to fly, the covey scatters to escape cover. They do not remain dispersed, however. Soon after being flushed, the birds begin to call to each other aiding in their getting back together. This covey or assembly call is a two note whistle (sometimes rendered as coo-lee or per-deet, with the accent on the higher, last syllable.

Quail have two major feeding periods each day, lasting about three hours each. The first one begins at sunrise and lasts until mid-morning. The second one begins in mid-afternoon and lasts until about sunset. Between feeding periods, the birds use brushy or woody cover as loafing areas where they can preen, dust and rest. Loafing areas are almost always near good escape cover.

When a covey is disturbed, its first reaction is either to run from the danger or to freeze. Running is much more common now than it was several decades ago, but bobwhite still tends to freeze and remain still to avoid detection. Usually some of the birds are much more tenacious at holding their ground than the rest of the covey. This will usually result in one or more of the birds flushing late, even when shots are fired during the covey rise. Generally, these quail hold very well for a pointing dog that does not press them too closely. A flushing dog or an approaching hunter or dog handler will usually cause the majority of the birds in the covey to take flight almost simultaneously.

As the covey rises, birds take individual directions, often crossing the paths of others in flight. The loud whirl of their wings causes a distracting noise which disturbs some predators, particularly excited hunters. With multiple targets, it is difficult for any predator to concentrate on just one individual. Since concentrating on an individual is essential to bagging it that is one of the most important factors in hunting success.

In flight, the quail rapidly accelerates to its full speed with a burst of wing movement. Once at full speed, the bird may set its wings and glide to its intended landing area. If a long flight takes place, the flight may have one or more additional bouts of wing flapping interspersed with gliding. The escape flight is almost always to dense or woody cover.

Single birds, unless repeatedly flushed, often will hold even better for a pointing dog than will the covey. Wild flushing singles are often birds that have been hunted very heavily or ones that have been flushed repeatedly. While it is possible to hunt down and shoot every single in a covey, it is neither sporting or wise to do so. The covey represents the production of the area it uses, and leaving a few birds in each covey provides the seed stock to replace it with another in the following year.

Habitat Requirements and Preferences

Quail Hunting

Bobwhite quail prefer grasslands with a mixture of woody cover. Agricultural lands with brushy field edges or interspersed woodlots, rangelands with patchy or open woody shrub over stories or open forest land with a grassy understory are all excellent habitat for these birds. Clumped grasses and forbs with interspersed patches of bare soil are excellent, allowing easy movement of young birds and easy foraging for seeds and leaves of forbs, while offering plenty of cover. An abundance of seed-bearing forbs promotes quail abundance. They can subsist on wild grasses and forbs, but crop residues are used where they are available. Use of crop fields is often limited to the edges, within easy flight distance of dense escape cover. Clean farming with limited escape cover limits quail numbers.

Quail rely on low, dense cover to avoid predators and severe weather. Dense shrubs, particularly those that retain their leaves into the winter, brambles, and dense vines or bunch grasses all serve as escape cover or shelter. Where it is available, quail will use marshy or swampy areas as well as woodlands as escape cover. They also use brushy hedge or fence rows, particularly when they are fairly wide with an abundance of low cover. Adequate width is an important factor in reducing predation, particularly by mammals. Quail using these dense cover areas may hold very well and provide extremely tricky shooting for gunners used to finding them in more open areas.

Hunting Techniques

The classical picture of quail hunting involves a party of hunters (only two shooting at a time) with horses, mules or a mule-drawn wagon, a brace of English pointers or Llewelin or Gordon setters and a dog handler. The hunters will be shooting side-by-side doubles, attempting to take a right and a left from the covey rise. The cover will be grassy with interspersed patches of dense woody cover, like shrubs or brambles, and an over story of plantation pines. That picture can be re-visited over much of the Southeast's quail range today.

No matter where they are found quail may be hunted in several ways. The most common method is to follow one or more pointing dogs. This may involve small parties following relatively close-working dogs on foot, following wide-ranging dogs on horseback, or even following those dogs using a hunting vehicle of some type - wagons drawn by horses or mules or specialized hunting cars or trucks. Any time horses, mules or power are being used, all firearms must be kept unloaded and secured until the hunters are on the ground and ready to move in on the point. Methods that are common in some parts of quail range are considered unethical or illegal in other areas.

Regardless of the locality or the hunting method, quail hunters are wise to use high visibility clothing. It helps others to see you in dense cover. It helps you keep track of any hunting partners. Finally, it may be required to meet local regulations. It is unlikely to cause any problems with approaching the birds, and it could be a life saver in some circumstances. The blaze orange (or other bright) clothing should be worn on the head and/or chest for highest visibility. In some parts of the country, quail hunters commonly used snake boots or chaps to deter rattlesnakes or other poisonous snakes that may be surprised into a defensive strike.

A wide variety of dogs are used in quail hunting. English pointers, English setters, Gordon setters, and even Irish setters are traditional quail dogs. In recent years, many walking quail hunters have shifted to smaller, closer-working breeds like Brittanies or to some of the "Continental breeds" like, German shorthairs, weimaraners or vizslas, German wirehaired pointers or others. A few use unlikely species like "pointing" Labrador retrievers. Regardless of the breed, the dogs must be well-trained and staunch, holding their points while the hunters work into position for a flush and shot. The breed is determined by a number of factors, including the type and extent of the terrain being hunted, the temperament of the dog and the hunter, tradition, and a variety of personal preferences.

Quail Hunting

A few hunters prefer to use flushing dogs. Springer spaniels are traditional flushing dogs, and a few hunting cocker spaniels are still available if a smaller dog is desired. Nearly any retriever trained to upland work can also be used, as can some small hounds. Use of a flushing dog requires well-trained dogs that are very cooperative in their relationship to their handlers, operating under close control and within gun range. This eliminates nearly all hounds with their independent spirit, but makes biddable retrievers a good bet for an all-purpose dog. Many flushing breeds will show a "flash point" or momentary pause before flushing the game they have located. This and their tendency to show "birdiness" in their behavior enable the hunter to prepare for an impending flush.

While it is much more challenging than using canine assistance, quail may be hunted by a small party of hunters merely by "walking up birds." An individual hunter may use this technique effectively if he or she is patient and thorough enough. For the individual, the technique involves slow and erratic movement through likely quail cover. Frequent changes of direction and pauses are used to make the birds nervous, prompting a flush. The technique is more effective with a small group of hunters who walk line-breast through likely cover. Maintaining one's position in the line is critical to safety, and trying all likely holding cover is essential to flushing birds that might otherwise freeze and let the line pass over them. Hunters using either technique without the aid of dogs should focus on any individual bird that is hit, marking its fall and moving immediately to that position unless the bird is clearly visible. This will promote a higher recovery rate for birds downed in heavy cover. Marking the spot where the bird fell using a cap or some similar marker, then looking in a circle around that spot will produce most of the birds downed.

Where it is legal, baiting may be used to concentrate birds into an area being hunted. Some ranchers, for example, regularly bait their roadways. This allows them to drive these roads until a covey is spotted, then descend with or without dogs to work the covey. Many people question the ethics of baiting, and some question its wisdom as a management tool as well. If it is legal in your area, you, must consider whether the ethics of using bait fit with your own before using the technique.

Quail Guns and Loads

Any gauge shotgun that is legal for hunting can be adequate for quail. The tiny .410 is effective in the hands of an expert quail shot at short ranges, but it is an expert's gun with a small, thin pattern. Beginners should consider a 12 gauge or 20 gauge shotgun for quail hunting. Regardless of the gauge, the shotgun should be equipped with open chokes. Most quail hunting, whether over dogs or simply walking them up is a close-range affair, usually within about 25 yards. That makes skeet boring an ideal choice, with improved cylinder a good alternative. Some quail hunters prefer cylinder bore guns, with no choke at all. Doubles choked either skeet and skeet or improved cylinder and modified are good choices for quail hunting. Regardless of the type, gauge or boring, the shotgun should have good balance and fit. It should point where your eyes are looking without need for adjustment once the shotgun has been mounted. Since the action is fast, the gun should be quick-handling. Walking hunters frequently prefer a somewhat lighter shotgun that helps them maintain their quickness after a long day of carrying the shotgun in the field.

Quail are relatively small birds. Target or light field loads are completely adequate for hunting them. Most hunters prefer size 7½ or 8 shot, often moving up a shot size late in the season when feather development is heavier and ranges may be slightly longer. Many experienced quail shots use a ⅞ ounce load in a 20 gauge, a ¾ ounce load in a 28 gauge, or a 1 ounce load in a 12 gauge for their quail hunting.

Moving in on a flush, the hunter keeps the shotgun at a gun ready or port arms position with the muzzle low enough to see the flush, but pointed upward and away from dogs and other shooters. The eyes are trained ahead, but focused more on the horizon than on the dogs. As the birds flush, the hunter picks a bird from the covey, mounts the gun, swings through and shoots with a strong follow-through. If time permits, he or

Quail Hunting

she can pick a second bird and try for a double. Low birds, that can endanger the dogs, are not taken. Birds that break toward the other shooter or back over the shooters are passed. A wise hunter will reload before taking another step, since one or more late-breaking members of the covey may rise on the first step.

Field Dressing and Preparation

Quail are outstanding table birds. Field dressing your birds prevents contamination of the flesh with gut contents or other sources of off-flavors. Begin by making a small incision near the vent and extending that incision to each side. Insert a finger or a gut hook (found on some bird shooter's knives) and remove the entrails. If the bird has been feeding on rank or bitter vegetation, you may want to remove the crop as well, making a small incision near the base of the neck and removing the crop with its contents. In most cases, this is not necessary in the field.

Once you are back in camp or at home, the birds may be plucked or skinned to remove the feathers. Many people prefer to pluck their birds so the skin can add flavor and protect the flesh from drying while the bird is being cooked. Quail are easily plucked when they are still hot or after they have cooled thoroughly. Simply grasp a small bunch of feathers and pull them away with a gently ripping motion. Use caution not to tear the skin. Remove all the feathers to the base of the neck and to the first joint on each wing. Disarticulate the lower legs at the heel. Remove the wings at the first joint and the neck at its base. If the crop has not been removed earlier, remove it at this time. [Remember to save the crop and the wings if you are doing a study of food habits or population structure. Note also that fly tiers can use most of the feathers for flies.]

Check the carcass carefully, removing pin feathers, wads of feathers driven in by shot or visible pellets. Clean it thoroughly inside and out. Decide how it would best be prepared for the type of cooking you plan to use. Quail may be left whole, split or split up the back and "butter-flied" for cooking. Make the preparation as easy as possible on the person doing the cooking, and the birds are more likely to be used.

If the birds are to be cooked within a few days, they may be stored in the refrigerator or ice chest. If they are to be held longer than that, they should be frozen to preserve their quality and flavor.

Quail Management

Much quail management involves setting back plant succession to an earlier stage. Woody vegetation is often controlled by controlled burning, disking or, in forested areas, patch clear cutting. These actions promote the growth of forbs and grasses used by the birds for nesting, escape and feeding cover. Where escape cover or shelter is a limiting factor, populations can be increased by providing living brush piles. This can be accomplished by half-cutting some species of trees or shrubs, by planting clumps of shrubs or vines or by releasing existing low, woody plants from competition by removing taller woody plants.

Brush piles can also provide escape cover. Start with a series of large logs or rocks as a base, providing access for the birds. Then pile successively smaller materials on top of the brush pile until it provides a relatively secure shelter. One or two living brush piles or stacked brush piles per acre can provide needed escape shelter for the birds.

Food supplies may be increased in several ways. Establishing feeders is the most direct approach, but availability and cost are two key limiting factors to their use. The feeders also tend to concentrate predators and competitors. Other techniques are less direct, but quite successful in increasing food supplies for quail. Disking or burning, as mentioned above, are excellent tools for diversifying and increasing food supplies. In addition to the forbs and the seeds produced, newly burned ground often experiences a flush of insect production, which helps the young birds to grow quickly. Food plots may be established, as well. Some types

Quail Hunting

of food plots require annual treatment. Others may last for many years. Many sources list potential food plot plants for a variety of species, including quail. State wildlife agencies and Cooperative Extension Services, as well as federal wildlife and conservation agencies can supply information on the types and mixtures of plants that will be most successful in your area.

In some arid regions of the country, water availability may be limiting to quail. While this is more common with the "western quails," like scaled or blue quail, Gambel's quail, Mearns' quail and, the like, it does impact Northern bobwhite in some regions. Where tanks or troughs are provided for livestock, providing watering boards can increase their use by birds of all kinds, including quail. Alternatively, guzzlers may be built to catch and hold water for wildlife. Where quail populations are governed by the level of spring rains, the best alternatives for habitat management seem to be prayer and rain dances.

SHARING AND EXHIBIT IDEAS

1. Save crops from harvested birds and make a collection of foods used by quail in your area. Compare these foods with the plants that are available, and construct a food preference display. Share your findings with others interested in quail.
2. Estimate the numbers of quail in your area by doing roadside "whistle counts" in the spring. Counts should be made during April, May and June between sunrise and two hours after sunrise on relatively calm, dry mornings. Establish a route with stops at ½ mile intervals. Shut off the car or park your bicycle and spend 5 minutes at each stop. Record the number of different males calling at each stop.
3. Save a wing from all birds harvested by a group of cooperators during a season. Hold a "wing bee" where all the wings are aged and sexed using the criteria provided in the lesson. Construct a table showing the ratio of adult to young birds and the sex ratio of the birds harvested by your group of cooperators.
4. Locate a landowner or a public land area where habitat improvement projects for quail can be conducted. Survey the area to determine what type of projects would be helpful (with the aid of agency staff if possible). Decide upon a project and carry it out as a group.
5. Obtain and train a dog for use in quail hunting. Demonstrate what the dog can do with your group when they study the lesson next year.
6. Build a call-back pen for use with quail used for dog training.
7. Conduct a study of shotgun patterns relative to gauge, choke and shot size, making pattern sheets that can be used in teaching about selecting guns, chokes and loads for quail and other species. Make the sheets available to your leaders or give a report to your group based on your findings.
8. Record your quail hunts in a hunting or sporting journal, listing all pertinent information including your feelings and attitudes during the hunt. Include anything of interest in your notes.

Ruffed Grouse Hunting

HUNTING THE RUFFED GROUSE

Ronald A. Howard Jr.¹

Objectives

Participating young people and adults will:

1. Identify and distinguish sexes of ruffed grouse
2. Identify ruffed grouse habitat
3. Select appropriate hunting techniques and equipment
4. Understand some basics of ruffed grouse natural history and management
5. Have fun while learning.

Roles for Teen and Junior Leaders

1. Demonstrate identification techniques
2. Demonstrate shot size, pattern density and choke selection relationships
3. Lead small "hunting parties"
4. Handle a gun dog on a mock hunt
5. Save feathers or tail fans for use in the program

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide/handle gun dogs
3. Discuss grouse hunting experiences and tactics
4. Arrange for or provide transportation
5. Arrange for or provide access to teaching sites
6. Arrange for or provide refreshments
7. Teach portions of the lesson as requested
8. Share personal preferences in equipment and reasons for those selections

Best Time: Late summer, early fall

Best Location: Ruffed grouse habitat

Time Required: 1 to 3 hours

Equipment and Materials

grouse photographs or mounts
shot samples (#6 - #8, ¼ oz. to 1¼ oz.)
pattern sheets fired at 15, 25 and 35 yards
with skeet (or IC and full chokes)
dried, fanned tails showing complete,
interrupted and intermediate tail bands
tail and rump feathers (male and female)
broom handles, dowels or walking sticks
trained grouse dog (if available)

References

The Ruffed Grouse: Life History, Propagation, Management. Bump, G., R. W. Darrow, F. C. Edminster and W. F. Crissey, 1947. New York State Conservation Department. Holling Press, Inc., Buffalo, N.Y., 915pp.

"Ruffed Grouse (*Bonasa umbellus*)" in *New York's Wildlife Resources.* Goff, G. R., D. J. Decker, J. W. Kelley and R. A. Howard Jr., 1981. Department of Natural Resources, Cornell University, Ithaca, N.Y.11pp.

Numerous publications are available on this species, its hunting and its management. The Ruffed Grouse Society has some good materials available. Watch the sporting press for pertinent articles. Classical hunting books by authors like Spiller (*Grouse Feathers, More Grouse Feathers*) or Evans (*The Upland Shooting Life*) might give good background information.

¹ Professor and Extension Specialist, 4-H Youth Development, Texas Agricultural Extension Service, Texas A&M University System, College Station, TX

Ruffed Grouse Hunting

Teaching Outline

Presentation

- I. Identification
 - A. Medium-sized, chicken-like bird
 1. About the size of a gamecock
 - a. About 17 inches long
 - b. Wingspread about 23 inches
 2. Weighs up to about 1½ pounds
 - B. Color pattern
 1. Back gray to reddish brown
 2. Lighter spots, streaks and bars
 3. Nearly white below with darker bars
 4. Barred tail with dark, terminal band
 5. Ruff (neck) and tail band black or rusty
 - C. Flight explosive with loud wing noise on take-off
 - D. Tail broadly spread in flight
 - E. Sex differences
 1. Female generally smaller
 2. Tail bands
 - a. Complete on males
 - b. Interrupted on females
 - c. Intermediate may be either sex
 3. Tail feathers
 - a. Females less than 5.9 inches (15 cm)
 - b. Males usually longer
 4. Rump feathers
 - a. Females - single light spot
 - b. Males - two light spots
- II. Behavioral characteristics
 - A. Behavior varies seasonally and with hunting pressure
 1. "Tame" where human disturbance is low
 2. Wild or flighty with hunting pressure
 - a. Freeze in cover, flushing close
 - b. Flush explosively and fly to dense cover
 - 1) Flight directions often predictable
 - 2) Anticipating direction aids hunter
 - c. Often allow steadily moving hunter or dog to pass
 - d. Often flush during pauses or changes of direction
 3. Strong, swift, relatively short flights
 - a. Short flurry of wing beats, long glide
 - b. Seldom over 400 yards
 - c. Often hold better on a second flush
 - B. Challenging for pointing dogs .
 1. Often flu.sh on approach

Application

SHOW several pictures or mounts of ruffed grouse and **ASK** participants to describe the birds.

SHOW dried tails with complete, intermediate and interrupted tail bands. **ASK** participants to discuss the differences among them.

COMPARE length of male and female central tail feathers.

PASS AROUND rump feathers from male and female birds and have participants note the difference in markings.

ASK participants if they have observed ruffed grouse in the wild. Have them **DISCUSS** their observations. Use your own observations to supplement those of the group.

USE DIAGRAMS or natural habitat to illustrate this point and. to aid in thinking about the predictability of grouse flight.

DEMONSTRATE times a grouse might flush during the movements of a hunter, either in cover or in an open area. **NOTE** that the unpredictability of the movement helps in flushing the bird.

Ruffed Grouse Hunting

2. May run to dense cover or flush at a point
- C. Seek dense cover before flushing
- D. Individuals or small flocks
 1. Groups of young birds in early fall
 2. Groups of adults in later winter
 3. Loose concentrations
 - a. Concentrated food sources
 - b. Prime cover patches

III. Habitat use

- A. Forest, woodland edges, early successional woodlands
 1. Highest densities - young woodlands or patchy woodland edges
 2. Lower densities in mature forest
- B: Food habits
 1. Mixed diet, opportunistic feeder
 2. Heavy use of buds in winter
 - a. Aspen (poplar), apple and birch preferred
 - b. Catkins and flower buds
 3. Insects and forbs in spring
 4. Fruits and seeds as available
 5. Insects, forbs and mast as available
- C. Centers of activity change with food supply, weather and cover
 1. Preferred foods used as available
 - a. Scout for foods
 - b. Keep notes on foods found at various times of year
 2. Heavy cover used in foul weather
 - a. Evergreens or dense hardwood saplings
 - b. Brush piles or tree roosts
 - c. Snow roosts
 3. Loafing and dusting cover - mid-day
 - a. Open, sunny hillsides
 - b. High spots in wet areas
 4. Escape routes fairly predictable

IV. Hunting techniques

- A. Locating birds
 1. Drumming in spring or early fall
 2. Hunting likely habitat
- B. Hunting without dogs
 1. Slow movement through cover
 2. Frequent pauses or direction changes
 - a. Pause only where you can shoot
 - b. Pause near likely holding cover
 3. Attempt to cut off escape routes to dense cover
- C. Hunting with dogs
 1. Pointing dogs
 - a. Specifically trained on grouse
 - b. May be a problem if not

ASK participants to discuss where they have observed ruffed grouse and to **COMPARE** their observations with habitat, time of day and time of year.

Have participants **LOOK** up food habits in Martin, Zim and Nelson, *American Wildlife and Plants*.

DISPLAY an assortment of grouse foods, and ask the participants to **DISCUSS** where they might locate those foods during the hunting season.

ASK participants to discuss how cold wind, heavy rain or availability of food affects their activities. **COMPARE** that with locations and behaviors of grouse in heavy weather or as food supplies change.

READ: "Red Lanterns" in Aldo Leopold, *A Sand County Almanac*, as an introduction to grouse hunting techniques.

STAGE a demonstration "hunt" with small groups of members and a parent or teen leader in good grouse cover. Have them use walking sticks or other simulated guns.

USE any DOGS that are available in the mock hunt situation.

Ruffed Grouse Hunting

- c. Common breeds
 - 1) English or Gordon setters
 - 2) Brittany
 - 3) German Shorthair
- 2. Flushing and/or retrieving dogs
 - a. Retrievers that work close
 - b. Cocker or Springer spaniels
- 3. Control and responsiveness critical
- D. Equipment selection
 - 1. Clothing
 - a. Comfortable boots matching terrain and conditions
 - b. Brush pants that turn briars, cut full
 - c. Vest or coat
 - 2. Guns and ammunition
 - a. 20 gauge and 12 gauge most popular
 - b. Most shots very close - inside 35 yards
 - 1) Skeet or improved cylinder ideal
 - 2) Modified for late season or open areas
 - 3) Skeet I and II or IC/Mod for doubles
 - c. Grouse relatively easy to kill
 - 1) #8 or #7 ½ shot early
 - 2) #7 ½ or #6 shot later
 - a) Longer shots in open cover
 - b) Heavy feather growth
- V. Field care of your game
 - A. Remove viscera and crop quickly
 - 1. Foods with strong, bitter flavors may contaminate flesh
 - 2. Gut contents may cause foul flavors or spoilage
 - B. Feathers most easily removed immediately or when thoroughly cooled
 - 1. Thin skin is easily torn
 - 2. Skin keeps bird moister during cooking
 - C. Preserve birds kept more than a few days
 - 1. Freezing
 - 2. Canning or other methods
 - D. Excellent table bird

DEMONSTRATE suitable equipment. Have experienced grouse hunters **DISCUSS** their preferences in clothing and other grouse hunting equipment.

DISPLAY favorite grouse guns of some of the parents or older teens. Have them discuss why they use the guns they have selected.

USE pattern sheets shot at the distances selected to illustrate the importance of having a proper choke combination for grouse hunting.

SHOW shot charges normal to each gauge. **SEE** also lesson on selecting shotguns and ammunition for hunting.

DEMONSTRATE using a chicken or pigeon if grouse are not available.

If they are available, **USE** frozen crops and dried crop contents to illustrate the types of foods commonly seen in grouse crops.

SEE "Game Cookery" Lesson.

Summary Activity

The mock hunt is an outstanding summary activity for this lesson on grouse hunting. Be sure to include several types of "hunting parties" and assign them to different types of habitat. After a relatively short hunting session (perhaps 1 to 1 ½ hours), bring the group back together and discuss their "success." Have the young people analyze the results of the hunt and any conclusions they may have drawn from the brief experiences.

Ruffed Grouse Hunting

Lesson Narrative

The ruffed grouse is one of the most popular game birds in parts of North America within its range. The bird is found from coast to coast and from the mountains of the Southeast to Alaska where suitable habitat is available. This hardy bird is adapted to extreme cold and hard winters, but it is absent from most of the southern United States.

Description and Identification

Ruffed grouse are medium-sized, chicken-like birds, about the size of a gamecock. They are about 17 inches long from beak to tail tip, with a wing span of about 23 inches. Although occasional birds will be heavier, most grouse reach weights up to about 1½ pounds.

Ruffed grouse are sexually dimorphic (the sexes look different to a trained eye), but the differences are relatively subtle. Both sexes are well camouflaged for life in wooded or brushy habitats. Their basic coloration ranges from gray to rusty brown above with lighter spots, streaks or bars to disrupt the pattern. They are nearly white below with darker bars that blend into leaf litter. The tail, which is spread wide in flight, is barred, and it carries a wide dark band near the tips of the feathers. Both sexes have a ruff of long, broad feathers on their necks. The ruff and the band on the tail are usually black, although occasionally they may be reddish or rusty colored.

They have short rounded wings adapted to explosive flight and high maneuverability. Their flush is accompanied by powerful wing noise that may distract a predator. Their flight is strong, featuring a short period of very rapid wing beats followed by a fairly long glide to their intended landing area.

The differences between the sexes are obvious to a trained observer, but very subtle for beginners. Female grouse are generally smaller than males. Tail bands are either complete or partially interrupted in males and partially or completely interrupted in females. A central tail feather from an intermediate tail band can be measured to determine the sex of a bird. In females, the tail feather is usually less than 15 cm or 5.9 inches long. Male tail feathers normally exceed that length. Rump feathers (the ones on the lower back) on females have a single light spot. Those from males have two. The pattern of barring on the neck and upper breast also differs.

Young birds can be told from older ones by the shape of the last two wing feathers. Like most other chicken-like game birds, grouse do not replace all of their wing feathers when they grow adult feathers in their first year. If the feathers are somewhat rounded at the tip, the bird is an adult. If they are pointed because of wear on the feathers, the bird is a juvenile or young of the year.

Behavioral Characteristics

Ruffed grouse behavior varies with the season and the hunting pressure. Where human disturbance is low, the birds may act "tame." Where hunting pressure is fairly intense, they become very wild or flighty. Grouse frequently lie very close when disturbed, depending on their coloration to avoid being seen. When they flush, the flush is explosive and the flight is almost without exception toward dense cover. They tend to put trees or other cover between themselves and the disturbance as quickly as possible, often resulting in hunters bagging bark and branches rather than birds.

If they are not unnerved by the behavior of a dog or hunter, grouse may hold and allow the hunter to pass by, particularly if their movement maintains a fairly even and fast pace. Slow moving hunters, those who pause frequently or those who show unpredictable movement usually force the birds to take flight. The

Ruffed Grouse Hunting

flights are usually relatively short, often less than 400 yards, and second flushes are generally more stable and predictable than the initial one. Repeated harassment, however, will make the birds extremely flighty and cause them to flush well ahead of the dog or gunner.

Dogs frequently have difficulty in handling grouse where they have been hunted heavily. The birds tend to flush on the point, skulk ahead to flush wild or slink into heavy cover as the dog approaches. Dogs can learn to handle them well, but the dog must be cautious and staunch. Frequently, grouse hunters who work the dense covers common to the sport want a dog that will work close to the gun, cover ground thoroughly and respond well to control. This enables the hunter to get shots at some of the birds who would not hold at the point.

Grouse are usually found either singly or in small groups, although concentrations of birds are occasionally encountered. In the early fall, hunters may encounter groups of young birds still behaving as a flock. Late in the season, adult birds may concentrate around dense cover or good food supplies. Food often concentrates the birds throughout the season if it is preferred, patchy and abundant in the patches.

Habitat Use

Ruffed grouse are birds of woodlands, woodland edges and successional woods. Although some birds will be found in large patches of mature forest, the highest densities of birds will be found in patchy successional woodlands or shrublands reverting to wooded cover. The reverting farmlands of the Northeast and the aspen clearcuts of the Lake States are prime ruffed grouse habitat.

Grouse feed on a mixture of insects and plant materials, including foliage, seeds, fruits and buds. They are opportunistic in feeding habits, taking advantage of foods that are high in quality and availability. They make heavy use of buds, particularly the flower buds of aspens, apple and birch during the winter months. Insects are vital to the development of young birds in the spring. A mixture of insects, forbs and seasonal fruits carries them through the summer and early fall. Fall diets emphasize both fruits and nuts with a liberal sprinkling of green forbs.

Centers of activity change with food availability, cover and weather conditions. Preferred goods will be used when they are available, and the grouse hunter can take advantage of that fact by scouting their hunting areas for patches of foods and learning when they are available to the birds. Field notes are extremely valuable in keeping track of the locations of those foods and the times when birds are found in their vicinity

Heavy cover is used extensively in foul weather. The birds may use evergreen patches, dense shrubs, dense patches of hardwood saplings, blowdowns or brush piles to escape from bad weather. In snow covered areas, grouse often roost below the surface of the snow.

Loafing and dusting cover is usually found on open, sunny hillsides, park-like areas or patches of high ground that offer dry sites. Good escape cover is seldom far away. No matter where the grouse is flushed, the escape route is fairly predictable with the bird heading for dense cover almost without exception.

Hunting Techniques

In "Red Lanterns," Leopold discusses different ways to hunt grouse. Many grouse hunters say they would rather not shoot grouse than not shoot any other game bird because hunting ruffed grouse takes them into areas that they enjoy. They may need to be reminded of that when they are in the midst of a blackberry tangle or a laurel thicket, but that holds for most of us. Good grouse areas can be located in the early spring (and sometimes on sunny afternoons in early fall) by listening for the thunder-like rumble of drumming

Ruffed Grouse Hunting

males. Another way to locate them is to hunt through likely looking cover. Good maps and a sense of adventure make the latter approach more productive.

Ruffed grouse may be hunted very effectively without the use of gun dogs. The dog-less hunter should move slowly through good grouse cover, making sure to cover all dense patches of cover. The wise hunter changes direction frequently and pauses often. These pauses or changes in direction are usually the actions that trigger flushes in the birds. Knowing that, the hunters should be careful to pause only in areas where they have a clear field of fire and close to the cover patches they suspect will be holding birds. Planning an approach to cut off escape routes and force the bird into an open shooting area is worth the effort as well.

Hunters using dogs may be helped or handicapped by their "hunting partners." Whether the dog used is a pointing dog or a flushing dog, they must be well-trained and easily controlled. For pointing dogs, specific training on ruffed grouse is a substantial asset. Dogs familiar with pheasants or quail may crowd grouse too closely, pushing them into flight at or before the point. English setters, Gordon setters, Brittanies and German shorthairs are among the more commonly used grouse dogs. In general, they must be responsive and capable of adjusting their range to the prevailing conditions.

Flushing dogs of many varieties are useful if they work under excellent control. Traditional flushing dogs, like springers can be used very effectively. If hunting strains of cocker spaniel can be found, these small dogs can make very effective grouse dogs. Many shooters prefer to use a retrieving dog that is trained to work close to the gun. A few even use small hounds or mixed breed dogs with an intense desire to hunt birds. Any dog that is controlled can help in the grouse woods, and the dog provides some insurance when a bird is dropped into very dense cover.

Grouse Hunting Clothing

Grouse hunters have been known to remark that their avocation is the only one they know where they can park their vehicle, walk up hill, follow birds uphill all day, and have to climb to get back to the car in the evening. Walking is a major part of grouse hunting, and that makes clothing selection very important. Comfortable boots designed to meet the demands of the weather and the terrain is essential. Full-cut brush pants that turn thorns and briars are also vitally important. A vest or coat to carry ammunition, lunch, something to drink, empty shells and the occasional bagged grouse is also needed. That garment must be light enough to prevent over-heating, but adequate to protect the hunter from the elements. A cap or hat is also important. It helps to regulate heat loss from the head, shields the shooter from the sun, and shades the eyes. Blaze orange is an excellent idea for both the cap or hat and the vest or shooting coat. It helps others see you without apparent impact on flushing rates or locations. Many grouse hunters also like to use a light, tough pair of shooting gloves to protect their hands and wrists from the offensive elements in some grouse covers. Shooting glasses are also an excellent idea. One whack in the eye from a twig may ruin your entire day. Shooting glasses can prevent that as well as the usual things they are intended to prevent.

Guns and Ammunition for Grouse

Ruffed grouse hunting is most often a short range affair with a lot of walking between shots and a premium on quick shooting. The versatility of a 12 gauge gun is hard to dispute, but many grouse hunters prefer to carry a quick-handling 20 gauge or even a 28 gauge in the field. The vast majority of shots will be within 35 yards, making skeet and improved cylinder chokes just about ideal. The classic upland double, bored improved cylinder and modified or skeet 1 and skeet 2, is an outstanding choice for these birds. Where the birds are found in more open country or later in the season, the shooter may find that slightly tighter chokes are useful, but there is seldom a need to go tighter than modified.

Ruffed Grouse Hunting

Grouse are relatively easy to kill, and lightly hit birds can usually be recovered. Most shooters prefer a relatively light load (3/4 to 1 ounce) of #7 ½ or #8 shot in the early part of the season. As feathers get heavier and the potential range increases, most shooters go up about one shot size, shooting #6 or #7 ½ shot for better retained energy. When foliage is dense and shots are extremely close, shooters with tightly choked guns may find it advantageous to use "brush" or "spreader" loads. These loads use various combinations of wads to increase the dispersion of the patterns at close ranges. Changing chokes is preferred, but if that is impossible using a special load may help increase the chances of bagging a bird without destroying it in the process.

Care and Handling of Bagged Birds

Ruffed grouse should be drawn completely, including removing the crop, as soon as possible after they are bagged. This reduces the chances of contaminating the flesh with gut contents or off flavors coming from fermenting foods in the digestive tract. Some of the foods used by grouse are very strong or bitter in flavor. The precaution of removing the crop and the remainder of the digestive tract yields a better quality table bird while showing the shooter what the birds have been eating.

Feathers are most easily removed when the bird is freshly killed or after it has thoroughly cooled. Grouse have very thin skins that are easily torn, so caution is needed when they are being plucked. Disjointing the legs at the end of the "drumstick" and the wings after the first joint completes the dressing job. Hair-like feathers may be removed with a torch or other flame. Remove any visible shot or wads of feathers. The bird can then be washed inside and out, drained and prepared for consumption or storage.

Birds that are to be used within a couple of days may be kept in the refrigerator or on ice. If longer term storage is needed, the birds should be frozen or otherwise preserved. Ruffed grouse are excellent table birds as well as premium game birds. They have a very mild flavor that is easily lost by using heavy sauces, excessive spicing or over-cooking. Try them as you might use game hens or other game birds.

Good luck and good hunting.

Exhibit and Sharing Suggestions

1. Make a collection of grouse foods, based upon the contents of crops. Locate the source plants or identify the insects found. Try to assemble a food analysis for the hunting season based on your samples. Share your results with your club or in an exhibit at a science fair or county fair.
2. Collect grouse tails and central tail feathers and try to determine the sex ratio of birds bagged and the type of tail patterns common in your area.
3. Prepare a wing and tail board with adult and juvenile grouse wings and assorted male and female tail feathers and spread tail fans as an educational exhibit. Make it available to your club leader or a hunter education instructor interested in grouse hunting.
4. Make a drumming survey of grouse in your area during the early spring. Compare that information with the numbers of birds seen or flushed during the fall. Determine whether the numbers are similar and discuss the reasons.
5. Train a gun dog for your use in hunting.
6. Do something related to grouse and grouse hunting that interests you. Discuss your plans with a leader or parent and finish your task. Develop a report or display related to the project and exhibit it at an appropriate event.

Woodcock Hunting

HUNTING AMERICAN WOODCOCK

Ronald A. Howard Jr.¹

Objectives

Participating young people and adults will:

1. Identify woodcock and distinguish them from snipe and other shorebirds
2. Identify woodcock habitat
3. Use appropriate equipment and hunting or observation techniques
4. Understand basic natural history and management of woodcock
5. Have fun while learning.

Roles for Teen and Junior Leaders

1. Prepare exhibit materials
2. Demonstrate identification criteria
3. Demonstrate aging and sexing criteria
4. Discuss shot, choke and firearm selection
5. Lead small "hunting" or observation parties
6. Handle bird dogs

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Discuss personal choices for arms and ammunition
3. Demonstrate dog training or picking a puppy
4. Discuss experiences with bird dogs
5. Discuss woodcock hunting experiences
6. Arrange for or provide coverts for mock hunt
7. Arrange for or provide gun dogs
8. Arrange for or provide transportation
9. Arrange for or provide refreshments

Best Time: April/May in breeding areas; October-January along migration corridors and in wintering areas

Best Location: Woodcock habitat

Time Required: 1 to 4 hours

Equipment and Materials

photos of woodcock, snipe and killdeer
dried wings of male and female woodcock
wing bag and woodcock cooperators report
pattern sheets shot at 15, 25 and 35 yards
with skeet, IC and full chokes
broom handles or heavy dowels
trained dog
hunting clothing
ammunition selection chart or flier

References

The Book of the American Woodcock.
Sheldon, W.G. 1971. University of
Massachusetts Press, Amherst, MA.

*Management of Migratory Shore and
Upland Game Birds in North America.*
Sanderson, G. C., 1977. University of
Nebraska Press, Lincoln, NE.

"American Woodcock (*Philohela
[Scolopax] minor*)" in *New York's Wildlife
Resources*, Goff, G. R., D. J. Decker, J.
W. Kelley and R. A. Howard Jr., 1986.
Cornell University, Ithaca, NY.

Many other publications are available on
this species for interested instructors.
Extension publications on the species from
Maine and Pennsylvania are excellent
resources.

¹ Professor and Extension Specialist, 4-H Youth Development, Texas Agricultural Extension Service, Texas A&M University System, College Station. TX

Woodcock Hunting

Teaching Outline

Presentation

- I. Identification
 - A. Plump, large-headed, long-billed, short-tailed bird about the size of a bob-white quail or a mourning dove
 1. Heavy bodied
 - a. Females weigh about 8 ounces
 - b. Males to about 7 ounces
 2. Large head
 - a. Large eyes set high and far back
 - b. Pattern of dark blocks on crown and nape
 3. Long bill
 - a. Males usually less than 2.7 inches
 - b. Females usually over 2.8 inches
 4. Dead leaf-like pattern of tan, russet and black
 5. Rusty orange to buff below
 6. Silvery gray spots under tips of short tail feathers
 - B. Wings long and broad
 1. About 20 inch wing span
 2. Last three primaries thin (attenuated)
 - a. Males usually less than 4.1mm (about 5/32 inch) wide
 - b. Females usually at least 4.2mm wide
 - c. Measured 2 cm from the tip
 3. Buoyant, erratic flight
 4. Characteristic wing twitter on flush
 - C. Member of the sandpiper family
 1. Related to other shorebirds
 2. Sometimes confused with common snipe
- II. Behavioral characteristics
 - A. Spring breeding displays
 1. Nasal call
 - a. Known as a "peent"
 - b. Similar to night hawk call
 - c. Preceded by a gurgling "tuckoo"
 2. Spiraling upward with wing twitter
 3. Dead leaf-like descent with gurgling chirps back to the starting point
 - B. Migrates at night and individually
 1. Weather affects migration
 2. Covers may fill or empty very quickly
 - C. Hold well for dogs or hunters
 1. Erratic flight through cover
 2. May top out of cover then fly level for a short distance

Application

SHOW a photograph of woodcock to the group and ask them to list things they would use to identify it. **FOCUS** on the body and head shape, color pattern, tail, bill and blocky head patterns.

NOTE that woodcock-are about the size of bob-white and doves.

ASK why the eyes might be situated in that location and **DISCUSS** their feeding habits - probing soil for earthworms.

COMMENT on the flexible tip of the bill and its use in catching earthworms underground.

NOTE that the color pattern makes the woodcock difficult to see against a background of fallen leaves.

DISPLAY the attenuated primaries of both male and female woodcock using a dried wing. Have the participants differentiate between wings from hens and cocks.

ASK one or more experienced woodcock hunters to describe the flight pattern of woodcock.

NOTE that the wing whistle or twitter comes from the primary feathers and is not a vocalization.

SHOW photographs of some other shorebirds, like killdeer, that may be familiar to the participants.

SHOW a photograph or drawing of a snipe, pointing out striped pattern on the head and the rusty tail.

READ "Sky Dance" in Leopold's, *A Sand County Almanac*.

PLAY a recording or attempt to imitate the call of a territorial male woodcock. If breeding birds are in the area, arrange to spend some time watching and listening to them.

NOTE that even though woodcock migrations may be known as "flights" they tend to migrate as individuals.

Woodcock Hunting

3. Seldom fly over 200 yards before landing in cover
 - a. Repeated flushes may cause wilder flush or longer flights
- D. Single birds the norm
 1. May flush several birds together in prime cover
 2. Weather may concentrate birds
- E. Often observed in the evening flying near meadows and woodland opening

III. Habitat Use

- A. Prefer mixture of shrubs, meadows, and woodland edges in all seasons .
 1. Earthworms a primary food
 2. Feed by probing soil
 3. Soft, rich soils preferred
 4. May take some plant material, particularly in early spring
- B. Aspens, alders, overgrown orchards, young pines and hardwood thickets very attractive cover
 1. Generally in dense cover during the day
 2. Soil moisture can strongly affect habitat use
- C. Where their ranges overlap, often found in good ruffed grouse cover

IV. Hunting techniques

- A. Locating birds
 1. Hunting patches of likely cover
 - a. Stream bottoms
 - b. Patchy woodland edges
 - c. Old orchards and pasture edges
 - d. Aspen or alder covered slopes
 - e. Regenerating hardwood stands
 2. Watching for signs
 - a. Probe holes
 - b. "Whitewash" or "chalk"
 3. Recording good locations
 - a. Most woodcock covers closely held secrets
 - b. Heavy pressure may move birds out of an area
 - c. Good locations often remain good for many years
 4. Spring "singing" can indicate where local birds are available in fall
- B. Equipment Selection
 1. Clothing
 - a. Comfortable boots
 - 1) Suitable for terrain

ASK participants if they have ever observed woodcock in flight from a flush. Have them **DESCRIBE** the flight they have observed. **COMMENT** on the tendency to land after a relatively short flight.

ASK participants where they have observed woodcock and to **COMPARE** their observations relative to habitat, time of day and time of year.

Have participants **DISCUSS** how weather might affect the availability of earthworms in some covers. **RELATE** that to the impacts of weather changes on habitat use.

If they are available, ask experienced woodcock hunters to **DESCRIBE** the types of habitat they prefer for woodcock hunting and the most unusual locations where they have located the birds.

Have participants **SUGGEST** some types of cover that might be good places to prospect for woodcock.

DISCUSS the use of feeding evidence, like probe holes, and "whitewash" or "chalk" in locating birds or potential covers.

SUGGEST the value of keeping a personal record of good woodcock locations along with other hunting information. **NOTE** that experienced woodcock hunters are often very protective of their covers.

DISPLAY clothing suitable for the area or have a teen or junior leader model it. **DISCUSS** the reasons for each clothing selection.

Woodcock Hunting

- 2) Suitable for conditions
 - b. Brush pants or chaps
 - c. Coat or vest
 - d. Cap or hat
 - e. Shooting gloves
2. Safety equipment
 - a. Blaze orange.
 - b. Shooting glasses
3. Guns and ammunition
 - a. Usually easy to kill
 - 1) Light charges of fine shot
 - a) Target loads
 - b) #8, #9, or #7 ½ shot
 - b. Close flushes in dense cover
 - 1) Quick handling, open-choked guns
 - 2) 20 gauge most popular
 - 3) Skeet or improved cylinder with or without dogs
 - 4) Spreader, scatter or brush loads in tighter guns
 - 5) Most shots inside 25 yards
- C. Hunting without dogs
 1. Thoroughly hunt likely holding cover
 - a. Frequent pauses and direction changes
 - b. Pauses in areas where shooting possible
 2. Observe flight paths and mark birds down for follow up flushes
 3. Very important to mark fall of birds carefully
 - a. Very well camouflaged
 - b. Mark spot and go directly to it
 - c. Place marker at spot
 - d. Hunt in circular pattern
- D. Hunting with dogs
 1. Any close working dog helpful
 2. Excellent training bird for young dogs
 3. Pointing breeds handle woodcock well
 4. Flushing breeds and retrievers should work close in dense cover
 5. Invaluable in recovering downed game
 - a. Some dogs will not retrieve the birds
 - b. "Hunting dead" helps
- V. Field care of your game
 - A. Drawing does not seem to be critical
 - B. Easily plucked except when heavily covered with pinfeathers .
 - C. Birds kept more than a few days should be frozen or otherwise preserved
 - D. Somewhat "glandular" or liver-flavored

NOTE the value of gloves in keeping the hands free of scrapes and scratches from briars and brambles. **STRESS** the importance of helping others see you in heavy cover. Consider using the Camouflage Game (fact sheet) as an illustration. **REINFORCE** the value of shooting glasses in protecting the eyes.

See the lesson on selecting shotguns and ammunition for hunting as well. Have woodcock hunters **DISCUSS** their preferred loads for woodcock hunting.

Ask several woodcock hunters to display their favorite woodcock guns and **DISCUSS** their reasons for the preference.

SHOW pattern skeet shots at various distances using different chokes.

EMPHASIZE the need to hunt slowly with erratic changes in direction and frequent pauses where openings for shots are available.

STRESS the value of marking birds down for a second flush. Note that the second flush is often more predictable than the first one.

EMPHASIZE the need to mark the exact location of a downed bird and to search carefully until the bird is recovered.

Ask experienced bird hunters to **DISCUSS** their preferences in upland bird dogs and the reasons for those preferences. **ALLOW** the participants to see the dogs in action, even if planted pigeons or call-back quail must be used.

NOTE that woodcock do not seem to spoil readily or change flavor much if not field dressed immediately. **DISCUSS** the European treatment of the entrails or "trail" as a delicacy to be eaten on toast.

COMMENT on the flavor enhancement coming from wrapping the bird in a strip of bacon prior to cooking. **SEE** "Game Cookery" lesson.

Woodcock Hunting

VI. Woodcock management and hunting

- A. Interspersions of young woodland or shrubs with old field or meadow habitats needed
 1. Early successional areas
 2. Areas of woodland/agricultural interfaces
- B. Federally controlled seasons .
 1. Migratory Bird Treaty Act
 2. Breeding into edge of northern coniferous forest
 3. Wintering mainly in southeastern states to Louisiana and East Texas
 4. Both breeding and wintering grounds in adequate quantity and quality needed for abundance
- C. Contaminants and toxic chemicals
 1. Pesticides a double-edged problem
 - a. Bioaccumulation
 - b. Destruction of food supply
- D. Increasing popularity as a game bird
 1. Concern about harvest levels and productivity
 2. Voluntary data collection through U.S. Fish and Wildlife Service
 3. Personal management of covers possible

POINT OUT good woodcock habitat and **DISCUSS** the effects of aging and setting back succession.

NOTE that the basic regulations on woodcock are set by the U.S. Fish and Wildlife Service, based on their assessment of the populations of birds available and population trends from woodcock cooperators.

Briefly **ADDRESS** the issues of habitat aging, urban encroachment and wintering habitat destruction.

SHOW a woodcock cooperator report and a sample wing bag. Note that the information derived from this voluntary sampling procedure is used to enhance woodcock management.

Summary Activity

If the lesson is taught in the early fall, conduct a mock hunt, letting small groups "hunt" using walking sticks as guns. Keep the groups well separated to avoid interference. Let participants try good areas with and without the help of dogs. Discuss their observations.

If the lesson is taught in the spring, conduct a singing count in the evening during the breeding season. Compare habitat observations and numbers of birds heard or seen. Perhaps participants would enjoy observing the "sky dance" and the birds behavior on the ground.

Lesson Narrative

A bird watcher once remarked that the American Woodcock looks like it was put together by a committee. The bird is a heavy-bodied, large-headed, long-billed, short-tailed shorebird that lives in wooded and shrubby habitat in much of the eastern portion of North America. It is about the size, of a bob-white or a mourning dove, with females weighing about 8 ounces and males being slightly smaller. The large eyes are set very high and somewhat toward the back of the skull. The markings on the head consist of a series of large dark blocks on the crown of the head and down the nape of the neck.

The bill is very long relative to the size of the bird. Males usually have bills that are less than 2.7 inches in length, while on females the bill is normally at least 2.8 inches long. The bill is adapted to probing for food (primarily earthworms) in soft soil, and the flexible tip allows the bird to grasp a worm without opening the bill for its whole length.

Woodcock Hunting

Woodcock plumage is soft, with a color pattern composed of tan, russet and black in a disruptive pattern that camouflages the bird beautifully against a background of dead leaves. The bird is rusty orange to buffy below. The larger European Woodcock, which is seen occasionally in North American coverts, is heavily marked with fine barring on the flanks. The short tail is black below, with silvery gray spots on the underside of the tip of each feather. These spots appear to be somewhat luminescent under low light conditions and are part of the miniature turkey-strut displays of breeding males.

Woodcock have fairly long, broad wings, with a wing span up to about 20 inches. Their flight is buoyant and frequently erratic when flying in cover. Both males and females have three specially adapted primary feathers at their wing tips. These narrow or attenuated feathers make a characteristic twittering wing whistle when the bird flushes and may continue to do so throughout a flight. They are also used as a character to differentiate between males and females. The attenuated feathers are measure 2 cm from the feather tip. In males, the feathers are usually less than 4.1 mm (about 5/32 inch) wide. In females they usually exceed 4.2 mm in width.

The woodcock is a shorebird, a member of the sandpiper family (Scolopacidae.) It is fairly closely related to such familiar species as spotted sandpipers, upland sandpipers and common (Wilson's) snipe, and more distantly related to plovers, like the killdeer. Occasionally it is confused with snipe by hunters, although the snipe is easily distinguished from the woodcock by its thinner appearance, long and pointed wings, striped or streaked plumage and rusty tail.

Behavior

Breeding Season - Woodcock have a fascinating breeding display in the spring. Males select openings with relatively short cover for display arenas. They start the display with a buzzy, nasal call, similar to the call of a night hawk. This "peent" or "bzzzt" call is preceded by a soft, liquid call that is often rendered "tuckoo" or "tookoo" in verbal descriptions. While the call is being repeated, the male struts like a tiny turkey with its tail erect and fanned, showing the silvery spots on the tips of the feathers. After several calls, the male springs into a spiraling upward flight that carries it several hundred feet into the air. This flight is accompanied by the twittering or tinkling wing whistle as the bird climbs. At the height of the climb, the bird begins a tumbling, dead-leaf-like descent that it accompanied by a series of musical, liquid chirps until it is fairly close to the ground. It then lands at the starting point and begins the series again. This display is performed under the low light conditions of dawn and dusk and during moonlit periods throughout the spring. Females come to the display arenas to mate, and then rear their young alone. During the nesting period, female woodcock hold very tightly on their nests. One bird held so tightly that a photographer dug up the nest with the female and moved it to a better location to take a photograph, then replaced it without flushing the female bird. Young woodcock are unique in splitting the egg lengthwise when they hatch.

Migration - Woodcock normally migrate at night and as individuals. Although woodcock hunters often talk about flights and flight birds, the aggregations of migrants are the result of common responses to weather and cover conditions. Covers that were empty of birds one day may be over-run with them the next. Following winds are an important feature for migrating birds, and the passage of storm fronts frequently brings a pulse of migrating birds through an area. Areas used by migrating birds are usually attractive to them for many years, so keeping notes on locations that have been productive is a very wise approach for the dedicated woodcock hunter.

Hunting Behavior - Woodcock are almost ideal birds for upland bird dogs. They hold very well for either a dog or a hunter under most conditions. Flushes are usually a very close range. The bird may spring upward toward the top of the cover before leveling off for a short distance, or it may stay low and weave through the

Woodcock Hunting

cover. In either case, normal flight is unpredictable with changes in direction occurring frequently where cover is dense. The birds seldom fly more than 200 yards before landing. In patchy cover, which is often preferred by the birds, landing sites are usually fairly predictable, even if they were not observed. Several flushes are often possible with a single bird, but repeated harassment tends to make the birds to flush wild or fly longer distances.

The norm in woodcock hunting is to flush one bird at a time, but in prime cover the hunter may encounter several birds simultaneously. Weather or limited areas of prime cover may concentrate birds in very small areas at some times. Hunters should note the conditions and locations for use in later years.

Occasionally woodcock use unusual types of cover. Hunters may be alerted to that situation by observing "dusking flights" as the birds leave daytime covers for meadows and fields as dusk falls. Dogs may help in this situation as well. Several points or flushes from "bad cover" while "good cover" is not producing very well may indicate that the birds have a different idea about what constitutes good cover. In that situation, trust the dog. Its nose may prove more useful than all the experience you have.

Habitat Use

Woodcock prefer a mixture of shrubs, meadows and woodland edges in all seasons. Earthworms are their primary food, and they forage by probing in the soil. Soft, rich soils are preferred. Woodcock will also eat other invertebrates. They may take some plant materials, particularly during inclement weather during spring migration.

Aspens, alders, overgrown orchards, young pine plantations and regenerating hardwood sapling thickets are all very attractive covers. These dense covers are preferred during the day, while pastures, meadows, old fields and similar covers are good nocturnal habitat. Soil moisture can exert a strong influence on habitat use as well. Where their ranges overlap, good ruffed grouse habitat will frequently hold woodcock, at least seasonally.

Locating Hunting Covers

Several methods work well for locating woodcock populations. One of the most frequently used approaches is to locate patches of promising cover, and explore those patches with a dog or a companion who can be trusted. Stream bottoms, patchy woodland edges, old orchards, pasture edges (particularly if they have stands of alder, aspen or hawthorn), aspen or alder cover slopes or young, regenerating hardwood thickets are excellent choices for woodcock prospecting. Even relatively small patches of cover can be worth exploring, particularly when weather and the season restrict birds to prime covers.

While exploring potential covers, watch for signs of woodcock feeding. Probe holes in the soil or patches of "whitewash" or "chalk" are indicators of recent woodcock use. Even if the birds are not in the area at the time, they have been there and will probably use the area again, either later in the year or in following years. Staying for a little while after shooting hours are over can also help in locating birds. Watch for "dusking" birds as twilight deepens. Remember that they will not travel very far between daytime and nocturnal covers. Explore the area for holding cover on a later trip.

Most serious woodcock hunters are very secretive about their favorite covers, particularly when those covers are hidden from view by cover that would not attract birds. Maps with cryptic symbols and personally coined names often accompany their notes. Those recorded notes on woodcock covers are extremely valuable. Passing comments from hunters who see woodcock in the spring or during hunts for other species can lead to discovery of outstanding hunting. Good locations frequently remain quality covers for many years, but

Woodcock Hunting

heavy gunning pressure can make birds extremely wild or move them out of a cover completely. Be sure to regulate your own use of a cover to prevent this problem, and be sure to remove the signs of your presence so you leave nothing behind but tracks.

Woodcock Hunting Clothing

Under most conditions, standard upland bird hunting clothing is completely adequate for woodcock. Comfortable boots that fit the terrain and the weather are vitally important and occasionally hip boots will be necessary to reach good covers or to cross lowland areas in order to hunt a cover that is otherwise inaccessible. Brush pants or chaps will find plenty of use in the types of habitat woodcock prefer. Briars and brambles are frequently part of the understory. A coat or vest to match the conditions and carry ammunition and accessory gear is very useful. A cap or hat helps in regulating the body temperature and shades the eyes, reducing eye strain on bright days. Shooting gloves are worn by many woodcock hunters to protect their hands from thorns and provide a sure grip on the stock. Shooting glasses are extremely valuable for all the usual reasons, for sharpening contrast and for protecting the eyes from errant twigs and debris. Use of blaze orange clothing, particularly on the head and upper body, is strongly encouraged even if it is not required by law. The bright cloth helps hunters keep track of each other, particularly in heavy covers, preventing "companion in the line of fire" accidents.

Guns and Ammunition for Woodcock

Woodcock are relatively easy to stop and kill, although an occasional hard-hit bird will escape. Shots are generally at short range in tight covers, so most shooters prefer to use light charges of fine shot. Target loads of #8, #9 or # 7 ½ shot are an excellent choice. Remember to use loads that will be adequate for larger upland birds that might be encountered in the same covers.

With close flushes (most shots are less than 25 yards) and heavy covers, most woodcock hunters prefer a quick handling, open-choked shotgun. Twenty gauge shotguns are most popular, but nearly any shotgun can be used. Most shooters prefer skeet or improved cylinder chokes. Shooters using doubles may use either a skeet-skeet or improved cylinder-modified combination. Those who are handicapped with tighter chokes may compensate by using specially designed loads that expand the pattern. Different manufacturers refer to them as "scatter," "brush" or "spreader" loads. Although their patterns may be somewhat erratic, they do tend to expand the pattern for close shots.

Hunting Techniques

Woodcock can be hunted successfully without benefit of dogs. The hunter or hunters must make sure that likely holding coverts are hunted very thoroughly. Frequent pauses or changes of direction are helpful in flushing the birds, and most flushes will be nearly under foot. The hunter should pause in locations where shots are possible and be prepared for a flush during the pause or as they begin to move after pausing. Careful observation of the flight path or destination of flushed birds can lead to a more predictable second flush.

The dogless hunter must be extremely careful to mark the fall of each bird. Fix your eyes on the spot where the bird fell, locate an obvious "marker" and move directly to it without taking your eyes off the spot. Place your hat or another marker at the marked location and search in a circular pattern around the marker until the bird is found. Woodcock are extremely well camouflaged, and a bird that falls on its breast or one that is wounded can be very difficult to locate in dense cover. Search until the bird is recovered or you are absolutely certain it cannot be found. Ethics demand that a downed and lost bird be considered part of the daily bag limit, even though the law does not.

Woodcock Hunting

Any close-working dog is a benefit in woodcock hunting. The dog will locate and flush birds that the hunter would walk past. Pointing breeds generally handle woodcock very well, and the birds are excellent training birds. They hold very well and offer repeated locations and flushes quite frequently. Flushing breeds and retrievers should handle close to the gun and adjust their range to the density of the cover. Many woodcock hunters use a bell on the dog's collar to assist in keeping track of the dog when it cannot be seen. Dogs are very helpful in recovering downed birds. Although many dogs either do not like to retrieve woodcock or refuse to retrieve them, most of them will "hunt dead" and give some indication of the downed bird's location. Watch the dog carefully and call them back several times if necessary until the bird is recovered.

Field and Home Care of Game

Unlike most other game birds, woodcock do not seem to have their flavor affected adversely if they are not drawn immediately. They should be carried so they can cool thoroughly, but field dressing is seldom necessary. The birds are extremely easy to pluck, and only those birds that are endowed with large numbers of pin feathers require skinning. Leaving the skin intact keeps the flesh moist during cooking, and the fat seasons the bird as well.

European gourmets often cook the bird with the entrails intact, serving the entrails or "trail" on toast or crackers as a delicacy. Most American hunters find that practice a bit much, preferring to dress the bird in the traditional manner. Woodcock have a somewhat glandular or "livery" taste that benefits from having a strip of bacon wrapped around the bird during cooking. Those who like the birds relish them. Those who find the taste objectionable should shift their efforts to other birds or find someone who really likes them. Unlike most other game birds, woodcock have light flesh in their legs (which resemble tiny turkey legs) and dark flesh on their breast.

Birds that are to be used within a couple of days can be kept refrigerated. If they are to be kept much longer than that before being used, freezing or some other method of preservation is advised.

Woodcock Management and Hunting

As outlined earlier, woodcock need an interspersion of young woodland or shrubs with old fields or meadows to maintain good densities. Most of these areas are early to middle stages of woodland succession. Areas where woodlands and agricultural lands are interspersed may also be attractive. Some birds breed as far south as Alabama and Louisiana, but the majority of them breed in the northern United States and Canada south of the evergreen forest. They winter in the southeastern United States as far west as East Texas, with the largest concentrations in Louisiana. Adequate amounts of both breeding and wintering habitat are essential for abundant populations of woodcock.

As a migratory bird, woodcock are managed by the U.S. Fish and Wildlife Service under the authority of the Migratory Bird Treaty. Basic season guidelines are established by USFWS, and then states develop regulations within that context.

As migratory birds, woodcock are exposed to contaminants and toxic materials used in several types of land management. Insecticides and fungicides used to combat forest or agricultural pests and broad spectrum contaminants like PCBs may act as a double edged sword. They can accumulate in the birds through feeding on contaminated earthworms, or they may affect the food supply by killing earthworms or other invertebrates. Most examinations of woodcock to date have not found actionable levels of pesticides.

Woodcock Hunting

The increasing popularity of woodcock as game birds has generated some concern about management, particularly harvest levels and productivity. Hunters contribute to woodcock studies by participating voluntarily in annual woodcock hunter surveys. Cooperators record their hunting activities, woodcock encountered and numbers bagged. They also provide one wing from each bird bagged personally, shipping single hunt samples to USFWS in mailing envelopes that are provided. These wings provide a sample that helps biologists determine the age and sex ratios of birds in the fall harvest. The other data allows calculation of relative population estimates using "catch per unit effort" estimators.

Some personal management of woodcock covers is possible. Materials, available from the Cooperative Extension Services in Maine, Pennsylvania, New York and Wisconsin can provide interested people with means of getting involved personally in improving woodcock habitat and populations.

EXHIBIT AND SHARING SUGGESTIONS

1. Study the natural history of woodcock. Develop an illustrated report and share that report in an appropriate setting.
2. Make a woodcock wing board, illustrating the characteristics used in aging and sexing woodcock using wings. Collect a sample of wings and lead the group in aging and sexing the birds from which they were taken using the wing board as a starting point. Consider making wing boards for hunter education or 4-H hunting instructors to use.
3. Organize a local "singing count" during the spring. Layout several routes and develop a protocol. Map the number of courting males observed along each route. Compare the habitats encountered with the numbers of birds observed. Note any changes in the numbers of courting males with changes in weather or date. Share your information with the club, a sportsman's group, a birding group or local wildlife biologists.
4. Make a set of pattern sheets using favorite guns and loads at "normal" woodcock ranges. Compare the pattern densities and dispersions for each of them. Use the sheets in presenting a program on woodcock guns to your club or another interested group. Consider giving them to an instructor for use in teaching.
5. Plan a woodcock management project in your area. Survey a site; determine what might be done to improve it, secure the necessary permits and support and complete the action. Follow any changes that take place for one or more years. Report the impacts of your actions to your club or another interested group. This could even be used as a science fair project on habitat improvement. Be sure to seek qualified help along the way.
6. Develop a photographic essay on woodcock or woodcock hunting. Exhibit your display in an appropriate fashion, either as a photography project or a wildlife project.
7. Begin keeping a field notebook or hunting diary. Record the location, weather conditions, date, wildlife encountered and any successes you had. Be sure to include your impressions and feelings as well as anything that you learned during the day. Exhibit your notebook or pieces extracted from it in an appropriate setting, or share excerpts with members of your club or another interested group.
8. Do something you want to do concerned with woodcock natural history, management or hunting. Develop a product or exhibit that can be shared with others in some fashion.

Raccoon Hunting

RACCOON HUNTING

Shari Dann¹ and Ronald A. Howard Jr.²

OBJECTIVES

Participating youth and adults will:

1. Experience and become interested in the night environment and nocturnal animals
2. Observe and learn about the biology, behavior and habitat requirements of raccoons
3. Experience raccoon hunting methods
4. Understand the popularity of raccoon hunting and learn about raccoon management.

ROLES FOR TEEN AND JUNIOR LEADERS

1. Assist in handling live animals for demonstration
2. Assist in handling dogs (with dog owners' permission)
3. Assist leader or agent guest speaker in seeking permission to hunt on private lands
4. Lead small group activities
5. Demonstrate fur handling if desired

POTENTIAL PARENTAL INVOLVEMENT

1. See "Roles for Teen and Junior Leaders" above
Also, if an evening hunt is organized during the training/pursuit season, two to three adults per every 10 youth can help keep the group together while on the hunting experience. Have students ready with spare flashlights, warm clothing, etc. for youth.

Best Time to Teach: Late summer or early fall well after dark for field experiences, any time for classroom based program

BEST LOCATION: Any comfortable teaching space and a good hunting area

LENGTH: 2 to 3 hours or more

MATERIALS/EQUIPMENT

flashlights headlamps
live raccoon (see NOTE on pg 2)
Hounds (contact local raccoon hunters club)
Comfortable walking shoes and evening clothing
Raccoon pelt (borrow from state game agency local office, from local conservation officer or from trapper or hunter)
Picture of raccoon silhouette (you may need to locate a side-view photograph of raccoon, trace outline and blacken in to create your own silhouette)

REFERENCES

Raccoon, G. R. Goff, D. J. Decker, J. W. Kelley, and R. A. Howard, Jr. *New York's Wildlife Resources*, Department of Natural Resources, Cornell University, Ithaca, N.Y. Publications (brochures, magazines) by your state wildlife/game agency.

¹ Wildlife Specialist, Michigan State University, East Lansing, MI

² Professor and Extension 4-H Specialist, Texas Agricultural Extension Service, Texas A&M University System, College Station, TX

Raccoon Hunting

NOTE: contact local raccoon hunters club or hound club, wildlife agency office, wildlife rehabilitator or nature center) NOTE: It is run suggested that you or your club members keep live raccoons. Special permits for possession of raccoons and other wildlife may be needed.

LESSON OUTLINE

PRESENTATION

- I. Game animal and furbearer
 - A. Hunted for fur and meat
 1. Fur only
 2. Combination
 - B. Hunted for hound music
 1. Chase only
 2. Chase and harvest
 - C. Hunted for damage control
 1. Agricultural damage
 2. Nuisance animal
- II. Identification
 - A. Well-known animal
 1. Black (or dark brown) mask
 2. Bushy, tail with dark rings
 3. Pelt color
 - a. Varies with region and season
 - b. Underfur brownish to yellowish gray
 - c. Guard hairs vary in color
 - 1) Silver or white tipped
 - 2) Black tipped
 - 3) Brown tipped
 - d. Overall color rusty tan to nearly black
 - B. Stocky, compact body shape
 1. Narrow, pointed snout
 2. Moderately long legs
 3. Slightly high-romped profile
 4. Adult weights
 - a. Range - about 2-9 kg (4 1/2 to 20 pounds)
 - b. Maximum up to 18-25 kg
 - c. Smaller in South
 - d. Weight varies seasonally
 5. Adult length
 - a. Total length 60-105 cm (23 to 41 inches)
 - b. Tail length 20-40 cm (8 to 15 inches)
 - c. Smaller in the South

APPLICATION

DISPLAY a live raccoon, raccoon pelt or photograph, asking the participants to **DISCUSS** the identifying characteristics of the animal. **DISCUSS** current fur values in your area and/or locally popular dishes based upon raccoon.

Have participants **OBSERVE** a live raccoon (or a mount or photograph) and **DESCRIBE** its general body size and shape. **NOTE** the humpbacked appearance of the animal.

Have participants attempt to **GUESS** the weight of a raccoon. **NOTE** that most stories of 30 or 40 pound raccoons are estimates. Most are smaller than 22 pounds. **DISCUSS** reasons why the estimated weights might be so high, including the fact that their fur is very long, increasing their apparent size.

NOTE that raccoons vary in size with the region, with size increasing toward the northern end of their range and decreasing in the southern parts of the range. If desired, relate that to other animals that show a similar pattern of size variation.

- C. Tracks and signs
 - 1. Flatfooted
 - a. Front feet
 - 1) Like tiny hands
 - 2) Five digits
 - 3) About 7 cm (2.8 inches) long
 - b. Hind feet
 - 1) Like human footprint
 - 2) About 9 cm (3.5 inches) long
 - 2. Toenails usually visible in tracks
 - 3. Deceptively fast on their feet
 - a. Rolling walk
 - b. Shuffling slow run
 - c. Galloping full speed run
 - 4. Scats
 - a. Droppings dog-like
 - 1) Up to about 2 cm in diameter
 - 2) Usually bluntly broken segments
 - b. Imbedded insect parts and fruit seeds
 - 5. Other evidence of raccoon activity
 - a. Hair on fences or tree bark
 - b. Smoothly worn areas at the bases of trees
 - c. Mussel shells or other feeding signs
 - d. Tracks on trails or along water courses
 - 1) Locate active raccoons
 - 2) Identify good hunting area
 - D. Similar species (where located)
 - 1. Ringtail
 - 2. Coati (Coatimundi)
- III. Hunting-related Behavior
 - A. Food habits
 - 1. Opportunistic omnivore
 - a. Seasonally variable diet
 - b. Capable predator
 - c. Seasonally abundant insects
 - d. Fruits and other mast in season
 - 2. Diet strongly influenced by habitat
 - 3. Use garbage in urban area
 - 4. Some carrion eaten
 - B. Movements and activity levels
 - 1. Raccoons primarily nocturnal
 - a. Active after sunset to early morning
 - b. Feeding centered around midnight
 - c. Seasonal differences in activity levels
 - 2. May be active during daylight hours
 - a. Coastal raccoons may follow low tides
 - b. Weather conditions may influence activity
 - 3. Intense cold or snow cover induces denning
 - a. Do not hibernate

SHOW participants some raccoon tracks either in the field or as plaster casts of tracks. **EXPLAIN** how to make plaster casts of tracks if desired.

ASK if anyone in the group has seen raccoons in the wild. Have them **DESCRIBE** or **ROLE PLAY** the raccoon's walking, hurried walk or running behavior. **NOTE** that the long hind legs give it a humpbacked shape.

DISPLAY preserved or fresh raccoon scats. **NOTE** that most raccoons carry a parasitic worm in their feces that can be fatal to humans. **CAUTION** participants about sanitation where raccoons are handled, including the use of hypochlorite bleach as a disinfecting agent.

HELP participants to locate some signs of raccoon activity in this category.

If these animals occur in your area, **DISCUSS** them and the differences between them and raccoons using appropriate photographs, mounts or live animals to support the discussion. **NOTE** that these species are related to the raccoon, but distinct species with their own characteristics and biology.

Ask participants to **DISCUSS** anything they know that raccoons eat. Add to their lists as needed to **CONSTRUCT** an eclectic diet for this highly opportunistic and adaptable beast. **SUGGEST** that collecting and preserving samples of food items eaten by raccoons might be an excellent project for someone interested in the species.

If in the field, **SCOUT** an area for raccoon signs and activity. Try to have participants **DEDUCE** what the animals were doing and the things that attracted them to the area. **IDENTIFY** plants or food sources that might be attractive to the animals in your area.

Raccoon Hunting

- b. Deep sleep with bouts of activity
- c. Emerge during thaws
 - 1) Changing sites
 - 2) Looking for mates
- d. Southern animal's active all year
 - 1) Den only during extreme cold
- 4. Daily movements related to habitat types
 - a. Preferred paths from den to feeding sites
 - b. Linear structures - linear movements
 - c. Concentrated foods concentrate raccoons
 - d. Site use follows food availability
 - 1) Slight to modest time delay
 - 2) Continued use after supply declines
 - 3) Exploratory forays before and after
 - e. Proximity to escape cover important
 - f. Hunting strategies should fit movements
- C. Responses to hunting pressure
 - 1. Running from pursuing hounds
 - a. Faster than they look
 - b. Making best use of their home range
 - 1) Doubling back on their trails
 - 2) Using available shelter
 - a) Ground dens
 - b) Rocky refuges
 - c) Den trees
 - d) Brush, slab or lumber piles
 - e) Dozer tree piles
 - f) Buildings
 - 3) Using elevated escape routes
 - a) Rail or wooden fences
 - b) Crowns of trees
 - 4) Taking to the water
 - a) Running streams or wetland edges
 - b) Swimming
 - 2. Females and young may scatter or stay together
 - a. Scattering may confuse young hounds
 - b. May elect to tree or den quickly
 - 3. Treeing as a form of escape
 - a. Treed raccoons rarely descend on their own
 - b. May flatten in cover as concealment
 - c. Squallers used to attract attention
 - 4. Cornered raccoons dogged fighters
 - a. Hiss, growl, snarl and squall to intimidate
 - b. Arch their backs like cats to "increase" size
 - c. Bite and claw if attacked
 - d. Tenacious fighters even with large dogs

POINT OUT or **POSTULATE** a current food source and have participants **DEVELOP** a hunting strategy to fit the situation and expected raccoon movements. **DISCUSS** the need to make the strategy fit the current movements of the raccoons, cutting across the activity areas of a number of different individuals.

NOTE that the animals know their home ranges intimately and are able to use the terrain and any physical structures in that habitat to elude or escape from pursuing hounds or hunters.

DISCUSS the decision making process when an entire litter is treed. Females are unlikely to have prime fur early in the season and young may be relatively small. Taking the whole litter is a mistake under those conditions. Young may be better on the table than older animals. Have participants **DISCUSS** their reasons for the hunt and the decision they would make under these circumstances.

DEMONSTRATE the use of a raccoon squaller. **NOTE** that the simulated commotion often causes the hidden animal to look toward the noise, revealing its eye shine to the hunters below.

- e. Very dangerous to dogs if in the water

Raccoon Hunting

- 1) Excellent and nimble swimmers
- 2) Dexterous "hands"
- 3) Often attack the dog's head
- 4) May drown a much larger dog

IV. Habitat requirements

A. Very adaptable species

- 1. Any place with adequate food, cover and water
 - a. Mature woodlands
 - b. Marshes and swamps
 - c. Prairies and rangelands
 - d. Deserts with water available
 - e. Farmlands
 - f. Suburban and urban areas
- 2. Critical limiting factors vary with region
 - a. Denning sites in prairies
 - b. Water in arid regions
 - c. Food in mature forests
 - 3. Populations highest in urban areas

B. Shelter

- 1. Refuges from predators
- 2. Refuges from weather conditions
- 3. Many types used
 - a. Tree cavities considered traditional
 - b. Caves or rock crevices
 - c. Buildings
 - 1) Attics
 - 2) Cellars or crawl spaces
 - 3) Side walls
 - d. Culverts
 - e. Brush piles
 - f. Dozer piles (trees and earth)
 - g. Abandoned burrows
 - h. Barns and outbuildings
 - i. Grass platforms in coastal marshes
 - j. Storm drains and culverts

C. Water requirements

- 1. Free water is important
- 2. Much water in moist foods
- 3. Free water sources
 - a. Seeps and springs
 - b. Creeks, streams and rivers
 - c. Ponds and lakes
 - d. Marshes and swamps
 - e. Ditches and man-made catchments
 - f. Sloughs and temporary streams
 - g. Brackish water in coastal regions
 - h. Lawn sprinklers and pet watering sites
 - i. Storm drains and sewers

If an actual encounter takes place during a hunt, ask the participants to **DESCRIBE** the actions of the raccoon during the fight. **DO NOT STAGE** a fight between a raccoon and a dog under any circumstances!

DISCUSS the areas in which raccoons are found. Have participants **REPORT** any of the places where they have observed raccoons or raccoon sign. If a field exercise is used, consider having each participant **DRAW** a sketch map of the area, indicating den sites, mast producing trees and shrubs, free water, agricultural areas, sources of fruits or other habitat features. When the maps are completed, have them **COMPARE** and **DISCUSS** their findings.

EMPHASIZE the types of refuges or shelters commonly used in your area. Pay particular attention to those types of sites that the participants may not consider for themselves, noting that these adaptable creatures can live nearly anywhere, including inside a wall only one 2x4 thick.

NOTE that raccoons do not need to live in wetlands in order to satisfy their water requirements. They will get water where they can and collapse around free water sources when forced to do so.

Raccoon Hunting

- D. Urban/suburban attractants
 - 1. Limited predation
 - 2. Abundant shelter
 - 3. Abundant and varied food supply
 - 4. Attractive structures
 - a. Parks and lawns or green spaces
 - b. Gardens
 - c. Fish or flower ponds
 - d. Bird feeders and pet feeding area
 - e. Garbage
 - f. Municipal storm or; waste water systems
 - g. Raccoon watchers and feeders
- V. Hunting methods
 - A. Several methods may be used
 - 1. Calling
 - a. Respond to varmint calls
 - 2. Still hunting
 - a. Warm afternoons in fall or winter
 - b. Searching tree tops for sunning raccoons
 - 3. Hunting with hounds
 - a. By far the most popular
 - b. Strong tradition in parts of the U.S.
 - B. Hunting with hounds
 - 1. Most raccoon hunting done this way
 - 2. Many hound breeds used
 - a. Black and tan
 - b. Plott
 - c. Walker
 - d. Bluetick
 - e. Redtick
 - f. Redbone
 - g. Other hound breeds less common
 - 3. Listening to and following hounds primary
 - 4. Fur or meat usually secondary
 - C. Pre-season preparation
 - 1. Dog training
 - a. Involved process
 - b. Personal commitment
 - c. Daily training sessions
 - 2. Scouting
 - a. Familiarity with habitat
 - b. Assessing food sources
 - c. Assessing raccoon activity
 - d. Obtaining hunting permission
 - e. Learning the area
 - 3. Training or pursuit season
 - a. Dog training on wild raccoons

NOTE that urban and suburban areas offer a protected environment with abundant shelter and food supplies. People who regard raccoons as desired wild visitors or nuisance animals are about equally abundant.

If possible, have some local coon hunters **DISPLAY** their dogs and **DISCUSS** their preferences in dogs for raccoon hunting. **CHALLENGE** the participants to **DIFFERENTIATE** between bias or pure preference and carefully thought-out reasons for those preferences.

Ask one or more local raccoon hunters to **DESCRIBE** the training methods they use in starting a new pup. **ALLOW** time for participants to ask questions.

Ask participants to **DESCRIBE** some of the factors they would consider in pre-season scouting for prime raccoon hunting areas.

- b. Often 1 or 2 months before the season

Raccoon Hunting

- c. Warm-up for dogs and hunters
 - 1) Conditioning and training dogs
 - 2) Scouting hunting area
 - 3) Reviewing tricks and techniques
 - 4) Enjoying hunting without harvest
- d. Field trial competitions
 - 1) Evaluating hound performance
 - 2) Comparing breeds and breeding lines
 - 3) Improving hunting characteristics
- D. Coon hunting
 - 1. Almost entirely nocturnal
 - 2. Length depends on chases and stamina
 - 3. Several methods
 - a. Use of a strike dog
 - b. Releasing the dog or pack
 - c. Releasing the dog on "hot" scent
 - 1) Leashing dog until scent is hit
 - 2) Releasing the dog on fresh tracks
 - d. Silent, semi-open and open dogs
 - 1) Silent trailers bark only on tree
 - a) Promote short, hot chases
 - b) May be more efficient treeing dogs
 - c) May be hard to locate without electronic help
 - 2) Semi-open dogs bark on tree and during hot chases
 - a) More easily followed than silent dogs
 - b) Pressing hard before opening
 - c) More "hound music"
 - 3) Open dogs bay on cold trails
 - a) Easily followed
 - b) More "music" to interpret
 - c) Hunter more involved in each chase
 - d) Promote longer chases
 - 4. Following the hounds
 - a. Familiar places look different at night
 - b. Following hounds to the quarry
 - c. Interpreting hound music
 - d. Bagging or passing up the coon
 - 1) Generally shot from trees
 - 2) Selective harvest
 - a) Serious coon hunters control harvest
 - b) Ethics important
- E. Raccoon hunting equipment
 - 1. Smallbore arms adequate
 - a. .22 rimfire rifle
 - 1) Single shot adequate

If conditions permit, **ARRANGE** for participants to experience a training season session or field trial to observe the hounds in action and compare their character. **PREPARE** the hunter(s) by outlining the 4-H Shooting Sports Program and by sharing the following questions that should be covered during the training hunt.

1. What is the purpose of an early training season?
2. How are dogs trained to chase and tree a raccoon?
3. How can you tell when the dogs are on a scent trail?
4. How can you tell what the dog is doing by listening to its voice?
5. Where will the hunt take place and why?
6. What do you want the group to do when they approach a dog barking treed?

ORIENT the participants to the area before the hunt, and give them some time to get acclimated to the night environment by having them sit in the dark for a short time. Be sure to **EXPLAIN** what to do if anyone becomes separated from the rest of the group during a chase, including how to find their way out.

DISCUSS the pros and cons of each technique and the preferences of the raccoon hunters in the group. **NOTE** that raccoon dogs must be trained to follow only the intended species, shunning deer and other non-target trails.

If hunters with preferences for each type of dog are available, have them **DISCUSS** the advantages of each type of dog and their reasons for preferring the type they have selected.

- 2) Weight and size important
- 3) Unloaded during chase

Raccoon Hunting

- b. .22 rimfire pistol
 - 1) Easy to carry
 - 2) Adequate for good shots
 - 2. Squaller or other call
 - 3. Light(s)
 - a. Strong flashlight or headlamp
 - b. Adjustable beam important
 - c. Carbide lights
 - 4. Clothing
 - a. Suitable for the weather
 - b. Suitable for intense activity
 - 5. Footwear
 - a. Suitable for terrain and conditions
 - b. Comfortable for walking or running
 - c. Waterproof
 - 1) Shoe pacs or waterproof boots
 - 2) Rubber knee boots
 - 3) Hip boots
 - 6. Game bag or pocket
 - a. Adequate for furs or carcasses
 - b. Leaves hands free
 - 7. Pelt handling equipment
 - a. Skinning knife
 - b. Fleshing tools and beam
 - c. Drying frames
- VI. Hunting hazards
- A. Injuries
 - 1. Prevention better than cure
 - a. Caution and care
 - b. Use of safety glasses
 - B. Animal handling hazards
 - 1. Diseases
 - a. Several transmissible to humans
 - b. Mostly blood-borne
 - c. Barriers helpful
 - 1) Gloves while skinning
 - 2) Keeping things clean
 - d. Flu-like symptoms too many
 - 1) Let doctor know your hunt
 - 2) Most easily curable
 - e. Raccoon rabies
 - 1) Endemic in some areas
 - 2) Rabies vaccine for dogs and people
 - 3) Limiting exposure
 - 2. Parasites
 - a. Roundworms most serious
 - b. Sanitation important

Have a coon hunter (or several) **DESCRIBE** a few hunts, including the work involved and the distances covered, trying to give the participants the flavor of a hunt before they are actually involved in one.

DISPLAY an assortment of raccoon hunting equipment and allow the participants to **EXPLORE** how each of them works.

REPEAT the precautions about handling live coons or carcasses. **NOTE** that rubber gloves should be worn while skinning to prevent infections and blood-borne diseases transmissible to humans. If in an area where raccoon rabies is present, **CAUTION** everyone about the disease. **EMPHASIZE** the need to keep things clean and to disinfect with a hypochlorite bleach to eliminate *Baylisascaris procyonis* eggs. This roundworm has been implicated in the deaths of several humans, and the eggs are extremely resistant to many disinfecting agents.

- c. Fecal contamination by eggs
- d. Hypochlorite bleach disinfectant

Raccoon Hunting

- 3. Bites and scratches
 - a. Infections
 - b. Canine diseases

VII. Raccoon management

- A. Harvest regulation
 - 1. Season or bag limits
 - 2. Protection during the breeding season
- B. Habitat management
 - 1. Similar to squirrel management
 - a. Protecting den trees and sites
 - b. Protecting mast trees
 - 2. Maintaining or releasing fruit trees or shrubs
 - 3. Creating or improving impoundments and wetlands
 - 4. Providing nest boxes
- C. Human dimensions
 - 1. Popular game animal
 - 2. Popular animal with wildlife watchers
 - 3. Nuisance animal to some
 - 4. Agricultural or wildlife pest in some situations
 - 5. Fur value
 - 6. Food value
 - 7. Reservoir or vector for diseases and parasites

SUMMARY ACTIVITY

1. Hold a raccoon hunt with the cooperation of local raccoon hunters, allowing small groups of young people to experience this type of hunting with trusted guides.
2. Take young people to a coon dog trial to gain insight into the interests of houndsmen and their perspectives on raccoon hunting.

LESSON NARRATIVE

The raccoon, *Procyon lotor*, is a popular game animal in many parts of the country and a significant furbearer where it occurs. Coons are hunted for a variety of reasons. Some people hunt them for both the pelt and the meat. Some hunters are strictly after the fur. Many people hunt raccoons primarily for the chase, enjoying the music of trained hounds on the trail. A few may hunt them to control damage to agricultural crops or poultry or to eliminate nuisance animals. Most raccoon hunters chase raccoons for a combination of those factors, primarily focused on their dogs, the mystery and fun of night hunts and fur values that can help to offset the cost of owning big hounds.

Raccoon Hunting

Identification

Raccoons are fairly well-known and easy to recognize. Their dark mask, usually black or very dark brown, and their bushy tail with its alternating dark and light rings are raccoon trademarks for naturalists, cartoon watchers and readers of *Ranger Rick*.

Raccoon pelts vary in color with the region of the country. In general they have brownish to yellowish gray underfur with longer guard hairs that range from silvery to nearly black. Raccoons may appear to be nearly tan with rusty markings, salt-and-pepper gray, silvery, various shades of brown or nearly black. Their dense fur has been in demand repeatedly, but prices fluctuate both seasonally and regionally.

Raccoons have a stocky, compactly built shape, with a relatively narrow, pointed snout, fairly long legs and a slightly high-rumped profile. Adults are sometimes reported with weights of nearly 50 pounds (18-25 kg), but most adult raccoons weigh between 4 ½ and 20 pounds (2-9 kg). Weights vary with the season, being lowest in the late winter and early spring in most regions and peaking in mid to late fall. Southern animals tend to be smaller than those found further North, with shorter (and often lighter colored) fur. Regardless of locality, any raccoon over about 22 pounds or so is a very large one.

As with their weights, raccoons show a regional variation in length of various body parts. In the middle of their range, total lengths of 23 to 41 inches (60-105 cm) are normal for adults, with males being slightly larger than females on the average. About 8 to 15 inches of that length (20-40 cm) is in their tails. Plantigrade or flat-footed animals, raccoons have front feet up to about 2.8 inches (7 cm) in length and hind feet up to about 3.5 inches in length. The front track resembles a small hand, with five digits that are quite dexterous. The hind foot leaves a track that looks quite similar to that of a tiny human footprint. Toenails are frequently evident in tracks from both front and hind feet.

In spite of their slow, rolling walk and shuffling pace, raccoons are deceptively fast on their feet. They can gallop along at a sprinter's pace when speed is required, and they are quick and nimble in their movements.

Raccoon droppings or scats can be key evidence of their presence. In general they are about like those of medium to large dogs. The scats may be up to about ¾ inch (2 cm) in diameter. When well-formed, they are often bluntly broken into segments. Frequently seasonal fruit seeds or poorly digested fruit coatings or undigested parts of seasonally abundant insects like grasshoppers or crickets are evident. Most raccoons studied in some areas carry a parasitic round worm, *Baylisascaris procyonis*, which has caused deaths in several people. The eggs are very resistant to most disinfectants. Cleanliness is important, and areas where raccoons are routinely handled should be disinfected with a hypochlorite bleach solution.

Other evidence of raccoon activity can also be found. Hair on fences or tree bark can show areas where they are traveling. Young raccoons frequently will wear smooth areas around the bases of den trees or trees that are frequently used. Mussel shells or other signs of feeding can also give evidence of raccoon activity. The most obvious signs, however, are tracks on trails or along water courses. These indicate areas with active raccoon populations and identify good hunting areas.

Raccoon Hunting

In some parts of the country, particularly in the Southwest, other members of the raccoon family may be encountered. The ringtail or ring-tailed cat is a cat-sized animal with a head like that of a short-nosed fox, a weasel-like body, cat-like feet, and a long tail with alternating black and white rings. The coati or coatimundi is a tropical species. Brown to rusty in general appearance with an elongate snout, long legs and a long tail that is carried upright. This animal is recognizable as a raccoon relative. Its long tail is marked by indistinct pale bands, and its face includes white markings around the eyes. If these species occur in your area, be sure to compare them with the raccoon.

Hunting-related Behavior

Food Habits - Raccoons are highly adaptable and opportunistic omnivores. They will eat almost anything, concentrating on those readily available foods that are easiest to get. They are very capable predators of small vertebrates and large insects, taking animals as large as rabbits and ducks on occasion. When insects are abundant, they may shift to a diet of grasshoppers or crickets. Fruits of all kinds as well as acorns and nuts (hard mast) are seasonally important.

Their diet is strongly influenced by habitat. Urban raccoons are adept at raiding garbage cans, dumpsters or pet foods as well as gardens, fruit trees or small fruit plantings. Sometimes they will eat carrion. Along waterways they will take aquatic insects, clams, mussels, snails, crayfish, salamanders, frogs, fish, nesting birds or their nestlings or eggs, turtle eggs and even young muskrats in addition to the vegetative part of their diet. Coastal raccoons eat shrimp, crabs, mussels, oysters, sea turtle eggs, fishes and coastal fruits and plants. Raccoons in agricultural area will eat all sorts of seeds, grains, berries, fruits, eggs, poultry and livestock feeds. They also find stored hay to be an excellent denning or wintering site. It is edible and they can catch it, raccoons are likely to eat it. The animals are clever, dexterous and capable of learning effectively. Any rich food source is likely to be sampled, and anything short of a combination lock is likely to be defeated in their exploration.

Movements and Activity Levels - Raccoons are primarily nocturnal, being active from dusk until early morning. Feeding seems to be centered around midnight, at least in some studies. During very cold weather, the animals will forage or sun themselves only during the warmer parts of the day or evening. Coastal raccoons often disregard daylight and dark schedules and adjust their activity to low tides.

Weather conditions may influence activity strongly. Many raccoon hunters prefer warm, misty nights in the fall for prime hunting times. Perhaps the raccoons are more active. Perhaps the dogs are able to scent them better, but those are hot times. Extreme cold or deep snow cover tends to induce denning. Although the animals do not hibernate, they do become lethargic, interspersing bouts of deep sleep with activity. Where winters are open, the animals will remain active nearly all the time, denning only in response to periods of deep cold. Even in area where snow cover sends coons into their dens, they often emerge during warm periods or thaws to change sites and look for mates.

Daily movements are related to habitat types. The animals tend to follow preferred paths from denning sites to feeding areas. Linear structures, like fence rows, ridge lines or stream edges tend to encourage linear movements, but concentrated food sources will also concentrate raccoon activity. Always ready to eat, raccoons tend to go where the food is most available. There may be a slight to modest time delay from the time of first availability (from the raccoon's point of view) to peak use, but use rates usually reflect availability rates. This will often continue for a while after the food source begins to decline in value. Exploratory forays

Raccoon Hunting

by experienced animals may come before or after food resources are ready. Proximity to cover or refuges can be a key element in use of an area. Wise hunters adjust their hunting strategies to the foraging strategies of the raccoons for best results.

Responses to Hunting Pressure - Raccoons are faster than they look, but they do not rely on speed alone to avoid pursuing hounds. They make the best use of their home ranges, doubling back on their trails, using available shelters like ground dens, rocky refuges, den trees, slab or lumber piles, dozer piles where trees have been cleared or even buildings. They may take to the trees, using interconnecting crowns to avoid pursuit on the ground. They may climb rail fences and walk the rails. Finally, they may take to the water, either running stream or other wetland edges or swimming to refuges.

When females with young are pursued, the group may scatter or remain together. Scattering may confuse a hound or pack, with several interconnected chases going on at once. If they stay together, the group may elect to tree or den up quickly. When a family group is treed, the hunter faces an ethical decision. Females are unlikely to be in prime pelage until very late in the fall or early winter. The young may be relatively small. They would be prime eating raccoons at this stage, but less than optimum for their furs. Under most conditions taking an eating animal or passing the entire litter is a good idea. If one must be taken to "blood" the dogs, a young animal is a better choice than the adult female.

The habit of treeing is a form of escape from most terrestrial predators. Treed raccoons rarely descend on their own until all evidence of danger is past. Often they will flatten on a limb, in a fork or in heavy foliage to hide from the dogs. Coon hunters often employ a "squaller" to attract their attention. Eyeshine give away their position and makes it possible to get in a killing shot.

A cornered raccoon is a dogged and effective fighter, even when opposed by a much larger hound. They will use many types of threats to deter attack, including hissing, growling, barking, snarling and squalling. They will arch their backs and raise their hair in cat-like fashion to increase their apparent size. If attacked, they will bite and claw with effect and determination. Raccoons have an advantage over dogs in the water, and they will use water effectively. They are excellent and nimble swimmers with hand-like front feet. They will often attack a dog's head in the water and are reputed to be able to drown a much larger hound under those conditions. Many experienced coon hounds refuse to get into the water with a swimming raccoon.

Habitat Requirements

Raccoons are very plastic and adaptable as a species. Any place with adequate food, cover and water can be colonized effectively. They live in mature woodlands, marshes and swamps, along rivers, lakes or streams, on prairies and rangelands, in rich farmland, and in deserts where adequate water is available. They adapt easily to living with people, and urban/suburban populations have much greater densities than do woodlands or other non-commensal populations.

Critical limiting factors vary with the region and the season. Den sites, particularly those that permit overwintering in harsh conditions, may be the critical factor in prairies. Water may limit raccoons in arid regions, and food may act as a limiting factor in mature forests. In urban areas it is possible that the primary limiting factor is related to social interactions.

Raccoon Hunting

Shelter - Shelter is a very broad term that includes refuges from predators and protective cover from weather or other environmental conditions. As with other factors, raccoons have shown great adaptability in their use of shelter. Tree cavities are the traditional shelter types usually associated with raccoon, and that association is justified. The animals use tree cavities, sometimes surprisingly small ones, very effectively. Caves and rock crevices are also used where they are available. Abandoned burrows made by other animals are used in some areas, and coastal marsh raccoons may use grass mats or abandoned muskrat houses.

Human activities have enriched the raccoon's repertoire of shelter types. Outside, they have learned to use brush piles, dozer piles (where trees and earth have been pushed up during land clearing operations), culverts, storm drains and drainage tiles are used as shelters. The animals also use buildings effectively. They can live in the hollow walls of a building (even a 2x4 space is adequate), as well as in attics and cellars or crawl spaces. Outbuildings and barns are also outstanding shelter sites, and stored hay makes excellent (and often preferred) over-wintering sites for northern animals.

Water Requirements - Although they can get much of the water they need from eating moist foods, raccoons seem to need sources of free water. They can use a variety of sources effectively. Flowing water in seeps, springs, brooks, creeks or rivers is very attractive to raccoons. Marshes, swamps and other wetlands are used as are ponds and lakes. Ditches and man-made catchment basins are used in many areas. Sloughs, temporary streams or even brackish water sources in coastal areas can be used. In urban area, the animals may use lawn sprinklers, pet watering dishes, storm drains or sewers as well as other free water sources. As with food, the critters are very good at finding what they need and taking it where they find it.

Urban/suburban Attractants - Urban and suburban areas are not usually viewed as the stronghold of wild animals. Some adaptable species, like the raccoon, find these areas well-suited to their needs. Predation, except by free-ranging dogs, is limited. Shelter is extremely abundant. The food supply is varied, relatively dependable and abundant. Human development and structures provide many of the needs of these animals. Parks, lawns and green spaces provide foraging area. Gardens are there to raid. Fish and flower ponds provide hunting and drinking spots. Bird feeders and pet food dishes are great sources of food that is easy to find, and some raccoon watchers enjoy feeding the animals in order to observe them. Garbage is always available and municipal storm or waste water systems provide outstanding refugia. Once acclimated to people, the animal almost disregards anything that is not an immediate threat. Like house mice, brown rats, European starlings and English sparrows, the raccoon has moved in with us and finds the accommodations to his liking.

Hunting Methods

Several methods may be used to hunt raccoons. Some hunters like to call them in with a predator call. Others like to still hunt a fall woodland on warm afternoons looking for sunning or basking raccoons. Most, however, would not consider it raccoon hunting without the baying of a big hound. This is by far the most popular of the hunting methods with strong traditions in many parts of the United States.

Many hound breeds are used to hunt raccoons, and some of them were developed with that specific purpose in mind. While nearly any hound can be trained to hunt coons, large hound breeds are used most commonly. These include the black and tan, Plott, Walker, bluetick, redtick and redbone and multiple crosses. To the houndsman, listening to and following the hounds is the primary benefit of the hunt. The meat or fur value of the quarry is secondary to the chase itself.

Raccoon Hunting

Pre-season preparation is a major part of a coon hunter's annual affairs. Dog training is an involved process that requires a personal commitment to daily training sessions. There are hunting areas to be scouted, gaining familiarity with the area, looking at food supplies, checking for raccoon activity and gaining permission to hunt. Once the training or pursuit season opens, usually a month or two before the opening of the season, the dog needs to be worked on wild coons under field conditions. These workouts are as arduous as the real thing, with the chase ending when the animal is treed. The dog gets better at interpreting scent and tricky trails and both the hunter and the dog get to "blow the carbon out of" a system that has been idling since the previous season. It also lets a houndsman enjoy hunting without any harvest.

Field trial competitions are similar to that experience, although they are usually staged. These events allow houndsmen to compare breeds and breeding lines for performance against a set of established criteria. They can evaluate the performance of their individual hounds and consider ways to improve their hunting characteristics.

'Coon huntin' is almost entirely a nocturnal affair. The length of each hunt depends on the nature of the chases and the stamina of the hunters and the dogs. Several methods are used in making a hunt. Some hunters use a pack of dogs, releasing a strike dog, who will hunt silently until they hit hot scent. When the strike dog "opens" or begins to bay, the rest of the pack is released to join in the chase. Other hunters releasing their dog or an entire pack as they walk through likely areas. These animals may begin to work out relatively cold trails or cast about until fresh scent is struck. Generally any dog finding fresh scent and opening will be joined by any others in the pack immediately. A few hunter wait until hot trails are located before releasing their dogs. They may search for fresh sign, watching the dog for interest, and release the dog when it begins to get frantic. Alternatively, they may leash the dog until it shows signs of "making game" before letting it go.

Coon dogs have several styles or characters of trailing. Some are silent trailers, opening up only when the animal is treed. Proponents of silent trailers say that they promote short, hot chases because they tend to catch the coon by surprise and press it hotly. That makes them more efficient treeing dogs and enables the hunter to bag more fur or meat in a night. Others would counter that the best part of the chase is lost; because they cannot follow the hound music as the chase develops and try to second guess the animal. They also dislike the tendency to lose the dog because it got out of ear-shot before treeing.

Semi-open dogs are silent while cold trailing, opening when the trail gets hot or the animal is jumped. They are easier to track and provide more evidence of the chase than the silent dogs. Open trailers usually let the owner know when they have any trace of raccoon scent, changing from a questioning bark or baying to a more excited rhythm when the trail heats up. These dogs allow the greatest interpretation of the chase and may promote longer chases than the others. They are easily followed and involve the hunter more than do the more silent dogs. If a group of houndsmen gets together, this is a great topic of debate and argument. The best bet is to try a hunt with each kind to see what you prefer. Then you can get into the argument, too.

Raccoon Hunting

Familiar places can become very unfamiliar at night, when your world shrinks to the tiny illuminated area in your headlamp or flashlight beam. An excellent mental map or a good map and compass combination are good insurance in big country, unless you plan to hunt until daylight. Following hounds to the quarry, interpreting hound music and bagging or passing up the coon are the essence of raccoon hunting. Generally, the coons are shot from trees. Where visibility is good and the hunter is experienced, the houndsman can practice a very selective harvest, controlling their take and abiding by their own code of ethics.

Raccoon Hunting Equipment - Raccoon hunting equipment need not be elaborate. Most coon hunters carry either a light .22rimfire rifle or a .22 rimfire pistol to do their shooting. The targets are not extremely difficult as a rule, and there is no need for firepower. Single shot rifles or pistols can be completely adequate. Weight and size are important in this active sport, and the hunter must be aware of all safety precautions. Most raccoon hunters carry their rifles unloaded, loading a long rifle cartridge only when the coon is treed, located and ready for the killing shot. A squaller or other call can be very useful when the critters are not visible in the crown of a tree, but both the firearm and the squaller would be worthless without a good light.

Night hunters have developed several types of lights for their sport. Strong flashlights are preferred by some, and many carry one for spotting treed coons. Most coon hunters use a headlamp of some sort, usually one with a very bright, adjustable beam and a rechargeable battery pack or a miner's carbide lamp. The light is an essential tool unless you plan to stay under the tree until dawn.

Clothing needs to be suitable for the weather and the intensity of the activity. If the hunt is to be a listening only event, it may be sedentary. In most cases, it will be very active and will cover several miles. Be prepared for that level of activity. Footwear also must fit the needs. Hunting rough upland areas might require sturdy boots with good soles for traction. Hunters in areas with small brooks and similar water might get by with knee boots. Others might find a need for hip boots. In either event, the boots should fit the feet well and offer some support for active work in the woods.

A game bag, vest or pocket to carry out the pelts and/or carcasses will leave the hands free for climbing and deflecting brush and twigs. If the pelts are to be handled in the field, the hunter needs a sharp skinning knife. A rope gambrel will be a welcome aid in the skinning chore. Pelt handling equipment need not be elaborate. A quality skinning knife with a good set of stones to keep it sharp is required. Some people find they need a tail stripper to do that job and open the tail for drying. If the pelts are to be sold green, they can be rolled, fur side out, and frozen. Otherwise, they should be thoroughly fleshed using a fleshing tool (I like a draw knife) and a beam. Once they are clean and fleshed, they can be put on a fur frame to dry.

Hunting Hazards

As in most endeavors, injuries are possible while running about in the woods and fields in the dark. Injuries are easier to prevent than they are to cure. The use of common sense, caution and care will prevent the vast majority of them. Simple things, like wearing a set of clear shooting or safety glasses, can prevent a lot of grief.

Raccoon Hunting

Anyone who handles animals runs some additional risks. Raccoons carry several diseases that are transmissible to humans. Most of them are blood-borne, requiring direct tissue contact for infection. Using rubber gloves while skinning will prevent most of them effectively, but they will do very little good in the car or fur shed. If you insist on skinning bare-handed, remember that most of the diseases have flu-like symptoms. If the flu keeps coming back let the doctor know that you work with coons and do not use gloves. He or she may be able to figure out what you have and how to treat it.

Raccoon rabies does not fall in the easily treatable category. If you are hunting in an area where raccoon rabies is endemic you would be wise to limit your exposure and then consider a rabies vaccine for both, your dogs and you. Human diploid rabies serum is much less traumatic than the old duck egg serum, and pre-exposure treatment provides a hedge.

Raccoons also carry some parasites that can be a significant problem for either dogs or people. Roundworms, like *Baylisascaris procyonis*, are the most serious threat to people, with several deaths and some serious complications associated with them. In some areas, coons have virtually a 100% infestation rate with high worm densities and egg densities in the fall. Avoiding fecal contamination is the key to avoiding the parasite when that is coupled with disinfecting areas where eggs may have been deposited using a hypochlorite bleach solution.

Bites and scratches should be thoroughly cleaned and disinfected as soon as possible. Infections are nothing to shrug off and should be treated immediately. Your dog is also susceptible to several problems that come from bites. Consult your veterinarian if symptoms begin to appear.

Raccoon Management

Raccoon management consists of several elements. Harvest regulation revolves around seasons and bag limits. Its primary element is protection during the season when the animals are breeding and rearing young. Habitat management is very similar to what is done to manage squirrels, although the scale is somewhat larger. Protecting den trees and sites, protecting mast trees, maintaining or releasing fruit trees or shrubs, creating or improving impoundments and wetlands and providing nest boxes where natural cavities are limiting can benefit raccoons.

The human dimensions of raccoon management are diverse. A popular game animal in some quarters, the raccoon is also popular with wildlife watchers. They are nuisance animals to some, agricultural or wildlife pests to others, valuable furbearers, prime table fare, vectors or reservoirs for diseases and parasites, and interesting members of the wild carnivore collection living where they can find the tools to make a living.

SHARING AND EXHIBIT ACTIVITIES

1. Prepare a series of raccoon pelts, showing size, color, primeness and other characteristics of fur quality. Display those pelts and explain the differences.
2. Prepare raccoon pelts for sale, keeping records on the costs and time involved in proper acquisition and preparation of raccoon pelts. Share the cost and benefit analysis with an appropriate group.

Raccoon Hunting

3. Demonstrate how to make plaster casts of raccoon tracks, using casts you have made of raccoons in different settings to illustrate how the tracks can tell you what the animal is doing.
4. Tan raccoon pelts and make caps or other clothing from earlier eras using those pelts. Wear your "mountain man" clothing at a muzzleloading or similar event.
5. Build, place and observe raccoon nest box structures (instructions available from your state game agency, Cooperative Extension Service or in *Wildlife Management Techniques Manual*).
6. Locate and mark den trees so they will not be cut during logging or firewood operations. Be sure to cooperate with landowners in this process.
7. Build, expand or improve a small spring, seep or wet area to enhance its use by wildlife, including raccoons. (Relatively small areas of only a few square feet can be useful.)
8. Work with a dedicated raccoon hunter or dog trainer to train a dog, either yours or the other person's. Learn as much as you can about the training process.
9. Compare and contrast coon dog breeds, giving others an opportunity to make decisions on the breed that would fit their needs for raccoon hunting.
10. Attend a field trial for coon dogs, reporting the activities and events to your group.
11. Record your hunting experiences in a sporting journal, using that journal to remember the things you have learned about hunting raccoons and about coon dogs.
12. Study other nocturnal wildlife and record your observations in your field journal.

Fact Sheet - Food Webs

Food Web Game

This exercise illustrates the paths taken by energy as it flows from sunlight through living systems. It can be used to make a number of points, but is used here primarily to show the dependence of nearly all living things on sunlight and the relationship between living things at various trophic levels (producer, consumer, higher order consumer). Large groups can be used, constructing complex food webs, but even the most comprehensive food web diagrams made fall short of the realities in even simple communities. The interdependence of living things is clearly shown in this material.

Materials

yarn or string, paper punch, index cards, marking pens

1. Write the names of various plants and animals (a variety of types) on index cards. You may use the list below, construct your own or have the participants select which ones they would choose. Be sure to include the sun and plants as well as plant eaters and flesh eaters in the array.

Example: sun, grasshopper, robin, grass, berry brush, hawk, quail, dandelion, mouse, worm, rabbit, cow, flea, meadowlark, owl, wheat, tick, fox, weeds, coyote

2. Punch holes in each card and give each participant a card and a piece of string to hand the card around his or her neck.
3. Have individuals identify energy (or food) sources. As each one is identified, pass a length of string or yarn between the two people. Be sure that the sun is connected to all the plants.
4. Continue building the web, making the relationships as complex as time and numbers of participants allow, including herbivores (plant-eating animals), insectivores (insect eating animals), carnivores (meat eating animals) [note that insectivores are specialized carnivores] and decomposers.
5. Discuss the nature and complexity of the food web that is formed. Note that it is not as complete or complex as most natural food webs, but that it illustrates how living things are dependent upon one another. Biologists feel that more complex food webs are more stable than simple ones.
6. After discussing the food web, the leader could ask what would happen if a species were removed from the web. Illustrate that by removing an individual, e.g. the grasshopper from the above example of a food web, and any other species that are connected ONLY to that species or individual.
7. Discuss what would happen if all of the predators were removed. Some species might exhaust their food supply and starve, but others will continue to reproduce only until the food supply becomes limiting or their interactions limit population size.
8. Remove the sun from the system. Note that loss of the sun results in everything else being lost.
9. If desired, discuss the simplified food webs that produce most foods used by people. Remind the participants that such food webs are inherently unstable and require large amounts of management to avoid problems.

Fact Sheet - Field Notes

Field Note Format

Ronald A. Howard Jr.

Keeping a field journal is a great way to record observations for later use. The journal should be kept on good quality (100% cotton fiber paper is best) paper in a loose leaf notebook or bound journal like those used in keeping ledgers. Preferences among biologists are fairly equally divided. Most use waterproof ink and a drafting pen to record their notes. That makes the notes more durable in the event of rain or a dunking and less likely to be changed after the original observations have been recorded. Pencil is a poor second best medium (because it tempts us to change our observations), but it is better than ordinary ball point pen ink.

In order to be useful, field notes need to be complete. Each entry should carry a header that identifies the observer, date and exact location. The illustration shows a commonly used field note form. Some of us keep several types of journals, but record all observations in a single loose leaf book while in the field. My journals include a field journal (everything of interest), sporting notes (anything on fishing, hunting, or trapping), species accounts (observations of a particular species of interest) and a specimen catalog (a listing of the locations, measurements, species and other information about specimens I have collected). Others put everything in the journal. Take your pick. Label the upper left corner of the page with the title of the collection of observations, e.g. Journal. In the upper right hand corner of the page, write your name. (Some people number each page in that location and write their name under the page number.) Under that write the date and a code for the page number taken that day, e.g. 062288001 is the first page of notes taken on June 22, 1988.

The specific location should be recorded on the top couple of lines on the page and underlined (some like a wavy line). Location should include the name of the place, its distance and direction from the nearest town or village, the county, state or province, and country (if outside the US). The top of the page should now look like one of these examples.

Journal

*Ronald A. Howard Jr.
062288001*

*Wabash River, (about 700Wand 100S), 11km WSW West Lafayette,
Tippecanoe Co., IN*

OR

Sporting Notes

*2315
Ronald A. Howard Jr.
12 October 1985*

*Goodband Farm. Irish Settlement Road, 5km N Slaterville Springs, Tompkins
Co, NY*

OR

Fact Sheet - Field Notes

Species Account
Sigmodon hispidus

Ronald A. Howard Jr.
091492001

A&M Consolidated High School, NW corner Welsh and FM 2818, College Station, Brazos County, TX 14 September 1992

Each time you change locations or start a new day in the journal, record this basic information. Since the journal is for your own use, use real names for "secret" places, not those you may have made. "South pasture on the Billings farm" is preferable to "the graveyard cover" unless there really is a cemetery to mark the location of the cover. In a few years you may forget which place had the nickname. Using a distance along a road from a specific intersection can be an excellent way to describe locations.

Include information on who was there, the time of day (including time zone information) and weather conditions. It can be very helpful later. Maybe the things you observe are specific to the amount of daylight or the weather conditions. Finally, keep the notes so that they contain complete ideas, but do not worry about grammar. Running phrases are often the best approach.

For example:

Sporting Notes

2315

Ronald A. Howard Jr.
12 October 1985

Goodband Farm, Irish Settlement Road, 5km N Slaterville Springs, Tompkins Co, NY

*1745 EDT hunted north side of Taft Rd with Beau and Pat from 1600-1730
EDT - flushed 2 grouse from aspens - always seem to flush one from that tall stump near the black cherry tree {n the small clearing by the spring below the pine plantation - missed both - behind and behind - got one woodcock (only one we flushed in mixed aspen cover) - missed with the first barrel zigged when he zagged - caught him with the top barrel - saw 15 woodcock on the way back to the truck - seemed to come from the cover we just hunted - wonder where they were when we hunted through - great scenting conditions - both dogs working well - birds not where they are "supposed to be" - need to check the white pine plantation on the next trip - great dog work tonight - getting foggy around dusk - geese landed on the pond as [left - leaves just about gone now, probably won't make it past the next rain-*

Keeping good field notes will help you grow as an observer and participant in nature, whether you are a sportsman, photographer, biologist or casual observer of wild things. Besides that they can provide you with lots of pleasure and many fine memories that can be reviewed any time you like. They are worth the discipline it takes to record them.

Understanding Anti-hunting Organizations

Participating youth people and adults will:

1. Understand and be able to articulate some of the major anti-hunting arguments
2. Effectively use the principles of logical discussion to address these issues
3. Use biological and philosophical arguments that support their position on hunting
4. Interpret arguments that improperly use biological principles as a foundation and clarify those applications
5. Understand and practice means of reducing anti-management attitudes and increasing understanding and support for hunting among non-hunters

Roles for Teen and Junior Leaders

1. Present portions of the lesson
2. Lead small group discussions
3. Present questions designed to challenge group thinking
4. Role-play characters and situations to illustrate points or stimulate thinking
5. Collect anti-management literature or accounts
6. Cite personal experiences with anti-management programs
7. Collect information on hunter behaviors that stimulate anti-management attitudes

Potential Parental Involvement

1. See "Roles of Teen and Junior Leaders" above
2. Outline the reasons that they choose to hunt or not to hunt
3. Role play specified situations
4. Act as discussion leaders
5. Arrange for or provide teaching location
6. Arrange for or provide transportation
7. Arrange for or provide refreshments

Best Time: Any time of year

Best Location: Any site that promotes free and active discussion and debate .

Time Required: 1 to 12 hours, depending on the depth and nature of topics covered.

Materials/Equipment

appropriate A.V. equipment
selected films
dilemma or debate cards
chalkboard or newsprint easel and
appropriate writing materials

References

The Unendangered Species: The Success Of Wildlife Management In North America, International Association of Fish and Wildlife Agencies, P. O. Box 59, Riverside, CT06878.

A Question of Hunting, National Shooting SPORIS Foundation, 1075 Post Road, Riverside, CT 06878.

A Sand County Almanac with Round River Anthology, A. Leopold. Oxford University Press, New York. 1966.

LESSON OUTLINE

Leaders must judge the ability of their group to cope with the issues involved and try to maintain very high levels of involvement throughout the teaching process. Using small sections at any given time is advised for most audiences. Role playing, staged debates and similar actions can be useful. A great deal of information is provided to give leaders the widest latitude in presentation.

- I. Human attitudes toward hunting
 - A. Mixed reactions
 1. Pro-hunting - active support
 2. Anti-hunting - active opposition
 3. Non-hunting- majority
 - B. Really a question about the type of management that will be applied to wildlife
 1. Manage for human use
 2. Prohibit human use
 3. Relative amount of restriction
 4. Reasons highly variable
 - C. Wildlife management defined
 1. Wise use without waste
 2. Managing wildlife and their habitats to achieve societal goals
 - a. Maintaining ecological health
 - b. Managing for human benefits
 - 1) Subsistence
 - 2) Recreation
 - 3) Economics
 - 4) Aesthetics
 - 5) Science
 - D. Sources for attitudes and values.
 1. Conditioning
 - a. Family tradition
 - b. Cultural background
 - c. Personal experience
 - d. Media presentations
 2. Philosophical arguments
 - a. Ethics of using animals
 - b. Ethics of killing, even to live
 - c. Impacts on humans and values
 - d. Sanctity of life
 - e. Pleasure and Pain
 - f. Human rights and welfare
 - g. Animal or environmental rights
 3. Anthropomorphism
 - a. Ascribing human characteristics to non-human animals
 - b. Viewing hunting as warfare
 - c. Equating humans and other animals

ASK how many people are for hunting, against hunting or neutral. **LEAD** participants to understand that committed hunters and anti-hunters each number about 15 percent, while those that are essentially neutral represent about 70 percent of the population.

NOTE that wildlife is managed either by direct decision or default and that deciding not to manage is a management decision.

ASK what is meant by wildlife management. **LEAD** answers toward the definition used by managers themselves.

ASK where we develop our attitudes toward wildlife and human use of wildlife for various purposes. **LEAD** responses toward covering the spectrum of topics included in the outline. **ADD** any significant sources that may not have been generated by the young people and **CLARIFY** any notions that are vague or excessively limiting.

Have participants **BRAINSTORM** ideas about the sources of their attitudes toward hunting. Explore relationships of the types addressed here. **DISCUSS** their ideas and create an atmosphere where they feel safe to talk about ideas they do not quite understand. **AVOID** any hint of criticism to their notions or sources of ideas.

Have participants **LIST** reasons killing could be called morally wrong or evil. Try to **EXTRACT** at least the arguments of: 1) the same as murder (or against a commandment), 2) morally wrong to enjoy causing death (sadistic or morbid), 3) wrong to deprive other users of the commons resources and 4) we do not need to kill wild animals because we have tame ones.

4. Sociological baggage
 - a. Cartoons
 - b. Childhood toys
 - c. Media depictions of nature
 - d. Media images of hunting and hunters

II. Major arguments against hunting

- A. Intrinsic right to life
 1. Existence grants the right to life
 2. Sentience confers rights
 - a. Ability to feel pleasure or pain
 - b. Pleasure - a moral good
 - c. Pain - a moral evil
 3. Killing denies the intrinsic right to life
 4. Killing is morally evil
 - a. Some ascribe this to all living things
 - b. Some restrict evil to moral agents
- B. Extrinsic right to life
 - a. Granted by an outside authority
 - b. Modifiable by that authority
 - c. May be relative to status granted
- C. Killing is morally wrong (evil)
 1. Violation of God's law
 - a. "Thou shalt not kill."
 - b. Killing under any circumstance is evil
 2. Killing for pleasure is morally evil
 - a. "Enjoying" killing is despicable
 - b. Hunters "enjoy" killing
 - c. Hunters are despicable and morally evil.
 3. Killing an animal denies other use of commons resources
 - a. Hunting preempts the rights of non-consumptive users
 - b. Hunting depletes wildlife populations
 - c. Hunting creates unsafe environments for Non-consumptive users
- D. Adequate alternatives exist
 1. Subsistence on game is not needed
 - a. Food can be purchased easily
 - b. Meat is not needed in the diet
 2. Other means of population control are available
 - a. Capture and relocation
 - b. Sterility drugs
 - c. Letting Nature take her course
- E. Killing denies future interests
 1. Unquestionably changes future
 2. Questionable if interests exist

NOTE the relationship between hunting and continued survival of many wildlife species.

ASK if the presence of alternative food sources alters the fundamental standing, of other animals relative to humans and if hunting is more or less invasive than farming or ranching.

DISCUSS the feasibility, costs and impacts associated with these alternatives.

ASK if natural processes are be gentle or kind. **QUESTION** the sources of these ideas about nature. **LOOK** for answers that include children's books cartoons and media images.

ASK: Are people part of nature or separate from it? Does our ability to use other foods or restrain ourselves from direct interaction with other animals demand that we do so? **SEEK** answers showing our nature as predators and part of the animal kingdom.

EXPLORE the group's feelings about wounding or crippling loss. **CONSIDER** whether unintentional losses are cruel. **QUESTION** whether an intent to cause suffering is needed to make an act cruel by definition.

- F. Animals have a right to a decent death
 - 1. Nature is gentle or at least natural
 - a. Gentle nature a false notion
 - b. Natural nature a tautology
 - 2. Only natural predation is acceptable
 - a. Sudden or slow death is acceptable
 - b. Human predation is not natural
 - 1) Humans not part of nature
 - 2) Tool use denies naturalness
 - 3) Human efficiency is too high
 - 3. Hunters wound and cripple animals
 - a. Wastes wildlife
 - b. Causes cruel deaths
- G. Hunting upsets biological balances
 - 1. Increases wildlife mortality
 - 2. Removes the wrong animals from the population
 - a. Kills the fittest
 - b. Reduces fitness of populations
 - c. Counters natural selection
 - 3. Disrupts social organization
 - 4. Produces threatened or endangered wildlife
- H. Hunting upsets animals
 - 1. Increases stress
 - 2. Increases anxiety
 - 3. Causes grief to "friends and relatives"
- I. Hunting degrades human moral values
 - 1. Hunters are callous to pain and suffering
 - 2. Callousness extends to people
 - 3. Hunters are or become morally bankrupt
 - 4. Hunters kill to prove their dominance
 - 5. Hunters hunt to prove their maleness
- J. Hunting is dangerous to people
 - 1. Guns are inherently dangerous
 - a. Eliminating guns increases security
 - b. Hunters have guns
 - c. Eliminating, hunting eliminates guns
 - 2. Hunting is dangerous
 - a. Hunting accidents are common
 - b. Hunters are irresponsible drunks
 - c. Hunters injure other people
 - d. Hunters are irresponsible
- K. Anthropomorphic arguments
 - 1. Hunting equates to and encourages war
 - 2. The "Disney syndrome"
 - a. Animal families
 - b. Sadness and anticipation of death
 - c. Personifying wildlife
- L. Hunting is not sport

DISCUSS these arguments. **BE PREPARED** to discuss the counter arguments to these view points.

ASK how hunting could be dangerous or viewed as dangerous by non-hunters. Expect answers that include guns as weapons, irresponsible behavior and accidents. **DISCUSS** these notions thoroughly, being prepared to supply solid information on each point.

DEFINE "anthropomorphic" and ask the participants to **LIST** any examples they have observed. **NOTE** the relationship to false images of wildlife.

ASK participants to define "sport" and "fair chase" as they apply to hunting. **COMPARE** those responses to what is meant by "fair" in other areas. **ASK** what could be done to make hunting fair by the anti-management definition.

PROFILE anti-management advocates, noting that most are very committed and sincere.

1. Animals have no chance
2. Equipment gives unfair advantage
 - a. Equipment too efficient
 - b. Wildlife has no defense
3. Risks to hunter and hunted are not equal
4. "Fair chase" does not exist

III. Advice for working with or debating anti-hunting groups.

- A. Be aware of their objectives
 1. Remember the end justifies all means
 2. Avoid being misled by statements
- B. Be thoroughly prepared
 1. Know your arguments and theirs
 2. Keep your facts straight
 3. Insist that their facts be supported
- C. Try to have some friendly faces available
- D. Establish a level playing field
 1. Establish the ground rules
 2. Establish definitions of terms
 3. Expect these to be violated
- E. Be factual
 1. Admit lack of information
 2. Defer to established experts
 3. Ask for sources and verification of opposing statements
 4. Be prepared to complete partial data
 5. Be prepared to correct misstated data
- F. Watch for use of faulty arguments
 1. Challenge the use of faulty arguments
 2. Insist upon honesty and mutual respect
 3. Maintain honesty and respect
 4. Do not permit extension of faulty arguments
- G. Establish any available common ground
 1. Know your opponent's key issues
 2. Extend their arguments to your points
 - a. Seek agreement with the foundation of your arguments
 - b. Work toward your objectives, trying to maintain agreement
 - c. Disagree only when necessary
 3. Acknowledge real problems
 - a. Address problems positively
 - b. Include any actions taken to address them
 - c. Invite cooperative support for change
 - 1) Propose workable solutions
 - 2) Note past or current actions
 4. Expose manufactured problems

STRESS the value of getting professional help if you need it. Contact your State Fish & Wildlife Agency or Wildlife Extension specialist for information and examples.

REINFORCE the need to establish ground rules and definitions and to adhere to them, even if others violate them.

STRESS the importance of being honest, thoroughly prepared and knowledgeable about their arguments and your own.

STRESS the value of having some common ground with your opponent and building from that common base to your own conclusions.

REINFORCE the need for honesty and sharing concerns that are real issues (for example: poaching, irresponsible use of firearms, wanton waste).

ILLUSTRATE how knowledge of the topic and ability to supply complete information can eliminate the effectiveness of partial truth.

DISCUSS pleasure and pain as a foundation for moral good and evil.

- a. Use real data with documentation
- b. Use sources above reproach
- c. Use personal observations sparingly
- 5. Be able to discuss WHY we hunt.
 - a. Challenge
 - b. Satisfying atavistic needs
 - c. Recreation
 - d. Stress relief
 - e. Being alone
 - f. Social and family activity
 - g. Changing scenery
 - h. Independence and self-reliance
 - i. Renewing ancient skills
- 6. Address danger to human life and property
 - a. Fear of firearms a different issue
 - b. Only as dangerous as their users
 - c. Safety training effective
 - d. Hunting safer than many common activities
 - 1) Safer than taking baths
 - 2) Safer than tennis
 - 3) Safer than any team sport
 - 4) Much safer than boating or highway travel
 - e. Modern laws and hunter training reduce/minimize potential dangers
 - 1. Safety zones and discharge laws
 - 2. Safe firearms handling courses
 - 3. Site and time restrictions
 - 4. Clothing regulations
 - 5. Weapon restrictions in some areas
 - f. Most important - responsible and well trained individuals
 - 1. Responsible use of sporting arms
 - 2. Avoiding use as "weapons"
- H. Get involved with non-hunting groups and organizations. Knowing you personally reduces likelihood of accepting false statements.

DISCUSS one or more of the wildlife management success stories outlined. Ask participants to **IMAGINE** what the situation was like 50-100 years ago and **COMPARE** that with today.

Ask participants to **LIST** reasons hunting could be seen as a danger to human life or property. **DISCUSS** the items listed and **COMPARE** them with the realities of hunting today. Use this opportunity to **REINFORCE** the vital need for hunter responsibility.

Ask participants to **LIST** some laws or regulations designed to reduce hazards associated with hunting.

Have participants **DEFINE** fair chase and fairness in the context of hunting. **NOTE** that equality of senses, tools and risk need not be involved - a human definition is applied to a human activity.

Activities

1. Have each participant prepare a short statement about why they hunt and the benefits hunting brings to them. Share those statements and discuss the main themes of the group. Allow the members to refine their statements for use in interpreting their hunting experiences.
2. Stage a mock debate where members play roles of hunters, non-hunters and anti-hunters, presenting arguments about hunting or some locally important hunting issue. Make sure all members are involved in some fashion with assigned roles. After the debate is completed, discuss their new understandings of the various points of view and objectives.
3. Present a management dilemma (for example, the observation that a park has an extremely high density of deer which is causing damage to native vegetation and an endangered species of pocket mouse). Have

the members address this issue in a role play situation as managers and various special interest groups, including environmentalists, hunters, anti-hunters and various park users.

4. Share situations where anti-hunting sentiment has been voiced and discuss ways of response in those situations. Keep this positive and pro-active, avoiding denigration and reaction.

Understanding Anti-Hunting Organizations

Anti-hunting movements are a source of extreme frustration to some hunters and shooting sports enthusiasts. Although anti-hunting participants are often cast as a single group, they represent a complex group with equally complex issues.

Human attitudes toward hunting are extremely diverse. Approximately 15 percent of the population actively opposes hunting (anti-hunters). Another 15 percent actively participates (hunters). The remaining 70 percent hold less polar views or have no commitment either way. This majority may be classified as non-hunters. Where one falls on this continuum of ideas is really a question of the type of management that will be applied to wildlife. Hard-core utilitarian's opt for active and aggressive management for human use. Those on the opposite end of the spectrum would prohibit human use entirely (if that were possible). The vast majority, including people from all the groups listed above, apply some degree of restriction to human uses.

Major Arguments Against Hunting

Intrinsic Right to Life - Advocates of this viewpoint, argue that the right to life (seldom defined beyond its statement) is an inseparable part of existence. It is frequently viewed as being unalterable and inalienable as well as uniform to all animals. Other advocates would modify that position somewhat, stating that the ability to experience pleasure and pain is an essential element in rights-bearing. They regard pleasure as a moral good and pain as a moral evil. All creatures able to experience pleasure and pain are deemed to have an intrinsic right to life. Since killing denies the right to life, killing is morally evil and indefensible.

Response: Taking a biological approach to the notion of a fundamental right to life may be effective. Energy is the basic currency of life. It flows from an organized form (sunlight or electromagnetic radiation) to a disorganized form (entropy or heat). Biological systems tend to retard the progress toward entropy by passing energy through a series of beings - plants, plant eaters, plant eater eaters, and so forth. In general, mature communities pass the energy through very complex pathways. This may be viewed as a "game of life" in which the winners continue to play and the losers are dead. Winners enjoy a temporary "right to life" until the next event in the life of the community. Consumers must exploit other living things to survive, so all animals must depend on the deaths of other organisms for energy. Life is fragile; temporary and usually ends violently for wild animals. The "right to life" is extremely tenuous when viewed from the biological point of view.

Killing is Morally Wrong - Killing may be regarded as morally wrong for several reasons. Some view it as a violation of God's law; citing the Levitical admonition that "Thou shalt not kill." In this line of reasoning, killing any thing for any reason is morally wrong.

Response: Many people believe that the source of all rights is a Supreme Being. As the possessor of absolute Rights, God may confer to any other being that level of rights desired. Within the Judeo-Christian ethic, humans are given a standing just below God. We are empowered to behave as stewards, using other animals and being responsible before God for their stewardship and welfare.

Others seem more concerned with the state of the human mind during the act. They regard killing "for pleasure" as morally evil. Since "enjoying" killing is despicable and morally evil and hunters enjoy hunting, hunters are morally evil and hunting is indefensible. This argument relies on two fundamental assumptions. First, that enjoying killing is morally evil. Predators would be classed as evil in this context. Second, it assumes that the enjoyment of hunting requires enjoyment of the consumptive act, the kill itself. Ortega y Gasset, a Spanish philosopher who wrote extensively about hunting said, "I do not hunt in order to kill; I kill in order to have hunted."

Anthropomorphism- This is the ascribing of human characteristics to other living things. Hunting is regarded as warfare by many who have used anthropomorphism as a foundation for their feelings. These people frequently equate humans and other animals. Some of this comes from sociological baggage: cartoons and toys of childhood or images of nature created for entertainment. Some of that sociological baggage involves deliberately contrived images of hunting and hunters as evil, cruel or depraved.

Response: It is important to establish that animals are very different from humans. Selecting **some** behaviors or characteristics humans have in common with animals does not establish human/animal equality. The best way to counter anthropomorphism is to use the responses for the previous 2 arguments.

Killing Animals Denies Other Users of the Commons Resource - This is a complex argument. Fundamentally, it argues that hunting preempts access to commons resources by other users. In its extended form, it states that depletion of wildlife resources by hunters or manipulation of those resources by managers excludes others from their rightful sharing in the benefits of the resource. In addition, many argue that hunting creates an unsafe condition for other potential users, preempting their use through fear of harm.

Response: Anti-hunting arguments based upon competing uses for the wildlife resource are based on a static notion of wildlife. Individuals rather than populations or communities are seen as the focal point. The nature of reproduction and recruitment requires that substantial portions of most populations die in order to maintain a dynamic equilibrium. Since reproduction exceeds the capacity for recruitment, an expendable surplus population exists. In saturated environments, displaced individuals usually die. Turnover rates of 70 to 80 percent are common among smaller vertebrates. Having a relatively high reproductive rate is their strategy for survival. Among larger animals the reproductive strategy might be to reduce the number of offspring to nearly match recruitment to mortality.

Adequate Alternatives Exist - This argument assumes that the only viable reason for hunting is subsistence. It follows that the presence of adequate supplies of domestic livestock and alternative foods denies the necessity to hunt when purchased foods are readily at hand. Others would expand that notion to include domestic stock, advocating a diet based upon vegetable matter only. This argument merely transfers the moral responsibility for killing to another agent.

Response: This argument assigns levels of value or standing to other organisms and humans. With the notion that livestock bred for use is a preferred choice over wildlife, the burden of death or killing is shifted to specialists within the society. If the death is unseen and without personal participation, the moral evil is not recognized. This argument is a cop out. It fails to recognize humans for what they are and assumes that some creative process for food production that does not impact wildlife must exist.

Decent Death - Those who argue that death is acceptable, but that it must be "decent" contend that nature is gentle or at least natural. The realities of existence in natural communities strongly deny the existence of "gentle" nature. Living is a constant struggle for survival. Those that accept the relatively violent world of nature generally are willing to accept the role of "natural" predators. The type of death inflicted is immaterial as long as the predation comes through wild animals or plants. Humans are regarded as separate and distinct from nature.

The existence of wounding and crippling rates is frequently cited as evidence that hunted animals do not experience a decent death. Some cite the "waste" of wildlife as the reason for banning hunting on wounding loss grounds. Others cite "cruel" or "anguished" deaths as their reason. Most mix the two.

Response: The most difficult element in this argument is associated with the arbitrary definition of "decent". "Decent" can mean anything that the individual elects to assign, and its definition may change over the course of the discussion. The biological truth is that death is a constant part of the natural order. It takes many forms, some quick and violent, others lingering with suffering reduced at the end. As a natural predator with an array of tools available, the human hunter is capable of affecting a quick and relatively painless death. Relative to other predators, the duration of the killing is short and relatively painless.

Wounding and crippling losses are inevitable in hunting. These accidents are not desired or intended, but they will happen. Hunter responsibility can minimize such losses and result in recovery and dispatching of most wounded animals within a very short time span. Those with lethal crippling wounds usually are located and eaten by predators. Animals with minor wounds almost always recover fully.

Hunting Upsets Biological Balances - Some proponents of this argument focus on the removal of certain numbers and kinds of individuals from dynamic communities,

arguing that their loss disrupts the entire energy flow regime for the community. These arguments assume existence of a delicately balanced dynamic equilibrium in most systems and are closely related to the "let Nature take her course" attitudes.

A broader group of supporters for this argument base their objections on either selective removal of the "wrong" animals or disruption of the social system. This is similar to the "natural versus unnatural predators" argument. "Natural" predators are viewed as taking either only the sick, weak or injured or primarily those individuals from a population. The "unnatural" predator is seen as taking only the best ("fittest") individuals or primarily the best individuals from the population.

Response: Human predation has been a factor in the lives of wildlife for more than a million years. The tools have changed. Some of the reasons for hunting has changed. The hunter has changed very little. Humans have affected the population genetics of prey species by acting as a selective force for avoiding human predators. Even in those situations, the impact on overall population genetics associated with other environmental challenges has been minimal. Modern wildlife management utilizes hunting in a very conservative way to enhance populations and to protect the habitat from over use.

Hunting Creates Endangered Species- Some proponents claim that hunting generates threatened or endangered species.

Response: While commercial hunting or fishing and, in a few selected cases, illegal poaching are responsible for classifying several species as either threatened or endangered, regulated sport hunting has not caused any species to reach either status. In fact, having a large advocacy group is one of the most significant protective elements for wildlife.

Hunting Upsets Animals - Although most proponents of this argument use an anthropomorphic reasoning to support their argument, others are using selected ecological or physiological data. Hunting is viewed as increasing stress or anxiety.

Response: Temporary physiological stress may or may not be induced, depending upon the situation. The presence of definable anxiety or "causing grief" to "friends and relatives" is questionable. The fear experienced by hunted animals is no different than fear caused by hikers or other activity which startles them.

Hunting Degrades Human Moral Values - This argument assumes a direct and inevitable link between hunting and degeneration of fundamental human moral values and behavior. It is normally centered on the notion that hunters tend to become callous to death, pain and suffering. By extension of that notion they are assumed to become callous to human death, pain and suffering, or even to enjoy it. Proponents would paint the hunter as an evil and unfeeling ogre who is completely morally bankrupt. Less virulent views of the hunter may make assumptions that hunters hunt to exercise their

dominance over other beings or that hunting represents misplaced self-concept or sexuality.

Response: These arguments persist in some quarters in spite of psychological evidence demonstrating no differences between hunters and society as a whole.

Hunting is Dangerous - This is a multi-faceted argument that combines anti-gun sentiments and anti-hunting sentiments with concerns for human welfare. The anti-gun approach begins by stating that firearms are inherently dangerous to both people and the society. Elimination or severe restriction of firearms possession is viewed as a desirable means of increasing the level of personal and social security. Since much of the personal firearms ownership and much of the constituency for Second Amendment rights lies with hunters, eliminating hunting is a valuable step to eliminating firearms from the general society.

Others base their objection to hunting on the notion that hunting is inherently dangerous. In their view, hunting accidents are common, usually fatal and always traumatic.

Response: While most hunters would agree that **one** hunting accident is too many, the notion that hunting is a dangerous sport is not supported by the evidence. The institution of hunter education programs has had extremely positive influences on hunting safety, reducing accidents to the minimum, perhaps 3 to 4 accidents (not deaths) per million participant days. Hunting is, in fact, safer than driving a car, taking a bath, playing tennis, attending a college sporting event as a spectator or going to a concert at Kennedy Center.

Hunting is Not Sport - This argument reaches nearly to the bottom of the barrel. It questions the validity of hunting as a sport by confusing hunting with sporting contests among humans. A basic assumption is made that a "sport" must include equal risk to all participants and an equity in equipment. The proponents would argue that animals do not have a chance against a well-equipped hunter. Hunter success is viewed as a given, in which sighting an animal and bagging an animal are equivalent. Essentially, the concept of "fair chase" is indefensible.

Response: Some hunters would agree that the notion of sport is misplaced, particularly when viewed in the context of competitive sports. Hunting is, however, played by a set of rules and restrictions self-imposed to create fair chase. Effective use of all the tools and skills of a hunter requires intense training and practice. Equality of risk or fairness with respect to potential injury were never intended. The modern human predator plays by a set of societally and personally defined rules and regulations that make recreational hunting sporting.

How to Be Prepared

The Best Defense is a Good Offense- Anti-hunting groups have tended to take the offensive in the past, publishing or stating their objections to hunting and challenging proponents to respond. Unfortunately this resulted in many years of defensive behavior by hunters. Those defensive behaviors have ranged from ignoring the arguments to justifying hunting on management grounds - meeting emotion with data. This response has been only modestly effective. Explaining or interpreting hunting is a much better approach. It is proactive and positive, and it forces the opposition to defend their statements in response. In this case, the best defense is an outstanding offense. Hunters must learn to interpret their sport for themselves and challenge their opposition to defend their points of view.

Avenues of discussion must be expanded as well. Meeting with school, club or youth groups is one means of creating a positive image for hunting. Keep in mind that effective programs for these types of groups need to share a few characteristics.

Be prepared completely and thoroughly. Remember that planning and preparation time should increase as the time for a presentation decreases. A one minute presentation may take several hours to perfect. Spend the time up front. You do not have any time during the presentation.

Promote a positive image. Watch your dress and language. People are most comfortable when the barriers between them and the speaker are minimal. Over-dressing can be as damaging as under-dressing for your presentation.

Get involved in non-hunting groups and organizations like church groups, civic clubs, community service clubs and hobby groups (gardening clubs, birding groups, etc.). It helps you meet other people who are non-hunters. Discuss your hunting interests only as others show an interest or as opportunities to have one-on-one discussions present themselves. By being active, involved and responsible you are showing the membership of those other groups that "hunters" must be normal people. Knowing you personally makes it difficult to accept false statements about you or the things you seem to enjoy. Your involvement must be honest. Any attempt to infiltrate a group to influence it will merely injure your cause.

Exhibit and Sharing Suggestions

1. Consider why you hunt, including your motivations and satisfactions. Prepare a written statement that tells others what benefits you get from hunting and why you enjoy it. Share that paper with other members of your group or as an essay for exhibition.
2. Develop a poster or other presentation on any on any issues related to hunting. Try to juxtapose the arguments on either side of the issue. Have your group critique the poster or exhibit before it is displayed to the public, Display the poster appropriately.
3. Organize a National Hunting and Fishing Day program and exhibits, interpreting hunting for the general public.

Fact Sheet -Ethics Word Game

Hunter Ethics Word Game¹

Ronald A. Howard Jr.

Using the Game

1. Create small groups of three to five people, involving all persons.
2. Provide a copy of the word list to every group or individual. (The word list on the back of this page may be copied as needed.)
3. Explain that we are trying to develop a list of words that describe an ethical hunter, and instruct each small group to use the next three minutes (five minutes if necessary) to reduce the list of words and phrases to a 10.
4. After that task is complete, explain how the word list will be treated. Each group will have a chance to suggest a word that could be eliminated, rotating after each word is proposed. If any other group or person disagrees with elimination of the word, they may defend it. The group proposing to eliminate it may defend their reasoning as well. Open discussion will be permitted until either consensus or an impasse develops. In the latter case, a vote will be taken to determine the fate of the word. This process will continue until only 10 of the original words or phrases are left.
5. Next, instruct the same groups to use the remaining 10 words as a starting point and reduce the list to only three words.
6. Reiterate the previous process, expecting to see much higher levels of debate in this round.
7. Finally, propose that the single word, RESPECT, epitomizes the foundation of hunter ethics. It is composed of SELF RESPECT (which forms the foundation of ethical behavior), RESPECT FOR OTHERS (which is the foundation of all interpersonal relationships and contracts), and RESPECT FOR WILDLIFE AND HABITATS (which is the foundation of stewardship and restraint).

¹ Modeled after the ethics word game included in the National Bowhunter Education Instructor's Manual, International Bowhunter Education Foundation, Murray, KY.

Fact Sheet - Ethics Word Game

Word List

PREPARED
FAIR
KIND
ANXIOUS
WOODSMAN
FRIENDLY
INTEGRITY
RESPECT
KNOWS
AWARE
SAFE
RESPONSIBLE
GENEROUS
BRAVE
NEAT
MARKSMAN
SPORTSMAN
QUICK SHOT
OUTSTANDING
COMPETITOR
HONORABLE
EXPERIENCED
LAW-ABIDING
KNOWS GAME
WELL-KNOWN
AMBITIOUS
LOYAL
UNDERSTANDING
ENVIRONMENTALIST
CRACK SHOT
HONEST
SUCCESSFUL
TROPHY HUNTER
PERSISTENT
KNOWS EQUIPMENT
KNOWS LIMITATIONS
CAUTIOUS
WELL-EQUIPPED

[Suggest using a variety of fonts and placing the words "randomly" on the page. These should be printed on the back of the page to allow the instructor to photocopy them as needed.]

Planning and Conducting a Photographic Exhibition

Jim Smith¹

Photographic expeditions or photographic records of outdoor activity can be excellent ways of sharing the activities of a 4-H group with other people. It can help to recruit new volunteers and members as well as interpret the club activities to the public. An exhibition or display of photographs taken by the youth participants is an excellent way to accomplish that sharing. This fact sheet offers some guidelines on one way to develop and conduct such an activity.

Once the trip is completed and the photographs have been developed, have each participant bring their notebooks and their pictures to a planning meeting. Review the trip and decide upon a theme. Allow all the young people to have a voice in deciding what they want to show, then guide them in developing a working plan.

Start by selecting a location or event at which to display the materials. Consider whether the exhibition would be appropriate as a group exhibit at a county or state fair, as a display at a 4-H awards banquet, leader dinner or achievement night. It could be part of a National 4-H Week celebration or a 4-H recruitment day program. Shopping malls, libraries, banks or other businesses, community centers and similar sites are all possibilities for the program. Assign someone to contact the selected site (or persons) to make sure the exhibition would be acceptable. (It is often best if the volunteer leader makes an initial contact prior to having a young person make the "real" contact.)

After the site is selected and confirmed, develop a work roster to cover the tasks that must be accomplished. Make one individual responsible for each task group and try to involve all members in some phase of the presentation. The site preparation group is responsible for layout of the gallery, preparing backdrops for mounted photographs and decorations. An interpretation committee should prepare story boards for the exhibition theme and an exhibition catalog listing all the contributors and the photographic data with each photograph. A welcoming committee should be prepared to greet guests as they arrive and to provide guides to show them through the exhibition in a logical manner. Throughout the exhibition, a clean-up and repair team should be ready to address any need in the exhibition area. Be sure to have extra materials for re-hanging photographs if needed. The closing and material return committee is responsible for disassembly of the materials, cleaning up the exhibition site and getting all materials back to the appropriate persons. If necessary, a transportation committee could be organized to arrange all the transportation to and from the exhibition for the workers and their materials.

An exhibition that is organized and presented well can be an outstanding showcase for the young people in the club and an excellent recruiter for the club program. Be sure that the photographs chosen for display are of high quality, well mounted and consistent with the theme of the program. If at all possible, include the works of all the participants.

¹ Director of Marketing, Thompson Center Arms, Rochester, NH

Fact Sheet - Climbing Blocks

Making Climbing Blocks

Ronald A. Howard, Jr.

Introduction

Big game hunting from elevated stands is popular and quite successful, but it leaves the hunter with a problem: how to get into the tree with the necessary equipment. Many hunters simply nail small strips of wood or cut branches to the trunk of the tree they want to use. That practice damages the tree, and it is potentially dangerous to both the hunter and any future user of the tree. In some areas the practice is illegal for those reasons. An alternative is the use of screw-in tree steps or climbing irons. Both of those damage the tree and repeated use of the tree could result in killing it or significantly lowering its timber value. Careful selection of trees or using only trees on one's own land could eliminate almost all of the objection to this type of damage, but we often hunt on "borrowed" lands without thinking about future tree use. An excellent alternative to any of these wood damaging and metal imbedding practices is the use of climbing blocks. They are easy to make, easy to carry, and easy to use. They also have minimum impact on the tree. From an ethical point of view, they are one of the best ways to get into a tree stand.

Making Your Climbing Blocks

Any scrap of 2x4 lumber over about 13 cm or 5 in. long is large enough to make a climbing block.

1. Square the ends of the block, cutting them approximately 5 inches long.
2. Bevel all 8 corners of the block.
3. Locate a point in the center of the "2 inch" side of the block, approximately 1.5 to 2 inches from one end. Mark that point.
4. Using a 3/8 to 1/2 inch bit, bore a hole through the block parallel to the "4 inch" side.
5. Use flat brown, green, tan, and black paints to camouflage the blocks. Spray paints work very well for this purpose.

The climbing block itself is now ready for use, but you need to have some means of attaching it to the tree. Either nylon or dacron rope is an excellent choice. Nylon stretches a bit, causing the block to settle, but it holds very securely. The strength of the rope should be two or more times the weight of the heaviest person who may use the blocks. Most people use lines in the vicinity of 1/4 inch or more, testing at least 500 pounds. Parachute cord has worked very well for me. Woven rope seems to be much more durable than the more common twisted type. The length of the cord depends upon the size of the trees being climbed. For most trees 15 feet is plenty, but if you climb huge trees, you may need to make your ropes longer. Excess rope can be tucked out of the way when the blocks are installed.

6. Cut the rope or cord to length and seal the ends by heating them with a match, torch, or lighter. (Adult supervision is advised! Be careful not to touch the molten ends until they have cooled completely and be sure to do this in a safe place.)
7. Place the cord or rope in an approved container and dye it to suit your tastes using a fabric dye of your choice. Green, brown, or black all blend well with the background on trees; but you may wish to use orange or some other bright color to help you see it better. You decide.
8. Carefully rinse the rope in hot, then cold, water to remove all excess dye.

Fact Sheet - Climbing Blocks

9. Tie a small loop on one end of the rope using a bowline knot.
10. Pass the free end of the rope through the hole in the climbing block; loop it around one side of the block, and pass it back through again, leaving the loop exposed.
11. The block is now ready to use. Merely wrap the loose line around the block and tuck an end under to keep it from getting tangled.

Using the climbing blocks is easy. Wrap of the rope around the tree at the height you want the block. Pass the free end of the rope through the loop and wrap it back around the tree. Wrap it tightly around the block, pulling it as snugly as possible between the block and the tree and around the ropes. Wrap in the opposite direction and repeat the wrapping (or frapping) process. When you first put your weight on the block, expect it to slip or settle a bit. After that it should be very stable. Add additional blocks until you have reached climbable branches or your stand location. In most situations, 6-10 blocks will get you as high as you need or want to go.

A WORD OF WARNING: NEVER CLIMB A TREE WITH A BOW, ARROWS, OR FIREARM IN YOUR HANDS. THE RESULTS OF A FALL COULD BE DISASTROUS. INSTEAD USE A HAULING LINE TO HOIST YOUR BOW, EMPTY FIREARM, OR OTHER EQUIPMENT INTO THE STAND. REMEMBER TO USE A SAFETY BELT OR LINE WHILE IN THE STANO, TOO.

Thanks for being careful. Happy hunting.

Activity Sheet - Meat Sacks

Making Muslin Meat Sacks

Ronald A. Howard Jr.¹ and Sylvia S. Howard²

Introduction

Linking 4-H Shooting Sports programs with other program or project areas need not be complicated. The diversity of the activities involved lends itself to many direct links with a wide array of project activities. This activity is an example of such a direct link - construction of meat sacks to be used in hunting. These simple sewing projects produce a valuable and useful product while teaching some fundamentals of sewing and fabric selection for a purpose.

Those who hunt in warm climates, seek larger species of big game animals, or who may be in the field for extended periods of time often need to skin or quarter their game in the field for adequate cooling and/or ease of transporting it. Protecting the exposed meat with a light bag keeps off vermin and dirt and promotes thorough cooling of the meat for better table quality. Commercial net or cheesecloth bags are single use items, and they are inferior to cloth sacks. Cloth sacks, on the other hand, may be washed and used repeatedly. They are relatively simple and inexpensive to make, and they can give the careful sportsman years of service. Fabric for these sacks needs to be durable, tightly woven but porous enough to allow air to circulate freely, washable (including bleaching) and light weight. A light color is best, since lighter colors will absorb less heat from the sun. Bleached or unbleached muslin is an excellent choice in most situations, but bright colors might be advisable where the possibility of "mistaken for game" accidents exists. Common sense and a few strips tied to the sacks should be adequate protection. Camouflage or blaze orange material might be a better idea if you decide to make a shoulder bag. Sheets often can be purchased more inexpensively than can muslin or cotton fabric, and old sheets or similar materials can be used as well. Be sure to consider all possible sources of fabric before starting your project.

Making a Meat Sack

The first step in making a meat sack requires that you determine the size. A sack about 30 inches wide and 40 to 48 inches long is adequate for quartered game animals in the deer size class. A sack about seven to eight feet long and about four feet wide or a bit wider is adequate for an entire skinned deer or pronghorn or for quarters of very large game animals. There is nothing magical about these sizes. Simply adjust the size to the animals or quarters you might encounter in the types of hunting you do. Some small game hunters like to use a muslin sack or shoulder bag for squirrels, rabbits or other small game. This allows them to skin and dress the animal in the field while the carcass is warm and to protect it from hair and dirt while allowing it to cool rapidly for better meat quality. Remember to consider safety if you decide to make a shoulder bag.

Once the size is determined, decide whether or not you would like to have drawstrings or ties on the sack. A small game bag may need a flap closure, perhaps with a bit of hook and loop tape, some sort of tie down or a

¹ Professor and Extension Specialist, Texas Agricultural Extension Service, Texas A&M University System. College Station, TX

² Volunteer, Brazos County, TX

Activity Sheet - Meat Sacks

button, as well as a carrying strap. Big game sacks need to provide some means of sealing them tightly to prevent dirt, flies or other potential problems damaging or contaminating the meat. Where a whole skinned carcass is to be bagged, that seal can be as simple as rolling the top between the hocks and tying the bag at the hocks. A clothes pin or a large safety pin can secure the rolled material. Some people use a deeper bag and gather the material above the gambrel, tying the bag shut around the rope used to hang it. Others like to incorporate a set of drawstrings or attached ties so they do not need to search for a piece of light rope or cord when it is time to seal the bag.

A reasonable pattern can be made by simply making a bag out of newsprint or paper grocery bags and tape. Once it has been modified to fit your purposes, the "bag" can be used as a pattern. Simply cut the "bag" into the major component parts and use those parts to determine the amount of fabric needed or as a pattern for the fabric once it has been obtained. Remember to allow a little extra material for the seams. Usually this seam allowance is about $\frac{5}{8}$ inch on all sides. If you are going to attach drawstrings, as this suggests, add an additional $1\frac{1}{2}$ to 2 inches on the top of each side to construct a casing (a tunnel for the strings). This additional fabric should be adequate for most $\frac{1}{8}$ to $\frac{1}{4}$ inch ripcord type drawstrings. Very large or heavy sacks or multiple, larger drawstrings may require some additional fabric and deeper casings.

If recycled material is to be used, make sure that all possible problem spots, like broken seams or tears are repaired before the material is fashioned into a sack. If new fabric is used, note that it comes in a variety of standard widths, including 35, 44 or 45, and 54 inches. If your pattern is close to a standard fabric width, it may be wise to alter the pattern slightly to accommodate the use of one of those widths. Fabric is finished with a tightly woven and finished strip, the selvage, running along each side of the cloth. Although the selvage is not used in most sewing projects because it may shrink or otherwise behave differently from the rest of the fabric, causing puckering or other aesthetic problems, leaving it in place and using it in the seams has several advantages for this project. That action reduces cutting and provides a finished edge on the fabric that reduces raveling while adding some strength in the seam area. Any puckering that might occur as a result of excess shrinkage is an aesthetic problem, not a structural or functional one; and it can often be cured by clipping just through the selvage at intervals.

While it may be permissible to ignore a common rule of clothing construction and use the selvage for side seams or bottom seams or top hems on the meat sack, it is important to match the type of edges being sewn in seams. Match selvage to selvage or raw edges to raw edges for best results.

Layout your bag to allow the most efficient use of the material at hand. It may be made from two separate pieces or of a single piece folded either vertically or horizontally. Align the pattern with the fabric, and pin the pattern to the cloth or mark it with a pencil or chalk. If you have selected fabric of approximately the desired width, you may simply fold it to the desired length; or if it is twice as wide as necessary, you may simply fold it from the side before cutting it to the desired length and beginning to sew. Remember to cut the fabric a little larger than the pattern to provide for the seams and the casing (the tunnel for the drawstrings if you are adding them). This seam allowance is usually about $\frac{5}{8}$ inch wide, while the casing allowance should be adequate to allow two drawstrings to slide freely, from about $1\frac{1}{2}$ or 2 inches to as much as 4 inches, as noted above.

Regardless of whether a folded piece of fabric or separate pieces of fabric are used, place the "right" sides of the fabric together (the smoother surface), and pin the pieces together along the seam at intervals of about 4

Activity Sheet - Meat Sacks

to 6 inches. Pin the corners of the fabric first, then start with the center of the fabric and work toward the corners, keeping the pins perpendicular to the seam. The bottom seam may be straight or curved smoothly. If a drawstring is desired, start the side seam the width (depth) of the casing allowance below the top edge of the fabric and stitch forward and back several times. This forms a bar tack which helps to reinforce the seam, and it leaves the top open to permit forming the casing.

Then stitch a 5/8 inch seam from the casing allowance mark to the bottom corner. Bar tack the corners by stitching forward and back several times where the seams will meet or where the side seam meets the bottom edge if a vertically folded piece of fabric is being used. If two separate pieces of fabric are being used or the fabric is being folded from one side, leave the needle in the fabric, raise the pressure foot on the machine and rotate the fabric to align the machine with the bottom seam. Lock the stitching as you did on the other side of the corner and proceed across the bottom and up the other side in the same fashion. Remember to make a matching bar tack at a matching point on the second side, leaving the same amount of material free for the casing. If curved corners are used, cut away excess fabric at the curves leaving the 5/8 inch seam allowance. Clip notches in curved seams before turning the sack right side out, being careful not to cut too close to the stitches. If straight seams are used, cut the bottom corners diagonally across the corners close to the stitches before turning the sack right side out.

To form the casing for the drawstrings, first roll the raw seam allowances left open at the top of the sack under itself twice and stitch it down from the top to the bar tack. If the seam allowance has a selvage edge, simply press the 5/8 inch seam allowance flat and stitch along the selvage. Always lock the top and bottom stitches. Repeat this with all four of the edges. Next, fold or iron about 1/4 inch of each top edge under. Then fold that folded edge down to a point just below the top of the side seam. Iron or pin it in place and stitch the front and back casings leaving strong bar tacks at both ends.

To make the sack even stronger, consider top stitching around the outside edge of the finished sack about 1/4 inch from the edge, or if your machine has the functions use a zigzag straight or stretch stitch (about 1/8 to 1/4 inch) for the side and bottom seams. Any other locking stitch could also be used or you could make a mock flat-felled seam. To make a mock flat-felled seam along the inside (inseam) of the sack, trim any excess fabric to 5/8 inch and clip small notches along rounded edges of corners or cut diagonally across square corners so the fabric will lie flat when the sack is turned right side out. Pressing the raw edges of the inside seam to one side, stitch through all three layers of fabric from the inside of the sack about 1/4 to 3/8 inch from the previously stitched seam. Use the pressure foot as a guide over the side seam. Be careful at the corners, using the same techniques used in the forming the original seam.

Use parachute cord or similar material to form two drawstrings. Be fairly generous with their length, passing a loop through in both directions or use a single drawstring with a folded bag. Knot the ends of the drawstrings with a knotted end protruding from each side. Seal those knotted ends with a match or lighter, being very careful not to get burned with the melted nylon or dacron. Your meat sack is ready for years of service.

Other Possible Activities

If you had a good time making the meat sacks, you might want to try some other projects that are useful to the hunter, shooter or anyone spending time in outdoor recreation. Decoy bags or vests can be made like the

Activity Sheet - Meat Sacks

meat sacks or in poncho style. Gear bags, parkas, dog beads, gun socks, rod or reel bags, stuff sacks and many other items for the sportsman can be made by someone who knows how to sew. Clothing kits are available from a number of manufacturers, and patterns are available for those of you who might feel adventurous. Even expensive outdoor gear can be inadequate for your exact desires and use. You can customize your gear to do exactly what you want, by adding pockets, shell loops, closures, elastic or hook and loop tape to control excess fabric, or similar things. Your imagination and experience can help you make items that are ideally suited to your use, if you have the skills to construct or modify them yourself. You can make items that are not available commercially or simple covers, cases, or protective bags for equipment that can keep it looking and performing like new for years. Let your imagination be your guide, and consider trying some of the other sewing projects available through 4-H. Who knows, you may even want to enter the fashion show with a complete hunting or shooting outfit you made yourself!

Fact Sheet - Boning Venison

Boning Venison

James E. Knight¹

Why Boning

Many hunters prefer to bone their venison. Boning reduces the bulk of venison that is stored, makes packaging easier, allows the selection of cuts that fit the family size, and improves the flavor of the meat by trimming away excess fat. It is particularly helpful in processing the hind quarters and greatly improves the quality of the round steaks or roasts. Many people who tolerate, but do not love, venison find their opinions of the meat improve when they go to boning as a handling method.

Boning has several advantages over the conventional methods of cutting up big game animals. It separates choice pieces of venison from the connective tissues, tendons, off-grain meat, and excessive fat. Also dirt, hair and bloodshot muscles can also be easily removed. Bone dust and marrow produced by the meat saw during conventional cutting is eliminated. Packages for freezing are smaller and don't have protruding bones. Venison from the boned animal takes up less space in the freezer. Where the animal must be packed out of the kill area to camp or vehicle, boning it prior to transport substantially reduces the load.

The Basic Tools

Boning a deer is not particularly difficult, it just looks that way to those who are not experienced in the technique. Once learned, it is an easy and convenient way to take care of venison. It does take some extra courage and a sense of adventure to try it the first time.

Boning does not require access to a bona fide butcher shop. It can be done easily in a garage, kitchen, basement or screened area. Where the law permits, it can even be accomplished successfully in the field. In fact, it is one of the best ways to prepare larger game animals for backpack transport to camp or hunting vehicle.

The equipment required can be as simple as a sharp, narrow bladed knife. Angled boning knives are available from many knife makers, but a short fillet knife makes an excellent boning knife as well. Larger game may require the use of a meat saw or a fine toothed carpenter's saw. A block and tackle equipped with a gambrel is helpful in getting the carcass elevated to a good working height. A flat surface, like a counter top or a table is needed to hold the sections as they are being boned. A cutting board (even a 12 to 18 inch section of a 1x12 will work) and a piece of plastic sheeting or an old table cloth will protect the table surface from knife marks or scratches from bone ends. Finally, you need several places or containers to hold cut meat, trimmings, and the unwanted scraps like bone, fat and connective tissue. Large mixing bowls are excellent containers, and a lined garbage can serves as a scrap barrel. In the field, the discarded parts are quickly located by scavengers and picked clean.

¹ James Knight is Extension Wildlife Specialist at Montana State University. Bozeman. MT.

Fact Sheet - Boning Venison

Getting Started

The butchering process begins with skinning and sectioning the carcass into pieces small enough to handle easily at the boning table. These things are best accomplished by hanging the carcass by the hind legs using a gambrel. Where that is not possible, the skinning and sectioning can be done on the ground, although it may take a bit more effort.

The basic principles and processes of boning can be applied to antelope, bear, elk, moose or any other large game animal. It is helpful to learn the locations of the major cuts of meat, although this is not necessary. A boning chart or meat cuts chart will give you an adequate orientation to the parts of the carcass. If the principle of cutting meat across the grain is understood, anyone could invent their own cuts. If labels reflect the types of cuts the cook understands, however, the choice of cooking methods will fit the cut better.

It is not necessary to follow the exact procedure described below, but the outlined approach is a good one for beginner and expert alike. Start by freeing the front shoulders. Start by rotating the front leg out from the body and cutting through the meat that attaches the shoulder to the rib cage. Much of the underlying tissue is a loose connective tissue that will separate with a slight amount of pressure. Cut only as necessary. It is connective tissue and is easily separated simply by applying light pressure or long strokes with the knife. When freeing the top of the shoulder blade from the muscles of the back, be careful not to cut too deeply into the loin, a column of muscle along the top of the backbone.

Once the legs and shoulders are free, they can be cut into three pieces: a shoulder blade roast, an arm roast, and a shank. Remove the shoulder blade roast from the leg by locating the joint between the shoulder blade and the upper leg bone and cutting through it. Simply move the leg slightly while feeling for the head of the arm bone. Once it is located, slice down to it with the knife. The ball and socket joint separates easily. Trim away any excess fat (venison fat becomes rancid quickly, even at freezer temperatures, and it has a tallow-like consistency as it cools) which most people define as all the fat you can remove. Trim the roast to make a neat looking roast. Package and label the roast, and place the meat trimmings in a bowl for later handling. They make good hamburger or sausage. The shoulder can be boned if desired and made into chuck steaks or steak cubes that can be used in fajitas, venison stroganoff, or similar recipes calling for cubed steak. The muscles on either side of the bony ridge on the shoulder blade can be removed using the bone as a guide for the knife. Chuck steaks should be cut rather thin, about 1/4 to 3/8 inch thick, across the grain of the muscle. They can be fried or simmered in a gravy. Cubes can be cut as large as 1 inch on a side if desired.

The arm roast can be made either with the bone in place or as a boneless piece. If a bone-in roast is desired, cut through the meat just above the elbow, then saw through the bone. Remove any bone dust, trim the meat, package and label it for storage. A boneless arm roast can be removed from the upper arm by locating the thinnest part of the muscle covering the bone with the fingertips. Once that area has been found, insert the knife tip to the bone and follow the contour of the bone to the elbow joint. Next, carefully slide the tip of the knife along the bone while peeling the meat back from it. This roast may be rolled and tied, if desired or simply packaged as it is removed. This area can also be made into high grade stew meat or steak cubes if desired.

Fact Sheet - Boning Venison

The shank muscle can be removed by guiding the knife along the bones and peeling the flesh away from the bone and connective tissue. This meat has a high proportion of fibrous connective tissue (tendons and ligaments). If the muscles are separated, which may be as simple as pulling them apart, each one can have most of that fibrous tissue removed by sliding the knife along the connective tissue while keeping it taut with the other hand. The shanks can be cut into chunks for making soups or stews or they can be added to the trimmings to make ground meat.

A logical next step is to remove the loin. This long back muscle lies between the vertical vertebral spines and the lateral processes or ribs that join the backbone from the sides. Three basic cuts are required. The first cut starts where the loin joins the pelvis. Feel for the rim of the pelvis along the back and cut along its edge down to the lateral spines. Next, using the vertical spines as a guide, cut along them to the base of the neck. Using a series of cuts and gradually pulling the loin free from this part of the backbone often works best. Next, cut along the tops of the ribs to join the vertical cut. Lifting the loin away from the ribs allows you to remove almost all of this highly prized meat in one long cylinder. Although the process sounds complicated, it is quickly and easily learned; and it follows a logical set of steps.

Once the loins have been removed from both sides, they are ready to be trimmed and cut into serving pieces. Lay the loin on the table and pull off any fat or loose pieces of odd-grained meat. Holding the knife flat against the band of connective tissue and keeping the tissue taut, slice the connective tissue band away from the meat of the loin. The loose meat near the neck end of the loin detracts from the tenderness of the loin. It can be cut into cubes or ground as desired. The loin can be cut into family-sized pieces and packaged for freezing or cut into chops or steaks. Leaving it in a large piece holds moisture and flavors better. It also allows use of the loin pieces as a grilled, barbecued or roasted item. If the chops or steaks are to be used, cut the loin pieces across the grain into slices about $\frac{1}{2}$ inch thick. The boneless loins are free of fat, connective tissue and off-grain meat and therefore one of the choicest parts of the animal.

The flanks can be removed by cutting them loose from the inside of the rear leg, attachment along the side of the spine and the attachments at the ribs. Flank meat can be cut into strips or cubes for fajitas or ground into hamburger or sausage. The neck can be boned to make mincemeat, added to the ground meat, or cut into rough cubes for stew meat. It can also be removed whole and used as an excellent roast. If it is to be removed as a single piece, it may be cut through with a saw or disjuncted at one of the vertebral joints.

If the ribs are to be boned, that can be accomplished without removing them from the spine. Simply use the knife to separate the meat from the bones by guiding the knife edge along the bone. The heavier layer of meat that covers the ribs can be removed and cut into stew meat, tiny steaks, cubes, or strips to be made into jerky. The thin layer of meat between the bones is best used as ground meat unless you are planning to use the ribs.

If the ribs are to be used, cut them free along their upper curve, near the spine. Use a saw to cut through from the back of the rib cage to the base of the neck. Each side can be cut into shorter, sections or left in cooking sized plates. If you are planning on making barbecued ribs, leaving the loosely attached meat on the ribs keeps them moister in cooking and makes a heartier meal. Ribs can be left in large plates or cut into smaller ones. Each plate of ribs can be barbecued whole or separated into two or three rib sections. Ribs may also be cut into short pieces and used in soups or stews as well.

Fact Sheet - Boning Venison

The tenderloins are located on the inside of the body cavity along each side of the backbone. They extend from the pelvic area to the back of the rib cage. These choice pieces can be removed by lifting and cutting them free from the backbone. Each tenderloin is only about 1 ½ inches in diameter and about a foot long. They are the most tender pieces of meat in the deer and are excellent for steak. The steaks can be made larger by cutting them into butterflies. A butterfly steak is made by cutting entirely through alternate slices while leaving the intermediate slices just barely connected. In cooking, the steaks are laid out flat in the pan, using the thin tissue layer as a hinge.

Each hind leg can be removed either by sawing through the backbone and splitting the pelvis with the saw or by cutting the muscle mass free of the pelvis with the boning knife. If the knife is used, carefully follow the edge of the pelvic bones with the knife blade until the ball and socket joint of the hip is located. Cutting through the ligaments at the joint will free the leg.

If the sawing method is used, each hind leg can be cut into a sirloin roast, sirloin tip, round and shank. The sirloin roast can be cut free from the remainder of the leg by making a vertical cut through the hip joint nearly parallel to the spine. The sirloin roast should be left large enough for a family meal. It may be boned or left with the bone in. In the latter case, all pelvic fat and sharp edges of bone should be removed before the roast is packaged for freezing. Remove the leg bone by tracing the inside of the upper leg along the leg bone with the knife. This will reveal several major muscle masses. The sirloin tip appears as a football shaped muscle. It may be used as a roast or sliced into thin steaks about 1/4 to 3/8 inch thick. Small pieces may be cut into cubes for stroganoff or similar dishes. Each piece of the round may be handled similarly; separating the muscle masses before cutting them into steaks or packaging as roasts.

The major difference in the complete boning method is that the major muscle masses are separated prior to deciding how to use each one. Divide the large leg muscles by using finger pressure or cutting the connective tissue holding them together. Be careful to leave each of the muscles as intact as possible, without excessive cuts. Each of the major muscles can be used as one or more boneless roasts, thin steaks or as cubed meat. Scraps can be used as ground meat if desired.

The shanks and the muscles encased in heavy layers of connective tissue are best trimmed out and cut for stew, cubed meat or ground meat. The shanks will peel loose rather easily if they are pulled from the lower leg with a minimum of cutting. They will need to be freed from the upper part of the lower leg by cutting. Trimming off as much of the connective tissue as possible makes a much better ground meat or stew meat product.

All the bones, including sections of the backbone, can be trimmed of any small scraps of meat for grinding. The bones may then be simmered in a large stock pot to make a soup stock. Cooked meat scraps can be used for making head cheese or other uses as desired.

Meat that is to be ground should be put through the grinder twice. Using a large rectangular cake pan or something similar, the ground meat can be formed into meal sized packages that are easily handled and wrapped for storage. Ground venison that has been trimmed well is very low in fat. In fact, it will tend to stick and should be used for moist cooking methods. Many hunters prefer to mix the meat with other types of meat, like pork, or with beef fat. If fat content is not a concern, mixing 10-15 percent beef fat with the ground meat can make a moister, less likely to stick, hamburger. The ground meat can be used to make meatballs, sausages, wieners or bologna.

Fact Sheet - Boning Venison

Most parts of the deer that are relatively free of connective tissue can be made into excellent jerky. Cutting the venison, even tougher cuts, into chunks and canning it is an excellent means of preserving and tenderizing the meat. Be sure to use approved pressure cooker canning methods.

Salvaging Bloodshot Meat

Game animals killed with shot or bullets may have significant areas of bloodshot meat. Most of it can be saved by careful trimming and soaking in salt water. Areas around bullet wounds should be checked carefully to remove any bits of bone or bullet fragments. (Users of carbon shafts should remove and bury the flesh immediately around the wound channel to prevent ingestion of carbon filaments.) To remove the blood from a bloodshot piece of meat, place about a gallon of cold water in a large bucket or dish pan. Add three or four hands full of salt, and put the bloodshot meat into the solution. Let the meat soak in the brine solution for an hour or two before rinsing it and scrubbing the blood off the pieces. The meat can be used according to the cut, just as fresh meat is used. If blood fills the muscles after treatment with the cold brine, trim the bloodshot flesh from the remainder of the cut and toss the bloodshot portions into the scrap bowl. Small quantities of bloodshot flesh can be ground with the other trimmings without noticeable effect on the final product.

Using Venison

The boning process as described here favors cutting much of the deer into steaks or leaving individual muscle masses as roasts. It also removes the majority of the fat and connective tissue from the meat as it is being processed. Since venison fat tends to harden as it cools and to become rancid quickly even under good freezer conditions, removal of that fat greatly improves the quality of the venison. Unlike beef, venison has almost no natural marbling. Thus, the steaks and roasts have very little fat and require cooking methods that will prevent it from becoming dry and tough. Quick frying or braising with a very hot skillet or moist cooking methods both produce outstanding venison dishes, but venison that is cooked too long with a dry methods will become tough.

Venison steaks are generally smaller than those taken from domestic beef and without bone or much fat. In fact, venison rivals skinned chicken as a low-fat source of animal protein. Steaks can be cut from most of the larger muscles if desired. Experiment to see which way your family likes to have its venison cooked. If steaks are preferred, shoulder blade roasts, rump roasts, arm roasts, and even the heavier muscles over the rib cage can be used to cut thin steaks or cubed steak. Small, thinly sliced steaks make an outstanding breakfast meat that is very popular with many families. Large muscles may be left in meal sized portions and steaked immediately prior to cooking. Partially thawed meat, with firmness from ice crystals in the flesh cut very easily. All steaks should be cut across the grain of the meat to produce the most tender table fare.

Venison steaks should be cut so they are relatively thin. All steaks except those from the tenderloin and loin should be cut from about ¼ inch thick for thin steaks to about ¾ inch thick for thick ones. Loin may be cut to a thickness that pleases you and your use of the steaks. Smaller steaks can be enlarged by using the butterfly technique.

Fact Sheet - Boning Venison

Quick frying or grilling over hot coals produces outstanding venison steaks. Thin steaks need only about 90 seconds on a side to be cooked to a medium to medium-well done stage. They should be slightly browned on the outside and slightly pink on the inside. This method sears the outside of the steak and keeps the inside tender and succulent. Over-cooking produces a tough steak that does not do justice to venison. Salt, pepper and a touch of garlic compliment the flavor of venison. If fat content is not a concern, use your favorite shortening to fry your venison steaks. Bacon fat and beef fat make excellent "shortening" for this cooking method, but they add saturated fat to the cooking of a nearly fat-free red meat. Their flavor enhancing qualities are outstanding however.

Venison can be chicken fried if desired. Steaks can be cut, pounded and breaded lightly with seasoned flour. The pounding tenderizes the steak and allows it to become impregnated with the spices you add. It also makes superior venison stroganoff or "beef" burgundy. These moist cooking techniques are outstanding for tiny pieces of steak that you would rather not turn into ground meat. Smothered steak dishes are outstanding for tough, old bucks. The slower, moist cooking provided in Swiss steak (tomato based stock) or smothered steak (gravy based stock) can tenderize even the toughest steak. The key is to remember that venison is dry and low in fat. Treating it so it retains its juices or adding liquid to provide tenderizing juices makes almost any venison dish a delight. It is good for you, too.

Roasting venison provides a moist cooking method that simmers the roast in its own juices. A pot roast with carrots, potatoes, celery and onion can be mouth wateringly good. If you find getting a good venison roast a challenge, try this approach. Layout a piece of aluminum foil large enough to double wrap the roast, sprinkle ½ package of dehydrated vegetable or onion soup mix in the aluminum foil and place the thawed roast oil top of the soup mix and pour the rest of the soup mix on top of the roast. Season to taste with salt, pepper and garlic, then seal the aluminum foil tightly around the roast. Place the roast in a pre-heated oven (325-350°F) and roast for about 45 to 60 minutes per pound (1 ½ to 2 ½ hours for a 2-3 pound roast). Either rare or well-done venison roasts are tender and juicy, but some cuts will be a bit tough at stages between those two points. Roasts also may be grilled in a covered barbecue grill. Turning and basting the roast every 15 to 20 minutes using a basting sauce or a vinegar based "barbecue" sauce will produce an outstanding "roast" that will have you debating over steaks or roasts on the next deer.

Preserving Venison

By far the most common method of preserving venison is freezing. Freezing larger pieces of venison before cutting them, saves time in the cutting and wrapping process and helps to preserve the moisture content and flavor of the meat. It allows the cook a choice of cooking methods, although it does require a bit more planning and handling during preparation. Frozen venison will keep well if as much air as possible is removed from the packages as they are wrapped. Many hunters prefer to use a plastic wrap for an inner seal followed by a freezer paper wrap to protect the meat and provide a label. Special freezer bags of tough polyethylene plastic are preferred by others. Some double wrap the meat in freezer paper, although venison will keep nicely in single wrapped freezer paper for up to a year. Regardless of the wrapping method, be sure to label the cut, species and date on each package so they can be recognized without playing guessing games later.

For best results, venison should be quick frozen at a very low temperature, then stored at 0°F or below. Flash freezing is easiest if the meat is placed in a single layer with plenty of open space around it. Keeping packages fairly flat allows for excellent stacking and conservation of freezer space later. Freezer temperatures can be checked easily with a thermometer.

Fact Sheet - Boning Venison

Canning venison is also an excellent choice. As a low acid food, meats must be canned under pressure to kill potentially harmful, anaerobic bacteria - like those that cause botulism. Although oven canning was used to preserve canned meats for many years, the risks are too high for this method to be recommended today. Pressure canning, following the recommendations put out by your state Extension Service or canning jar manufacturers, will allow a margin of error and produce a high quality, safe canned product. Canning tenderizes even the toughest of venison cuts and produces a tasty and useful meat product. If freezer space is limited and the equipment necessary for canning is available, it is a good preservation alternative to the freezer.

Dried venison, like jerky, can be smoked cured or oven dried. It will keep for quite a while in sealed bags or jars in a refrigerator. It will only last as long as it is not discovered, however. Venison jerky is a great survival or snack food, and it could be used in cooking if any is left. Cured sausages, wieners and bologna can be treated just like the commercial products.

Try boning your own big game animal. The process is actually relatively simple. The products are outstanding and fitted precisely to your family needs and wants, and personal handling of the process gives the hunter greater satisfaction.