4-H Shooting Sports

Hunting, Wildlife and Outdoor Skills Curriculum

Leader Manual and Teaching Activities

National 4-H Shooting Sports Committee

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Hunting and Outdoor Skills Curriculum

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Leader Manual

ACKNOWLEDGEMENTS

The 4-H Shooting Sports Hunting Materials were first put together about 25 years ago. Since that time there have been periodic updates and additions. Some of the authors are known, some are unknown. Some did a great deal of work; some just shared morsels of their expertise. We are grateful for the contributions of all of them. Because much of the original work has been altered, we didn't think it was proper to keep the original authors listed on the chapters they contributed. We cannot assume our attempts to update chapters would have met their approval although we hope it would. A primary thanks goes to Dr. Ron Howard, Professor and Extension 4-H Specialist at Texas A&M University. Ron spearheaded the original efforts, authored the majority of the chapters and updated other chapters over the 25 year period. Here are others who contributed to this manual: Shari Dann (Michigan), Tom Davison (Texas), Kelly Gorham (Montana), Jim Kitts (Minnesota), Jim Knight (Montana), Jeanne Olmstead (Montana), Jack Payne (Florida), Jim Smith (New Mexico) and Bill Stevens (Minnesota).

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YOU, the 4-H Shooting Sports Hunting Instructor

Congratulations and thank you for taking the first steps in becoming a 4-H Shooting Sports Hunting Instructor! The commitment you are undertaking will affect 4-Hers, parents, families, the general public and the overall hunting community. With your commitment comes a responsibility to conduct trainings that ensure a positive future for those you affect and the tradition of hunting in America.

As a member of the 4-H Shooting Sports team, always keep in mind that the purpose of ANY 4-H program is youth development and teaching life skills to young people. The Hunting discipline and all the 4-H Shooting Sports programs are valuable for helping young people develop self confidence, personal discipline, responsibility, teamwork, self esteem and sportsmanship. Always keep this in mind as you instruct, mentor and serve as an example to your students.

You as a 4-H Hunting Instructor will have a unique set of challenges and considerations to address. Review the following section to be sure you understand how you can be an excellent hunting instructor and also consider the related complications of teaching hunting, wildlife and outdoor skills to 4-Hers.

SAFETY
Firearms, getting lost, falling injuries, fire, knives, wild animals, hypothermia, blisters, fatigue...WOW! Are we sure we should expose young 4-Hers to all the dangers involved in hunting? Absolutely!

The safety concerns related to hunting are best addressed through education by qualified instructors. Understanding how to be a safe hunter and developing the awareness, knowledge and skills to be a safe hunter is one of the greatest benefits of the 4-H Shooting Sports Hunting, Wildlife and Outdoor Skills Curriculum. **You, as the instructor, must always make safety the highest priority when conducting your training sessions.**

- Always have a sufficient number of adults to assist you. Have a back up activity available if expected assistance is not available.
- Familiarity with all 4-H Shooting Sports discipline is critical to understanding skills within the 4-H Hunting discipline. 4-H Hunting Instructors are **not** approved to teach any other shooting disciplines unless they completed the discipline-specific training.
- Every 4-H Hunting Instructor must have passed a state Hunter Education program.
- Always have an appropriate first aid kit available and a person with the knowledge and ability to use it.
- When conducting activities using fire, always address necessary fire control measures.
- In all exercises, be sure to understand the skill levels of participants to avoid putting them in unsafe or uncomfortable situations.

- Before any live-fire activities, youth participants must be trained **by a 4-H Shooting Sports Instructor** in safe use of the firearm being used.

SENSITIVITY

"WHAT! Sensitivity?"
"I am proud to be a hunter! I don't need to apologize for what I do!"

WHOA! Let's not get too sensitive ourselves! One of the most difficult concepts to pass on to our students is the balance between being proud of our hunting skills and offending others who might not have the same calling. As a 4-H Hunting Instructor you need to walk that fine line. And you need to have the skill to pass that ability on to your students.

- Students should learn from you they must conduct themselves safely and must show respect toward the animals they hunt and for the landowners where they hunt. They must also show a respect for the rest of society who will ultimately determine if we hunters, as a minority, can continue to pursue this legitimate activity.
- Be aware that not everyone understands or appreciates hunting in the same way. Though we have our own thoughts, facts and philosophies – we should be careful in how we act, speak, write, teach, etc – so that we present hunting in the best possible light.
- Be cognizant of the fact that not everyone that takes part in this curriculum has the same background experience and understanding.
- BUT let's not go overboard. Let's be sensitive, but let's not dilute our message. Hunting is a legitimate activity…even in today's world. It has a place in recreational pursuits and wildlife management. America has a rich hunting heritage – which we need not apologize for.
- As an instructor, be aware that your students will have much less exposure and experience than you. Too much challenge or too much expectation might turn them off to hunting. This is especially important when conducting care of harvested game exercises and early field orienteering activities.

MISUNDERSTOOD TERMS

Times change and so does our language. The common meanings of words change over time ("cool", "gay", etc.). We are sometime resistant to change because it seems we are conceding to pressure groups or we are trying to be "politically correct". Some words or phrases however, can cause confusion or may provide fodder for those who want to attack our hunting heritage. As a 4-H Shooting Sports Instructor, you should understand the concerns and discuss them with your students.

- The term "sport-hunter" can be taken negatively. It is commonly used to mean we hunt as a sport or recreational activity – and not because we <u>have to</u> in order to survive. However, the term came about during the era of Theodore Roosevelt. Today, "sport" is seen as competitive and for the "thrill". Because we

don't always have the opportunity to define the term when we use it, we should try to use "regulated hunting" when we want to differentiate from market or survival hunting.

- "Trophy hunting" is a concept that can be misunderstood. As a 4-H Hunting Instructor, you must understand the importance of helping students value ALL game they harvest, not just those with large antlers. You must help them appreciate the table fare, the chase, the challenge of the natural elements, the exposure and interaction with the natural world, the camaraderie with fellow hunters and all the other aspects of the hunting experience. Too much emphasis placed on antler size or bag limits will lead to diminishing the most enjoyable aspects of hunting.

STORIES AND TALES

From the time of the earliest hunters, recalling the memories of hunts and telling the story to anyone who would listen, has been an enjoyable addition to the hunting tradition. As a 4-H Hunting Instructor, your previous experiences and your desire to share them can be both a benefit and a determent to your success as an instructor.

- When recalling experiences for the benefit of students, be sure the story enhances the lesson and does not merely serve as an attempt to impress the audience.
- Keep stories short (less than 1 minute).
- Don't decide to tell a story impulsively. Plan to use a specific incident to illustrate a specific point.
- Too much story-telling will reduce your effectiveness as an instructor.
- Don't mistake the attention the students are giving you as in indication of interest or appreciation. 4-Hers are very polite!

PERSONAL BELIEFS VS. SCIENTIFIC FACTS

All hunters are proud of their knowledge and experience. Unfortunately, many "facts" and a great deal of advice passed on are based on folklore, tradition or old-fashioned hunches. As a 4-H Hunting Instructor, it is important that we stick to instruction based on science, research and unbiased knowledge.

In today's world there is a great deal of information available on the world wide web. While much of this is extremely valuable, be cautious about what you pass on to your students. They depend on you to be a purveyor of the truth!

Finally, on the National 4-H Shooting Sports website, there is much more hunting information and curriculum available to you as a 4-H Hunting Instructor. APPENDIX A lists the subjects available at **http://www.4-hshootingsports.org/index.php**

The History of Hunting

OBJECTIVES
Participating youth and adults will:
1. Explore how hunting practices and traditions have developed.
2. Discuss and explain the origins of hunting skills and tools.
3. Review the history of wildlife management in North America.
4. Explain the role of hunters in the wildlife management and conservation movements
5. Explain the meaning of regulated hunting
6. Have fun while learning.

Roles for Teen and Junior Leaders
1. Role play hunter gatherer scene.
2. Demonstrate use of various early hunting tools.
3. Portray progress in hunting tools.
4. Make and demonstrate early hunting tools.
5. Assist in "caveman skeet".
6. Prepare posters or illustrations for the session.

Potential Parental Involvement
1. See "Roles for Teen and Junior Leaders" above.
2. Arrange for or provide teaching area.
3. Arrange for or provide teaching materials.
4. Demonstrate stone flaking and help youth try it.
5. Arrange for or provide transportation.
6. Arrange for or provide a "cave man" snack.

Best Time: Any time when being outdoors is pleasant

Best Location: Near brushy, rocky area

Time Required: 1 hour and 45 minutes

Equipment and Materials
stone
stone flake (flint, chert, obsidian)
small stick
sharp stick
sling
willow bow and reed arrow
clay targets
20 assorted sticks and stones

References
State Hunter Education manuals

The Unendangered Species, (film of same title also available), National Shooting Sports Foundation, 1075 Post Road, Riverside, CT 06878.

LESSON OUTLINE

Presentation

I. Early man as hunter-gatherer
   A. Method of survival
      1. Food
      2. Shelter
      3. Clothing
      4. Tools
      5. Decoration
   B. Protection

II. Development of hunting techniques
   A. Humans as social animals
      1. Family or clan groups
      2. Division of labor and risk
      3. Hunters and gatherers
         a. Foraging for natural foods
         b. Catching small animals
            1) Nearly equivalent to gathering
            2) Individual unless concentrations found
         c. Obtaining larger prey
            1) Usually required group cooperation
            2) Driving predators from kills
               a) High risk
               b) Rapid evolution of tools
            3) Traps, pitfalls, deadfalls
   B. Evolution of hunting tools
      1. Small prey
         a. Hand capture
         b. Tools to gain access
            1) Prying or moving tools
            2) Sticks and stones
            3) Modifications for efficiency
      2. Large prey animals and defense
         a. Available sticks and stones
            1) Brandishing
            2) Striking
            3) Throwing
         b. Stone club/ax
            1) Increased striking energy
            2) Cutting with sharpened edges
         c. Spears
            1) Sharpened sticks
            2) Fire hardening
            3) Flaked stone points
            4) Stabbing or throwing tools
         d. Atlatl
            1. Throwing stick
            2) Smaller, lighter spear
            3) "High velocity, long range"
         e. Sling
            1) Stone throwing device
            2) Strip of leather or cordage with pouch
            3) Higher velocity and longer range

Application

ASK: "What are some of the reasons early man hunted?" Have participants list possible reasons early man hunted.

ASK: "How do you think the very earliest men hunted?" **ENCOURAGE** participants to be imaginative. Eventually point out that the first hunters probably turned stones over hunting for insects.

NOTE that even a handy stick used to flick an insect or reptile from under a rock ledge or a sharp thorn used to impale grubs in a wood tunnel qualifies as a tool. **RELATE** these ancient hunting and gathering tools to the hunter-gatherer societies still in existence today.

f. Blowgun
    1) Very small spears
    2) Use of poisons for larger game
    3) Pneumatic propulsion
g. Bow and arrow
    1) Extreme range for that time.
    2) Shooting from “safe” distance
    3) Modifications for conditions.
        a) Changes in length of both
        b) Increase in cast
        c) Changes in point materials and shapes
        d) Changes in bow materials

3. Continued evolution of hunting tools
    a. Crossbow
    b. Matchlock firearms
    c. Wheel lock firearms
    d. Flintlock firearms
    e. Caplock firearms
    f. Modem firearms

III. Hunting in North America

A. Wildlife critical to survival for early settlers
    1. Primary food supply
    2. Important for clothing and shelter
    3. Competition with wild predators
    4. First game laws - establishing a right to hunt
    5. Depletion of game around villages
        a. Closed seasons
        b. Restrictions on some species

B. Market hunting
    1. Major business, highly respected profession
    2. Supplied meat for "urban" residents
        a. Those who could or would not hunt personally
        b. Those who had other specialties.

C. Reductions in wildlife populations
    1. Unrestricted harvest by market hunters and others
    2. Changes in habitat with development
    3. Personal hunting still very common
    4. "Sport" hunters - not hunting for commerce

D. Conservation movement started by sport hunters
    1. Leadership in hunting laws
    2. Leadership in national parks and wildlife refuges
    3. Boone and Crockett Club formed 1888
    4. Twenty-three states had bag limits by 1900.
    5. Lacey Act of 1900
        a. Prohibited interstate shipment of illegally killed wildlife
        b. Provided federal help to curb market hunting
    6. Aldo Leopold
        a. First wildlife management text 1933
        b. *A Sand County Almanac* shortly later
    7. Duck Stamp Act of 1934
        a. Funds from federal stamps for waterfowl

Have participants **MAKE** or **FIND** hunting "tools" that might have been used by early humans. Have them **PARTICIPATE** in a "cave man skeet" exercise to demonstrate the challenge in using these tools to harvest game (See *Caveman Skeet).*

NOTE that the time required for these later innovations became progressively shorter and that continuing changes in earlier technologies are still taking place as hunters try their skills at more demanding hunting techniques.

Have participants **DISCUSS** the reasons for the shift from personal hunting skills by early settlers to market hunting in later years. **EMPHASIZE** the changes in the country and its population with specialization into many different professions. Those who pursued other professions or had different talents depended upon market hunters or hunting friends for wild game meat, both at home and in inns and restaurants.

management
b. Funds for land purchase - refuge system
8. Pittman-Robertson Act of 1937
a. Sportsman lobbied self tax
b. Excise tax on long guns and ammunition
c. Aid to states for wildlife management

D. Today's hunter organizations
1. Ducks Unlimited
2. Quail Unlimited
3. National Wild Turkey Federation
4. Ruffed Grouse Society
5. Pheasants Forever
6. Rocky Mountain Elk Foundation
7. Foundation for North American Wild Sheep
8. Isaac Walton League
9. National Wildlife Federation
10. Game Conservation International
11. Safari Club International
12. Boone and Crockett Club
13. Pope and Young Club
14. Hunter Education Association
15. Others associated with dogs, hunting and more

E. Support through licenses and fees
1. License fees nearly $500 million each year
2. Excise taxes nearly $200 million each year
3. Hunting pays for wildlife conservation efforts

NOTE that hunter and anglers pay for the vast majority of all wildlife conservation in the United States, either directly through licenses, fees, and excise taxes, or through their participation in conservation organizations.

F. Impacts of hunting
1. Direct impact over $14 billion each year.
2. Indirect impacts nearly $40 billion annually.
3. Recreational impact
4. 200 million person-days hunting
5. Critical to well-being of some people

IV. Regulated hunting perspective

A. Defining regulated hunting
1. Not commercial or market hunting
2. Hunting as a sport
3. Hunting for recreation and personal reward
4. Hunting for personal uses

Have each participant or small groups **WRITE** a definition of regulated hunting. **DISCUSS** their definitions and try to bring about a consensus.

B. Many motivations and satisfactions

C. Mostly personal reasons
1. Enjoying wild game as food
2. Other uses of wildlife
3. Protecting crops and domestic stock

D. Recreation
1. Rebuilding spirits and relationships
2. Vital to many people
3. Vital to wildlife survival

Have participants **LIST** some of the reasons they think that people hunt. Allow them to **DISCUSS** the list and create a merged one for their use.

ACTIVITIES

Caveman Skeet

The origins of hunting and hunting tools can be an entertaining story. They can also become an active part of instruction with a little effort. One of the ways to make this part of the history of hunting fun is to hold a cave man skeet "tournament." The prey is a "cave rat."

Playing the Game
Cave rats are represented by using standard clay skeet targets. Place about 9 to 12 rats in some orderly fashion in an open area. Participants are usually sent to find their own hunting implements (sticks, logs, rocks) but they may be supplied if tools are scarce at the site. A "firing line" is set up fairly close to the "rats" but far enough away to provide some level of challenge. Each participant can be given a certain number of shots, allowed to throw as many objects as they can in a time span, or allowed to use only what they brought to the line as tools. You decide which of those approaches would be most instructive.

Any target that is broken (chipped, cracked, or totally smashed) is considered a kill! Some creative caveman skeet shooters will notice that a heavy object skipped through the "rats" gives excellent results. This can be used as evidence of improvement in hunting technique. A playing period of about 5 to 10 minutes is usually adequate to establish the frame of reference you want to use in follow-up discussion. Do not let it continue too long. Remember, you will need to spend some time in clean-up after the targets have served their educational purpose.

Using the Game
The key to using this activity successfully is having your questions or observations ready. Tie the activity to the instructional content that you want to communicate.

Knapping

Knapping is the process of making stone tools (arrowheads, knives, points, axes, etc.) by flaking stone, usually flint. Knapping has been around for about 4 millions years.

It can be fun and educational to try your hand at making hunting implements the “old” way! There are dozens of how-to sites on the internet and it is likely your local historical society will have a volunteer to provide a demonstration. No matter successful or unsuccessful, spending some time trying to make tools the way early hunters did will develop an appreciation for the skill.

Knappers, both ancient and modern, generally begin knapping a piece of stone with direct percussion. Direct percussion is accomplished by directly striking the stone which is being worked with a tool, such as a hammerstone or antler to remove large flakes. The purpose of direct percussion is to thin the stone to the required thickness. Generally, the next step is pressure flaking. Pressure flaking is achieved by placing a pointed tool such as an antler tine on the edge of the stone, and applying an inward pressure to the tool. This pressure will remove a small, thin flake from the stone. Pressure flaking shapes and refines the projectile point. Finishing a point can include notching, stemming, fluting, etc.

Using the Activity
Participants will generally express the difficulty and frustration of this effort. Discuss the patience knapping would have required and how this patience related to other skills of early hunters. Discuss some of the shortfalls of such primitive hunting tools compared to what is available today.

WHY WE HUNT

Participating members and adults will:
1. Discuss hunter motivation and satisfaction
2. Explore relationships between hunting and wildlife management
3. Understand the role of humans as natural predators
4. Form personal understandings of their reasons for hunting
5. Have fun while learning

Roles for Teen and Junior Leaders
1. Assist with room set up and clean up
2. Record group responses on display sheets
3. Make “planted” comments to stimulate discussion
5. Poll local hunters about motivations and satisfactions
6. Share personal experiences

Potential Parental Involvement
1. See" Roles for teen and junior leaders" above
2. Share personal reasons for hunting
3. Arrange for or provide teaching space
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Serve as role models and mentors
7. Share experiences and values as appropriate

Teaching Outline

Presentation

I. Review history of humans as hunters
   A. Scavengers to hunter-gatherers
      1. People as natural predators
      2. Food, fiber and protection

   B. Commercial hunting
      1. Honorable use of wildlife resource
      2. Conflict with regulated hunting
      3. Loss of commons resource
   C. Regulated Hunting
      1. Food
      2. Fiber (hides, fur)
      3. Recreation

II. Why do people say they hunt?
   A. Using the animal
      1. Meat
      2. Hides or fur

   B. Reducing problems

Best Time: Anytime

Best Location: Any good teaching space

Time Required: Approximately 1 hour

Equipment and Materials

display writing materials
paper and markers for each group
masking tape

References

State Hunter Education materials

Application

ASK participants to **DISCUSS** the reasons people may have had for hunting in the past. **RECORD** their answers and continue asking leading questions until food, clothing, shelter, tools, fiber and protection are all mentioned.

Ask participants to **CONSIDER** why they feel commercial hunting was banned.

Have participants **BRAINSTORM** why people hunt today. **NOTE** that some of the reasons are exactly the same, but that others have been added, like recreation.

Have participants **BRAINSTORM** their personal reasons for hunting. If groups are large, split them into relatively small groups and have the groups work independently before pooling their responses.

1. Population reduction
2. Removing problem individuals

C. Recreation
1. Enjoying nature
2. Affirming our place in nature
3. Companionship
   a. Family relationships
   b. Groups of friends
4. Solitude
5. Using equipment
6. Working with dogs or horses
7. Personal challenge
8. Managing wildlife
9. Killing something

III. Benefits of hunting

A. Back to Nature
1. Understanding source of food
2. Understanding source of fiber
3. Understanding natural processes
4. Positive influence

Why Hunt

B. Historical perspective
1. Reliving cultural development
2. Personal understanding of history
3. Positive influence

C. Independence
1. Doing things simply
2. Doing things for oneself
3. Providing for our own needs
4. Positive influence

D. Ethical decisions
1. Positive or negative
   a. Personal choice
   b. Personal codes
   c. Lack of referee
2. Positive or negative influence

E. Recreation

IV. Benefits of hunting to wildlife management

A. Hunters as the means of harvest
1. Harvest to reduce populations
2. Harvest to balance numbers and habitat
3. Harvest to reduce problems
4. Harvest to increase productivity

B. Hunters as a political force
1. Speaking for management
2. Provide a support base for management agencies
3. Supporting environmental concerns

C. Hunters as a funding source
1. Direct fees and licenses

2. Indirect contributions
    a. Pittman-Robertson funds
    b. Dingell-Johnson funds
    c. Wallop-Breaux funds
    d. Non-game program support
3. Lobbying for funding

D. Hunters as direct agents
1. Personal management activities
2. Group management activities
3. Personally promoting stewardship

Activty

1. Share photographs, or other evidence that show the values you place and receive in hunting. Carefully selected stories may also be used. Try to be brief and stick to the point.

2. Have an adult or teen member of the group share their reasons for hunting and the benefits they derive from hunting.

HUNTING ETHICS

Participating young people and adults will:

1. Understand and practice actions of a responsible hunter
2. Develop the ability to project a positive public image for hunters
3. Develop the skills to make clean kills and recover wounded game .
4. Understand and practice excellent landowner-sportsman relations
5. Understand and practice abiding by game laws
6. Show self-respect, respect for others and respect for wildlife and wildlife habitats
7. Have fun while learning

Roles for Teen and Junior Leaders

1. Lead or assist with demonstrations
2. Assist with dilemma discussions
3. Share personal experiences
4. Introduce guest speakers
5. Teach portions of the lessons

Potential Parental Involvement

1. See "Roles for teen and junior leaders" above.
2. Arrange for or provide a location for instruction
3. Arrange for or provide transportation
4. Arrange for or provide refreshments
5. Assist in development of dilemmas

BEST TIME: Any time

Best Location: Any quiet indoor or outdoor teaching area

Time Required: 2 hours or more

Equipment and Material

chalkboard or newsprint pad
easel
appropriate writing materials
paper and pencils or pens
dilemma cards
posters or photographs depicting dilemmas

References

Outdoor Ethics Newsletter, Izaak Walton League of America. Arlington, VA.
Operation Respect, Virginia Commission of Game, Richmond.
Basic Hunters Guide, National Rifle Association, Fairfax, VA.
Hunters Code of Ethics, Safari Club International, Littleton, CO.
International Bowhunter Education Manual, IBEP, Murray, KY.
Environmental Respect - A New Approach to Outdoor Education, Safari Club International, Tucson, AZ.
State Hunter Education Materials
Videos available from your Cooperative Extension Office or State Hunter Education Program

Lesson Outline

Presentation	Application
I. Ethics	**ASK** participants to **DEFINE** "ethics." Be sure to accept either conceptual or pragmatic definitions and lead the group toward the definitions given. If the audience is slow to respond, consider using a dictionary definition and asking for examples from hunting or· other experience.
A. Philosophy 1. Morality and norms 2. Codes of conduct B. Hunting ethics 1. Accepted standards 2. Codes of conduct or behavior· 3. Behavior when nobody is watching 4. Personal development a. Attitudes b. Skills c. Knowledge d. Experience	**ASK** participants who defines hunter ethics and what some of the basic parts of good hunter ethics are. Record their answers and discuss them. **NOTE** that ethics involve a complex set of attitudes, skills, knowledge and experience, often becoming more restrictive or structured with time and experience. **ASK** if hunting laws are adequate to define ethical behavior and **DISCUSS** the responses.
C. Hunter development 1. Shooter a. Using equipment b. Success measured in shots taken c. Danger of inappropriate shooting 2. Limit bagger a. Limits as a standard of success b. Success measured in numbers bagged c. Danger of greed and over-shooting 3. Trophy hunter a. Pre-determined quality measures success b. Any personal restriction translates to trophy c. "First stage of ethical behavior" 4. Method hunter a. How game is taken measures Success b. Equipment or method restrictions c. Specialization and deeper commitment 5. Aesthetic hunter a. Hunting *per se* defines success b. Appreciation of the total experience c. Bagging game important but secondary d. "Mature" ethical hunter 6. Giving something back a. Contributing to the future of hunting b. Beyond participation to commitment	**DISCUSS** the Jackson and Norton model of hunter development, noting that most hunters are a mix of several of these stages. **LEAD** the group to conclude that the single word, respect, defines the root of hunter ethics. **EXPAND** on the concept of respect to include self-respect, respect for others and respect for wildlife and wildlife habitats. Have the group **DEFINE** some persons or groups that are included in "others." Have small groups try to **DEFINE** "fair chase." Have those small groups **LIST** some skills and knowledge that an ethical hunter must or should have. Combine the groups to discuss their findings. **ASK** a teen leader or parent to share an experience they have had with actual or potential conflict situations or competition for a spot and how they resolved the situation.

II. Defining hunter ethics

A. Respect
   1. Self respect
      a. Foundation for all other types
      b. Internal reasons for ethical behavior
   2. Respect for others
      a. Other hunters
      b. Landowners
      c. Non-hunters
      d. Anti-hunters
   3. Respect for wildlife and their habitat
      a. Defining fair chase

      b. Skills and knowledge

      c. Involvement and commitment

Have teen leaders or parents **SHARE** personal experiences with landowner relations to illustrate the points in the outline. Let the participants **DISCUSS** how to they might handle similar situations.

EMPHASIZE the need to make game as table ready as possible and legal when it is offered to a landowner, as a "thank you."

ASK the group to consider how other people view hunters, and the sources of 'their opinions or attitudes. After allowing them to discuss it, ask them to **OUTLINE** some ways to project a positive image of hunters and hunting to those who do not hunt.

AVOID deep discussion of anti-hunting or anti-management groups here. Confine your discussion to responsibilities of hunters toward individuals holding those attitudes and convictions.

III. Responsibilities
A. Projecting a positive image
   1. Practicing what you project
   2. Representing hunters and hunting
B. Toward other people
   1. Other hunters
      a. Respecting the law
         1) Seasons
         2) Bag limits
         3) Shooting hours
      b. Behavior afield
         1) Avoiding conflict
         2) Honoring others rights
         3) Teaching others
         4) Helping others
         5) Handling dogs
            a) Your dogs
            b) Other's dogs

   2. Toward landowners
      a. Gaining permission
         1) Thanks regardless of outcome

         2) Developing a personal relationship

STRESS the fact that your respecting their rights to an opinion on hunting while disagreeing with it implies that they have a similar responsibility toward respecting your right to hold an opposing' view.

ASK participants to define what is meant by "fair chase" in hunting. Have teen leaders or adult volunteers **SUMMARIZE** the fair chase definitions used by some hunting groups.

DISCUSS some ways a hunter can become more involved and committed to the conservation of wildlife and the enhancement of habitat. **ENCOURAGE** the group to identify and complete a project that will enhance habitat locally or assist wildlife conservation efforts.

Briefly **DISCUSS** some of the wildlife skills needed to become a competent and ethical hunter. **STRESS** species that are hunted locally in examples.

3) Respecting restrictions
b. Behaving as a guest
1) Leaving things as they are
2) Reporting problems
3) Rendering aid when needed
4) Avoiding any form of damage
5) Watching your words and deeds
c. Giving something back
1) Lending a hand
2) Staying in touch
3) Offering to shim game,

3. Toward non-hunters
a. Watching your appearance
b. Watching your words
c. Apparent disrespect for game
d. Promoting hunting values

4. Toward anti-hunters
a. Respecting their right to an opinion
b. Disagreeing without being disagreeable
c. Understanding their concerns and motivations
d. Avoiding antagonism
e. Defending your right to an opinion

C. Respect for wildlife and habitat
1. Defining fair chase

2. Maintaining adequate skills and knowledge
3. Involvement and commitment

IV. Skills
A. Hunting skills
1. Wildlife knowledge
a. Identification
b. Behavior
c. Anatomy

2. Game recovery
    a. Tracking and trailing skills
    b. Use of trained dogs

3. Game handling and use
    a. Field care
    b. Home care and preservation.
    c. Cooking and serving.

B. Shooting skills
    1. Marksmanship
        a. Practicing field shooting
        b. Staying within your limitations

    2. Shot placement
        a. Shooting for vital areas
        b. Avoiding wounding shots
    3. Shot selection
        a. Waiting for good shots
        b. Avoiding chancy shots
C. Interpersonal skills
    1. Projecting a positive image
    2. Ability to talk effectively

V. Hunter image
A. Image defined
    1. Perception of other people
    2. Projection of who and what you are
B. Actions and words
    1. Behaviors that hurt

    2. Behaviors that help

    3. Watching your words

EMPHASIZE the importance of practicing the type of shooting that will be used in the field. **STRESS** the fact that shooters must stay within both the capabilities of their equipment and their own abilities to use that equipment.

STRESS the fact that proper shot selection and shot placement are vital keys to clean kills and easy recovery of game animals. These skills are essential to any ethical hunter.

ASK small groups to develop a list of behaviors that could be harmful to the image of hunters. After a few minutes, have each small group **SHARE** their list with the larger group.

REPEAT the small group discussion, listing behaviors that help or improve the image of hunters and hunting.

C. Projecting yourself and hunting
   1. Going outside the hunting community.
   2. Promoting hunting values and benefits
   3. Helping others learn to hunt properly

NOTE that our greatest impact on the image of hunters and hunting is in groups or personal discussions where the others involved are not hunters. Helping others to understand hunting or to get started in hunting and understanding why you hunt make the process of selling hunting easier and more positive**.**

VI. Developing a personal code
   A. Acting without a referee

USE one or more dilemmas to force participants into making ethical decisions (see *Dilemma Techniques for Teaching Hunter Ethics)*

   B. Benefits of hunting

Ask an older teen or adult volunteer to **SHARE** some of the benefits they have gained from hunting. **ALLOW** time for a question and answer period.

   C. You, the hunter

Have each participant who has hunted **WRITE** a short statement of why the hunt. **ASK** them to be honest to themselves and to try to think about the real reasons. When they are finished, let any who are willing **SHARE** their reasons with the rest of the group.

Summary Activity

Show a video on hunter ethics or construct a role playing exercise that reinforces the need for a personal code of ethics for all hunters.

Activity

Dilemma Method for Teaching Hunter Ethics

Dilemma techniques are based upon the exposure of participants to different levels of reasoning during the discussion of a realistic dilemma. Dilemmas can be simple or complex, depending upon the maturity of the audience. The leader is in the best position to determine the level of dilemma or discussion that should be presented. Leaders need to understand that ethical reasoning takes place on a variety of levels from the legalistic to the internally governed. Listening to others reason at a higher level is a key to raising ethical reasoning to a higher level. As a result, ample time should be allowed for that discussion to take place, and pat or "expected" answers should be challenged.

Dilemmas are built around a central character, a described set of circumstances and a set of issues. The situation must place the reader as a decision making participant in the scenario in the position of being forced to decide which course of action to take. If participants tend to give "expected" answers and fail to discuss the reasoning behind those answers, the group leader must be prepared to pose some alternatives or challenge the participants to think more deeply.

Dilemmas are relatively easy to develop. To be effective, the dilemma story must have a central character facing a challenge or problem in which a moral or ethical choice must be made from the array of alternatives available.

To use the dilemma method, seat the participants in small groups to aid discussion. Read the dilemma story to the class, and provide a copy for each group to use. Allow them several minutes to select a choice and develop a set of reasons for selecting that choice.

Each group should select a recorder and a reporter. The recorder should keep the discussions on paper. The reporter is responsible for representing the group and their decision when the small groups share their ethical choices with the entire group of participants. By posing a situation with multiple good responses in a short story with enough background information to make a choice, the leader can stimulate thinking about the types of decision that should be made and the processes involved in ethical reasoning. Seldom is there a universally "right" or "wrong" answer in these circumstances. The reasons for selecting the choice are far more important than the choice itself. Focusing on the reasons for the choice and the responsibilities to all parties concerned is evidence of sound ethical reasoning.

AN EXAMPLE FOR A DILEMMA STORY

DEER HUNTING

Jim Pitts is an avid bowhunter who considers himself a true sportsman. He had hunted a particular area for several years trying to get a shot at a magnificent trophy buck. On the final day of the season, he finally got an excellent shot at the big ten-point buck. The arrow flew true to its mark and the deer bolted away. From the signs and the observed point of impact, Jim knew that the buck was mortally wounded. He waited about 30 minutes before searching for his arrow without success, then he waited a while longer before setting out on the blood trail to recover the deer. The trail went further than he had expected, and just before dark it crossed a fence onto posted land.

Jim knew the owner of the posted land, Bob Hendricks. His children attended school with Jim's, and the two men had talked about hunting many times. Although their discussions were cordial, Bob left little doubt of his opinions about both hunting and hunters. Bob was opposed to hunting in any form, and he had posted his land to keep hunters out. Jim knew that he had had several trespassing hunters arrested in recent years.

Jim was sure that Bob would not permit him to enter the property if he drove to the house and asked. With over a mile to his truck and another mile on the road, he felt that the trip would be wasted time. He was positive that his trophy buck was down and dead, probably within a short distance of the fence. In fact, he thought he could see it just at the edge of his vision. Jim also knew that his state had a law against wanton waste that required a hunter to make every reasonable effort to recover any game animal that was hit, and he believed that any sportsman should do all they could to recover game and to prevent needless suffering.

What should Jim do?

HUNTING LAWS AND REGULATIONS

Objectives
Participating young people and adults will:

1. Understand the reasons for hunting laws and regulations
2. Know the basic regulations in their area
3. Know how to get more specific or additional information
4. Have fun while learning

Roles for Teen and Junior Leaders

1. Planting questions or responses to stimulate discussion
2. Role playing mock legislative session
3. Introducing conservation officer
4. Leading small group activities

Helping with “Cookie Activity”.

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Leading dilemma discussions
3. Arrange for or provide teaching materials
4. Arrange for or provide teaching site
5. Arrange for or provide transportation
6. Arrange for or provide refreshments

Best Time: Any time
Best Location: Any comfortable location relatively free from distraction.

Time Required: 30 to 90 minutes

Equipment and Materials:
Enough cookies for everyone
State regulations booklet
Federal regulations pamphlet
Dilemma examples on cards

References
State Hunting Law Syllabus

Federal Migratory Bird Regulations

NRA Hunter Safety and Conservation Manual

State Hunter Training Manual (appropriate sections).

Lesson Outline

Presentation

I. Commons and proprietary resources
- A. European system
  1. Proprietary ownership
  2. Landowner possesses rights to wildlife
- B. Commons resources
  1. Not owned until legally possessed
  2. State "ownership" of resident wildlife
  3. Federal "ownership" of migratory species
  4. Right to pursue/possess governed by law
  5. Tradition and legal precedent for harvesting game for subsistence.
- C. Equitable sharing of commons resources
  1. Restricted seasons or times
  2. Bag limits
  3. Licensing requirements
  4. Restricting methods or equipment

II. Protecting commons resources
- A. Harvestable surplus
- B. Long-term population protection
- C. Success stories
  1. White-tailed deer
  2. Wood ducks
  3. Wild turkeys
  4. Pronghorns
  5. American elk or wapiti

III. Protecting human life and property
- A. Transport laws
  1. Loaded firearms in vehicles
  2. Shooting from or across highways
- B. Safety zone laws
  1. Restricted areas residences, etc.
  2. Method restrictions
- C. Hunting activity restrictions
  1. Shooting hours
  2. Clothing regulations.
  3. Method restrictions.

IV. Funding wildlife management
- A. Pitman-Robertson - Federal Aid in Wildlife Restoration
  1. Excise tax on arms and ammunition
  2. Matching with state money
- B. Licenses, permits and stamps
  1. Federal migratory bird stamp
     a. Refuge system

Application

Ask participants to **DEFINE** proprietor or proprietary. **NOTE** the relationship to ownership of property**. ASK** who owns wildlife in this country.

SET OUT a plate of cookies with about 1/4 to 1/3 as many cookies as kids. **EXPLAIN** that they are a commons resource and may be harvested in any way or number. After the mad scramble; **ASK** the kids if the announced method gave them an equal chance for a cookie. **LEAD DISCUSSION** into the concept of wildlife law – equitable sharing of commons resources. Also note the population effects of uncontrolled harvest. Be sure to have enough additional cookies to share after the point is made.

EXPLAIN that leaving several cookies will allow them to "reproduce," producing a new surplus to be harvested. **ALLOW** another "harvest" using the kids' restrictions and replacing cookies in proportion to the number left on the plate. **REPEAT** a couple of times before asking how we could protect the 'breeding stock."

CITE local examples as much as possible or ask participants to **LIST** local examples.

DISCUSS how these species have benefitted from laws protecting them.

Ask kids to **THINK** of laws meant to protect human life and properly.

ASK where the money to manage wildlife is obtained. Have participants **DISCUSS** how more money could be raised to manage our wildlife resources and who should provide those funds.

b. Waterfowl management.
2. State licenses, stamps and permits
a. Management agency activities
b. Law enforcement

C. General tax levies and check-offs

V. Political expediency and responses to pressure
A. Legislation responding to squeaky wheels
B. General laws for specific problems
C. Need for legislative understanding and informed involvement of users

VI. Relationships between laws and ethics
A. Laws coming from ethics
B. Ethics including law
C. Conflicts between law and ethics

Activity

1. Create an exhibit to explain the types of permits, licenses and stamps pertinent to your state.

2. Ask a local conservation officer or game warden to share common legal issues or questions with the group. Encourage participants to ask questions they may have.

Landowner Relations

Participating young people and adults will:

1. Discuss the importance of private land to wildlife
2. Practice effective methods of obtaining permission to hunt on private land
3. Review legal and ethical responsibilities of hunters toward landowners
4. Develop a permission agreement
5. Develop confidence in approaching landowners
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Distribute materials to participants
2. Lead small group discussions
3. Assist members in developing a permission form
4. Act as landowners in role playing exercises
5. Share personal experiences

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Locate potential landowners to talk with kids
3. Arrange for or provide transportation for youth visits to landowners
4. Share personal experiences with landowners
5. Arrange for or provide a landowner guest speaker
6. Arrange for or provide refreshments

Best Time: Spring through late summer

Best Location: Anywhere (nearby landowners with hunting opportunities desirable)

Length: I hour

Equipment and Materials

state hunting regulations brochures,
copies of state trespass laws
sample permission forms
notebook with permission forms
paper and pencils

References

Basic Hunters Guide, National Rifle Association, 11250 Waples Mill Road, Fairfax, VA,

State hunter education manuals

Sample permission forms (NRA, Izaak Walton League, others)

LESSON OUTLINE

Application

I. Importance of landowners to wildlife
   A. Control habitat quality and quantity
      1. Cover types and locations
         a. Escape cover
         b. Breeding cover
         c. Resting or loafing areas
         d. Wintering cover
      2. Food sources
      3. Water sources
   B. Location often critical to wildlife
      1. Best soils for habitat development
      2. Often in critical wintering areas
      3. May supplement natural foods
   C. Selection of land management options
      1. Wildlife and agriculture
      2. Agriculture only
      3. Development
      4. Conversion to non-wildlife uses
   D. Cooperation with agencies
      1. Control of access for harvest
      2. Advising of poaching or illegal kills
      3. Cooperation with management plans

Ask participants to **DISCUSS** the roles landowners play with wildlife on private and public lands. **USE** leading questions to extract the concepts below as well as any others they may identify. If the group is too large for a discussion as a body, **SPLIT** them into smaller groups led by parents or teen leaders then have each group **SHARE** their information in a rotation. **SUMMARIZE** the discussion to emphasize the major points.

USE specific local examples if they are available to illustrate the points in this section.

II. Landowner incentives for wildlife management
   A. Profit motivation
      1. Fee hunting
      2. Guiding or taking in hunters
      3. Trapping or fur harvest
   B. Tax incentives
      1. Wildlife management tax credits
      2. Access-related tax reduction or payments
   C. Set-aside programs
      1. Passive benefit of set-aside programs
      2. Cooperative development of habitat
      3. Mitigation actions
      4. Conservation Reserve Program (CRP)
      5. Cooperation with private conservation groups
   D. Personal interest
      1. Tradition of managing for wildlife
      2. Personal hunting interest
      3. Pride in having wildlife on the land
      4. Enjoyment of interaction with hunters
   E. Sense of social responsibility
      1. Good will of community
      2. Traditional views of commons resources

Ask participants to **DISCUSS** some of the potential problems a landowner might face as the result of managing their forests, farms or ranches for wildlife as well as domestic stock or crops. After reaching some conclusions about negative impacts of wildlife on agriculture or forestry, ask them to **DISCUSS** reasons a landowner might have to promote wildlife management even when some wildlife species might compete with their livestock, pose a potential threat to livestock or damage crops.

If local landowners who manage for wildlife are available, ask one or more of them to **SHARE** their reasons for being involved in wildlife management on their lands. **ENCOURAGE** the participants to ask questions.

3. Pride in stewardship of wildlife as public trust
4. Sense of wildlife as environmental monitors

III. Why landowners grant or deny permission
   A. Granting access
      1. Responsible and respectful hunters
      2. Personal relationship or friendship with hunters
      3. Sense of hunter responsibility and training
      4. Early (off season) contact with strong introduction
      5. Questions about limitations
      6. Just wanting to know who is out there
      7. Willing to lend a hand where needed
   B. Reasons for denying access
      1. Protection of crops or livestock
         a. Damage to grain or seed crops
            1) Allowing dogs to hunt in standing grain
            2) Walking through standing grain
            3) Digging in winter wheat fields
            4) Driving on fields or rangeland
         b. Livestock concerns
            1) Careless shooting around livestock
            2) Harassment of livestock
            3) Killing livestock
      2. Disrupting farming activities
         a. Bothering owner or employees at busy times
         b. Failure to leave gates as found
         c. Damaging fences and gates
         d. Damaging equipment
      3. Safety and behavior concerns
         a. Irresponsible or unsafe shooting
         b. Violation of safety zones or specific directions
         c. Rowdiness and irresponsible behavior
         d. Unauthorized access
         e. Driving in unauthorized places
         f. Foul or abusive language
         g. Disrespect for land, landowner, pets, stock or landscape
         h. Excessive group size
      3. Denial based upon past experiences or reports from neighbors
      4. Management for personal hunting
         a. Only family members hunt
         b. Invited guests or personal friends only
      5. Hunting as an income source

Have participants **DISCUSS** some of the reasons a landowner might have for allowing hunters to use his or her land. **NOTE** that landowners are much more likely to permit hunting by neat, trained, responsible, courteous, respectful hunters than by others who may not show those characteristics.

REVIEW these reasons and ways to avoid them as a summary for this section.

If possible have a **landowner SPEAK** to the participants about experience, positive and negative, he or she has had directly with hunters. Ask them to **ELABORATE** on experiences they have heard of others having and the impact of those things on attitudes toward hunters. **ENCOURAGE** the participants to ask questions to determine their status as a potential hunter.

        a. Exclusive lease rights granted
        b. Guiding or outfitting hunters
        c. Assumption of game ownership
    6. Uneasy about strangers on the land
    7. Likes privacy
    8. Concerns about off road damage
    9. Concerns about littering
    10. Concerns about liability risks

IV. Obtaining permission to hunt on private land
  A. Make early contact
    1. Off-season contacts preferred
    2. Avoid busy times or seasons for landowner
  B. Dress neatly
    1. Clean, neat clothing
    2. Avoid camouflage
    3. No face paint or other odd appearance
  C. Be courteous
    1. "Sir" and "Ma'am" if regionally appropriate
    2. Greet the landowner warmly
    3. Introduce yourself positively
    4. Tell landowner where you live
    5. Share what you do for a living if it is appropriate
        a. Establish your credibility
        b. Reference your stability and responsibility
    6. Comment on qualities you observe on his land
    7. Ask permission to hunt
        a. Stress your responsibility
        b. Stress your respect for the land and property
        c. Be specific
        d. Include any companions
    8. Thank the landowner for his/her time
        a. Whether permission is granted or denied
        b. Maintain positive and courteous attitude
        c. Obtain written permission if required
        d. Offer a one-way contract on your behavior
  D. Helpful hints
    1. Inform the landowner of special hunting methods
        a. Bowhunting
        b. Muzzleloading
        c. Use of dogs
    2. Keep first-time groups small - two is good
    3. Leave guns at home or out of sight
    4. Keep your dog in the vehicle
    5. Pet friendly dogs
    6. Be sincere, phonies are obvious

V. Responsibilities when hunting on private land

A. Behavior
    1. Safety first and always
    2. Strict sportsmanship
    3. Avoid loud, foul or abusive language
    4. Maintain friendly courtesy
    5. Ask about any special restrictions
B. Treatment of the land
    1. Drive only where permitted
    2. Park so access is not restricted
    3. Leave gates as they were found
    4. Report any problems observed
    5. Avoid disturbing livestock
    6. Keep out of crops that could be damaged
    7. Take out your litter (and any you encounter)
    8. Get specific permission before bringing any group to the land
C. Show respect for the landowner
    1. Offer to share bagged game (dress it carefully)
    2. Always thank landowner when hunt is over
    3. Ask if you can help with off-season chores (e.g. fence mending)
    4. Treat the landowner as a friend
        a. But not OVER familiar
        b. Don't wear out your welcome
        c. Stay in touch between seasons (example: Christmas card)

Activities

1. Assign a reason for refusing access for hunting to each participant or small group of participants. Have them role play the farmer or rancher with others playing the roles of a hunter or hunter wishing to have access to the land. Act out each reason adding persons from the audience if necessary to complete the scene. Discuss what could be done to avoid giving the landowner a reason to refuse access.
2. If appropriate, have participants go to landowners in pairs to ask permission to hunt for a specific species and time. After all participants have had an opportunity to do so, bring the group back together to discuss their experiences and to share what they have learned through the process.

WILDLIFE MANAGEMENT AND THE HUNTER

Participating young people and adults will:

1. Develop positive attitudes toward wildlife and the environment
2. Define the basic requirements of animals (food, cover, water, and space)
3. Explore basic predator-prey relationships
4. Understand interactions and interdependence among the biological and physical parts of the environment
5. Have fun while learning

Roles for Teen and Junior Leaders

1. Lead demonstration exercises
2. Assist participants as needed
3. Conduct portions of the lesson
4. Create visual aids or exercises to aid learning
5. Lead small group discussions

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching site
3. Arrange for or provide transportation
4. Arrange for or provide teaching equipment
5. Arrange for or provide refreshments
6. Teach portions of the lesson
7. Arrange for guest instructors for the lesson

Best Time: Any time

Best Location: Indoors or outdoors

Time Required: 1 to 2 hours

Equipment and Materials

chalkboard or newsprint pad
appropriate writing materials

References

Wildlife Management, Principles and Practices. National Rifle Association, Washington, D.C.

Unendangered Species. International Association of Fish & Wildlife Agencies, Riverside, CT.

A Sand County Almanac, A. Leopold. 1949. Oxford University Press. London.

Helping Wildlife, Working With Nature. Wildlife Management Institute, Washington, D.C.

State Hunter Educational Manuals

Lesson Outline

Presentation

I. Wildlife
   A. Game animals
   B. All mammals and birds
   C. All non-domestic animals

II. Management
   A. Applied science and art
      1. Based upon basic ecology
         a. Basic needs of animal populations
         b. Communities of living things sharing space
         c. Reproduction and recruitment
         d. Mortality

      2. Includes the wants and needs of people
         a. Viewing wildlife
         b. Hunting, trapping or fishing
         c. Wildlife damage to crops or landscape plant
         d. Wildlife accidents or diseases
         e. Future benefits of wildlife to people
         f. Ecological benefits
   B. Definitions
      1. Leopold - wise use

      2. Giles - manipulating for societal objectives
      3. Many similar definitions

         a. Concept of stewardship (enlightened responsibility)
         b. Responsibility to all people for commons resources

III. Principles of wildlife management
   A. Limiting factors
      1. Energy from the sunlight

      2. "Stuff" from the soil, water and air

Application

Have participants DEFINE what they mean by "wildlife." Allow plenty of time for them to voice their concepts. **NOTE** that most wildlife professionals include all free living animals in their definition, even when they make distinctions like big game, small game, waterfowl and non-game operationally.

ASK participants to define ecology. **NOTE** that it refers to the study of living things in their' "house" - that is where and how they live.

ASK how many acorns an oak tree might produce in its lifetime, then **ASK** how many of them must become oaks for the system to remain stable. **NOTE** that only one needs to replace the parent tree in its lifetime. **DISCUSS** the fact that more offspring are produced than can be recruited into populations in most species of wildlife.

ASK what kinds of interests people might have in wildlife. Be sure to include both positive interests and negative ones. **NOTE** that the manager must consider the desires of the society and education of the society as well as considerations about animals and their habitats.

Wildlife management is a form of conservation, the "wise use without waste" of renewable natural resources.

"Wildlife management is the art and science of manipulating wildlife populations and the habitats upon which they depend to meet societal objectives."

DISCUSS these general types of requirements for wildlife, noting that the specific requirements may differ greatly.

a. Food
1) Type
2) Quality
3) Availability

b. Water

c. Cover
1) Type of cover
a) Breeding or nesting
b) Rearing cover
c) Resting cover
d) Feeding cover
e) Escape or refuge cover
2) Arrangement or pattern
a) Patch size
b) Interspersion of patches
c) Accessibility and proximity

3) Space

B. Law of the minimum
1. Something exists in a minimum amount
2. Altering that amount creates a new minimum
3. Limiting factors

C. Carrying capacity
1. Maximum number that can be sustained
2. Constantly changing with conditions
3. Usually considered on an annual or seasonal basis
4. Biological carrying capacity
5. Sociological carrying capacity
a. Unwanted species

b. Nuisance animals
1) Animals ant of place
2) Defined by people

Lead participants to DISCUSS the food habits and preferences of one or more selected game species from their area.

OUTLINE the water needs of selected species, pointing out that some species get all the water they need from food or dew, while others need free-standing water.

SHOW examples of various types of cover for selected local game species, either in the field' or by showing photographs, or slides of excellent cover.

DEFINE a restricted area and **ASK** the participants how many people could stay inside that area. DISCUSS how wildlife species have similar space requirements, some very large and others relatively small areas.

USE The Deer Herd Game to emphasize limiting factors, noting that the population cannot grow beyond a certain size because of “habitat” limits.

QUESTION participants on the desired number of cockroaches, ticks, mosquitoes, black flies or other pests. **LEAD** the discussion to the fact that these animals have biological functions but reducing their numbers is a socially determined objective.

LEAD participants to discuss any nuisance animals they might have encountered. Raccoons, woodchucks, deer, beavers, muskrats, skunks and others might be mentioned.

3) Animals causing accidents
c. Disease or parasite vectors

D. Dynamic equilibrium
1. Natural systems dynamic
2. Balanced changes mimic a static situation

IV. Manipulating populations
A. Overproduction of young
1. Reproduction exceeds replacement
2. Replacement of adults
3. Death or emigration
4. Existence of a harvestable surplus
B. Reduction in population size
1. Mortality factors
a. Predation
b. Starvation
c. Disease and parasites
d. Natural catastrophe
e. Accidents
2. Hunting and trapping as natural mortality
a. Predation
b. Changing the type, not the nature, of predation
c. Self-limitation by the predator
3. Compensatory mortality or natality
a. Reduction to carrying capacity inevitable
b. Increases in birth or recruitment rates
c. Regulated to meet human needs and wants

4. Primary tools
a. Seasons
b. Bag limits
c. Equipment restrictions
d. Limited issuance of tags

V. Manipulating habitat
A. Habitat requirements specific

Wildlife Management Basics

1. Changing arrangement

2. Changing structure (vegetation types)

ASK participants to **DISCUSS** their concepts of the Balance of Nature, carefully including the information contained in the sequences above.

Have participants **LIST** some of the factors that can cause mortality or reduction in a population. Prepare the way to compare them to human-imposed mortality.

Help participants to **DISCUSS** how human predators differ from others. **EMPHASIZE** self-limitation and the selling of restrictive rules to govern "predatory" behavior.

DISCUSS the ability to use a portion of a renewable resource without damaging the ability of the resource to continue being productive and available for other societal wants and needs.

Lead participants to **DISCUSS** some ways they might be able to limit the harvest of a game species to take only the harvestable surplus or less.

3. Addressing limiting factors

B. Community management
1. Seldom manage one species
a. Species share habitat preferences
b. Target species the reason for management
c. Associated species benefit from management
2. Managing for communities
a. Groups of plants and animals
b. Maintaining dynamic interactions

C. Systems management
1. Complex interactions
a. Wildlife biology
b. Land and water capabilities
c. Human wants and needs
d. Human pressures
2. Integrating concerns and abilities
a. Biological limits and capacities
b. Human interests
c. Affordability
d. Professional competency
1) State-of-the-art science and art
2) Enlightened responsibility
3) Wisdom in "wise use"

Activities

1. Consider taking a field trip to a managed area where the managers can discuss what they are trying to do, what techniques are in use and the expected or demonstrated impacts of their efforts on the wildlife population.

2. Select an area and have the group develop a possible management plan for the area. Allow them to consider all potential options and keep restrictions to the minimum while they work. Having a professional discuss options and potential actions with the group could be extremely valuable.

The Deer Herd Game

This game was adapted from "Oh, Deer," a Project WILD activity. Project WILD is a national environmental education program developed by the Western Regional Environmental Education Council.

Many factors affect the ability of wildlife to survive over time. Weather conditions, disease, predators, pollution and habitat destruction are some examples. Habitat is the key to wildlife survival and population size.

For the purposes of this exercise, habitat is defined as food, cover and water. If any one of them is lacking or restricted in availability then wildlife numbers are reduced. In the accompanying exercise, participants learn that "deer" numbers will be governed by the availability of habitat elements.

1. Divide the group into a deer and a habitat group. These may be equal in size or with only one or two deer. The latter tends to show population growth better.

2. Explain that we are using three elements to define habitat for the purpose of this exercise - food, water and cover. Demonstrate how to make the symbols for each habitat component. For food, place both hands on the stomach. For water, hold the fingers to the lips. For cover, touch the hands together over the head. Deer participants will make the symbol for what they need, habitat participants will make a symbol for what they are.

3. Establish two lines approximately 15 to 25 yards apart in an open area, placing the "deer" behind one line and the "habitat" behind the other. (You might want to have the deer go uphill to slow them down.)

4. Have the “deer” line turn their backs to the “habitat” line so each “habitat” and each “deer” can individually decide what habitat symbol to make.

5. After they have made their symbol decision, both sides turn around. Upon the command of the moderator, and while continuing to hold their habitat symbol, the "deer" walk or run toward the appropriate habitat element, standing with a person with the same symbol as their own. They return to the starting line with that habitat component which has now been incorporated into the “deer” population. Since the deer has found the habitat element it needs to survive and reproduce, the "habitat" person now becomes a "deer", and the process is repeated. **Note**: Neither the deer nor the habitat can change symbols once they have decided on one during each bout of selection.

6. If a "deer" fails to find the habitat element it requires, that deer "dies" and becomes habitat. Only one deer may capture any element of habitat, so if two or more try to get the same one, only the first one to reach the habitat person survives.

7. The moderator should record the number of deer at the beginning and end of each bout or round. Running 8-10 bouts or rounds of selection is usually adequate to let participants see how the population and habitat interact. At the end of the game, plot the deer numbers against "years" (bouts). Note the change in behavior of the deer as well. As the habitat becomes more limiting, “deer" will run or otherwise compete to get to the needed habitat first.

8. Lead a discussion with the participants on what they observed and did during the game. They should be able to discuss what animals need to survive and how these elements work as limiting factors that affect the animal's survival. They should recognize that the habitat and the population are both dynamic. Finally, they should be able to recognize the increasing competition as populations increase and the stress that places on them.

9. If desired, run a few bouts with "trucks" or "hunters" as mortality factors, where any deer taken becomes habitat. A volunteer with arms extended moving across the flow of traffic makes a good "truck." Hunters can "shoot" deer by tossing knotted socks. Limits can even be applied if desired. A volunteer can become a “mountain lion” and the “deer” that are touched become “mountain lions”. The exercise can become very complex, however that will impress on the participants how complex population and habitat dynamics are.
10. Using a simple graph with time (the different bouts) on the Y axis and population numbers on the X axis, display the results so participants can see the population fluctuations. Discuss the changes and the relative pros and cons of each type of population reduction.

Use your imagination in applying this exercise to the hunting and wildlife management context. It provides many opportunities.

Caramelita Hunt

Introduction
A successful hunter must be a successful predator. Although we may differ from other predators in some ways, like imposing limitations upon ourselves, the skills required to be a successful predator certainly overlap. There are many ways to teach the principles of predation and predator avoidance to a group of people learning about hunting and wildlife. This activity is an active and involving way of getting those principles and concepts across to an audience. It is simple, and it carries its message effectively. It forms an excellent base for discussion of what makes predators successful and how prey avoids predation. It can help the participants realize that hunters are indeed predators and a part of the natural system.

This activity will help participating youth and adults to:

1. Understand the principles and concepts of predation and predator prey relationships, including:
    a. Predator-prey relationships
    b. Specific searching images
    c. Variations in hunting efficiency
    d. Cryptic coloration or camouflage
    e. Diminishing returns and catch/effort relationships
    f. Relationships among population density, competition or hunting pressure, and other factors affecting hunting success
2. Develop a positive basis for discussing wildlife management principles

Materials:
Individually wrapped caramels or similar items. If the activity is held indoors or on a lawn or playground, variations might use beans (Beanalita hunt) of various types, e.g. kidney beans, black beans, and pinto. beans.

Preparation:
The "prey" should be planted in their selected "habitat" prior to the beginning of your session. Participants should not see this being done. The "hunt" area should be large enough that the group will not be crowded, but small enough that you can maintain some control over the “predators”. Nearly any type of area can be used, from a lawn or parking lot to an area covered with dense leaf litter. Be sure to match the prey to the terrain and your purposes. You may distribute the prey evenly, in clumps or in association with some habitat feature. Placing it near some selected habitat feature can illustrate the relationship between preferred habitat and prey abundance for more advanced groups.

Procedure:
Tell the participants that you are going to take them on a caramelita hunt, but DO NOT TELL THEM WHAT A CARAMELITA IS. An introduction might go like this.

"We are very lucky to be holding this workshop here in (insert name) because they have a unique critter here called a caramelita. I'm not quite sure what its exact classification might be - perhaps it is related to snails because it is very slow moving. Some people cook them, but I prefer just to skin them and eat them raw. The skin is very thin and easy to remove, so you can do it without even using a knife. Remember though that you are a predator in this activity. Since there is normally no advantage to one predator who helps another, do not let the other predators see what you are finding. In order for me to see you have survived as a predator, keep the carmaleta or at least its skin as evidence. From this point on there must be no talking or communication between you predators."

Take the group to the "hunting area" and give any additional instructions that might be helpful. For example, you will likely need to define the boundaries of the potential search area. Have the participants form a line facing the hunting area. Tell them they will have about 30 seconds to capture their prey. Initiate the hunt, and let it continue until you have observed that approximately 10% of the predators have

captured prey. Have all the participants return to the starting line, cautioning them not to show their prey to anyone or to tell them what they have caught. Have the "successful predators" step forward and make sure that they have actually caught a caramelita.

Announce to the group that these were successful predators. They were able to capture prey, so they will live to hunt again. The unsuccessful predators died because they were unable to find prey. Explain that survival rates of young predators are often in the 10-20% range under natural conditions, so the kind of survival rates we observed were normal.

Allow the successful predators to hunt for another 30 second period. Almost all of them will be successful in the second hunt. Ask the group what makes a predator successful. Anticipate answers like:

Experience
Knowing what to look for,
Knowing where to look,
Covering a large area,
Recognizing prey, or
Being faster than competitors.

Ask the group what makes prey successful in avoiding predators. Try to draw out answers like:

Remaining motionless,
Being camouflaged,
Being small,
Using cover for concealment or hiding in shadows

Have the group discuss these two sets of characteristics and how understanding them can be valuable to the hunter.

Variations:
Many variations on the activity are possible, and they can be used to illustrate other points you might want to make. Sometimes, for example, you might wish to have several "species" with different habits or habitats. Each one can be given a different point value or survival value in a competitive game. A few other examples are listed below to stimulate your thinking on possible alternatives and uses for this teaching tool.

1. Set a bag limit on the number of caramelitas that can be taken. By making them obvious and abundant, difficult to find, but abundant, or by cuing a few people in to the game, you can show how bag limits can be used to spread the potential for harvest among the owners of the commons resource.

2. Limit the area in which the hunt may take place, designating areas outside the hunt zone as refuges. Place obvious and abundant prey outside the open area, tempting the participants to violate the refuge boundaries. Use that situation as a springboard for discussion of ethics and related topics. It might be useful to have a person appointed as a violator and see if that has an effect on the other participants, (e.g. do they use peer pressure to force conformation to the rules, report the violation, or resort to following the example of the violator).

3. Repeat the hunt several times with prey distributed relatively evenly, in scattered and tightly clumped groups, or in one large clump. Try using some rather subtle characteristic of the area like a particular plant type, shallow depressions in the ground, or the bases of trees as cues to the locations of the clumps. Have the participants discuss how the searching time was affected by the different distributions. Ask them to compare the relationship between the distribution and the way they went about hunting for the items. Ask whether they discovered any pattern to the distributions of the prey.

4. Use several kinds of prey, with some having discreet distributions (like only being found under the loose bark of certain types of trees) and others being scattered at random throughout the area. Compare the effectiveness of the group in finding the different types.

CAREERS IN WILDLIFE AND SHOOTING SPORTS

Participating young people and adults will:

1. Explore wildlife or shooting related careers
2. Examine personal career and hobby interests
3. Recognize the economic importance of wildlife based recreation and shooting sports
4. Develop accurate perceptions of conservation professionals and their careers
5. Evaluate personal interest in these fields of employment
6. Have fun and meet new people while learning

Roles for Teen and Junior Leaders

1. Ask questions of guest speakers
2. Pose planned questions to stimulate discussion
3. Lead suggested small group activities
4. Share part-time/seasonal job experiences
5. Introduce speakers

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching sites
3. Arrange for or lead field trips
4. Arrange for local mentorships
5. Serve as group leaders for field trips
6. Share personal career choices related to this area (both why they did or did not select careers)
7. Arrange for or provide transportation
8. Arrange for or provide refreshments

Best Time: Any time

Best Location: Any comfortable teaching space

Time Required: 1 or more hours, depending upon speakers and field trips used

Equipment and Materials

pencils
paper
scissors
index cards
sporting magazines
job description handouts
resource people (guest speakers)

References

Starship Self - Leader's Guide (4-H 1102), - Member's Guide (4-H 1103). Michigan State University, Cooperative Extension Service, E. Lansing, MI

Wildlife Careers. The Wildlife Society, Washington, D. C.

LESSON OUTLINE

Presentation

I. Career search process
   A. Interest apparent
   B. Steps in a career search
      1. Identifying likes/dislikes and abilities
      2. Shopping for variety of jobs and employers
      3. Finding out more about jobs and employers
      4. Personal decision-making (what is right for me?)

II. Identifying likes and dislikes
   A. Adults spend more time working than any other activity
      1. Liking job reduces stress
      2. Liking job increases productivity
      3. Liking job increases enjoyment

   B. Hobbies as careers
      1. Pros and cons
         a. Pros stated above
         b. Cons
            1) May alter interests over time
            2) Working at fun changes things·
            3) Hobby as career adds pressure

III. Shopping for employment
   A. Many careers related to conservation and shooting
      1. Management related careers
         a. Wildlife management
         b. Conservation law enforcement
         c. Conservation education
         d. Wildlife pathology
         e. Wildlife administration
         f. Wildlife science/research
      2. Recreational careers
         a. Outfitter
         b. Guide

Application

DISCUSS the career search steps with participants, explaining that the lesson is designed to help them explore careers in shooting sports and wildlife recreation. **ASK** what careers have been chosen by their parents or siblings. Have them **INVESTIGATE** how those career decisions were made.

Have each participant **LIST** 10 things they love to do or 10 activities that are important to them. Make **SURE** they understand that these can include any personal likes, including shooting and wildlife-related activities.

Have each participant **REVIEW** his or her list and place the following codes by each item: A = things they do alone, 0 = things done with others, $ = things that cost money to do, M = things they'd like to do more of, numbers 1, 2 and 3 next to the three favorite things.

Ask participants to **STATE** some of the positive aspects of choosing a career that is closely related to their hobbies. **RECORD** their answers.

Ask participants to **STATE** some of the negative aspects of choosing a career that is related to their hobbies. **RECORD** those answers so the two sets can be compared.

COMPARE the pro and can lists. Lead the participants to **DISCUSS** how their career choices might be influenced by their personal likes and dislikes and how their hobby interests and career selection might be related.

CONDUCT a magazine career search. Provide a supply of sporting magazines (as broad a variety as is readily available) and have small groups of participant's page through them listing all careers they find in the magazine(s). **REMIND** them to look at the advertising and other materials as well as articles. Consider having some type of small award for the team with the largest variety of legitimate careers. **NOTE** that the careers listed below are only a fraction of the possible careers in the field and that they tend to lump wide ranges of careers together.

c. Gun dog breeder/trainer
d. Shooting preserve operator
e. Gamebird breeder
f. Exotic wildlife breeder
g. Shooting range operator
h. Shooting instructor/coach

3. Sporting goods careers
   a. Manufacturer
      1) Ballistic engineer
      2) Mechanical engineer
      3) Chemical engineer
      4) Designer /draftsman
      5) Gunsmith
      6) Metallurgist
      7) Machinist
   b. Sales and marketing
      1) Manufacturer's representative
      2) Wholesale sales
      3) Retail sales
   c. Support services
      1) Office management
      2) Advertising
      3) Shipping
4. Sports media
   a. Sporting press
      1) Author
      2) Editor
      3) Publisher
      4) Photographer
      5) Advertising
   b. Sports radio/television
      1) Script writer
      2) Cinematographer
      3) Director
      4) Producer
      5) Editor
      6) Sound production
      7) Sports personality
5. Much, much more

B. Career relationships
   1. People
   2. Data (information)
   3. Things (tools)
   4. Animals and plants
   5. Combinations of two or more

NOTE that most careers involve an emphasis upon people, data, things, animals and plants or some combination of those items. **STRESS** that career choices should include the type of relationships one enjoys in his or her work. Have each participant **CODE** his or her list by including a code for each group of relationships that the career includes. USE (P) for people, (D) for data or information, (T) for things or tools, and (A) for animals and plants. If more than one category is involved extensively, include multiple listings. **DISCUSS** their ratings of the positions and **COMPARE** their ratings with the realities of each type of position.

Wildlife Careers

IV. Finding out more…
- A. Reading
  - B. Direct observation
  1. Field trips
  2. Site visits
  3. Career days
- C. Guest speakers
- D. Personal interviews
  1. Formal
  2. Informal
- E. Mentorships
  1. Working with a professional
  2. Volunteer work in a field
- F. Some career choice criteria
  1. Likes/dislikes
  2. Strengths, abilities
  3. Desired working conditions
  4. Desired locations
  5. Job availability/competition
  6. Salary and benefits
  7. Promotion potential
  8. Level of responsibility required
  9. Level of education needed
- G. Conducting career research
  1. Role models
  2. Survey/questionnaires
  3. Field trips to work site

SHARE some possible sources of additional information or ASSIGN investigation of specific careers to teen or junior leaders. USE as much variety of technique in presenting career choices as you are able to assemble in your community.

Ask participants to **OUTLINE** some of the things that might be important in making a career decision. Use **QUESTIONS** to bring out factors they fail to present in their discussion.

If potential career interests are known, **PLAN** a field trip or invite a guest speaker to **PRESENT** a summary of his or her career characteristics and viewpoints on the career.

Where opportunities can be made available, **ARRANGE** for mentorships, pairing interested youth with professionals who would make good role models. Have the young people keep a **JOURNAL** of their experiences and share their observations and experiences with the group.

V. What's right for me?
- A. Many choices available
  1. Personal choice important
  2. Influences beyond self
     - a. Parents
     - b. Teachers
     - c. Youth leaders
     - d. Peers
     - e. Professional mentors
  3. True to yourself
- B. Continuous process
  1. On-going development of plans
  2. Changing future plans
     - a. Common occurrence
     - b. Refining objectives
     - c. Realizing new goals

Have participants **REVIEW** their lists and compare them with potential career choices outlined. Ask them to RECORD some possible choices for career and avocational activities.

STRESS the importance of continuous review of long-term plans and flexibility to modify plans as new information and objectives emerge. **NOTE** that perfect situations may not be achieved and that other types of careers are often best for the individual. **EMPHASIZE** that the model used is adaptable to other kinds of careers as well.

d. Acceptable and desirable

Summary Activities

1. Have each participant construct a Shooting and Wildlife Hobby and Career Plan. Have them include personal goals, things needed to reach those goals, and dates by which they plan to reach those intermediate steps.
2. Play a game of career charades. Write a set of index cards with career types on them. Select teams of members and have a member of a team select a card. As, they act out the career, have members of that team try to guess the career. Set a time limit of about two minutes, and keep the activity lively. Use this to discuss the nature of those careers and participant interest in them.
3. Try using a What's My Line game approach where selected youngsters answer a series of yes/no questions about the career. Allow a maximum of 20 or fewer questions.

HUNTING RIFLES

Participating young people and adults will;

1. Understand the array of rifles used in hunting
2. Understand the ammunition types, available
3. Know how to select appropriate arms and ammunition for specific hunting purposes
4. Understand basic rifle ballistics and bullet performance
5. Have fun while learning.

Roles for Teen and Junior Leaders

1. Assist with demonstrations
2. Control observers during demonstrations
3. Develop and lead a summary activity
4. Ask questions to stimulate discussion
5. Present portions of the lesson content

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Share personal equipment experiences and choices
3. Arrange for or provide transportation
4. Arrange or provide refreshments
5. Arrange for or provide teaching materials
6. Arrange for or provide a teaching site

Best Time: Anytime

Best Location: Any safe shooting area

Time Required: 1 to 2 hours

Materials and Equipment

bullets (assorted shapes and styles)
ballistics reference manuals
bullet board or bullet chart
empty cartridges or dummy rounds
soap bars or eggs
cabbage (thoroughly soaked)
water-filled plastic or metal container
high power rifles
.22 rimfire rifle
ammunition for demonstration rifles
trajectory charts
one pound can of beans
ruler
recovered rifle bullets

References

The Complete Book of Rifles and Shotguns. O'Connor, J, 1961. Outdoor Life. Harper and Brothers, New York.

Arms and ammunition company catalogs and fliers

Component manufacturer's reloading and ballistics handbooks (DuPont, Hercules, Hornady, IMR, Lyman, Nosier, Sierra, Speer, Winchester and others)

Teaching Outline

	Application
I. Objective: quick, clean kills A. Shot placement 1. Central nervous system a. Brain b. Spinal cord 2. Cardio-vascular system a. Heart b. Major vessels 3. Pulmonary system - lungs 4. Careful placement of shot is vital	**USE** models or slap-on charts to show locations of vital areas on selected game animals. Have participants indicate where they would hold for a clean kill, then overlay an organ chart or turn the model over to show hit locations: **STRESS** the importance of bullet placement for clean kills.
B. Energy absorbed l. Bullet kills by hydrostatic shock 2. Energy transferred to vital organs is the key	**DEMONSTRATE** hydrostatic shock by shooting a fluid-filled (completely) container, like a 2 gallon oil can filled with water, or a well soaked cabbage, with a high velocity, frangible bullet at about 100 to 200 yards. Warm cans of soda can be used at closer range if desired. Watermelons are also excellent. **POINT OUT** that animals are mostly water and violently moving water is the cause of these spectacular events.
II. Range in energy from tens to thousands of foot-pounds	**DEMONSTRATE** a foot-pound by holding a one pound object (a can of beans, etc.) one foot above a surface, and dropping it. **ASK** how hard that would hit.
A. .22 rimfire long rifie smallest commonly used sporting rifle 1. About 100 to 150 ft-lbs 2. Small game hunting	**SHOOT** one or two bars of soap, gelatin blocks or eggs with a high velocity .22 rimfire cartridge. **ASK** participants whatthey observed about the effect on the target.
B. Most powerful US-made rifle cartridge - .460 Weatherby Magnum 1. >7000 ft-lbs 2. For largest game	**HAVE** participants compare the volume of a large, belted magnum case and .22 rimfire case. **ASK** them to discuss the observed differences.
C. Recoil momentum and bullet momentum equal 1. Mass of rifle and shooter 2. Relationship to shot placement	**HAVE** a volunteer (or several) shoot one round from each of two closely matched rifles with about the same weight and style using a small caliber, high velocity bullet and a larger, slower one with about the same energy. **ASK** them to compare the recoil they felt with each rifle. **DISCUSS** the nature of recoil and the effects of bullet weight and velocity on it.
D. Poorly placed powerful bullet not as good as well-placed but less powerful one	
III. Choices usually involve compromises A. Legal considerations 1. Minimum energy 2. Minimum caliber	**COVER** any local restrictions on energy or caliber here.
B. Action types 1. Rolling or falling block single shots 2. Hinge actions	Briefly **REVIEW** action types. **DISCUSS** some of the pros

3. Bolt actions
4. Lever actions
5. Slide actions
6. Semi-auto actions

C. Personal tastes or aesthetics

USE a set of rifle pictures or photographs and ask each member to place them in order of their personal preferences. **DISCUSS** the reasons they list for placing the rifles in the order they did, for example, stock style, stock finish, action type; brand name, etc.

D. Physical considerations to use in selecting a caliber or chambering
1. Bullet mass
2. Bullet velocity
3. Energy
4. Penetration

DEMONSTRATE the variety of bullet types and shapes available using a bullet board, wall chart or manufacturers' catalogs. **ALLOW** participants to ask questions if desired. **CHALLENGE** them to match bullets to hunting uses.

E. Questions and answers
1. Versatility or one purpose
a. Loads available

COMPARE the potential versatility of a .30-06 (or similar chambering) versus a highly specialized one like the .17 Remington (or a similar loading). **DISCUSS** the reasons for that versatility or specialized use.

2. Normal range of shots
a. Terrain
b. Techniques
c. Long shots - premium on high velocity
d. Select for normal conditions

GRAPH the trajectories of selected cartridges with different velocities and the same zero (e.g. .30-30, .30-06, .300 Weatherby or .22 Hornet, .222, .22-250, 220 Swift).

3. Size of game hunted
a. Over-kill on dangerous game
b. Adequate energy to kill cleanly
c. Larger animals require deeper penetration
d. Bullet selection to fit game

SHOW the relationships between momentum (penetration ability), calculated as bullet mass times velocity (M =mv) and kinetic energy (killing power) calculated as ½ bullet mass times velocity squared ($E=mv^{2}/2$) of bullets. **ENCOURAGE** kids to discuss the relationships and draw basic conclusions about energy and momentum.

IV. Bullet Selection

A. Calibers available
1. Diameter (mm or inch)
2. . 17 to .458
3. Caliber and mass
4. Mass and velocity

REVIEW the bullet board, bullet chart or ammunition manufacturer's flier to show range of sizes and styles available.

B. Bullet characteristics
1. Construction
a. Cast and jacketed
b. Frangibility
c. Mass-retaining
1) Solids
2) Core bonding
3) Hot-core, etc.
4) Partition

USE recovered bullets or. illustrations to demonstrate how these various types of bullets react on impact. **STRESS** the value of core retaining bullet types for large game.

2. Sectional density
a. Weight (pounds) divided by diameter (inches)

SELECT a series of bullets in one caliber. Have the kids **ARRANGE** them in order of increasing sectional density.

b. Relationship to penetration and ballistics

3. Ballistic coefficient
   a. "Slipperiness" through air
   b. Shape plus sectional density
   c. Velocity retained

PROVIDE a set of bullets in the same weight but different calibers and shapes. Have the kids **ARRANGE** them in order of increasing ballistic coefficient. **COMPARE** round ball, wadcutter, round nose, spitzer (various) boat-tail for aerodynamics.

V. Some examples of selections
   A. Small game
   B. Varmints
   C. Fur hunting
   D. Deer
   E. Pronghorns
   F. Moose, elk, caribou
   G. Bears
   H. Elephants and buffalo

LEAD young people in discussing the types of rifle cartridges and loadings that might be best for each use. **ADAPT** the exercise to local conditions and species, but leave some high adventure types to stimulate discussion. **FOCUS** on reasons for their selections, adding insight as needed to help in the choices.

Summary Activity

The last part of this exercise would make a good summary activity. Have each of the participants pick a game species and a set of conditions (make the difficulty of the choice appropriate to the age and experience of the young people) then attempt to pick a rifle and load combination that would be appropriate. Remember to rely on both ballistic performance and shootability. Let the discussion run after they have had a chance to make their selections.

Hunting with Shotguns

Participating youth and adults will:

1. Understand the selection and use of shotguns in hunting.
2. Practice balancing gauge, choke, shot charge with range and game characteristics.
3. Apply pattern and pellet energy understanding to hunting loads.
4. Understand the use and limitations of shotguns in big game hunting.
5. Have fun while learning.

Roles for Teen and Junior Leaders

1. Set up or conduct demonstrations.
2. Assist with controlling live shooting.
3. Distribute and collect "pass arounds."
4. Interpret pattern sheets.
5. Discuss choke, gauge, and shot selection.
6. Lead small group discussions.

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above.
2. Present personal experiences in shotgunning.
3. Arrange for or provide transportation.
4. Arrange for or provide teaching site.
5. Arrange for or provide equipment.
6. Arrange for or provide refreshments.

Best Time: Any time

Best Location: Safe outdoor area

Time Required: 1 ½ to 2 hours

Equipment/Materials

shotshell cases (10, 12, 16, 2O, 28 gauge and .410 bore cases)
assorted shot 000 buck - #9
fiber and plastic wads
vials with ½ to 2½, ounces of shot
pattern sheets (skeet, IC, mod, IM, full) at 20, 30, 40 and 50 yards, varied shot charge
short pieces of 1 x 4" or 1 x 6" pine
two or more well soaked cabbages
wood stake
pattern sheets with buckshot, if desired
rifled slugs (cut away, recovered)
shotguns (gauges, actions, barrel lengths)
shot selection charts (handout)
life-size cutouts of gamebirds and mammals (colored acetate or plexiglas)

References

Shotgunning: The Art and Science. R. Brister. Winchester Press, New York, NY. 1987.

The Complete Book of Rifles and Shotguns. J. O'Connor. Outdoor Life, Harper and Brothers, New York, NY. 1961

State Hunter Education manuals

Arms/ammo manufacturer's catalogs

Lesson Outline

Presentation	Application
I. Shotguns as hunting arms	Ask participants to **LIST** some types of hunting that are done with a shotgun. Try to include types that use shot charges and single projectiles.
A. Multiple projectiles for moving targets 1. Timing 2. Pointing	**STRESS** the fact that shotguns used with a shot charge are pointed rather than aimed, and that timing the arrival of the shot charge and the target is the critical factor in success.
B. Single projectile for big game 1. Mimic rifle use 2. Short range accuracy 3. Sight picture and trigger control	**REINFORCE** the notion that using a shotgun like a rifle demands rifle-like shooting skills and actions.
II. Shotgun mechanics A. Gauge 1. Number of bore-diameter lead balls per pound a. 10 balls per pound - 10 gauge b. .410 bore 1) Not a gauge 2) Actual bore diameter or caliber	**PASS AROUND** various dummy rounds or empty cases for various gauges and the .410 bore. Give members a bore diameter table.
2. Bore size directly related to shot charge 3. Bore size inversely related to shot string length	Have participants **CONSULT** a manufacturer's leaflet or table to determine some of the standard shot charges for each gauge.
B. Chamber length 1. Safety considerations a. Match ammunition to chamber length b. Shorter ammunition acceptable c. Longer than chamber length dangerous 2. Shot charge differences a. Payload increases with length b. Increasing charge increases effective range	
C. Other safety considerations 1. Damascus barrels unsafe 2. Mixing gauges dangerous a. Bore obstruction b. Excessive pressures c. Deadly combinations 1) 20 gauge in 12 gauge 2) 16 gauge in 10 gauge 3) 28 gauge in 20 gauge	**DEMONSTRATE** bore obstructions using dummy rounds or empty unprimed cases.
D. Choke 1. Constriction of bore a. Control of shot distribution b. Increasing pattern density	**DIAGRAM** or **PASS AROUND** a section of a shotgun barrel showing the position of the choke. **NOTE** that choke boring is designed to control the dispersion of the shot charge.

Hunting Shotguns

2. Choke types
   a. Jug
   b. Swaged
   c. Machined
   d. Variable
   e. Screw-in tubes
3. Vary with manufacturer
4. Common chokes designations
   a. Cylinder bore - no constriction
   b. SK - skeet
   c. IC - improved cylinder (quarter choke)
   d. Mod - modified (half choke)
   e. Full
   f. Others
      1) Skeet 2 (strong IC)
      2) Improved modified (three-quarter choke)

DISCUSS the use of choke devices or types, including the advantages and disadvantages of each type. **SHOW** examples or illustrations to aid learning.

DISPLAY pattern sheets fired with the same shot charge at the same distance with only the degree of choke being changed. **DISCUSS** the relationship between the degree of, choke and pattern density: Ask participants to **DISCUSS** how changing the amount of choke could modify the effective range of a shotgun.

E. Barrel length
   1. Minor influence oh velocity
   2. Primary influences
      a. Length of "sighting plane"
      b. Smoothness of swing

II. Shotgun ballistics
   A. Projectile energy
      1. $E = ½ MV^2$
         a. M = mass (related to weight)
         b. V = velocity
      2. Range of pellet energies
         a. About 2 pound-feet for 1/9 shot
         b. About 225 pound-feet for 000 buckshot)
         c. Seldom limits range if proper size selected

DEMONSTRATE or have youth **CALCULATE** projectile energy for a sample projectile.

   B. Pattern density
      1. Interaction of shot charge, choke, and distance
         a. Density decreasing with distance
         b. Density increasing with choke
         c. Density increasing with shot charge
      2. Effective ranges of various chokes
         a. Varies with gauge and shot charge
         b. Skeet and IC - about 30-35 yards
         c. Modified - about 40-45 yards
         d. Full - about 50-55 yards
         e. Test to determine
      3. Pattern usually limits effective range

DEMONSTRATE or **DISPLAY** patterns shot with various shot charges at several distances using the same choke. Then **CHANGE** the choke and use a single shot charge at varying distances to see the effects of different chokes on patterns.

Ask participants to **COMPARE** the patterns and **DISCUSS** the effects of shot charge, choke and distance on pattern density. Lead them to **SPECULATE** on the process of matching gun, choke, and load to game and conditions.

If possible. **COMPARE** pattern sheets fired with shotguns of similar nominal chokes from different manufacturers to **DEMONSTRATE** the need to pattern a shotgun to determine true performance.

Hunting Shotguns

II. Matching equipment to needs
- A. Cost and personal preference
  - 1. Action types
    - a. Advantages
    - b. Disadvantages
  - 2. Fit - shooting where you look
  - 3. Aesthetics
    - a. Looks
    - b. Feel
    - c. Other factors
- B. Single purpose or general use
  - 1. Special designs for special use
    - a. Long range pass shooting
      - 1) Long barrel for smooth swing
      - 2) Tight choke for dense pattern
      - 3) Heavy shot charges
        - a) Long chambers for 3 or 3½ inch shells
        - b) 10 gauge or 12 gauge guns
    - b. Turkey hunting
      - 1) Short barrel for easy concealment
      - 2) Tight choke for dense patterns
      - 3) Heavy charges of shot
      - 4) May use sights
      - 5) Often camouflaged
    - c. Upland bird hunting
      - 1) Light and easy to carry
      - 2) Short barrels for quick handling
      - 3) Open chokes - close shots
      - 4) Gauge to match preferences
  - 2. General use shotguns
    - a. Versatility important
    - b. Gauge selection
      - 1) Common use
      - 2) Adequacy for most demanding use
    - c. Interchangeable barrels or chokes
- C. Gauges for hunters
  - 1. 12 gauge - 3 or 3½ chamber
    - a. Most versatile boring
    - b. Shot charges from 1 oz. to 2½ oz.
  - 2. 10 gauge the heavy weight
    - a. Excellent long range gun
    - b. Heavy waterfowl gun
    - c. Turkey gun
  - 3. 20 gauge 3" chamber
    - a. General purpose light gun
    - b. Light guns available
    - c. Quick-swinging upland gun
    - d. Adequate close range waterfowl gun

DISCUSS relative cost, speed, balance, weight, choke combinations available, reliability and other factors that may be used in selecting an action type. Include single shots of all action types, doubles (both over-under and side by side), bolt actions, slide or pump actions and semi-automatic or self-loading actions of both recoil and gas operated designs. If desired, have parents or teens discuss their preferences, giving reasons for selecting them.

DISPLAY some specialized shotguns and have participants **NOTE** the features that make them effective for their specialized uses.

Have participants **STUDY** a manufacturer's catalog of shotshell loadings and note the diversity of loads available in each gauge. After they have studied the materials, ask them to **SELECT** a shotgun gauge for several purposes, defending their choices.

Hunting Shotguns

4. 28 gauge and .410
   a. Very demanding guns
   b. Shorter effective range
   c. Limited ammunition loadings
   d. Best for experts and short range

D. Expected ranges for hunting
1. Most upland game within 35 yards
   a. Shorter in dense cover
   b. Slightly longer in open country
2. Decoyed waterfowl like upland game
3. Pass shooting waterfowl
   a. 40 to 50 yards common'
   b. Tight chokes, big shot
4. Late season or driven upland birds
   a. Tighter chokes, larger shot
   b. Ranges to 45 or 50 yards
5. Turkey
   a. Up to about 40 yards
   b. Very dense patterns
   c. Turkey head as a target
6. Ethical considerations
   a. Sure-kill zone
   b. Lead and hitting
   c. Crippling loss

E. "Toughness" and other factors
1. Game varies in "ability to carry lead"
2. Tough species
   a. Hard to stop or kill
      1) Pheasants
      2) Waterfowl
      3) Squirrels
      4) Coyotes and faxes
   b. Big shot/dense patterns
3. "Soft" species
   a. Easily killed or stopped
      1) Most upland birds
      2) Rabbits
   b. Smaller shot
   c. Less dense patterns
4. Some variation with season
5. Some variation with technique

III. Hunting big game with a shotgun
A. Rifled slugs and other single projectiles
1. Importance of sights and sighting in
2. Specialized barrels or open chokes best
3. Staying within sure-kill range
   a. Maximum about 75-100 yards
   b. Accuracy, not energy, the limiting factor
   c. Excellent short-range choice

NOTE that hunters who elect to use smaller gauge guns must limit their shooting to shots that can be made effectively with the smaller, lighter shot charge.

DISPLAY pattern sheets 'fired with various chokes and the same shot charge at 20, 30, 40 and 50 yards. Keep them available for the participants as they begin to think about the ranges where game is being taken. Have them usc silhouettes of game birds or mammals to **ASSESS** the impacts of the various chokes with that shot size on these "game animals."

DISCUSS the difference between hunting and clay target games. **NOTE** that a single, tiny chip from a clay target counts as a "dead" target, but that live birds must be hit hard enough with an adequate number of pellets to kill them effectively. Chance shots taken on clay targets carry no more than a missed target as a penalty. Wounded birds are much worse.

Have small groups of participants use ammo company fliers to **DETERMINE** shot and choke selections for local species and **DEFEND** their reasons for selecting that combination. Be sure to **SUPPORT** any reasonable combination and **OFFER SUGGESTIONS** where better choices or sound alternatives are possible.

If adequate space is available, **DEMONSTRATE** slug and buckshot load behavior. Use local landmarks to **PROJECT** the potential range of these heavy loads.

d. Caution about backstop

Hunting Shotguns

1) Rifle-like concerns
2) Must know where projectile will stop

4. Energy best with 10 and 12 gauge guns
5. .410 slug inadequate for big game

B. Buckshot effective if legal and properly used
1. Pattern before use
2. Limit to sure-kill range
a. Pattern dense enough
b. Avoid crippling
3. Down range danger and caution

IV. Shotguns as hunting tools.
A. Extremely versatile
B. Relatively short effective range
C. Must'match gun and ammo to tame

Summary Activity

Have participants select a game species commonly hunted with a shotgun. Using their shot selection brochure, have each one pick a gun, gauge, action, choke, loading and shot size. Have them present the idea to the group and discuss the selections. Be sure to include discussion of specialized conditions in your area or that your member may select.

HANDGUN HUNTING

Participating young people and adults will:

1. Understand the limitations of handgun hunting
2. Be able to select a handgun and chambering appropriate to the hunting situation
3. Know and practice the safety considerations specific to handgun hunting
4. Have fun while learning

Roles for Teen and Junior Leaders

1. Demonstrate positions and equipment
2. Disperse and collect "pass arounds"
3. Lead small group discussions
4. Set up or take down displays or demonstrations
5. Assist participants with live firing exercises
6. Serve as range officers or firing point coaches
7. Discuss personal experiences with handgun hunting

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide firearms and ammunition
3. Arrange for or provide a teaching site
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Share personal experiences

Best Time to Teach: any time

Best Location: safe outdoor range (indoors with visuals)

TIme Required: 1 to 2 hours

Equipment and Materials
samples or visuals of handgun actions (semi-auto. single, and double-action revolvers, bolt action, break action)
metallic cartridge leaflet
scoped handgun or long-eye relief scope
dummy rounds for all pistols present
holsters
Aim-point
Ammunition, if live firing takes place

References
Fact Sheet: *Calculating Projectile Energy*

State hunter education materials

Arms and ammo manufacturer's catalogs

Lesson Outline

Presentation	Application
I. Handgun safety for the hunter A. Basic safety considerations apply B. Special concern for muzzle control 1. Holstering or removing arm. 2. Short barrel - muzzle control critical	**REINFORCE** basic hunting safety - self-control, target identification, muzzle control and backstop identification. **ASK**: How does handgun hunting differ from long gun hunting? **STRESS** carrying technique, short barrel, relatively low power of handgun ammunition, limited· expansion as basic differences.
C. Matching arms and ammunition 1. Safe exchanges 2. Unsafe exchanges	**PASS OUT** ammunition manufacturer's materials displaying pistol ammunition. **DISCUSS** why some ammunition exchanges are safe but others are extremely dangerous. **EMPHASIZE** the importance of making sure the ammunition is intended for the firearm being used.
II. Handgun actions for the hunter A. Single shot pistols 1. Bolt action 2. Break action B. Revolvers 1. Single action 2. Double action C. Semi-automatic pistols D. Chamberings available by action type 1. Wide variety for single shot pistols 2. Limited array for other arms	**DEMONSTRATE** or **ILLUSTRATE** various handgun actions stressing their use in the field. **DISCUSS** advantages and disadvantages, particularly the strength and versatility, of various action types.
III. Handgun sights for hunting A. Partridge - square notch with flat post 1. Precise 2. Difficult to see in poor light 3. Relatively quick to use 4. Multiple focal planes in sighting a. Front sight focus necessary b. Colored or outlines sights as aids B. Optical sights 1. Aim-point a. "Projected" spot b. Single focal plane c. Quick and easily seen 2. Telescopic sights a. Single focal plane b. Some magnification c. Precise sighting d. Moderately quick e. Loss of definition at very close range f. Magnification of wobble	**ILLUSTRATE** or **DEMONSTRATE** a variety of pistol sights useful to hunters. If possible let participants **PRACTICE** aligning different "sight styles in both good and poor light against high and low contrast backgrounds.

Handgun Hunting

IV. Cartridge selection for game
- A. Small game hunting
  - 1. .22 rimfire
    - a. Adequate energy for clean kill
    - b. Minimum meat damage
    - c. Minimum fur damage
    - d. Relatively short range
  - 2. Centerfire shot loads
    - a. Poor substitute for shotgun
    - b. Adequate for close range
    - c. Check legality for anticipated game
  - 3. Light centerfire loads
    - a. Multiple use arm
    - b. Adequate energy and moderate damage
    - c. Reduced or midrange loads
    - d. Careful shot placement required
- B. Varmint hunting
  - 1. Rimfires for close range only
  - 2. High velocity .22 or larger centerfires
  - 3. Frangible bullets preferred
  - 4. Long range shooting a rule
- C. Big game hunting
  - 1. Adequate energy essential
  - 2. Adequate bullet performance necessary
  - 3. Restraint essential
    - a. Self-control
    - b. Relatively close range
    - c. Careful shot placement
    - d. Staying within sure kill range
  - 2. Matching energy to game .
    - a. .357 Magnum minimal for deer-sized game
      - 1) Close range
      - 2) Excellent shot placement
    - b. Legal restrictions
    - c. Wildcat and rifle cartridges in handguns
      - 1) Developed for handgun hunters
      - 2) Higher energy and better bullet performance
      - 3) Essentially hand rifles

V. Handgun hunting tactics and ethics
- A. Self-restricted method
  - 1. Demanding of skills
  - 2. Demanding of ethics
  - 3. Demanding of shot selection
- B. Similar to bowhunting tactics
  - 1. Stay inside sure-kill range
  - 2. Careful shot selection
  - 3. Thorough knowledge of game anatomy
  - 4. Serious and frequent practice

Have participants **READ** velocity and energy tables in the manufacturer's materials and **DISCUSS** appropriate choices for various hunting' situations.

DEMONSTRATE differences in bullet energy by shooting cans of soda or similar water-filled targets with several hunting handguns.

COMPARE rifle and handgun ballistics using an ammunition manufacturer's materials. **NOTE** that handguns generate lower energy levels than even mild rifle cartridges. **REINFORCE** the need to show restraint so adequate energy is delivered at the point of impact.

DISCUSS requirements of handgun hunting and restraint needed. **NOTE** that those unwilling to meet the requirements should stick to shooting paper.

C. Respect for game animals
1. Adequate accuracy
2. Adequate power
3. Adequate bullet performance
4. Appropriate tactics and shot selection

Summary Activity

Have each participant pick a hunting situation, then select a chambering, handgun, and load for that situation. Share and discuss each one in small groups.

HUNTING WITH A MUZZLELOADER

Participating young people and adults will:

1. Understand cap lock and flintlock systems
2. Practice using charging and cleaning equipment
3. Demonstrate the proper charging sequence
4. Select loads for various hunting uses.
5. Practice muzzle loading safety precautions
6. Have fun while learning.

Roles for Teen and Junior Leaders

1. Set up and clear range
2. Assist with demonstrations
3. Serve as assistant range officers
4. Ask planted questions to get at points not addressed by participants
5. Present portions of the lesson
6. Develop and lead summary activity

Potential Parental Involvement

1. See "Roles for teen and junior leaders" above.
2. Share personal experiences and equipment choices.
3. Arrange for or provide equipment for demonstrations
4. Arrange for or provide range or teaching space
5. Arrange for or provide transportation to and from the teaching site
6. Arrange for or provide refreshments
7. Act as range officers or firing point assistants

Best Time: Any time

Best Location: Classroom and range

Time Required: 2 hours

Materials and Equipment

loading data: black powder and pyrodex
assorted projectiles
empty powder cans
powder granulation samples
wads
shot
percussion rifle.(s)
flintlock rifle(s)
muzzle loading shotgun
cap-and-ball revolver
loading components
cleaning equipment
ballistics charts or tables
water soaked telephone directories
holding frame
targets

References

Black Powder Hunting. Sam Fadala. Stackpole Books, Harrisburg, PA, 256 pp.

Shooting Black Powder Guns. Thompson/Center Arms Co., Rochester, NH, 33 pp.

Lesson Outline

Presentation	Application
I. Interest in muzzleloading arms for hunting increasing A. Special seasons B. Challenge and sense of history C. Another way to increase quality of experience	
II. Muzzleloaders as hunting arms A. Quick, clean kill the objective B. Shot placement and absorbed energy 1. Modern bullets a. Hydrostatic shock b. Disruption of vital functions 2. Black powder projectiles a. Hydrostatic shock· b. Nervous shock c. Body fluid loss 3. Energy is transferred to vital organs a. Measured in pounds-feet or ft-lbs b. $\frac{1}{2}MV^2$	**NOTE** that a .54 caliber muzzleloading rifle loaded with either the 430 grain maxiball or a 230 grain round ball at maximum loadings will approximate the energy of a .25-06 at the muzzle while having much more momentum than a 175 grain 7mm Remington Magnum bullet traveling at 2800 feet per second. These slower, more massive· bullets will not produce the spectacular hydrostatic shock seen in high velocity, modern rifles; but they are extremely effective in downing big game.
4. Momentum (MV) related to penetration a. Influence of mass and velocity b. Influence of shape and mass (sectional density) 1) Higher sectional density penetrates better 2) Bullet deformation reduces penetration 3) Deformation increases energy transfer	**SHOOT** into a stack of wet telephone books to demonstrate penetration and energy transfer. Use a round ball and a maxi-ball or minnie ball and a modern high velocity rifle load for comparison. Extract the spent balls and bullets for shape comparisons. **DISCUSS** the amount of energy transferred and note the penetration relative to the shape and composition of the projectile. Note the depth of penetration relative to the mass of the projectiles. **ASK** why the observed differences might have occurred.
5. Accurate shot placement the key a. Disruption of vital functions 1) Central nervous system 2) Circulatory system 3) Respiratory system	**NOTE** the importance of careful shot selection and thorough knowledge of the anatomy of game animals. **STRESS** the importance of good marksmanship and staying within the limits of the shooter. **EMPHASIZE** the need to pass shots that risk wounding game animals.
b. Placing shots for quick kills 1) Heart-lung region 2) Cervical spine 3) Brain	**DISCUSS** the advantages and disadvantages of each shot, emphasizing the greater margin for error and larger kill area of the heart-lung shot. Actively **DISCOURAGE** the use of so-called "break-down" shots.

C. Ignition systems
1. Black powder· fireworks to firearms
a. Same basic formula
b. Sulfur, saltpeter and charcoal
2. Early ignition systems
a. Hot wire, matches and fuses
b. Matchlock
c. Wheellock
d. Flintlock
e. Percussion or cap lock

Briefly **DISCUSS** the history of black powder, its ignition systems in firearms (fuses, matchlocks, wheellocks, flintlocks, percussion.)

3. Two popular systems for hunting use
a. Flintlock
1) First inexpensive and reliable system
2) Colonial times through the Civil War
3) Wide variety of arms
4) Operates like flint and steel fire starter

DEMONSTRATE the action of an empty flintlock **without powder In the pan** first in a well lighted area, then in a dark area. **NOTE** that the sparks are burning steel from the frizzen and that they shower into the pan. **In a safe area and with youngsters at a safe distance and wearing eye protection, DEMONSTRATE** flashing a pan of powder. **Never permit anyone to stand forward of the muzzle or within 6 to 10 feet of the f1ash pan on the lock side of the firearm!**

b. Percussion or cap lock
1) Relatively short-lived as a dominant system
2) First step toward modern cartridge ignition
3) Wide variety of arms
4) Detonation of a priming compound ignites powder
5) More weather resistant than flintlock

With appropriate safety precautions, **DEMONSTRATE** the operation of a percussion firearm . **NOTE** that the development of percussion caps led rapidly to the development of self-contained ammunition and breech-loading firearms. **DISCUSS** the pros and cons of each system and stress that the beginner should become familiar with cap lock firearms before trying to use flinters for hunting.

III. Charging and cleaning supplies and equipment
A. Propellants
1. Only black powder and pyrodex
a. Fg or single F in big bore muskets
b. FFg or double F in most rifles and shotguns
c. FFFg or triple F in small caliber rifles and pistols
d. FFFFg or pan powder ONLY in pan of flintlocks
e. RS pyrodex in rifles and shotguns
1) Loads volume for volume with black powder
2) NOT for use in flinters
f. P pyrodex in pistols

PASS AROUND samples of various granulations of black powder and pyrodex. Minute quantities on index cards covered with contact paper can be used effectively.

2. No other powders currently approved
B. Powder measure
1. Non-sparking material
a. Brass

STRESS that a powder measure must always be used for both safety and accuracy. **NEVER** load powder directly from any horn, flask or can! **NOTE** that a

b. Copper
c. Horn
d. Antler
e. Bone
f. Some plastics

2. Fixed or adjustable
   a. Appropriate amount of powder
   b. Reliable and repeatable units

C. Projectiles

1. Round balls
   a. Smaller than bore diameter in rifles,
   b. Slightly oversize for cap and ball pistols
   c. Sprue loaded up
2. Bullets
   a. Maxi-balls
   b. Mini-balls
   c. Buffalo bullets
   d. Jacketed bullets in sabots
3. Shot
   a. Shot sizes and types to match game
   b. Shot charges appropriate to arm

D. Patches and patch lube

1. Rifle and musket bails patched
   a. Seals the bore
   b. Engages rifling and impresses on ball
   c. Many patch lubricants
   d. Tight fits usually produce best accuracy
2. Bullets lubed but not patched
   a. Lube grooves filled with lubricant
   b. Bottom and top bands imprint on rifling
3. Shot sealed above and below by wads
   a. Fiber and card wads
   b. Wool wonder wads
4. Patch materials
   a. Natural materials only'
      1) Cotton drill
      2) Linen
      3) Wool
   b. Synthetics may melt and foul bore
   c. Sabots only as approved by manufacturer
5. Patch and bullet lubricants
   a. Spit patches
      1) Adequate for nearly immediate use
      2) Poor choice
   b. Vegetable fats or oils
   c. Animal fats
   d. Synthetic lubes
   e. "Natural" lubes,

powder measure calibrated using black powder may be used with pyrodex because it loads volume for volume with black powder.

PASS AROUND samples of muzzleloading projectiles. Bullets or round balls may be placed in small vials or plastic tubes for easy viewing and handling. Allow shooters to compare the size and weight of-round balls and conical bullets for each bore diameter. Note that the bullets are nearly twice as heavy as the round ball and much more efficient at retaining energy and velocity than the more traditional round ball. Label shot sizes and types or use a visual aid that makes shot sizes apparent.

STRESS the importance of having a tight fit between the patched ball and the rifle barrel in order to impart spin to the ball.

PASS AROUND patches of different materials and thicknesses. Note that the diameter of the ball plus the thickness of the patch should be approximately bore diameter making a tight fit. **STRESS** that the shooter must experiment with different ball and patch combinations to find the one that shoots most effectively in their rifle.

DISPLAY and **DISCUSS** a variety of patch and bullet lubricants. **NOTE** that patches lubed with saliva are adequate if they are used immediately, but that they tend to lack consistency from shot to shot. **DISCUSS** the improved accuracy of bullets and balls lubricated with vegetable shortening or similar lubricants.

E. Minimum Cleaning Equipment
1. Ramrod.
a. Loading and light cleaning rod
b. Work rods
2. Cleaning jag
a. Wiping barrel between shots
b. Cleaning after shooting
c. Applying bore conditioners
3. Ball puller or bullet screw
4. Vent or nipple pick
5. Nipple wrench
6. CO, ball discharger

DEMONSTRATE. and **DISCUSS**. the use of each of these tools. **STRESS** the importance of deactivating any powder charge before attempting to remove a ball or bullet with a screw.

DEMONSTRATE the use a CO^2 ball discharger with either a flintlock or cap lock muzzleloader. **EMPHASIZE** the importance of keeping the muzzle in a safe. direction at all times when using the discharger!

IV. Charging a muzzleloading firearm
A. Check for a loaded gun
1. Use of a marked ramrod
2. Measuring ramrod against outside of barrel

DEMONSTRATE how to check the firearm for an existing charge using both a marked ramrod and measuring against the outside of the barrel. If the ramrod does not penetrate the bore to or very near the flash hole or nipple, suspect a loaded gun. Use a ball discharger or screw to extract the ball and load or take the gun 10 a qualified gunsmith for assistance.

B. Clear the flash hole or nipple
1. Fire several caps or pans of powder
a. First one down range
b. Second pointed at light material
1) Grass blades or leaves
2) Light duff or dusty soil
3) Watch for gas movement at muzzle

DEMONSTRATE The process of clearing the firearm by flashing a couple pans of powder or firing several caps. **REINFORCE** the need 10 treat the first shot as though the firearm were loaded, even though it was just checked with the ramrod! **NOTE** that the shooter must observe the gases coming from the muzzle to be sure the flash channel is clear.

C. Load a measured charge of powder
1. Black powder or pyrodex only
2. Proper granulation
3. Carefully measured charge
4. Pour powder into the barrel
a. Muzzle pointed away from face and body
b. Minimum exposure to the muzzle
c. No other open powder containers!
5. Settle powder
a. Smack side of barrel with a hand

DEMONSTRATE measuring, pouring and loading powder, including using a series of taps on the side of the barrel to settle any powder that hung part way down the barrel. **EMPHASIZE** the importance of keeping the muzzle pointed away from the body and face while loading.

D. Load the projectile
1. Center lubed patch over the muzzle
2. Center ball in muzzle with sprue up

DEMONSTRATE the loading sequence with each type of firearm that will be discussed in this lesson. **PAY** particular attention 10 the variations from the basic

3. Position short starter over ball
4. Press or “pop” starter to start ball into barrel
5. Push ball down bore with the long starter
6. Seat ball firmly on powder charge
   a. Use short strokes on the ramrod
   b. Be sure ball is completely seated on powder
7. Withdraw and replace the ramrod
8. Variation for maxi-balls
   a. Lube all grooves in bullet
   b. Press bullet into bore
   c. Seat bullet firmly on powder charge
9. Variation for shotguns .
   a. Insert over-powder wad after powder
      1) Nitro card wad and felt wad.
      2) Two wool "wonder wads"·
   b. Drop shot into barrel
   c. Insert over-shot wad
      1) Thin card wad
      2) Make sure wad firmly seated
   a) Watch for ramrod rebound
   b) Repeat until rod stays *in* place

maxi or mini balls will engrave on the rifling with the base band and the upper band on the bullet and that cap-and-ball revolvers will shave a thin ring of lead off the over-sized ball as it is being rammed home. The last step in cap and ball loading is to lube each cylinder with a good coating of grease over the cylinder mouth. **NOTE** also that this sequence assumes that the proper combination of patch and ball is used to keep the projectile firmly seated on the powder. If it does not do so, change either ball or patch material until a proper fit is attained.

E. Cap or prime the firearm
1. Cap or prime only when ready to fire
2. Cap all cambers on a revolver tightly

COMPLETE the loading sequence by firing a shot or shots.

V. Selecting loads for hunting
A. Shotgun loadings
1. Comparable to breech loaders of same gauge
2. Load equal volumes of powder and shot
3. Adjust load to needs
   a. Lead or steel
   b. Payload
   c. Velocity
   d. Shot size
   e. Stick with established loading data
4. Some with choke tubes

NOTE that muzzle loading shotguns carry charges similar to target and field loads for modern shotguns and that the shooter needs to adapt the loads used to the game being taken.

EMPHASIZE the importance of staying with published loading data from firearm or powder manufacturers and following their directions explicitly when loading.

B. Muzzleloading rifles and muskets
1. Consult state regulations
   a. Minimum caliber
   b. Load types and restrictions
2. Manufacturer's guidelines
   a. Powder types
   b. Powder charges
   c. Projectile types and weight

COVER local requirements completely and note any differences in legal requirements or restrictions in neighboring states.

STRESS the importance of staying within manufacturer guidelines for loading data with rifles of any given make, model and caliber. **NOTE** that rifles of the same caliber and manufacture may differ in the safe charges that may be used in them. If in doubt, contact the manufacturer for a set of loading tables for the arm in question.

3. Accuracy and energy considerations
   a. Experiment with different loads on the range
      1) Round ball loads
      2) Maxi or minnieball loads
      3) Variations in bullet weight
   b. Select a load that shoots well
   c. Select for adequate terminal energy
   d. Limit shots to "sure kill" ranges

NOTE that most manufacturers use it safe beginning load of about one grain of powder for each caliber (for example, 50 grains FFg with a .50 caliber.) Best accuracy is often found at modest velocities, but bullet energy increases with velocity. A quality hunting load may be a compromise between the best accuracy and the best down-range energy.

C. Muzzleloading handguns
   1. Not suited for big game
   2. Small game at short range.
      a. Under 40 yards
      b. Consistent, humane kills
   3. Stick with published. Loads

DISCOURAGE any tendency to consider muzzleloading handguns as big game arms, regardless of the caliber. Consult loading tables for specific loads.

VI. Special safety precautions
   A. No smoking, fires or flames

DEMONSTRATE the ease of igniting black powder and its explosive burning rate by placing a very small amount in a container with a set of wires. Connect the wires to produce a spark to ignite the powder. Since black powder is very unstable, there is **NO** room for error. **NEVER** smoke near black powder or while handling it in any way.

   B. Keep containers· sealed

NOTE that sparks and embers are common around muzzleloading firearms and that any stray spark that landed in a powder can or horn could cause the entire container to go up like a bomb! **ALWAYS** cap your powder horn, flask or powder can immediately after dispensing powder.

   C. Handle misfires with great caution
      1. Hold firing position for 10-30 seconds
      2. Keep firearm pointed down range
      3. Anticipate a hang-fire

STRONGLY REINFORCE the need to keep firearms pointed in a safe direction at all times. Keeping the firearm pointed downrange for a minute or more is important on any apparent misfire. Hold the firearm on the shoulder and aimed at the target for at least 10 to 30 seconds. **NOTE** that many situations could delay ignition. If the pan flashed or the cap popped, keep the firearm pointed downrange and be prepared for a delayed ignition (hang-fire).

D. Seat projectiles firmly on the powder	**STRESS** the need to seat bullets or shot charges firmly on the powder to prevent obstructed barrels. It is particularly important to check bullet seating after any misfire. Use **extreme caution** when checking the seating of a ball or bullet that has been subjected to a misfire. **ALWAYS** check at loading to be certain the projectile is firmly seated on the powder charge.
E. Keep the barrel clean.	**DISCUSS** and **DEMONSTRATE** how to eliminate fouling between shots in order to avoid hanging a projectile part way down the barrel. **SUGGEST** the use of a solvent, saliva or alcohol as cleaning agents.
F. Keep things straight 1. Practice and follow proper loading sequences 2. Remember to replace the ramrod before capping or priming	**REINFORCE** the need to keep the loading sequence straight and to avoid errors in loading. Avoid rushing through the loading sequence, and be conscious of each step. Loading the muzzleloader is like loading a cartridge for each shot. Accuracy and safety depend on thinking about your every action.
3. Double check all doubles a. Check both barrels before loading b. Load one barrel at a time c. Check both barrels after loading	**DEMONSTHATE** using a system that keeps the loading sequence straight. Keeping the ramrod in the barrel being loaded between operations is an excellent approach. **STRESS** the need to check once more before capping or charging the pan.
G. NEVER put anything you need over the muzzle 1. NEVER blow down the barrel 2. MINIMIZE exposure to the muzzle 3. Keep the muzzle in a safe direction	**NOTE** that any activity that places vital parts of your body over the muzzle is foolish and that moisture from your breath provides water to form acids that are damaging to the rifle bore.

Summary Activity

Have every shooter in the group fire one or more shots with muzzleloading firearms with hunting loads at a simulated game target. Be sure to place the target close enough for all shooters to have a good chance of hitting it and/or provide alternative targets that provide sufficient ease or challenge to allow the shooter to select one appropriate to their needs.

BOWHUNTING

Participating youth and adults will:

1. Learn how to select archery equipment
2. Learn how to maintain their equipment
3. Learn how to match equipment with the game being sought
4. Learn the importance of shot placement and shooting skill
5. Have fun while learning

Roles for Teen and Junior Leaders

1. Demonstrate proper use of equipment
2. Lead exercises, assisting participants in trying various types of equipment
3. Lead small group learning activities
4. Teach selected portions of the lesson
5. Share selected experiences to reinforce the lesson

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Share bowhunting experiences and observations
3. Lead discussion sessions
4. Coordinate or provide transportation
5. Arrange for or provide teaching site
6. Arrange for or provide teaching equipment
7. Arrange for or provide refreshments

Best Time: Anytime

Best Location: Indoor or outdoor archery range with available classroom space

Time Required: 1 to 2 hours

Materials and Equipment
bows (various weights and styles longbow, recurve and compound)
arrows (assorted spines. length and material)
hunting heads (blunts, judo, snaro and variety of broadheads - fixed and replaceable)
sharpening tools
tree stands (portable, various types)
hauling line
safety belt or line
camouflage clothing (assorted types)
sights (assorted types)
rangefinder
shaft spider (or similar tracking device)
game anatomy chart or model

References

Anon., *Bowhunting with Easton Aluminum Arrow Shafts.* Easton Aluminum, Van Nuys, CA
Bear, F., *The Archer's Bible.*
Fader, *S., The ABC's of Archery.* American Archery Council, Chicago, IL
Martin, D. and T. Martin. *Pocket Guide to Bowhunting.* 1980. Martin Archery
Wadsworth, W., *International Bowhunter Education Program, Instructors Manual,* National Bowhunter Education Foundation, Murray, KY.

Teaching Outline

Presentation	**Application**
I. Bowhunting skills	
A. Stalking	
B. Camouflage	
C. Game spotting	
D. Game calling	
E. Learn about your game.	
F. Shooting as a bowhunter	
1. Estimating range	
2. Determine maximum distance.	
3. When to shoot	
4. Picking a small spot	**DISPLAY** a wide variety of bows, arrows, clothing, stands, other accessories, personal gear and gimmicks in a highly visible location where easy access for demonstration or illustration is possible.
II. Hunting methods	
A. Still hunting	
B. Tree stands	
C. Spot and stalk	
D. Blinds	
III. Wide array of equipment available to bowhunters	
A. Most bowhunters use compound bows	
1. Mechanical advantage	
a. Reduced holding weight .	
b. Increased arrow speed	
2. Greater efficiency	
a. Longer acceleration	
b. Recovers more of drawing force	Have participants **DRAW** and **LET DOWN** several types of bows. Do not let them dry fire the bows! **ASK** them to discuss the advantages and disadvantages they think are associated with each of the types for bowhunting.
B. Recurve bow still very popular with some	
1. Aesthetic reasons	
2. Better release characteristics	
3. Personal preference	
4. Self bows and takedowns	
C. Longbow growing in use	
1. Historical and traditional	
2. Effective	
3, Challenging	**USE** the opinions expressed to show that bow selection is a personal thing with many different factors to be considered. **STRESS** that the over-riding factor involves the ethical requirement that the equipment be adequate to bring about a quick, clean kill on the animals being hunted.
IV. Selecting a bow for hunting	**DISCUSS** the importance of accuracy and full penetration in making clean kills.
A. Type of bow	
1. Personal preference	
2. Adequacy of performance	
B. Draw weight	**DISCUSS** each feature presented briefly. **SEEK** personal questions about advantages and disadvantages associated with each feature or alternative. Advanced youth may want to discuss various bow-making materials.
1. Ability to handle draw weight	
2. Game being sought	
a. Adequate penetration	
b. Range considerations	
C. Features desired	
1. Adjustable draw weight	
2. Interchangeable limbs	
3. Design and construction	
a. Wood, glass, graphite, laminates	
b. Limb design	
c. Riser and handle construction	**EXPLAIN** archer's paradox and the need for proper spine or stiffness for straight arrow flight. **DEMONSTRATE** the effects of variation in shaft stiffness on a target, either in a live demonstration or using groups shot with arrows from moderately too soft to moderately too stiff for the bow**. Do not use radically mismatched arrows!**

d. Handle shape
4. Weight and size
5. Accessories available

V. Arrows for hunting
A. Matched to the bow
1. Draw weight and arrow spine
2. Archer's paradox
B. Matched in mass
1. Consistency in performance
2. Up to AMO standard
C. Adequate stabilization
1. Fletching material
a. Feathers
1) Greater drag
a) More forgiving of release errors
b) Greater stabilizing influence
c) Some cost in arrow speed
2) More noise in flight
3) Affected by weather
4) Adaptable to all types of bows
b. Vanes
1) More speed
2) More sensitive to release
3) Quieter in flight
4) Require an arrow rest

OUTLINE the functions of the fletching materials and **DISCUSS** the relative advantages and disadvantages of vanes and feathers for the bowhunter.

2. Sufficient fletching area
a. Not necessary with perfect set-up and shooting form
b. Compensates for variation in style and performance
c. Trading speed for stability
d. Heavy heads require more area
1) Standard 15-16 inches
2) 3 or 4 vanes
3. Fletching style
a. Straight
b. Off-set
c. Helical

COMPARE the fletching surfaces on target and hunting arrows. **ASK** the participants to speculate about the differences in fletching area. Be sure that mass of the hunting head and slight variations in shooting form or style are noted. **DISPLAY** some standard fletching patterns, including three and four vane styles in straight, offset and helical patterns as well as one or more flu-flu designs. **DISCUSS** the reasons for using the various types, including personal preference. **COMPARE** the offset and helical fletching patterns to rifling, in a rifle barrel and the stabilizing effect of spinning the projectile in flight.

D. Hunting and practice heads
1. Screw-in points
a. Lubrication
b. Types of points available

COMMENT on the convenience of screw-in points and **STRESS** the importance of lubricating the threads to prevent them from corroding together.

2. Target and field points
a. Matching performance, not just mass
b. Usefulness on small game

PASS AROUND examples of various types of hunting and practice heads. Be sure to include small game as well as big game heads.

3. Blunts
a. Uses on game and in field
b. Types and construction

PASS AROUND examples of steel, rubber and plastic blunts and explain their use in small game hunting.

4. Broadheads

STRESS the importance of setting up the bow for broadhead performance, then selecting other points to match the behavior of the hunting shafts.

a. Sharpness required in hunting

ILLUSTRATE the action of dull and sharp broadheads using a rubber band exercise. **STRESS** the importance of razor sharp broadheads and **DISCUSS** the merits of fixed and replaceable blades.

1) Pre-sharpened, replaceable blades
2) Sharpening blades
a) wire edge sharp but delicate
b) razor edge cuts cleanly
c) use of file, stone and strop
3) Inappropriate edge shapes
a) jagged edges clog .
b) clean edges slice

DEMONSTRATE proper broadhead sharpening technique on a simple two or three blade design and allow participants to practice in small groups. **EMPHASIZE** the need for a razor edge without notches, teeth or other jagged edges.

b. Shapes of trailing edges
1) Ease of removal
2) Ethical considerations

DISCUSS the ethical considerations associated with having a smooth and clean trailing edge on the blade, allowing a non-vitally hit animal to remove the arrow easily.

c. Shape
1) Width and penetration
2) Width and wound size
3) Point styles
a) Sharp to tip
b) Punch-point
c) Dubbed or rounded points
4) Odd shapes and sharpening

SHOW and **DISCUSS** various blade designs and point types. **EMPHASIZE** ease of sharpening, culling effectiveness, penetration and ease of removal.

d. Aerodynamics
1) Importance of tuning
2) Exact hunting set-up

DISCUSS or **DEMONSTRATE** planing and the importance of proper bow tuning.

e. Toughness and durability
1) Construction
2) Blade thickness

DEMONSTRATE the after-impact appearance of tough and fragile blades.

5. Specialty points
a. Judo points
b. Bird points
1) Loop points
2) Multiple projectile points
c. Fishing points

PASS AROUND examples of some of these head types and **DISCUSS** their uses.

d. Limited penetration points

COMMENT on the need for barbs in fishing arrows.

VI. Quivers
A. Types of quivers available
1. Bow quivers
a. Must fully cover/protect broadheads
b. Convenient to carry
c. Heavy and limited capacity
d. Lillie motion needed to reach arrows
e. Acts as a stabilizer on the bow

NOTE the use of washers or other devices to keep the arrow in tough small game animals like turkeys or pheasants.

2. Hip quivers
a. Variety of styles for hunting and target use
b. Motion, noise in cover
c. Limited capacity

Have participants **BRAINSTORM** the functions of bowhunting quivers. **STRESS** protection of the broadhead and the shooter, minimizing noise and convenience.

3. Back quivers
a. St. Charles and related styles
1) Broadheads semi-exposed
2) Cumbersome and noisy in cover
3) Greater capacity
b. "Traditional" quivers
1) Broadheads inadequately protected,
2) Noisy and cumbersome in cover

DISPLAY a variety of quivers, commenting on advantages and disadvantages of each type.

3) Large capacity
4) Demand excessive motion

VII. Bowhunting Clothing

A. Importance of quiet and camouflage

1. Breaking up the outline
   a. Camouflage patterns
      1) Leaf patterns
      2) "Tiger stripe"
      3) Bark patterns
      4) White or "snow" camo
      5) Safety camo
   b. Matching the background
   c. Face and hand camo
      1) Predator eyes
      2) Flashing eyelids
   d. Hats for the bowhunter
      1) Jones style
      2) Stocking caps
      3) Non-interfering brim
2. Keeping movements quiet
   a. Close range encounters
   b. Necessary movement

B. Layering for all aspects of the hunt

1. Active and passive phases
2. Comfort and attentiveness
   a. Managing moisture
   b. Wind chill and hypothermia
3. Foul weather protection
   a. Personal
   b. Equipment
   c. Ethical considerations

C. Pockets, fanny pack or day bag

1. Cargo space for accessories
2. Personal preferences and needs

VIII. Other Bowhunting Accessories

A. Safety Equipment

1. Basic first aid materials
2. Hauling line
3. Safety belt or line
4. Broadhead wrench
5. Whistle
6. Waterproof matches or lighter
7. Map and Compass

B. Blinds and Stands

1. Use of local materials
2. Camo cloth ground blinds
3. Tree stands
   a. Commercial stands
   b. Home-built portable stands
   c. Permanent stands discouraged
4. Climbing blocks or tree steps

Have participants **SPECULATE** on the function of camouflage clothing.

DISPLAY and **DISCUSS** several types of camouflage patterns useful in your area. Consider using a field exercise based on the Fact Sheet: *Camouflage Game.*

STRESS the significance of covering the face and hands. **SHOW** pictures of predators (owls, big cats, wolves), having participants **DISCUSS** the value of hiding "predatory" eyes.

COMMENT on the value of the shadow created by the hat brim in hiding the eyes and face.

STRESS the need for caution and careful movement because of the close ranges associated with bowhunting. **DISCUSS** the need to plan times and locations for drawing the bow.

CONTRAST the clothing needs for different types of hunting and different stages in any given hunt. **REINFORCE** the need for layered clothing to match the conditions.

INTRODUCE the question of foul weather hunting and its effects of game recovery. Have participants **DISCUSS** when an ethical hunter should avoid taking a shot.

Use a fully equipped bowhunter as an example to **DEMONSTRATE** the need for adequate cargo space and storage space in the bowhunting gear.

LEAD small groups of participants in developing a checklist of safety equipment and gear suitable for their region and conditions. **COMPARE** their lists with those listed in the IBEP Manual and **DISCUSS** the reasons for differences or additions that might need to be made.

Where appropriate, **DISCUSS** tree damage, dangers of metal in trees that may be harvested later, and wood damage from nails, screws or other foreign objects. **CONSIDER** the ethical questions of unnecessary damage.

C. Game recovery and handling equipment

1. Trail marking materials
   a. Surveyor's tape
   b. Toilet paper
2. Field dressing tools
   a. Knife
   b. Hatchet or saw
   c. Sharpening stones
   d. Block and tackle
   e. Plastic and/or cloth bags
      1) Plastic bag for organs
      2) Meat sacks.
      3) Pepper to fight flies
   f. Gloves
   g. Tag and attachment
   h. Dental floss or string
3. Transportation equipment
   a. Drag rope
   b. Packframe
   c. Other means

SHOW alternative game recovery aids, like engineer's tape, paper strips or other trail marking materials and **DISCUSS** their use and removal.

DISPLAY and **EXPLAIN** the use of materials and, equipment needed for field dressing and handling game in the field or in camp. Adjust the equipment to the game being hunted and. local conditions.

STRESS the importance of using gloves to prevent infections, particularly where brucellosis, tularemia or similar diseases are present in the wildlife populations.

DISCUSS various ways of getting the game animal back to camp or home and the need to be prepared.

Summary Activity

Where appropriate, have participants assemble a working collection of bowhunting equipment suitable for their area. If they are not ready to assemble bows, arrows and accessories, have them construct smaller items, like meat sacks, climbing blocks, a tree stand, a basic first aid kit, an emergency survival kit for a day bag, a field dressing kit or something similar.

The Camera Hunt

The purpose of any hunt is to allow participants to use their hunting skills to bag game animals. The purpose of a camera hunt is to use a camera instead of a firearm or bow. Camera hunts can be conducted at any time of the year and in any area wild game exists and permission for access can be obtained.

In its simplest form, participants simply go out and try to get a high quality picture of any game animal. Equipment used is whatever is available. There are no limitations on lens or camera type. Participants come back to a central location and share their "catch".

Although hunting is certainly NOT a competitive sport, young people like to compare their skills to others. A camera hunt is an appropriate venue. Described below is a sample camera hunt with rules and scoring procedures. This can be modified to make it more or less difficult or to accommodate available equipment.

Elements of a Camera Hunt

– Write all information on a large sheet or flip chart.

Time Period: Determine the "season" length. Establish the beginning and ending time. For a workshop the hunt period might be 24 hours. Try to include 2 prime periods such as early morning and late evening. For a 4-H Club, the period of the hunt might last several days or a week. It is usually best to limit the period to a week or participants will procrastinate or get tired of hunting. **Define the exact deadline for photos to be turned in**.

Location: Define the location to hunt. This might be a certain boundary such as a camp or it might be county-wide. Even if the area is unlimited, be sure to define this so everyone knows. Be sure to eliminate zoos and game parks.

Species to Hunt: Don't just go on a "wildlife hunt". Select specific species to hunt. This encourages participants to use skills such as habitat knowledge or stalking skills.

Determine bag limit: How many photos of each species can be submitted?

Equipment: It is very important for all participants to use comparable equipment. It is also important to define all allowable equipment and not just cameras and lenses.

Camera: Options include disposable cameras or digital cameras. The advantage of disposable cameras is consistency between participants, the ability to limit the number of shots and the need to stalk closely to get a quality shot. The disadvantage is lower quality photos and the need to have prints developed.

The advantage of digital cameras is the ability to take better quality shots because of built in lens lengths and variable settings. Digital shots can also be immediately printed. Disadvantage of digital cameras is the difficulty of all participants having the same equipment and reliance on the camera to get a good shot rather than the hunting skills of the participants.

Transportation: Define whether it is a walk-only hunt or if vehicles are allowed. Define vehicle type if vehicles are allowed.

Miscellaneous Equipment: Clothing, decoys, calls and blinds: Define if camouflage clothing is allowed and whether tree blinds or ground blinds can be used. Also define the allowable use of other equipment such as lights, calls, scents and decoys.

Number of shots: Define how many shots can be taken. If digital cameras are used the honor system will apply. With disposable cameras or digital cameras, 5-7 shots are usually sufficient. The first shot should be a photo of the participant. This will avoid confusion if cameras are similar and simplify photo return after development.

Scoring

Species Difficulty: For each species determined to be game, assign a difficulty value from 1-20 with the most difficult animal getting the highest score. Mallard duck or geese might have a difficulty rating of 2, white-tailed deer might be 8 and black bears might be 19.

Closeness: Use a transparent plastic grid to score closeness. These can be purchased or they can be made using an 8 ½ X 11 clear plastic sheet and a permanent marker to make a ¼ inch grid. Place the grid over the photo and move the photo to determine the maximum number of cells containing some portion of the animal. If disposable cameras are used, give 3 points per cell. With digital cameras, allow 1 point per cell.

Sharpness: This is a measure of whether the game was running because the hunter was detected. A blurry photo scores a one and a very sharp photo scores a 6.

USING THE MAP AND COMPASS FOR HUNTING

Participating young people and adults will:

1. Practice using a compass
2. Practice using topographical maps
3. Identify the length of their pace as a measurement tool
4. Practice using map and compass to locate hunting sites and access routes
5. Use map and compass skills in planning safe and successful hunts
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Layout a compass course that will be used in the lesson
2. Lead small group discussions
3. Assist participants who are having difficulty with the instruction
4. Assist with the pacing exercise
5. Discuss personal uses of map and compass
6. Escort members over an orienteering course as observers and guides

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide a teaching site
3. Arrange for or provide teaching materials
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Discuss personal uses of map and compass in hunting
7. Staff an orienteering check point

Best Time: Any time

Best Location: Outdoor site with recognizable landmarks

Time Required: 1 to 5 hours

Equipment and Materials

topographic maps of teaching site
compasses (orienteering compass preferred)
flagging
clipboards
scrap paper and pencils
teaching compass (large cardboard model of a compass)
protractor or compass rose
ruler or straight edge

References

Be Expert With Map And Compass,The Orienteering Handbook, Bjorn Kjellstrom. 1976. Charles Scribner's Sons. New York.

The ABCs of Compass and Map. video. The Brunton Company, Riverton WY

USING THE MAP & COMPASS FOR HUNTING

Presentation

I. Importance of map and compass for hunters
   A. Safety
      1. Never being lost
      2. Relocating camp or vehicle
      3. Avoiding hazards
   B. Ethics
      1. Boundaries
         a. Avoiding conflicts
         b. Avoiding unintentional trespass
      2. Relocating downed game
   C. Enjoyment
      1. Locating game concentrations
      2. Locating prime hunting areas
      3. Locating camp sites
      4. Locating water or other needs

II. Understanding and using a compass
   A. Compass orientation
      1. Cardinal points
         a. North
         b. South
         c. East
         d. West
      2. Ordinal directions
      3. Azimuth or bearing
   B. Identifying compass parts
      1. Base plate
         a. Holds other parts together
         b. Provides a straight edge
         c. Provides a measuring device
      2. Direction of travel arrow
      3. Magnetic needle
         a. Points to magnetic north
         b. Orients the compass to north
      4. Compass housing
         a. Turntable
         b. Degree graduations

Application

Using a small group discussion approach, have participants **DISCUSS** the importance of understanding how to use map and compass to hunters. **CONSIDER** the following features: survival, locating game or habitat, planning and locating access routes or other features (boundaries, water, campsites, landmarks for orientation, marking kill locations for game recovery, or looking for potential hot spots).

ASK participants what we can learn from a compass alone. **NOTE** that it only gives us a direction – it cannot tell us where we are or where to go.

Have participants hold the compass flat in the palm of their hands and turn so they face the direction the red (or other North indicator) portion of magnetic needle is pointing. Have them sight on a landmark toward which the North needle is pointing. (Landmarks are permanent and prominent features like a tall tree, part of a building, a power line, the crest of a hill or a point on a lake.) Finally, have them put the compasses away and point to the other cardinal points (South, East, West) of the compass by relating them to North. Ask students to **MOVE** three steps east, then two steps south, then point north. Repeat this exercise a several times, changing directions and pointing to some cardinal direction. **NOTE** that they have learned the four cardinal directions of the compass.

DEMONSTRATE the parts of an orienteering compass, having the participants **IDENTIFY** each part as you show

5. Orienting lines

C. Facing an azimuth (bearing)
   1. What is an azimuth
      a. Direction relative to magnetic north
      b. North = 0 degrees
      c. 360 degrees clockwise
   2. Steps in facing a bearing
      a. Hold compass properly
         1) Flat and level
         2) Away from metal
      b. Rotate compass dial placing azimuth on direction of travel arrow
      c. Rotate body to align N arrow with N on housing
      d. Sight a landmark along direction of travel
      e. Walk to the landmark

D. Shooting an azimuth
   1. Direction to a landmark
   2. Pick out a landmark
   3. Hold compass flat and level
   4. Aim direction of travel arrow at landmark
   5. Rotate compass housing
      a. Keep DOT arrow aimed at landmark
      b. Magnetic north aligned with orienting arrow
   6. Read azimuth from compass housing

III. Measuring distance by pacing

A. Distance measuring tools
   1. Measuring tapes
   2. Surveyor's chains
   3. Measuring wheels
   4. By length of stride (pacing)

B. Determining your pace
   1. Layout a measuring tape (at least 100 feet) on level ground
   2. Walk along the tape counting paces
      a. Use your normal stride
      b. Walk at least 20 paces
         1) Start with the toe of one foot at zero mark
         2) Count each time it hits the ground
         3) Record the number of paces
      c. Record the distance on the tape
      d. Repeat the process several times
   3. Calculate the length of your pace
      a. Divide recorded distance by number of paces

them where it is. **DISCUSS** the function of each part briefly.

POINT OUT the azimuth numbers ort the compass housing. **NOTE** that the compass is divided into 360 degrees. An azimuth is a direction expressed in degrees. **ASK** which direction has an azimuth of 0 degrees, [**NORTH**].

LEAD small groups through the steps of "facing a bearing." **CHECK** to make sure the compasses are being held properly with the direction arrow pointed away from them. Rotate the housing (bezel) of the compass until the desired azimuth is on the direction of travel arrow. Next turn the entire body to bring the north end of the magnetic needle in line with the North index or line, then line up the direction of travel arrow with an object and walk toward it. For practice, start with azimuths of 90, 180 and 270 degrees first, followed by more complex bearings like 38 or 247 degrees. **STRESS** the importance of sighting on a landmark rather than traveling while looking at the compass. **MAKE SURE** youth a) take and face the bearing, b) sight on a landmark, c) put the compass away and trust in themselves, and d) walk toward or to the landmark.

DEMONSTRATE this process while talking participants through the process. Start with a common object, then allow the participants to shoot azimuths to several landmarks of their own choosing. Have parents or teen leaders **OBSERVE** and **TROUBLE SHOOT** as necessary. **REMEMBER** that individuals a short distance apart will have slightly different compass headings to the landmark.

NOTE that distance as well as direction is needed in order to find a specific location. ASK them how they could measure distance. **STRESS** that your pace is always with you and is easily adapted to measure distance.

b. Average (total distance/total paces) better

B. Practice pacing and compass use
   1. Mark the starting point
   2. Face an azimuth
   3. Pace the distance
   4. Mark the turning point
   5. Face the second azimuth
   6. Pace the second distance
   7. Mark the second turn
   8. Face the third azimuth
   9. Pace the third distance
   10. Mark the ending point
   11. Note error of closure

IV. Using topographic maps
   A. Orientation to topographic maps
      1. Border information
         a. Quadrangle, area, scale
         b. Bordering quadrangles
         c. Latitude, longitude
         d. Revision date, type
         e. Scale
         f. Road classifications
         g. Location in state
         h. Declinations comparing
            1) UTM grid north
            2) Magnetic north
            3) Star (map) north
   B. Contour interval
      1. Elevation
      2. Slope
         a. Ridges
         b. Peaks
         c. Holes
         d. Valleys, ravines and gorges
         e. Passes
   C. Other natural features
      1. Bodies of water
         a. Lakes and ponds
         b. Streams and rivers
            1) Direction of flow
            2) Falls and rapids
         c. Swamps, marshes and tidal flats
      2. Vegetation types (some maps)
      3. Local names of features
   D. Man-made features
      1. Political boundaries
         a. Towns and cities
         b. County lines
         c. Townships

ASK participants what a pace is. **REINFORCE** the fact that a pace is two steps, or each time a given foot hits the ground. **NOTE** that every person has a unique pace length because their size and length of stride are different. **EMPHASIZE** the need to walk normally (looking away from the tape and walking toward a mark helps).

Have each participant **CALCULATE** and **RECORD** the length of their pace. (See **Activities** at end of teaching outline.) Have parents and teens ready to **HELP** with the calculations. **STRESS** that pace length will grow with the youngster. If time permits, have participants **REPEAT** this process going up or down slopes or over broken terrain. **NOTE** that these factors may alter the pace length and **REQUIRE** some correction to the distance estimate.

LAYOUT a compass course that requires each participant to walk a triangular course on a given bearing and distance. **NOTE** that almost all participants will have some "error of closure" in returning to their starting point. One such course might be to walk 45 degrees for 60 feet, 285 degrees for 100 feet, then 135 degrees for 80 feet. (This is a 30-60-90 triangle that can be rotated any way you choose.) This should lead the young person right back to the point where they started. Have them mark the beginning of their traverse, each turning point, and the end point. **START** on level ground, then try a different course of similar design on broken terrain or a slope. More advanced youth might be challenged by adding additional legs or creating more complex patterns. **DISCUSS** some reasons that the triangle might not have closed precisely and whether the estimates were close enough for hunting purposes.

PASS OUT topographic maps of the teaching area to participants. **POINT OUT** the features of the map as each one is discussed and make sure each youth or small group of young people locates the features as they are outlined. Briefly **DISCUSS** the differences (declination) in map

d. Public land areas
1) Federal lands
2) State lands
2. Highways and trails
a. Highway type
b. Improved and unimproved roads
c. Trails
3. Buildings (at map date)
a. Houses and barns
b. Schools
c. Churches
4. Landmarks
a. Obvious features of the landscape
b. Permanent and stable
c. Navigation cues

E. Using maps to navigate
1. Avoiding problems
a. Learning the area by map
b. Learning the area in person
c. Orienting to landmarks
d. Using topographic features
2. Value of map AND compass

V. Map and compass
A. Never lost just confused a little
1. Map
a. Knowing the structure of the area
b. Knowing the orientation of structures
c. Directions and locations
2. Compass
a. Finding directions to and from structures
b. Shooting intended direction of travel
B. Basic land navigation
1. Putting map and compass together
2. Plotting locations
3. Plotting courses to locations
4. Importance of declination
a. Deviation of compass from map
1) East declination
2) West declination
b. Importance of declination
1) Map orientation - map north (star north)
2) Corrections needed for large declinations
3) Importance varies with cover type
4) Importance varies with distances involve
c. Correcting for declination
1) Correcting compass to map
2) Set declination into azimuths
d. Correcting from compass azimuths to map
1) West declination - add declination to

orientation toward North for that quadrangle. **NOTE** that magnetic north tends to change slightly over time, and that local magnetic anomalies can influence local compass readings in relation to the map.

Have participants **CREATE** a three-dimensional model of a portion of their map by tracing contour lines onto pieces of cardboard or heavy poster board and gluing the layers together. (See **Activitys** at end of teaching outline.) **NOTE** that intervals may be extremely small in areas with little relief or as much as 100 feet in areas with sharp relief.

Have participants **LOCATE** contours that indicate as wide a variety of features as can be located on the map. **REMEMBER** that they will be using the map as a hunting tool later, so include features like low passes between steep peaks or high flats that might be favored by

their way in a hunting area. **LEAD** them to discuss using map features and orientation to aid them in becoming familiar with the area and its features.

NOTE that a person with a map arid compass and the knowledge to use them is never really lost, even if they become temporarily confused. **ASK** participants how it would feel to them to be in strange country, but to feel confident that they knew where they were and how to reach their destination.

REVIEW the features that can be gained by looking at the map alone and how they might be used to orient a hunter familiar with them. **STRESS** the importance of being familiar with differences in scale used on various maps!

REVIEW the basic orientation to the compass by having participants **FIND** shoot several azimuths or by completing a course of at least three legs. **REVIEW** the declination diagram. Be sure to include declinations in both directions in your discussion, while concentrating on the declination in the study area. **EXPLAIN** that an East declination shows magnetic north to the East of map north, while a West declination shows magnetic north to the West of map north.

Ask a volunteering youth to **EXPLAIN** the term "minute of angle" used in shooting. **NOTE** that the 1 inch at 100 yards description is strong. ASK how many minutes are in a degree of angle (60). **ASK** how many inches one degree would subtend (cover) at 100 yards (60 inches or five feet), 1000 yards (600

azimuth
2) East declination - subtract declination from azimuth

e. Correcting from map azimuths to compass
1) Reverse of compass to map
2) Subtract west declination
3) Add east declination
4) Check yourself against the declination diagram

VI. Triangulation
A. Minimum of two azimuths
1. Location where azimuths intersect
2. Powerful tool
a. Locating yourself by landmark azimuth
b. Locating a spot
1) Relocating a hot spot
2) Relocating a kill for recovery
3) Plotting a course
a) Must know position
b) Orient to desired location
c. More than two points better
B. Calculating back bearings
1. Determine a bearing to a point
2. Add 180 if it is less than 180°
3. Subtract 180 if more than 180"
4. Remember 0° and 360° are North
C. Land navigation for hunters
1. Hunt away from crowds
2. Hunt wild country
3. Find your way home
4. Increase fun and safety

plotted from the landmark back to the teaching location misses it. **ASK** why that happened - declination. **ASK** the participants how they might correct for that error, making reference to the declination diagram on the map. (**ADD** west declinations, **SUBTRACT** east declinations) **CALCULATE** the new azimuths and re-plot the line to see if it corrected adequately. (Expect some error because of reading the, compass or locating their exact position.)

PLOT several bearings on the map using a compass rose or a protractor. Have the participants **CALCULATE** the proper compass azimuths that win lead them to the locations plotted.

STRESS that any doubts about directions can be settled by looking at the declination diagram and checking changes against a standard.

Ask participants to **DISCUSS** why they might want to use two or more landmarks to locate a spot using a compass and map. **NOTE** that triangulation is a powerful tool that allows the hunter to navigate to desired locations.

If time and site permit, have participants **TRIANGULATE** their location using landmarks and a map, then **PLOT** a course to reach a desired location. You may use this as a challenge to small groups with some sort of award for those who successfully reach their desired location. **ALLOW** ingenuity to reign here - participants should consider the easiest course as well as the straightest one.

Activities

1. **Orienteering Field Day**. Plan summary activities to mesh with the level at which the lesson is taught. An outstanding summary activity would be to take a day-long or longer trip through new country, plotting the courses to various points of interest by map and compass and building individual confidence. Alternatively, consider laying out a map-based orienteering course and sending participants out onto the course alone with map and compass to locate each point and to plot their way through the course to a finish.

2. **Determining your paced distance.** Pace length is easily determined. It is best done on flat, level ground. Later adjustments can be made for distances taken on uphill, downhill or broken terrain. Start by laying out a tape at least 100 feet in length. Have each person start with the tips of their toes even with the zero end of the tape. Start walking with the right foot and walk normally. Count every time their right foot hits the ground. Walk along the tape without looking at the tape for 15 to 20 paces. Most people will be able to get 20 paces inside the 100 foot mark, but some taller kids with long strides may need to stop short of that. Repeat this process several times, recording the number of paces walked and the distance where the tip of the toes on the right foot lines up with the tape. Add all the paces together. Add all the distances together. Finally, divide the total distance by the total number of paces. That gives you a measure of the normal pace on level ground. Record that distance so it is not forgotten. Once the pace length on level ground is determined, each individual may wish to try measuring distances on the flat, and on uphill, downhill or broken areas where pace may be altered by the terrain. That will help figure correction factors for distance under different conditions.

3. **Understanding Contour Intervals**. Contour intervals can be illustrated easily by tracing contour lines onto cardboard or poster board and making a three-dimensional model of them. They reveal elevation and slope as well as topographic features that can be used as landmarks or that offer potential as prime hunting areas. No deer hunter can pass up a high bench or saddle between two steep ridges. No high country turkey hunter can pass up a flat, open area at the head of a south-facing draw or canyon. Marking observations on a topographic map (in code, of course) can teach a new hunter where and when to locate certain species or offer some prediction of hot spots in similar country that is unknown

Use of Handheld GPS Units

Best location: Large, open outdoor site such as field or park. For more advanced activities, wooded or uneven terrain will be appropriate.
Equipment/Materials: GPS units, flags, writing supplies, rewards

Objectives
Participating youth and adults will:
1. Become familiar with handheld GPS technology
2. Practice using a GPS to mark waypoints
3. Practice using a GPS to mark tracks
4. Use a GPS unit to navigate to a location
5. Use GPS skills in planning safe & successful hunts
6. Have fun while learning to use handheld GPS units

Roles for Teen/Junior Leaders
1. Flag and record coordinates for locations that will be used in the lesson
2. Flag a path for participants to use in the lesson
3. Assist participant who are having difficulty with the instruction or their GPS device
4. Discuss personal uses of handheld GPS applications for hunting

Potential Parental Involvement
1. See 'Roles for Teen/Junior Leaders'
2. Arrange for or provide a teaching site
3. Arrange for or provide handheld GPS units (instruction manuals are useful)
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Discuss personal uses of handheld GPS applications for hunting

Lesson Outline

1. Introduction
    a. What GPS does.
        i. Marks specific points.
        ii. Allows return to specific locations.
    b. Specific uses for hunters.
        i. Mark and return to trails, hot spots, camp, vehicle.
        ii. Locate boundaries, property lines, etc.

2. Background
    a. GPS stands for Global Positioning System
    b. Originally designed for military in 1970's.
    c. Became available to public in late 1990's.

3. How a GPS works.
    a. 24 satellites.
    b. Receiver (GPS unit) receives signals from satellites.
    c. Multiple (3 or more) satellites allow calculation of surface locations.
    d. More satellites allow greater precision.

4. Other uses besides hunting.
    a. Navigation by automobiles, ships and airplanes.
    b. 911 locations
    c. Find stolen vehicles.
    d. Agriculture crop mapping and equipment navigation.
    e. Geocaching.
5. Numerous GPS models are available.
6. Most models have 3 screen views.
    a. Satellite screen
        i. Satellite locations
        ii. Quality of signals
    b. Map screen displays relative position.
    c. Calculations screen shows distance and time traveled.
7. Creating a waypoint.
    a. Using names and markers.
    b. Returning to a waypoint.
8. Creating a track
9. Navigating
    a. To a waypoint.
    b. Following a track.
10. Cautions when using a GPS
    a. Maps only show basic landmarks.
    b. Batteries can run dry and units can fail.
    c. Always have map and compass backup
    d. Practice using unit before you are in a critical situation.

Teaching Activities

Teaching notes:

Learning to use GPS in practical application is a best done hands-on. If there are not enough GPS units for each individual, plan activities so that each youth takes turns working the unit. Due to the variations between different GPS models, it will be easier to teach youth to as a group if all GPS units are the same. If this cannot be arranged, try to familiarize yourself with them in advance and be sure users manuals are available if questions arise.

These activities are relatively basic. Older youth and/or those with more electronic device experience will easily master using a GPS device. Take this lesson further by incorporating games that are available on most GPS units or by taking an age- and experience- appropriate trip into a wild area.

For younger, less experienced hunters, navigating a hike based on waypoints and/or tracks would be a useful way to become more comfortable with their GPS units and being in a natural environment. This could easily be incorporated into a larger lesson other outdoor subjects.

For more experienced hunters, the trip could be used as a practice scouting trip where youth are to mark locations and tracks relevant to a safe and successful hunt. In this case, reward youth who can identify their marked locations and explain why they were chosen.

Make sure that teen leaders or parents who know the area and are competent with a GPS are with each youth. If the hike is in an unfamiliar area, take a compass and map as well. Discuss with youth the danger of being over-reliant on electronic technology.

Familiarity Activity

Turn on GPS units. Find the satellite screen. Remain on satellite screen until GPS has locked in more than three satellites. Note how the accuracy of the location improves as more satellites are locked on.

Help participants navigate through the screens and become familiar with each screen and the navigation buttons specific to their handheld GPS model. Note specifically the map and calculation screens.

Activity 1: Saving a location into the GPS unit

1. Preparation
    a. Supplies
        i. Extra batteries
        ii. Handheld GPS units
        iii. Flags
    b. Lay out locations
        i. Flag locations that are a good distance apart. Create enough locations so that each participant on a team has at least two locations to enter into the unit.
2. Activity
    a. Ask participants why they would want to mark locations when hunting and what locations they would mark.
    b. Have participants (individuals or groups) stand at each flag and save the location in the GPS units. If working as groups, ask each group to make sure each person gets to save at least two locations.
    c. If it is allowed in your GPS unit, name the locations titles from your conversation about saving hunting-related locations when you save them. Also try to use at least two different symbols if that is an option with your GPS model.
3. Follow-up
    a. Compare the latitude and longitude coordinates for each location between the different GPS units. Remind participants about the error possible between the true location and the location the GPS unit calculates from the satellite signals.
    b. Look at the locations they saved on the map page. Have the participants identify which locations on the ground are which on the screen. Use this discussion as an opportunity to remind them to be observant of their surroundings and the name of the waypoints they save.

Activity 2: Saving a track in the GPS unit

1. Preparation
    a. Supplies
        i. Extra batteries
        ii. Handheld GPS units
        iii. Flags, or other landmarks
    b. Lay out locations
        i. Flag or use landmarks to lay out trails that participants can walk along. Create enough trails so that all participants on a team will be responsible for saving a single trail.
2. Activity
    a. Ask participants when they would want to save a track during a hunting excursion.
    b. Have participants record the starting location of each trail and then travel the length of the trail. If desired, you can also include waypoints along the trail.
        i. Have participants start a new track, if possible for their GPS model, at the beginning of each trail.
        ii. Participants should save each trail as an individual track if possible.
    c. Participants should also record an endpoint for each trail.
3. Follow-up
    a. Look at the tracks the participants saved on the map page.
    b. Have the participants identify which locations on the ground are which on the screen. Use this discussion as a way to remind them to be observant of their surroundings and the name of the waypoints they save.

Activity 3: Navigate a course of GPS coordinates

1. Preparation-If appropriate for the participants, this activity could be done in wooded or uneven terrain.
    a. Supplies
        i. Extra batteries
        ii. Handheld GPS units
        iii. Flags or other station markers
        iv. Tokens for each station, enough for each team or member and each station
    b. Lay out locations
        i. Lay out a course of with a small token at each station. The length of the course and number of stations is dependent on the age of the youth and the time available.
        ii. Create enough locations so that each participant on a team has at least two locations to enter into the GPS unit.
        iii. Consider putting a barrier between some of the stations so that participants have to use their surrounds along with the GPS to navigate safely.
        iv. Record the coordinates of each station and assign a name to each.
2. Activity
    a. Ask participants why they would want to save locations into their GPS by entering the coordinates when hunting. Discuss how navigating to a pre-saved location could be important when hunting.
    b. Direct participants to enter the coordinates you recorded from the stations into their GPS units. If working with younger youth, it may be necessary to do this for them before the activity begins. Ensure the correct coordinates are entered for each location.
    c. Assign individual participants or teams each a unique order to find the stations and retrieve the tokens. Set up a new track for this activity. At the end of the activity reward participants who visited all the stations in the correct order.
3. Re-cap
    a. Discuss how close the coordinates in the GPS units were to the actual stations.
    b. View the tracks youth saved. If they were unable to walk in a straight line between stations, discuss what barriers, either natural or man-made, prevented this.

CUTTING TOOLS FOR THE HUNTER

Participating young people and adults will:

1. Demonstrate ability to match cutting tools to uses
2. Identify the parts of knives and axes
3. Use sharpening tools effectively
4. Sharpen a knife and an ax safely
5. Practice safe handling, use, transportation and storage of cutting tools
6. Select knives and axes for specific purposes
7. Have fun while learning

Roles for Teen and Junior Leaders

1. Demonstrate sharpening, use, transportation, handling or storage of knives and axes
2. Assist participants in using sharpening equipment
3. Discuss knife types and their uses
4. Discuss ax types and their uses
5. Share personal preferences in ax and knife types
6. Set up a consumer decision making demonstration

Potential Parental Involvement

1. See “Roles for Teen and Junior Leaders” above
2. Bring personal hunting knives and discuss the reasons for selecting them
3. Offer tips on preventing loss of knives
4. Arrange for or provide teaching space
5. Arrange for or provide transportation
6. Arrange for or provide tools and equipment for demonstrations
7. Arrange for or provide refreshments
8. Learn the basic skills for home reinforcement

Best Time: Any time

Best Location: Any indoor or outdoor area with work and display surfaces

Time required: 1½ to 2 hours

Equipment/Materials
various sharpening stones (size, shape, hardness, grit)
"easy" sharpening devices
mill bastard file
leather strop
sharpening steel
ceramic or crock sticks
true angle sharpening kits (Lansky, Gatco, or other)
assorted knives
assorted axes and hatchets
bench vise if available

References
Basic Hunter's Guide, National Rifle Association, Washington, D.C.

State hunter education manuals

Manufacturers’ instruction and maintenance materials

Lesson Outline

Presentation	Application
I. Cutting tools for outdoorsman A. Three essential types 1. Saws a. Coarse or fine cutting jobs b. Usually used across grain 2. Axes a. Relatively coarse cutting jobs b. Used diagonally or with grain 3. Knives a. Moderately coarse to fine cutting b. Extremely versatile 1) Light wood cutting chores 2) Food preparation 3) Cutting cordage and leather 4) Field dressing 5) Minor "surgery" - splinters and thorns	**DEMONSTRATE** the various types of cutting tools and **DISCUSS** their uses in camp and while hunting or field dressing an animal.
B. Wide variety of shapes and sizes 1. Matching tool to use 2. Using tools properly	**POSE** a variety of situations calling for a cutting tool. **ASK** participants to select a tool for that use and to discuss the reasons for selecting that particular tool. **REINFORCE** the different actions and purposes of the tools.
II. Saws for sportsmen A. Bow saws B. Meat saws C. Chain saws D. Survival saws	**DISPLAY** a variety of saws, including both fixed and take-down types. Note that sharpening saw blades is an advanced activity. If time, location and conditions permit, **DEMONSTRATE** the use of the various types exhibited.
III. Axes and hatchets A. Parts of axes 1. Head a. Blade 1) Toe 2) Heel b. Eye c. Poll 2. Handle 3. Wedges	**POINT OUT** the parts of an ax or hatchet, allowing the participants to name the parts before offering to name the parts for them. Be sure to include the functions of each part as they are named.
B. Types by length 1. Felling and splitting axes 2. Cruiser's ax - 3/4 length handle 3. Hatchets - short handle for one-hand use	**EXHIBIT** axes and hatches of several varieties in both length and head design. **DISCUSS** the merits of each type and the uses for which they are designed.

C. Types by head type and shape
1. Single bit axes
a. Many blade shapes
b. Mostly personal preference
c. Pounding face and cutting face
2. Double bit axes
a. Allows sharpening for different uses
b. No pounding face

DISCUSS the selection of an ax or hatchet, Posing scenarios that allow the participants to select an ax or hatchet for a particular purpose. Emphasize the fact that personal preference and utility play the greatest role in selecting an ax or hatchet for hunting camp use.

IV. Knives
A. Knife nomenclature
1. Blade
a. Point
b. Edge
c. Back
d. Blood groove
e. Choll
f. Tang
2. Handle
a. Hilt or blade guard
b. Bolster
c. Spring
d. Release
e. Pivot pin
f. Grip or handle
g. Rivets

Using several knives to illustrate the pints of a knife, **OUTLINE** the parts of a knife and the functions of those parts. Allow the participants to try to name all the parts before stating them.

B. Belt knives
1. Rigid or fixed blade knives
2. Lock blade folding knives
3. Wyoming knife

DISPLAY several types of knives designed to be worn on the belt in a sheath. **NOTE** that the fixed blade belt knife was the tradition of big game hunters and is still very popular. **DISCUSS** the fact that blades in the 3 to 4-inch range are adequate for most purposes associated with hunting.

C. Pocket knives
1. Single blade
2. Multiple blades
a. Two blade knives
b. Three blade knives
3. Camp knives
a. Combination knives
b. Cutting blade(s)
c. Other utility "blades"
1) "Scout knives"
2) "Swiss Army knives"

DISPLAY a variety of pocket knives, designed for different purposes and with various types of blades. **NOTE** that many two- and three-bladed pocket knives are suitable for all small game hunting and for many big game uses as well. Be sure to cover the usefulness of camp knives with their many blade and tool types.

D. Utility knives
1. Paring knives
2. Slicing knives
3. Skinning knives
4. Boning knives

EXHIBIT a selection of knives that may be used for general camp chores or for handling of the skinning and boning processes in camp. **NOTE** that fillet knives make excellent boning knives as well as excellent fish processing knives.

E. Blade shape and function
  1. Reasons for blade shapes
    a. Function
    b. Aesthetics
  2. Popular blade shapes for hunters
    a. Clip blades
      1) Saber clip
      2) Turkish clip
      3) Long clip
    b. Spey blades
      1) Spey
      2) Maize
      3) Skinning (some types)
    c. Sheepfoot and coping blades
    d. Spear and pen blades
    e. Drop point blades
      1) Narrow skinning
      2) General purpose
      3) Broad skinning
    f. Green River skinning
    g. Boning and fillet
      1) Straight
      2) Angled
    h. Gut hook (bird hunter's knife)
  3. No blade does everything well
    a. Multiple blade pocket knife
    b. General purpose belt knife
    c. Specialized knives in camp

SHOW as many blade types as you have available and discuss the uses the blade is designed to meet. Have advanced young people or adults discuss their choices in knives and blade designs for hunting along with their reasons for those choices.

REINFORCE the notion that no blade is designed to do everything well. **NOTE** that many hunters carry both a multiple blade pocket knife and a belt knife of some type when hunting big game. Hunters after very large game animals (elk, moose, caribou) often carry an assortment of cutting tools to make the task of handling the carcass easier.

F. Selection factors
  1. Primary use
  2. Personal preferences
  3. Durability and ruggedness
  4. Quality of steel and edge holding ability
  5. “Feel”

SET UP a "consumer decision making" process, where the participants are given a choice of knives and challenged to pick the best values and characteristics in a general purpose hunting knife or other knife to be used in hunting. Be sure to **INCLUDE** obviously inappropriate selections as well as some that are nearly too close to call. **CHALLENGE** your participants to discuss and debate the merits of the ones they pick at the top of the list.

V. Sharpening cutting tools
  A. Sharpening equipment
    1. File
    2. Carborundum stones
      a. Natural or manufactured
      b. Coarse or sort stones
      c. Medium stones
      d. Hard or fine stones
      e. Very hard or razor stones

DISPLAY and DISCUSS the use of the various sharpening tools you have assembled.

3. True angle devices or kits
4. Steel or crock sticks
5. Strop
6. Scraping sharpeners
7. Grinders

B. Sharpening an ax

1. Hold securely
   a. Vise
   b. Held on a convenient object
2. Draw file the edge
   a. Maintain pressure and angle
   b. Smooth strokes for length of edge
   c. Dual movement
   d. Equal work on both sides of blade
3. Polish edge with a stone
   a. Maintain angle and pressure
   b. Circular or draw filing motion
4. Protect the edge from damage
   a. Sheath or scabbard
   b. Proper storage and handling
   c. Check handle for tightness
5. Caring for the handle
   a. Linseed oil on the wood
   b. Check the wedges
      1) Add steel wedges to expand
      2) Soak in water (temporary)
6. Leather care
   a. Saddle soap
   b. Neet's Foot Oil
   c. Leather restorer

DEMONSTRATE sharpening an ax both with a vise (if available) and on a suitable surface. Once the demonstration has been completed, allow the participants to sharpen and ax or hatchet of their choice with adult or junior leader supervision.

C. Sharpening a knife

1. Comfortable work area
2. Select desired angle
   a. Determines sharpness and durability
   b. Compromise between the two
   c. About 30° for general use
   d. About 25° for coarse cutting
   e. About 15-20° for skinning and boning
   f. About 5-10° for fillet or boning knives
   g. About 5° for carving knives
   h. Experiment to find your favorite
3. Dress edge to desired angle
   a. Use coarse stone first
   b. Proceed to finer (harder) stones
   c. Equal stoning on each side of blade
   d. Even angle and pressure
   e. Use of water or honing oil on the stones
   f. Either circular or slicing motion
      1) Both sharpen well
      2) Circular motion
         a) May hollow stones quickly
         b) Removes material quickly
         c) May leave uneven edge

DISCUSS the compromises in selecting an edge angle for a knife or a particular blade on a pocket knife. Have one or more volunteers **SHARE** their personal preferences for edge angles under a variety of conditions. **NOTE** that manufacturers often sharpen to an angle of about 25° for general purpose use.

DEMONSTRATE both types of sharpening motions and the use of a device or system designed to hold a true angle during the sharpening process.
EMPHASIZE the need to apply equal pressure and an equal angle to both sides of the blade during sharpening. **BE SURE** to show participants how to keep their fingers clear of the blade or to use a block to hold the stone during the sharpening activity. With adult or junior leader assistance, have each participant **SHARPEN** a knife of their choice.

d) May be difficult to hold angle
3) Slicing motion
a) Uses more of stone
b) Even removal of material
c) Easier to maintain angles
d) Should alternate sides

4. Polish edge with crock sticks or steel
a. Very light pressure
b. Maintain proper angle
c. Alternate sides of blade

DEMONSTRATE the use of steel or crock sticks to polish and hone an edge. **ALLOW** participants to use these tools to see how they can refresh an edge or add sharpness to an edge that has been honed with carborundum stones.

5. Polish on strop or piece of leather
a. Stroke from back to edge of blade
b. Alternate sides

DEMONSTRATE the use of a piece of leather or a strop to further polish and hone the edge on a well sharpened knife.

6. Testing edges
a. Be careful
b. Many methods
1) Cutting paper (dulls edge)
2) Shaving hair (dulls edge)
3) Feeling edge with thumb (risks cuts)
4) Feeling edge with fingernail (risks cuts)

EMPHASIZE the need for caution in testing the edge on a knife that has just been sharpened. **NOTE** that nearly all these methods result in dulling the knife to at least a minor extent. **NOTE** that proper technique is important to preventing injury when testing a knife for sharpness.

7. Protect the edge
a. Prevent corrosion
b. Use appropriately

8. Leather care
a. Saddle soap
b. Neet's foot oil
c. Leather restorer

VI. Using cutting tools safely
A. Sharp tools cut better
1. Cut desired materials
2. Cut body parts if misused
3. Need for user control
a. Common sense and responsibility
b. Avoiding excessive fatigue
c. Keeping work area clear
d. Keeping body parts out of harm's way
1) Cutting away from the body
2) Keeping hands and fingers clear
3) Keeping legs and feet clear

ASK participants to name some of the situations or circumstances in which cutting tools could be dangerous. DISCUSS their responses and analyze the causes of the problems and possible ways to prevent them.

EMPHASIZE the impacts of a knife or ax wound on a hunting trip or wilderness trip and the need for caution and safe use habits.

B. Common hazards
1. Deflected tools
2. Damaged or loose tools
3. Dull tools
4. Cluttered environments
5. Careless people
6. Wood
a. Cutting tensioned wood,
b. Flying chunks of wood

NOTE the potential danger of cutting limbs, splitting wood or clearing brush and limbs from an area improperly.

C. Protective gear
1. Safety glasses
2. Gloves
3. Hard hat and ear protection (chain saws)

DEMONSTRATE (if possible) the proper way to handle these tools and situations.

Summary Activity

1. Conduct a consumer decision making event with the group, having them pick cutting tools for different purposes, giving their reasons for placing each one as they did.
2. Have participants demonstrate their ability to sharpen, care for and use saws, axes and knives in a contest of sawing, chopping, splitting and whittling events.

Planning a Hunt

Participating young people and adults will:

1. Practice planning a hunt
2. Determine equipment needs for a planned hunt
3. Develop one or more hunt preparation checklists
4. Prepare for a specific hunt with all necessary equipment and arrangements
5. Practice proper equipment care and maintenance
6. Have fun while learning.

Roles for Teen and Junior Leaders

1. Assist with setting up the teaching area
2. Support small groups in planning
3. Demonstrate equipment maintenance
4. Discuss personal hunt planning
5. Teach portions of the lesson

Potential Parental Involvement

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

Best Time: Spring or summer

Best Location: small group setting (kitchen table)

Time Required: 2 hours

Equipment/Materials
easel, blackboard or flipchart
marking materials
sample equipment checklists
regulations for hunting area
drawing or permit applications
examples of equipment
maps
materials for equipment maintenance

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

International Bowhunter Education Manual. International Bowhunter Education Foundation, Murray, KY.

State Hunter Education Manuals

Lesson Outline

Presentation	Application
I. Arranging for a hunt	**REVIEW** all regulations for the hunting areas, including both resident hunting and at least one non-resident area where permit drawings are required. **NOTE** that many states include special hunts with application deadlines months before the season or even the drawing date. Regulations should relate to the interests of the participants.
A. Review regulations	
1. Seasons	
2. Areas	
3. Permit or drawing requirements	
4. Hunter education requirements	**STRESS** the importance of meeting all regulations and planning well ahead to have certifications, equipment and clothing ready and available prior to the hunt date.
5. Clothing restrictions	
6. Equipment restrictions	
B. Arranging for access	
1. Public land	
2. Private land	**STRESS** the importance of having access arranged early in the process.
a. Permission or invitation	
b. Arrangement with outfitter	
c. Fee access	
3. Access type	Ask participants to **CONSIDER** how the type of access might impact the amount and type of gear and the relative need for emergency preparedness.
a. Automobile	
1) Road access	
2) 4x4 trail	
3) ATV trail	
b. Air or rail access	
c. Boat or canoe	
d. Horse, mule or dog	
e. Walk-in or backpack	
II. Developing an equipment checklist	Have participants **BRAINSTORM** things that should be considered in developing a checklist for a hunt. **ASSIST** them in considering all the items that should be included. **LIST** all their answers, then **CATEGORIZE** them by types.
A. Area being hunted	
1. Climate and weather	
2. Terrain	
3. Resource availability	
a. Water	
b. Fuel	
c. Food	
d. Camp amenities	
4. Sources of supply	
a. Proximity	
b. Type and quality	
B. Duration of trip	**NOTE** that longer hunts take much more planning and require much more gear than do those that take only a few hours or a couple of days. Have the participants **CONSIDER** why that might be the case and **DISCUSS** some of the additional considerations.
1. Day hunt	
2. Weekend	
3. Longer hunts	
C. Game being hunted	**ASK** how the game being hunted could affect the equipment· required for a hunt. **LIST** responses and **DISCUSS** the need to match your equipment list to the game.
1. Gear specific to the game	
2. Hunting techniques	
3. Game handling procedures	

Have small groups **DEVELOP** a checklist of equipment needed for a specific hunt. Once each group has finished their lists (about 10 to 15 minutes) have each group **REPORT** their lists to the entire body. Have a parent or teen leader **MERGE** the lists to come up with a composite.
ADD any necessary equipment to make the list complete. If desired supply an outline for the list, e.g. firearms or archery equipment, hunting accessories, clothing, boots, toilet articles, camping gear, cooking tools, food and water, miscellaneous. Generating a list on a personal computer may be helpful so that each member can have a copy.

III. Equipment selection
- A. Clothing
  - 1. Boots
    - a. Terrain
    - b. Weather
    - c. Purpose

DISPLAY a variety of boots for different conditions: waders, hip boots, low rubber boots, rubber bottomed leather boots, summer weight "bird shooters," insulated leather or nylon boots, mountain boots, felt-lined pacs, or others that are important in your hunting area. In warm weather snake country include snake boots, chaps or leggings.

  - 2. Foul weather gear
    - a. Poncho
    - b. Rain coat
    - c. Rain suit

EXHIBIT an assortment of rain gear from a simple and inexpensive poncho to a top quality rain or storm suit. **DISCUSS** how the type and location of the hunt may affect the type of rain gear needed.

  - 3. Garments
    - a. Durability
    - b. Versatility
    - c. Quiet surface
    - d. Color or pattern
    - e. Camp clothes
    - f. Prepare for extremes

DISPLAY a wide variety of hunting clothing from the camo tee-shirt to heavy, cold weather outerwear. **STRESS** the layering of clothing and having clothing that will withstand the wear and weather encountered in hunting. **DISCUSS** the amount of clothing required for a trip of some duration.

  - 4. On-person storage
    - a. Vest or jacket pockets
    - b. Day bag
    - c. Fanny pack

DISPLAY an assortment of jackets, vests, day bags and fanny packs and some of the contents that a hunter might want to include in them - survival gear, trail food, water, field dressing gear, map, compass, etc.

- B. Shooting equipment
  - 1. Firearm or archery gear
  - 2. Protective case
  - 3. Shooting glasses
  - 4. Ammunition
  - 5. Back-up equipment
  - 6. Maintenance equipment
    - a. Field
    - b. Camp

DISPLAY an assortment of shooting gear suitable for a variety of hunt types. **STRESS** the importance of spare or back-up equipment on long or backcountry hunts. **NOTE** that field cleaning kits can save the day when a barrel becomes obstructed or in similar situations.

- c. Field dressing and game care
  - 1. Cutting tools
    - a. Knife
    - b. Saw or hatchet
    - c. sharpening equipment

LAYOUT a set of equipment for field dressing and game care according to the type of hunt being considered. **NOTE** that the complexity of the equipment changes with the type of hunting being done.

  - 2. Rope
    - a. Drag rope or sling
    - b. Block and tackle

3. Meat protection
   a. Game pouch
   b. Game carrier
   c. Meat sacks
      1) Sealable plastic bag
      2) Muslin bag
      3) Cheesecloth bags
      4) Big game bags
   d. Chemical protectant
      1) Pepper
      2) Liquid meat sack
   e. Ice chests or coolers

STRESS the importance of keeping meat free from pests and dirt. In warm weather areas, **EMPHASIZE** the need to cool game quickly to prevent spoilage and **WARN** members about sealing meat in plastic bags. Refer to *Game Handling* for support.

D. Food and cooking gear
   1. High energy foods
      a. Trail mixes
      b. Granola or energy bars
   2. Match food to needs
   3. Cooking gear
      a. Adequate to the task
      b. Suitable for hunt type
      c. Suitable for cooking methods
   4. Stove or grill

DISPLAY a variety of foods (fresh, canned, frozen, dried, freeze dried). Have participants **DISCUSS** advantages and disadvantages of each one and **SELECT** an assortment of foods for the hunt being planned.

DISPLAY an assortment of cooking gear from the nested "backpacker" set to a full array of cast iron. Have participants **SELECT** a set of cooking gear and tools to match their needs on the planned hunt.

E. Camping gear
   1. Shelter
      a. Cabin
      b. Trailer
      c. Tent
      d. Temporary
   2. Sleeping gear
      a. Sleeping bag
      b. Cot or mat
      c. Sleep wear
         1) Sweats
         2) Socks
         3) Stocking cap
   3. Sanitation
      a. Wash basin
      b. Shovel
      c. Soap and dish detergent

NOTE that the type of hunt and its duration have a powerful influence on what is required in the camping gear department, from nothing to a full camp.

IV. Pre-hunt planning
   A. Equipment lists
   B. Time schedule
      1. Planned departure
      2. Travel time and route
      3. Hunting location(s)
      4. Planned return time
      5. Itinerary left at home

DISCUSS why leaving an itinerary at home is excellent insurance in the event of a mishap.

   C. Sharing camp chores
      1. Cooking
      2. Clean up
      3. Miscellaneous chores

LIST some of the chores associated with a hunting camp. **DISCUSS** why everyone should share in the camp chores and the wisdom of letting people choose the things they do best.

4. Everyone shares!

D. Confirming information
   1. Access
   2. Maps
   3. Dates and times

NOTE that some person in the planning group must be responsible for making sure that all details are in order well before the hunt date.

V. After the hunt

A. Equipment
   1. Inspect
   2. Clean
   3. Store

DEMONSTRATE equipment inspection, cleaning ,and storage.

B. Game
   1. Make table ready
   2. Store properly

STRESS the Importance of making game animals as table ready as possible in order to enhance their use.

C. Personal
   1. Record the experience
   2. Share it with someone

Summary Activity

1. Prepare several hunting scenarios. Have small groups of participants with the aid of a volunteer or a teen leader develop a checklist and a hunt plan for the scenario they have been given and share that plan with the group.

2. Develop a hunting plan for a trip the group will take to the field. Make sure that each young person takes part in the planning. Have the group put together the trip, and then take them afield using their pre-planned approach.

THE HUNTING CAMP

Participating young people and adults will:

1. Understand principles of camp site selection
2. Practice selection of camping equipment
3. Practice basic equipment maintenance skills
4. Develop consumer decision making skills related to camping equipment,
5. Explore proper use of camping equipment
6. Appreciate the aesthetics of camp site selection
7. Explore camping ethics
8. Have fun while learning

Roles for Teen and Junior Leaders

1. Demonstrate and assist with setting up tents or shelters
2. Lead participants in a cooking exercise
3. Demonstrate maintenance of lanterns and other gear
4. Discuss choices in gear
5. Lead small group discussions or exercises
6. Set up and break down demonstrations
7. Develop and conduct decision making activities

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Discuss personal preferences iii camping gear
3. Arrange for or provide equipment
4. Arrange for or provide teaching sites
5. Arrange for or provide transportation
6. Arrange for or provide materials for cooking activity
7. Support teen and junior leaders

Best Time: Late spring through early fall

Best Location: Outdoor campsite (or backyard)

Time Required: 4 hours

Equipment and Materials
assorted tents or other shelter
assorted cooking gear
lantern
flashlight
headlamp
candle lantern
assorted stoves
camp grill
sleeping bags
sleeping pad
folding cot
assorted hatchets and axes
assorted saws
camp boxes
camp stool
generator

References
Numerous extension publications, materials from camping organizations or youth groups, and information from manufacturers of camping gear are useful in support of this lesson.

Lesson Outline

Presentation	Application
I. Camping part of many hunting trips A. Wilderness experiences 1. Extended hunting trips 2. Staying in game country 3. Expanding the hunting experience 4. Getting away from it all	Ask participants to **DISCUSS** reasons why people might camp as part of their hunting experience. **LIST** their answers and **ADD** any that they might have missed.
B. Camping with another purpose 1. Different challenges 2. Different needs 3. Safety considerations	Briefly **DISCUSS** some of the ways that a hunting camp might differ from a camp used for other purposes. Ask the participants to **ANTICIPATE** some of the extra considerations that might be involved in hunting camps.
C. Many types of camping 1. Backpack camps a. Emergency over-night camps b. "Spike" camps c. Backpack base camps 2. Horse pack camps a. Outfitted and guided camps b. Drop camps c. Personally organized 3. Vehicular access camps a. Self-contained vehicle b. Cabins or trailers c. Tents or shelters 4. Boat or canoe camps	Ask participants to **LIST** some of the types of camps that might be used in hunting situations. **ENCOURAGE** them to consider all kinds of camps from the emergency over-night to long-term wilderness camps. **DISCUSS** the differences in the level of planning and competence needed for the different types of hunting camp experiences.
II. Locating good camp sites A. Access	Ask the participants to **OUTLINE** some of the features they would like to consider in picking a camp site. **EXPAND** on their ideas if necessary to include the major features listed plus any locally important factors. If time and site permit have small groups **SELECT** a site and **DISCUSS** the reasons they selected it.
B. Proximity to hunting location 1. Close to hunting areas 2. Avoiding disturbing sensitive game	**DISCUSS** locating the camp so it does not interfere with wildlife movements or behavior, but is close enough for relatively easy access to the game being hunted. **NOTE** that these factors may differ with the kind of game being hunted.
C. Site features 1. Level site a. Free of obstructions b. Adequate drainage c. Adequate space for gear 2. Access to needs a. Water b. Fuel wood c. Forage for pack animals	**CRITIQUE** each site selected on the criteria appropriate to that site. Make sure the participants have **CONSIDERED** sanitation, hazards, and other vital features of the site.

d. Sanitation
1) Avoid contaminating streams or lakes
2) Appropriate disposal or removal
e. Secure game hanging site
3. Other site features
a. Elevation
b. Flood or avalanche zones
c. Sun and shade
d. Wind protection
e. Privacy

III. Camping ethics
A. Minimum impacts
1. Proper disposal or removal
a. Wastes
b. Trash
2. Site clean-up and renewal
a. Using existing campsites
b. Minimizing evidence of camp
c. Restoring site features
d. Cleanliness
e. Leaving sites better than found

Ask participants to **DEFINE** ethics and to **OUTLINE** camping ethics for the camping hunter.

Ask participants to **CONSIDER** what minimum impact means and how that relates to their use of a camp site for hunting purposes. Use questions to **EXPAND** their concept to include the features listed here and any others that might be appropriate.

B. Responsibilities
1. Site and wildlife
2. Other people
a. Other hunters/campers
b. Other users
1) Recreationists
2) Resource managers
3) Resource users
c. Landowners

Ask participants to **LIST** entities to whom the camping hunter owes some responsibility. **ENCOURAGE** them to think broadly about other users, landowners, wildlife and even the vegetation in the area.

3. Legal requirements
a. Minimum acceptable standard
b. Ethics more than legal requirements

ADDRESS and legal constraints that might exist in areas where participants may be planning to camp during a hunt. **NOTE** that they should determine those restrictions early to aid them in planning their hunting trip.

IV. Camping equipment
A. Shelter and heat
1. Mobile recreational vehicles
a. Self-contained RVs
b. Pickup campers
c. Travel trailers or pop up campers
d. House boats

Ask participants to **CONSIDER** the basic types of needs the hunting camper might face. **LEAD** them to conclude that the major headings here are a minimum set to be considered and that a wide array of possible solutions to their needs are available.

2. Cabins and fixed shelters
3. Tents and shelters
a. Tarps and space blankets
1) Emergency use
2) Mild weather shelters
3) Rigged several ways

DISPLAY as wide a variety of tents and shelters as can be assembled. Have the participants explore them, looking at the space allowed as well as their convenience and utility for different purposes.

b. Tube and backpacker's tents
1) Limited space
2) Light weight
3) Minimum bulk

4) Easily transported
c. Dome and umbrella tents
1) Larger and heavier
2) Wide array of sizes and styles
3) Greater space
d. Cabin and wall tents
1) More space
2) Greater ease of movement
3) More heating options

NOTE that the greater height of the walls on these tents makes them more comfortable and spacious when used for a long period of time

4. Heat
a. Sheepherder stove
b. Catalytic heater
c. Reflector fires
1) Open front tent styles
2) Require maintenance
d. Dangerous options
1) Camp cook stoves
2) Lanterns

DISCUSS heating options with the group. **NOTE** that sheet steel or sheepherder stoves must be piped to the outside of the tent. **CAUTION** participants about the use of stoves or lanterns in tents because of the potential for carbon monoxide poisoning.

5. Unwanted guests
a. Insects
1) Adequate screening
2) Site with air movement
b. Rodents
1) Closed containers for foods
2) Floor or tarp on lower flap
3) Careful sanitation
c. Bears and raccoons
1) NO food in tents
2) Food containers out of reach
3) Scrupulous sanitation
4) Hang it high!
d. Other problem critters
1) Site selection
2) Sanitation
3) Barriers

ADDRESS the potential problems of unwanted animal visitors to the tent of the camp site and means of coping with them. **NOTE** that most problems can be avoided if forethought is used.

B. Sleeping gear
1. Just like home
a. Heated recreational vehicles
b. Beds or bunks
1) Recreational vehicles
2) Cots
3) Sleeping pads
2. Blankets
a. Moderate weather option
b. Heavy for warmth
3. Sleeping bags
a. Shapes
1) Rectangular
2) Mummy
3) Tapered (semi-mummy)
b. Fillers
1) Down
2) Synthetic fibers

POSE several scenarios for hunting camps, from very warm to very cold conditions. Have the participants **SELECT a**ppropriate sleeping gear for each situation.

COMPARE the comfort of a cot with sleeping on a pad or on the ground. **NOTE** that adding insulation to the cot helps to keep the sleeper warm under very cold conditions.

Allow participants to **COMPARE** various shapes of sleeping bags to see which ones they prefer. **NOTE** that the mummy and tapered bags tend to be warmer for their weight, but they are more confining to large or tall people.

DISCUSS the types of filler material available in modern sleeping bags; noting the advantages and disadvantages of each one. Have the participants **SELECT** a sleeping bag from a list of possible ones, a catalog, or a selection provided for their review. Allow small groups to **DEFEND** their choices based upon the conditions they anticipated encountering

3) "Chicken feathers"

C. Food and water

1. Adequate water supply important

a. Constant use

1) Drinking
2) Cooking
3) Washing dishes
4) Bathing

REINFORCE the need for adequate, quality water supplies in camp. **NOTE** that water is a critical resource that may be abundant or very precious.

b. Sources

1) On-site
   a) Springs
   b) Lakes, streams, ponds
2) Transported in
   a) Sources
   b) Storage
3) Purity and purification
   a) Iodine
   b) Halazone.
   c) Biofilters
   d) Boiling

STRESS the fact that surface waters may be contaminated with a variety of organisms that can cause disease or temporary disability. Any area with beavers should be suspected of harboring *Giardia,* a parasite that causes severe intestinal upset in people and is difficult to eliminate. **STRESS** the importance of thorough water purification if "native" sources are-used.

DEMONSTRATE the use of several water purification techniques.

2. Safe, quality food supply

a. Transportation dictates food types

1) Freeze dried backpacker food
2) Home style RV food

Have participants **PREPARE** one or more meals appropriate to the type of camping situation being experienced or simulated in the instruction.

b. Food safety

1) Hot foods hot
2) Cold foods cold

REVIEW the fundamentals of food safety with the group, paying attention to the need to use ice chests and similar equipment for cooling.

3) Keeping dishes, utensils clean

NOTE that utensils contaminated with either food residues or soap can lead to problems.

c. Fueling high activity

1) Balanced diet
2) Strong carbohydrate component
3) Hearty meals

Help participants to **CONSIDER** weather conditions and activity levels in planning their meals for a hunting camp experience.

d. Food preparation

1) Practice at home

CONSIDER using a round-robin or small group food preparation activities using a wide variety of techniques.

2) Learn a variety of technique
   a) Dutch oven cookery
   b) Reflector oven cookery
   c) Grilling
   d) Bake, boil, broil and fry

EMPHASIZE the need to practice the techniques before applying them in a hunting camp.

3. Camp kitchens

a. Multiple use cooking gear

1) Nested pots
2) Camp grill
3) Dutch oven

POSE several hunting camp scenarios and have participants **SELECT** appropriate cooking gear for the situation. **NOTE** that easy access makes the use of more variable camp kitchens possible.

b. Camp kitchen box

1) Utensils
2) Cooking tools

NOTE that seasonings add greatly to the palatability of the food without adding much bulk and weight. Take along those types of spices and seasonings that you use at home.

3) Condiments and spices
c. Cold storage
1) Ice chests
2) Ambient cold
a) Cold air temperatures
b) Sealed containers in cold water
d. Cooking techniques
1) Over coals
2) Bean hole cookery
3) Just like at home
e. Table
1) Folding
2) Break-down
f. Seats
1) Folding chairs
2) Camp stools
3) Packing boxes

REMIND participants that altitude adds cooking time because it reduces the boiling point of water.

NOTE that the presence of simple tables and chairs of some type makes the camp much more pleasant.

D. Sanitation
1. Multiple considerations
2. Body wastes
a. "Cat holes"
b. Latrines and camp toilets
c. Avoiding contamination of water
d. Keeping it away from camp
3. Keeping clean
a. Washing up
1) Hands
2) Face/hair
3) Feet
b. Bathing
1) Sponge baths
2) Sunshower
3) Jury-rigged showers
c. Importance to health
d. Importance to success
4. Dish sanitation
a. Hot wash
b. Hot rinse
c. Bleach solution to sanitize
d. Clean storage
5. Clothing
a. Plastic bag washer
b. Take them home

STRESS the fact that basic sanitation is a common sense process.

NOTE that basic cleanliness is important to health, a sense of well-being and hunting success. **STRESS** also that it contributes to the maintenance of camping equipment, such as sleeping bags and helps with the prevention of skin irritations.

EMPHASIZE the importance of thoroughly cleaning all dishes and cooking utensils to prevent contamination with either soap or bacteria. **NOTE** that mild bleach solutions are excellent disinfectants for plates and silverware.

DEMONSTRATE the use of a heavy plastic bag as a "washing machine," but **NOTE** that most trips are not so long that clothing needs to be washed in the field.

E. Light
1. Generator powered lights
2. Lanterns
a. Gasoline
b. Kerosene
c. Battery powered
3. Flashlights
a. Headlamps
1) Battery

Ask participants to **CONSIDER** why light sources might be important to people in a hunting camp. **NOTE** that hunting activity must often begin before dawn and may end after dark with many chores and activities to be done in camp.

DISPLAY a variety of flashlights and headlamps operating on a variety of batteries and carbide (if available). Ask participants to **COMPARE** the convenience of various types of lights for different types of activities.

a) AA to 9 volt
b) Rechargeable gel batteries
2) Carbide
b. Hand held
c. Extra batteries
4. Candle lanterns
a. Flame control
b. Protection from wind
c. Soft light

F. Cutting tools

DISPLAY an assortment of cutting tools that may be useful in a hunting camp. DISCUSS the advantages and disadvantages of various types and designs. See *Cutting Tools for the Sportsman: Selection, Care and Maintenance* for additional information.

1. Axes and hatchets
a. Cutting chores
1) Wood diagonal to grain
2) Splitting carcasses
3) Splitting fuel wood
b. Pounding stakes
2. Saws
a. Cutting across grain
b. Work on carcasses
c. Useful types

DISPLAY several types of saws, discussing the advantages and disadvantages of each type. NOTE that some redundancy is wise for wilderness or extended camping trips.

1) Bow saw
2) Take-down saws
a) Combination blades
b) Easily packed
3) Chainsaw
a) Convenient if useable
b) Noisy
c) Demands gas, oil, bar oil
d) Need eye and ear protection
e) Fast fuel wood production
3. Knives

NOTE that a sharp belt knife can do most of the tasks required in camp, but that specialty knives can be far superior if adequate space is available.

a. Belt knife
b. Paring or slicing knife
c. Boning or filleting knife
d. Sharpening equipment

DISCUSS the importance of good sharpening equipment to keep tools in prime condition for their purposes.

1) Sharpening stones
2) Crock sticks or steel
3) True-angle guide

G. Earth moving tools

NOTE the importance of digging equipment for many of the camp chores. Redundancy may be important for longer or wilderness trips.

1. Shovel
a. Folding
b. Standard
2. Pick if necessary

H. Maintenance tools

EMPHASIZE the need for basic maintenance tools, particularly in remote locations.

1. Screwdrivers
a. Phillips
b. Flat
2. Wrenches
a. Adjustable
b. Box wrenches
3. Pliers
a. Lineman's pliers
b. Locking pliers

c. Needle nose pliers
d. Water pump pliers
4. Claw hammer
5. Miscellaneous gear
a. Assorted nails
b. Assorted screws
c. Small bolts and washers
d. Spare parts to equipment
e. Spool of wire
f. Light rope
g. Duct tape
h. Electricians tape
6. Gun or bow equipment
a. Cleaning kit
b. Spare scope
c. Mount screws
d. Spare bow parts
e. Arrow repair kit
f. Soft and hard cases

Have participants **CONSTRUCT** a list of things they might possibly need to repair a damaged part, create a tool, or maintain their equipment. **SUGGEST** items they might have overlooked.

NOTE that basic maintenance and repair equipment can make the difference between a great hunt with a minor inconvenience and a ruined hunt.

V. Enjoying it
A. Sharing camp chores
1. Doing what needs doing
2. Looking for places to help
3. Volunteering for things you like
B. Running an organized camp
1. Keeping order
2. Anticipating needs
3. Planning for the entire trip

NOTE that happy camps are usually those where people share the labor, share the fun, and enjoy the company of valued companions. Keeping the experience positive and enjoyable requires shared effort and compatible people.

Ask participants to **LIST** some of the ways that camp organization might help to increase enjoyment. **DISCUSS** all the ideas presented and **NOTE** their importance to the camping experience.

4. Being prepared for emergencies
a. Repair kit

NOTE that emergencies can be minor inconveniences for those who are prepared, but trip-ending problems without prior planning.

b. First aid kit
1) Beyond band-aids and iodine
2) Anticipate common problems
c. Minimal survival gear

Have small groups of participants DEVELOP a list of materials they would include in a camp first aid kit for hunting camps of various lengths from short three-day hunts near towns to two week wilderness camps.

C. Enjoying the experience
1. Avoid pressures
a. Pressure to succeed
b. Pressure to hunt
c. Job pressures
d. Personality pressures

RELATE recreation to the type of experience that is brought to the camping situation.

2. Absorb the experience
a. Live on your time
b. Enjoy the solitude
c. Enjoy the companionship
3. Rebuild your spirit

STRESS the fact that the hunting camp is primarily a chance to re-create the person; relax, enjoy companions and the outdoors, and participate in an enjoyable activity.

Summary Activities

1. The ideal summary activity is to plan, organize and participate in a camping experience.
2. Have participants develop lists of camping gear required for several types of camping trips and plan those trips to include menus, food lists, gear to be taken along and organization.
3. Hold a field trip to a local sporting goods store, hardware store or department store that carries camping supplies. Compare qualities and prices of gear, and decide upon the types of gear that participants may want to have for their hunting camp experiences.
4. Hold a camping gear identification contest.
5. Hold an outdoor cooking/game cookery workshop.

FIREARM SAFETY FOR THE HUNTER

Participating young people and adults will:

1. Increase awareness and understanding to prevent hunting accidents
2. Understand how firearms and their projectiles work
3. Practice safe field handling of firearms
4. Practice positive and complete target identification
5. Practice field decision making in shot selection and safety
6. Observe the effects of clothing choice
7. Have fun while learning

Roles for Teen or Junior Leaders

1. Assist in setting up obstacle course
2. Assist in preparing hunter safety trail
3. Demonstrate gun handling procedures
4. Demonstrate gun cleaning procedures
5. Lead small group activities
6. Promote discussion

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching location
3. Arrange for or provide equipment and materials
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Lead discussions or demonstrations
7. Share personal storage and care decisions
8. Provide arms and equipment for cleaning activity

Best Time: Prior to hunting season

Best Location: Classroom, open area and range

Time Required: 1 ½ to 2 hours

Equipment and Materials

broom handle rifles
twine and chairs
damaged firearms for demonstration
cleaning kit and firearm per 3-5
hats (blaze orange, red, camouflage, ...)
air pistol or air rifle
pellet trap
targets
chalkboard or flipchart
chalk or marking pens
centerfire rifle
ammunition for rifle
milk jug or large sealed can filled with water
shotgun
shotgun shells
well-soaked cabbage
stake
hammer
soda straw
tissue paper

References

Target: Safety. National Police Athletic League, North Palm Beach, FL
Basic Hunter's Guide, National Rifle Association, Fairfax, VA
International Bowhunter Education Manual, International Bowhunter Education Foundation, Murray, KY
"Sweet Sunday Gone," video, State Hunter Education Coordinators

LESSON OUTLINE

Presentation

I. How firearms work

A. What happens when the gun goes off
1. Shooter pressed trigger to fire
2. Projectile pushed through barrel
a. Barrel as a launching tube
b. Points to impact site
3. Projectile exits through muzzle
4. Projectile strikes target
5. Projectile energy transferred to target

B. Pellet (bullet) holes as evidence

C. Mental control
1. Firearms do not think
2. Shooters must think

3. Muzzle control critical
a. Shooter responsibility
1) All the time
2) All situations
3) Constant attention
b. Foundation - self-control

c. Safe direction

II. Firearms handling in the field
A. Transporting arms
1. Legal requirements for transporting arms
2. Safety
a. For people
b. For the arms
3. Value of cases
a. Secure stowage during transport
b. Protection of firearm and sights
c. Legality
d. Accident prevention
4. Making sure
a. Clear and check
b. Check before casing
c. Check when removed from case
d. Check before loading in the field

B. Field firearm handling
1. Field carries
a. Two-handed
b. Cradle
c. Port-arms
d. Shoulder
e. Sling
f. One-handed
g. Muzzle direction reminder
2. Handling at obstacles
a. Fences
1) Always open and empty
2) Alone
a) Flat on ground
b) At least one post away
c) Watch for dogs!
3) With companions
a) Cross individually
b) Pass safe firearms across
c) Load after all have crossed
4) Ethics
a) Crawl under
b) Bend through
c) Climb only where damage unlikely
d) Report problems
b. Elevated blinds
1) Always empty (CHECK)
2) Hauling line
3) Opposite side of tree from climber
4) Check for obstructions before loading
c. Ground blinds or boats
1) Always empty and safe
2) Pass safely
3) Stow carefully and securely

4) Load only when ready to hunt
5) Unload prior to exiting

3. Loading or unloading
   a. Starting out
      1) Facing away from others
      2) Muzzles in safe direction
      3) Check for obstructions
      4) Load
      5) Safety on
   b. Obstacles or dangerous terrain
   c. Stopping to talk or eat
   d. End of day or hunt

C. Zones of fire
   1. Single file line of hunters
   2. Line abreast
      a. Close range
         1) Upland birds
         2) Small game
      b. Long range
         1) Big game
         2) Still hunting in groups
         3) Driving
      c. From blinds
         1) Close quarters
         2) Caution essential
         3) Who shoots, when and where
   3. From boats
      a. Anchored of staked - like blind
      b. Drifting or hand powered - bow only

D. Target identification and shot selection
   1. Complete, absolute identification essential
      a. Safety for people
      b. Livestock safety
      c. Game legality
      d. Clean kills on legal game
   2. People-and property
      a. Hunter orange not required
         1) Kids playing
         2) Hikers
         3) Loggers or other workers
         4) Firewood cutters
         5) Ranchers or farmers
      b. Muzzle or string to final resting place
      c. Hunter protection colors
         1) Color perception varies
         3) Completely concealed or obvious
   3. Recognition and shot selection

III. Equipment checking and storage
   A. Field checks
      1. Check before loading
      2. Check ammunition
      3. Frequent safety checks
         a. Periodic
         b. After a fall
         c. In heavy cover
         d. Rain or snow
         e. After taking a shot
   B. Exchanging arms
      1. Open and empty
      2. Protect trigger and trigger guard
      3. Extend with both hands
      4. Receiver in control - "thank you"
      5. Initiator letting go - "you're welcome"
      6. Return with same process
      7. Check bore and chamber
      8. Reload and apply safety
   C. Equipment inspection
      1. Bore obstructions
         a. Poor cleaning
         b. Poor storage conditions
         c. Projectile lodging
         1) Improper ammunition
         2) Mixing ammunition
         3) Bullet lodging
         4) Wad lodging
         d. Mud or snow
      2. Mechanical damage
         a. Safety failure
         b. Broken firing pin
         c. Faulty sear

2) Color varies with light

d. Headspace problems
e. Broken interrupter

3. Stock damage
   a. Cracks
   b. Broken butt plate

D. Cleaning
1. Check and unload
2. Swab bore
   a. Patch or brass brush
   b. Quality solvent
   c. From breech when possible
   d. Clean, dry patch
3. Lightly oil bore
   a. Quality gun oil
   b. Swab lightly oiled patch
4. Wipe down metal parts

   a. Clean and dry
   b. Lightly oiled cloth
   c. Anti-corrosion compounds

5. Stock treatment
   a. Minimize oil on wood
   b. Touch up scrapes
      1) Stock finish
      2) Boiled linseed oil
      3) Small amount!

E. Storage
1. Separate locations for guns and ammo
2. Vault, safe, locked cabinet or room
3. Cool, dry location
4. Avoid temperature extremes
5. Cleaned properly before storage
6. Check periodically

Application

FIRE a pellet pistol or rifle (or all other firearm if adequate range space is available) at a safely situated target in a pellet trap or on a range where the 'impact can be observed. ASK the participants to describe what went on, using **QUESTIONS** to help them outline the operation of the firearm and its projectile.

ILLUSTRATE the process with a straw and paper wad propelled by a puff of air.

LEAD participants to conclude that the bullet hole(s) show exactly where the firearm was pointed when the firearm was discharged. **ASK** them where the firearm could be pointed, noting that it could be pointed anywhere the shooter decides to point it. **REINFORCE** the notion that the bullet will strike where the firearm is pointed at the time it is fired.

Place a loaded pellet gun on a table with the muzzle pointed at a target back in a pellet trap. Use a second gun to **FIRE** a pellet into the trap. Ask participants to **DISCUSS** the differences between the two guns and their actions. **STRESS** the importance of mental control over the firing sequence until the trigger is actually pressed.

Using a shotgun barrel only, point the muzzle end of the barrel at each person in the room. **ASK** them how they felt about looking into the business end of the barrel. Lead them to **DISCUSS** the importance of muzzle control and the responsibilities of all shooters and hunters to maintain proper muzzle control and self control at all times. **SAFELY** fire the second gun to clear it before going on to the next section.

DISCUSS the real meaning of having a firearm pointed in a safe direction at all times. If desired, **POSE** several scenarios or have small groups **ACT OUT** safe directions using broomstick firearms or other models.

OUTLINE and **DISCUSS** the legal restrictions on transporting firearms in your state or local community. **STRESS** safety, common sense and double-checking all arms being transported.

If desired, show the movie or video, "Sweet Sunday Gone," to underscore the importance of proper field handling and sound decision making in the field. **DEMONSTRATE** and have groups **PRACTICE** safe field carries and handling at obstacles using broomstick guns or firearms with dummy ammunition. Alternatively, consider a **DEMONSTRATION** of the power of firearms by shooting a cabbage at close range with a shotgun or a milk jug or can of water with a high power rifle at 100 or more yards.

DEMONSTRATE each of these and have participants **PRACTICE** them on a real to simulated obstacle course. Firearms with **DUMMY AMMUNITION** or simulated firearms should be used. If bowhunters are present, include the use of bows, quivers and arrows for this experience.

Ask participants to **DISCUSS** when they might want to unload their firearms in the field and how they should handle the firearm during loading or unloading.

SET UP simulated hunting conditions for various types of game hunted in your area. **EQUIP** “hunters" with firearms loaded with dummy ammunition or simulated firearms for the exercises. **DEMONSTRATE** proper firearms handling, then have each participant **PRACTICE**. **OUTLINE** safe zones of fire with engineer's flagging if desired.

Ask participants to **LIST** reasons for careful target identification and shot selection. Use questions as needed to include the full array of reasons for absolute, complete identification of every potential target and the path of the arrow or bullet to its final resting place.

SET UP a comparison of color visibility under poor light conditions (intense overcast, dawn or dusk) using camouflage, neutral colors (tan or gray), red, yellow, blue, blaze orange or others. (See the fact sheet: *Camouflage Game* for more ideas.) Consider having both hidden and moving "hunters" and waiting "observers" to identify them as they can. NOTE the distances at which they are spotted by the observers. EMPHASIZE the danger of wearing small patches of white, yellow, orange, red or blue when turkey hunting.

SET UP a hunter trail with safe and "unsafe" shots, using animal silhouettes and "hunters" or other "don't shoot" situations. Walk the hunter through the trail, allowing them to select shots or pass them because of perceived dangers. Smallbore rifles can be used in areas where the shots can be adequately contained.

Ask participants to **LIST** some of the times they might want to check their firearm to see if the safety is on or if any safety problem has developed. **DISCUSS** their answers fully.

DEMONSTRATE and have participants **PRACTICE** passing firearms among themselves. Use models or firearms with dummy ammunition and positively reinforce the proper way to clear and pass the firearms.

DISPLAY damaged equipment (if available) and ask participants to **SPECULATE** on ways that the damage might have been caused.

DEMONSTRATE cleaning a firearm and have. Participants **CLEAN** one of their own in this session. Groups of two to three participants per cleaning station are about right.

Lead the group to **DISCUSS** proper storage of arms and ammunition.

Summary Activity

1. Arrange a Hunter Education Class for your group to be taught by a certified Hunter Education Instructor.

2. Develop a hunters trail in a natural hunting area. Have an adult accompany youth one at a time and in pairs. Use silhouettes or colored game animals to practice safe and unsafe situations. Observe safe gun handling practices.

3. Hold a hunter safety trail exercise and cleaning clinic for other clubs in your area.

4. Plan and present a sighting-in and safety day in cooperation with a local hunting or shooting group prior to the hunting season in your area.

Survival in the Outdoors

Participating young people and adults will:

1. Practice survival skills for coping with emergencies while hunting
2. Practice fire building skills
3. Recognize the signs and understand treatment for hypothermia
4. Understand what to do if they get lost
5. Practice emergency water gathering skills
6. Prepare a basic survival kit suitable for the area
7. Have fun while learning

Roles for Teen and Junior Leaders

1. Role playa hypothermia or injury victim
2. Demonstrate fire building
3. Assist members having difficulty with fire building exercises
4. Demonstrate shelter building
5. Lead small group discussions on making survival kits or first aid kits
6. Demonstrate water purification methods
7. Demonstrate signaling methods
8. Assist in map and compass exercise

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide a teaching area
3. Arrange for or provide teaching materials
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Monitor small groups in locating themselves on a map
7. Monitor small groups in planning a compass traverse to camp
8. Share personal experiences

Best Time: anytime

Best Location: Outdoors in a wooded or brushy area

Time Required: 2 hours

Equipment/Materials

knife
matches
lighter(s)
fire starting materials
plastic sheet
Mylar blanket
rope or cord
survival kit suitable for the area
first aid kit
solar still materials
water purification kit
compass
topographic map
signal mirror
flares

References

Basic Hunters Guide, National Rifle Association, 11250 Waples Mill Road, Fairfax, VA 22030

Survival, Instructors Manual, NRA Hunter Services, 11250 Waples Mill Road, Fairfax, VA 22030

State hunter education manuals and supporting materials

"Survival" (available through most state hunter education programs)

LESSON OUTLINE

Presentation

I. Basics of surviving emergency situations
   A. Preventing emergency situations
      1. Avoiding potential problems
      2. Exercising common sense
      3. Self control
         a. Panic dangerous
         b. Thinking aids survival
   B. Recognizing reality
      1. Admitting you are lost
      2. Recognizing the situation
      3. Responding to conditions
      4. Staying put!
         a. Usually less than 72 hours
         b. Location easier
         c. Conserves your resources
   C. Techniques and skills
      1. Practice before skills required
      2. Part of preparation
      3. Wise hunters prepare

II. Factors affecting survival

   A. Attitude and mental state
      1. Negative impact
         a. Fear damaging
         b. Loneliness and boredom
         c. Depression
         d. Hopelessness
      2. Positive impacts
         a. Feeling capable of coping
         b. Positive mental attitude
            1) Shelter
            2) Fire
            3) Food and water
         c. Strong personal relationships
         d. Perseverance and persistence

   B. Shelter
      1. Heat and sun
         a. Dehydration

Application

NOTE that most hunters avoid survival situations by careful preparation and planning. **STRESS** that preventing the need for using survival skills is much preferred to being required to use them. **EMPHASIZE** the vital need for self control and avoiding panic when survival situations are presented.

Aid participants to **RECOGNIZE** that all survival situations are potentially dangerous but that most of them last less than 72 hours, Unless the individual in a survival situation is sure of here they are, how to get to where they need to be, and their ability to accomplish that they are better off staying where they are and waiting to be located.

EMPHASIZE that survival skills must be learned and practiced before they are needed as a means of reinforcing confidence and a positive attitude about emerging from the situation successfully. This helps the individual remain calm and in full control of their mental abilities. If it is available and you chose to use it, show the film, "Survival" as an introductory activity.

ASK participants to list some of the factors that could have an influence on success or failure in a survival situation. List their responses on a suitable writing surface, and use questions to bring out the major categories listed below. Lump similar categories or split those that are too broad

Discuss some of the negative mental influences that can result in panic, giving up or trying foolish things in a survival situation.

Discuss some of the positive mental factors and allude to the fact that being prepared and equipped for the circumstance aids in having a positive mental attitude.

Even if hunters in your area are likely to encounter only hypothermia situations during the season, be sure to **DISCUSS** both hypothermia and the effects of excessive heat and inadequate water! **REFER** to the first aid lesson plan for further information on treatment and prevention.

b. Hyperthermia
    1) Heat exhaustion
        a) Profuse sweating
        b) Hot, wet skin
        c) Flushed skin
        d) Rehydration vital
    2) Heat stroke
        a) Hot dry skin
        b) Loss of consciousness
        c) Immediate medical attention required
        d) Life threatening situation
        e) Cooling required

2. Hypothermia
    a. Drop in core temperature
        1) Cool or cold and wind
        2) Immersion in cool or cold water
        3) Wet clothing and wind
        4) Wind chill
            a) Stripping away warm air envelope
            b) Increase in chilling
        5) Effects
            a) Misery and difficulty at best
            b) Life threatening at worst
    b. Symptoms
        1) Uncontrollable shivering
        2) Nausea
        3) Slurred speech
        4) Confusion and disorientation
        5) Stopping uncontrolled shivering
        6) Lethargy
    c. Treatment
        1) Shelter from wind and cold
        2) Removal of cold, wet clothing
        3) Fire or other heat source
        4) Dry clothing
        5) Shared body heat if needed

LEAD participants to discuss the contents of a first aid kit. **CHALLENGE** them to put together a small kit that they can carry in the field. Strongly **ENCOURAGE** them to participate in formal courses in First Aid and CPR to prepare them for survival situations.

Have students **DISCUSS** contents of a personal survival kit and **CHALLENGE** them to construct a kit they can carry with them in the field.

LEAD groups of participants in discussing how they would handle several survival situations with or without their survival and first aid kits. Use the discussion to **EMPHASIZE** the need to practice survival skills before they are needed.

Have participants collect fire building materials, select safe places to start a fire and build a small fire using the materials they have gathered. **EVALVATE** their efforts and discuss ways they could have improved their performance.

d. Prevention easier than cure
    1) Dress for weather
    2) Layered clothing
    3) Shelter from wind
    4) Fire or other heat
    5) Adequate water and food

C. Thirst and dehydration
1. Water a critical requirement
    a. Dehydration saps energy
        1) Malaise
        2) Depression
        3) Headache or other pain
        4) Physical weakness
    b. Dehydration reduces blood flow
    c. Dehydration leads to heat exhaustion or stroke
2. Water loss constant
    a. Sweat and respiration in hot weather
    b. Respiration in cold weather
3. Dehydration before thirst sets in
    a. Drink water or other fluid replacers
    b. Water most effective rehydrater
4. Finding water sources
    a. Surface water
    b. Water in soil (solar still)
    c. Ice or snow
    d. Dry stream beds (outside bends)
    e. Water in plants

D. Pain or injury
1. May inhibit rest
2. May inhibit movement
3. May impact mental attitude
4. Stabilize and maximize comfort

E. Strength conditioning
1. Eat and drink properly
    a. Fuel the body for exercise
    b. Carry food and water as needed
2. Dress and prepare for the weather
    a. Select proper clothing
    b. Versatile clothing

c. Layers
d. Foul weather gear
e. Prepared for weather changes

3. Compass and map
   a. Practice using these tools
   b. Use them as needed
   c. Trust them!
5. First aid kit
   a. Small enough to carry
   b. Basic needs
   c. Personal medications
6. Survival kit
   a. Basic materials
      1) Shelter
      2) Cutting tool
      3) Fire starter
      4) Water purifier
      5) "Canteen"
      6) Signaling device
   b. Additional items
      1) Consider area
      2) Local Conditions
      3) Specific needs or wants

E. Practice basic survival techniques
   1. Practice builds skills
   2. Practice creates confidence

IV. Basic survival techniques
   A. Fire building
      1. Basic needs for a fire
         a. Fuel
         b. Air
         c. Ignition source
      2. Elements of fuel
         a. Tinder
            1) Fine, dry materials
            2) Birch bark
            3) Dry grass balls
            4) Tiny twigs
         b. Kindling
            1) Increase in size progressively
            2) Toothpick to match stick size to
            3) Up to thumb-thick branches
         c. Fuel
            1) Dry branch wood
            2) Split logs
            3) Whole wood
      3. Fuel
         a. Split, dry wood lights quickly

EXIHIBIT several types of signaling devices that could be used in an emergency situation. Have participants **MAKE** a smoky fire of it is permitted where your group is meeting. Try some other signals as well, **PRACTICING** the use of a mirror or making ground to air signals that are in places where they can be seen.

b. Round wood burns longer
c. Some green wood burns well
d. Fire lays to draw air into fire
e. Collect plenty before darkness

4. Fire starters
   a. Strike anywhere, waterproof matches
   b. Lighter(s)
   c. Candle stub
5. Fire lays and location
   a. Basic fire lays
      1) Tepee
      2) Criss-cross or cabin
      3) Forester style (reflector)
   b. Location
      1) Mineral soil away from hazards
      2) Against rock or log heat reflector
      3) Sheltered from wind and elements

B. Shelter building
   1. Natural shelters
      a. Deadfalls
      b. Caves or rock overhangs
      c. Brush or other vegetation lean-to
   2. Man-made shelter
      a. Mylar sheeting
      b. Plastic sheeting
      c. Mylar blanket
   3. Snow or ice caves or shelters

C. Rescue signals
   1. Whistle
   2. Three shots in the air
      a. After dark
      b. In response to another signal
   3. Fire at night
   4. Smoke column during daylight
   5. Signal mirror
   6. Aerial flares
   7. Ground to air signals
      a. X to indicate location
      b. Arrow for direction of travel

D. Water
    1. Surface waters
        a. Permanent waters
        b. Temporary water
        c. Ice and snow
    2. Underground water
        a. Soil water
        b. Subsurface flow
            1) Dry stream beds
            2) Outside bends best
    3. Water in plants
E. Food
    1. Not a critical concern
        a. Survive several weeks without it
        b. Helpful for morale and higher energy
    2. High energy food in survival gear
        a. Gorp
        b. High energy bars
    3. Caution about poisonous plants in area
    4. Easily identified edible plants
    5. Wildlife or fish
        a. Save some ammunition
        b. Provide line, lures and hooks

V. Summary
    A. Avoiding survival situations best
    B. Prior preparation and skill development
    C. Calm and positive attitude important
    D. Most last less than 72 hours

Activities

1. Lead the group on a brief survival outing where they test their survival kits and survival skills under moderate conditions.
2. Practice fire building in a variety of conditions with a variety of materials and ignition sources.

The Fire Building Game

Practice building fires fast! This will encourage participants to quickly assess available fire building materials. Build a frame from metal clothes hangers on which a balloon can be suspended. Supply fire building materials or better yet, have participants find them from what is available.

Have a water hose ready and available.

In a safe setting, set up one hanger-balloon frame for each participant or team. Time starts and participants build a fire under the balloon. First team to break the balloon is the winner! This exercise teaches participants the trade-off between a fast fire and a sure fire. It gives them fire-building experience in a supervised setting.

Constructing a Hunter Trail

It is very difficult to give young hunters experience in a controlled setting that compares to situations they will encounter in a real life hunting experience. A hunter trail can be used to practice hunting skills and to instill safety and hunting ethics into the exercise.

The closer the hunter trail can be to real life, the more the experience will have real life benefits. This exercise can utilize other hunting skills such as stalking, spotting game and shooting accuracy.

Setting up the Trail

Only one hunter at a time is allowed on the hunter trail.

It is of utmost importance to locate the hunter trail in an area where safe shots can be taken. Use a drainage, ravine, canyon, arroyo, bottom or similar area where backstops are available. Access must be controllable or at least access points must be defined so signage or personnel can be stationed. Safety tape should be placed across the beginning and ends of the trail.

Spread the trail out. A ¼ to ½ mile trail provides an adequate experience. This gives the participant a chance to sneak along and search.

Life size targets with lifelike colors should be used. It is a good exercise to have participants color the targets using felt-tipped markers. Using reference photos will ensure accurate color schemes. (This coloring exercise is valuable to learn where different colored hair is on the animal so hair color can be used to determine the location of a hit.) Targets should be mounted on cardboard and cut out. They can be tied to saplings or brush in natural settings.

It is best to use targets of one or 2 species. This is more likely to mirror a typical hunt. Deer only or deer and turkeys is a good combination. Having antlerless deer will add another aspect to the course if antlerless deer are determined to be protected. Don't use too many targets. Five deer on the course is enough.

Set up 1-2 situations where the hunter should not shoot. Use your own imagination but you might place a deer on a skyline. You might stuff some clothing with grass to make a situation where a hunter is sitting beyond the deer but in the line of fire. A doe in a buck only area provides a good "don't shoot" situation.

Equipment

In most situations it is not practical to use a high caliber rifle similar to one that would be typically used in a big game hunting situation. But in some situations this is possible. Obviously the extended range makes safety considerations more stringent.

In most cases a realistic hunting experience can be simulated using a scoped .22 caliber rimfire rifle. Using a scoped rifle is important because there are many differences between hunting with iron sights and hunting with a scope. Also, most big game rifles are scoped.

Binoculars should be available and used because the use of binoculars allows better identification of targets and the surrounding area.

Personnel

This is a serious exercise but it should be enjoyable. Likewise, it is more than a hunter safety course. Game spotting, shot placement, stalking and other hunting skills can also be practiced and demonstrated. Therefore the supervisors must be well versed in all aspects of hunting.

Because the users of the trail are new, young hunters, supervision is critical. The supervisor should walk behind the hunter, but close enough that immediate intervention can be made if an unsafe situation occurs.

After the hunt, the firearm should be unloaded and made safe. Shot placement should be discussed with the hunter along with other noteworthy aspects of the hunter's performance. Discussions about spotting skills, hunting pace, use of cover when walking, shooting accuracy and of course, safety, should follow.

<u>Supervisors Duties.</u>
The supervisor is responsible for ensuring that the hunter is familiar with the operation of the firearm, including loading and unloading.
The supervisor will hand the firearm to the hunter at the beginning on the hunter trail and take it back at the end of the trail.
The supervisor will have a private conversation at the end of the exercise to discuss the experience. If unsafe shots were taken, allow the hunter to acknowledge the error and explain the lesson learned.

The hunter course can vary depending on situations. Try to make the experience as close to an actual hunting experience as possible.

Recovering Game

Best Time: Any time

Best Location: Wooded or brushy area

Time Required: 2 hours

Participating young people and adults will:

1. Practice skills required to retrieve downed game
2. Practice following a blood trail
3. Practice reading sign to interpret the severity of the animal's wounds
4. Recognize game behavior in reaction to hits
5. Develop personal protocols for game recovery
6. Have fun while learning.

Roles for Teen and Junior Leaders

1. Set up demonstrations and activities
2. Demonstrate trailing and other recovery techniques
3. Assist small groups in blood trailing exercise
4. Conduct sign reading exercises
5. Help participants to correctly interpret sign
6. Advise participants on recovery strategies for conditions

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching area
3. Arrange for or provide teaching materials
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Share personal experiences with game recovery

Equipment / Materials

milk
gelatin
corn syrup
glycerine
red food coloring
surveyors tape
toilet tissue
samples of hair and feathers
3x5 cards
bean bags
sock filled with shavings, flour, etc.
color photo of deer anatomy
deer sketch
arrow shaft
squirt bottle or sealable plastic bag

References

Bowhunting Deer, International Bowhunter Education Foundation, Route 6, Box 199, Murray, KY 42071.

Game Recovery Guide, International Bowhunter Education Foundation, Route 6, Box 199, Murray KY 42071.

LESSON OUTLINE

Presentation	Application
I. Importance of retrieving wounded game A. Legal requirements 1. Wanton waste laws 2. Every reasonable effort laws B. Ethics and responsibility 1. Prevents suffering 2. Avoids waste a. No real waste in nature b. Loss to human use as waste C. Hunter image 1. Responsible hunters 2. Irresponsible killers and wounders	Briefly **DISCUSS** the importance of using every reasonable means to recover any game animal that is hit. **NOTE** that this goes well beyond the legal requirements to ethical responsibility. **ASK** participants how game animals can be recovered. **PRESS** them to go beyond merely walking over and picking up the animal where it has fallen.
II. Methods of retrieving A. Visual marking without dogs 1. Game birds a. Concentrate on single animal b. Watch to the ground or as long as possible c. Pick a landmark 1) Obvious vegetation or structure a) Keep eyes on the landmark b) Send a partner to the spot c) Walk to the spot without looking away 2) Throw a marker a) Large washer with flagging streamers b) Cap or other object d. Mark the spot with a cap or other object e. Search around spot 1) Circular pattern 2) Look for blood or feathers 3) Look in dense cover 4) Watch and listen for movement f. Method requires intense concentration 1) ONE bird at a time 2) Good shooting with proper equipment g. Prompt (faster is better) recovery required 1) Take advantage of shock in wounded birds. 2) Reduce confusion or temptation to look away	If desired, have each participant **MAKE** a tossable marker from a large washer and several feet of brightly colored plastic or nylon flagging. **NOTE** that this is particularly important with tough birds like pheasants, turkeys and most waterfowl. **THROW** bean bags or socks filled with saw dust, wood shavings or similar materials into cover and have participants **LOCATE** them. Start with brightly colored ones if desired, then **PROGRESS** toward neutral or camouflage colors while moving into denser cover. **ENCOURAGE** the use of teams and markers in dense cover as well as careful, patterned searches.
B. Use of dogs	**LAY** a trail and have a ground trailing dog follow it to a recovery. **NOTE** that scenting conditions can make recovery on old trails somewhat difficult for the hound.

1. Small game and upland game birds
    a. Hounds and other ground trailing dogs

Game Recovery

    b. Trained pointing or flushing dogs
    c. Retrievers
2. Waterfowl
    a. Retrievers
    b. Springer spaniels in mild weather
    c. Continental breeds in mild weather
3. Big game
    a. Blood trailing dogs where legal

C. Hunter trailing wounded game
1. Game down in sight
    a. Approach cautiously
    b. Be prepared for a follow up shot
        1) Shoot again if game animal gets up
        2) Use a second shot when in doubt
2. Game put of sight before going down
    a. Mark visually
        1) Spot from where shot was fired
        2) Spot game was standing when shot was fired
        3) Spot game was last seen
    b. Observe as long as possible
        1) Animal's reaction to the hit
        2) Animal's behavior after the hit
        3) Pick a landmark
        4) Take a compass azimuth on last sighting
    c. Surveyor's tape or other marker
3. Keep disturbance to a minimum
    a. Avoid unnecessary noise
    b. Avoid unnecessary movement
    c. Avoid destroying sign
4. Examine area where animal was standing
    a. Hair an indicator of hit location
        1) Clipped hair shows hit location
        2) Match hair to body coloration
            a) Most big game darker on upper parts
            b) Most game lighter below
    b. Blood an indicator of hit location
        1) Bright, foamy or frothy blood - lung hit
        2) Bright crimson blood - heart, major arteries
        3) Dark red blood
            a) Liver or major veins
            b) Major muscle mass
        4) Dark blood with bits of vegetation
            a) Abdominal hit
    c. Bowhunters examine the arrow

USE the same objects used in the earlier exercise and have trained retrieving dogs **RECOVER** them under the direction of a handler. Attempt to get a dog that will work cooperatively with the handler to **SHOW OFF** the capabilities of these breeds.

DISCUSS the use of blood trailing dogs where they are legal to aid in the recovery of big game animals

DISCUSS personal experiences or other's experiences where a wounded game animal went down at the shot but recovered to escape or require a long trailing process.

Have pairs or small groups of participants **SIMULATE** a hunting situation by having one participant act as a big game animal and the other(s) as hunter(s). On the shot, have the "animal" **BOLT** from the area and disappear into heavy cover. Have the other participant **MARK** all three spots, and check them for accuracy.

SET UP several plots with hair clipped from big game animals located in your area. Using hair samples, photographs, preserved specimens or participant knowledge of the animals, have participants **DEDUCE** where the animal was hit from the samples of hair on the ground.

CREATE several "hit sites" by using artificial blood (see Fact Sheet). Use milk and red food coloring, shaking well to **SIMULATE** lung and heart hits. Use either gelatin or glycerin based "blood" to **SIMULATE** most of the darker blood types. **BLEND** or **CHEW** grass or twigs and mix it thoroughly with the "blood" to simulate an abdominal hit. Have participants **EXAMINE** the evidence and determine where the animal was hit.

USE either a complete arrow or a broken one to demonstrate.

Ask participants to **CONSIDER** some of the factors that must be included in deciding

III. Trailing wounded game

A. Timing the wait after a hit

Game Recovery

how long to wait after a hit is made to follow the animal in a recovery attempt.

1. Over-riding factors
   a. Rain or heavy snow
   b. Time until darkness
   c. Hunting pressure
   d. Personal situation
      1) No lantern or flashlight available
      2) Leaving the area after, the hunt
      3) Must be at work or school next day
2. Gut-shot animals - dark blood with food particles
   a. 8 hour - ideal
   b. 1 hour - minimum
3. Light blood trail with bright or dark blood
   a. Muscle wounds with bow
      1) Follow up immediately
      2) Wait at least an hour
   b. Body cavity hits
      1) 1 hour - ideal
      2) 1/2 hour - minimum
4. Heavy blood trail - bright or dark blood
   a. Immediate follow up if heavily hunted area
   b. 15 to 30 minutes usually adequate
5. Chest cavity hits - heart-lung shots
   a. Immediate follow up - firearms in heavily hunted area
   b. At least 30 minutes in lightly hunted area or archery
   c. 1 hour better

Using the hit locations and the first few feet of their blood trails, have participants **DECIDE** how long they would wait under the prevailing conditions before following the animal. **DISCUSS** their decisions and **EVALUATE**, the waiting periods selected. **STRESS** the importance of not pressing wounded animals too quickly under most conditions.

B. Game recovery equipment
   1. Trail marking materials
      a. Toilet tissue
         1) Tiny pieces adequate
         2) Biodegradable - need not be recovered
      b. Surveyor's tape
         1) Small, tight rolls adequate
         2) Must be recovered and renl0ved
         3) High visibility
   2. Spot markers
      a. Cap or hat
      b. Other clothing
      c. Throwable markers
      d. Paper or tape
   3. Orienting equipment
      a. Compass
      b. Map (even a sketch map)
   4. Artificial light

DISPLAY several items that can be used to mark a spot effectively. **NOTE** that camouflage gear is not the best choice because it is hard to see.

NOTE that the shield keeps the bright light out of your eyes and helps you to see better, as well as keeping your hands cooler.

DISPLAY and **DISCUSS** the equipment needed for recovering game animals.

a. Propane or white gas lantern ideal
1) Shows blood well
2) Long lasting
3) Capable of flooding an area

Game Recovery

4) Shield important
b. Carbide lamp
c. Battery operated lights
1) "Coon hunter's " headlamp where legal
2) Halogen or krypton bulbs preferred
3) Large flashlight
4) Small, high intensity light

Be sure to **EMPHASIZE** local laws as they pertain to recovery of any game animals at night and courtesies toward conservation officers when night trailing.

C. Following up blood trails
1. General considerations
a. Bring trail up to the eyes
b. Look ahead and to the sides
c. Trail from one side of the trail
d. Watch the ground and vegetation
e. Watch for other signs
2. Trailing with partner(s) more effective
a. One person along trail (to one side)
b. Other(s) slightly to a side
1) Range depends on conditions
2) Flankers watch ahead and for sign
3) Tracker stays on trail
3. Following blood trails
a. Avoid walking on trail
b. Upright if possible, as close as needed
c. Mark faint or intermittent trails
1) Toilet tissue
2) Engineer's tape
3) Line up markers to predict line of flight
4) Concentric circles at checks in trail
d. Watch for other signs
1) Concentrate on blood
2) Avoid confusion with other trails
3) Continue to confirm with blood sign
e. Watch for blood high on plants or rocks
f. Detecting blood
1) Contrast with background
2) Crimson to nearly black
3) Practice increases ability

LAY several blood trails ranging from very easy ones to trails that are intermittent, depending upon the ability of the participants. **USE** a squirt bottle or a sealable plastic bag to lay the trails, being sure to get some on trees, shrubs or rocks. **SIMULATE** scuff marks, overturned leaves or similar sign along sparse trails. **ASSIST** or have junior leaders assist with the trailing process on more difficult trails.

D. Using tracking devices
1. Use of tracking string by archers
a. Aids in locating trail
b. Great assistance on high hits
2. Infra-red detectors
a. Fairly high cost
b. Detect body heat

If either of these devices is available, **DEMONSTRATE** their use.

IV. Behavior as a recovery aid

GIVE some examples of local species, like turkeys,

A. Behavior may show hit location
   1. Tail down bolting - chest hit
   2. Humped back - liver or abdomen hit
B. Birds and small game

Game Recovery

   1. Run or hide
      a. Some species tend t6 run
         1) Shoot runners again if possible
         2) Reduces recovery time and loss
      b. Search heavy cover along trail
      c. Watch for signs
         1) Feathers or fur
         2) Blood
         3) Trails in vegetation or soft soil
      d. Search potential hiding areas
         1) Holes
         2) Brush piles
         3) Dense grass or other vegetation
         4) Depressions
   2. Some species easily anchored
      a. Tend to go to cover quickly
      b. Generally well camouflaged·

pheasants or squirrels that are hard to stop and will run if not killed cleanly or recovered a1most immediately

GIVE some examples of 10ca:I small game or birds, like woodcock or ruffed grouse, that are easily anchored with a hit, but often difficult to retrieve because of their disruptive or cryptic coloration. **REINFORCE** the value of a trained dog in recovering all game birds.

C. Big game
   1. Mortally wounded animals often go downhill
   2. Usually avoid obstacles
      a. Windfalls
      b. Rock piles
      c. Often stick to easy trails
   3. May seek water
   4. Head for heavy cover
      a. Often change direction before lying down
      b. May change direction before going down
   5. Watch backtrack if alert

V. Summary
   A. Hunter responsibility
      1. Every reasonable effort
      2. Prepared for recovery
      3. Persistence
   B. Art and science
      1. Practice and learning required
      2. Trained dogs extremely useful

Summary Activity

Have participants lay blood trails with other signs in small groups. Switch groups and have others attempt to locate the downed animal (indicated by a card or other object). Encourage them to share their experiences and to form cooperative groups for trailing animals when they are actually afield.

Artificial Blood Trails

Game recovery often depends upon the ability of the hunter to follow up a wounded game animal. That is particularly true in bowhunting, but it applies to most other types of hunting to at least some degree. Practice on artificially constructed blood trails can often make a difference in the ability and confidence of a hunter in successfully recovering the game animal.

Preparing Artificial Blood
Several types of artificial blood have been used successfully. The National Bowhunter Education Program materials contain a recipe for making an excellent artificial blood from glycerine and red food coloring. This material leaves a realistic trail that dries red, stays rather well in rain and wet conditions, and gives the appearance of a muscle hit - moderately dark red blood without traces of fatty tissue, bubbles, or rumen contents.

A very good "lung blood" imitation can be made with milk and red food coloring. This formula can be shaken to incorporate air bubbles, and it tends to leave a very bright trail that gives the appearance of a lung hit when fresh. It does not hold well in the rain, and it tends to be absorbed rather quickly on porous surfaces. It dries to a rather realistic trail, although it should be put down rather heavily if one intends to let the trail age a bit before "following up on the hit."

A third type of trail that has been used successfully is a mixture of gelatin, corn syrup, and food coloring. An adequate amount of syrup must be added to a thin mixture of gelatin in water if the mixture is to be allowed to stand for any length of time before being used. This mixture is intermediate between the glycerine and milk types in color and consistency. It is fairly persistent in dry conditions, dries very realistically, and is easy to handle. It can tend to gel, however, so it must be used soon after being made up.

Laying Out Artificial Blood Trails
Several delivery systems have shown their usefulness in preparing artificial blood trails for instructional purposes. Many instructors like to use a small plastic squeeze bottle holding approximately a pint to a quart of prepared solution. They control the amount of solution being laid down by their walking or running speed and the amount of pressure on the bottle. Others like to use a large, sealable plastic bag holding a similar amount of fluid with small holes punched in it. Like the squeeze bottle, varying the amount of pressure tends to vary the amount of blood laid down. Approximately ½ to 1/3 pint of liquid will lay several hundred yards of good trail. The container should be shown to the trackers after the trailing exercise is over to help give them an idea of the amount of blood a heavy blood trail represents.

Some instructors like to lay out a trail as though the trackers were being brought in from another spot to trail a wounded animal. Others like to have an associate lay the trail while the participants watch from a distance that approximates their normal shooting ranges in cover that is normal for the area. By prior arrangement, the area where the trail starts should have some cut hair and an arrow that looks like a pass-through shot. (Tallow may be simulated using soap, and rumen contents could be imitated with blended grass clippings or similar materials.) The trail layer should bolt from the area in direct flight, and then take a route that simulates the behavior of a wounded animal. Experience is the best teacher in this situation. Try to arrange the trail so that it is relatively simple and straight forward for beginners. A more complex one with circles, checks, and other challenges would be good for older youth or more experienced trackers.

The trail should be laid so that the usual complications of tracking are encountered. Force the trackers to cover different types of ground cover, different types of terrain, and different levels of the vegetation. Be

sure to smear the undersides of some leaves and twigs and the stems of at least some plants with the "blood" to make the trail realistic.

Vary the amount of fluid deposited along the trail. After an initial few drops, make the trail sparse for a few yards before starting to lay a heavier one. That simulates a condition often encountered by hunters in the field. Feel free to make the trail sparser near the end as well, and include enough "random" meanderings to simulate an animal that is nearing collapse.

Conducting the Exercise

Have the participants wait a few minutes after the "hit" has been made. Then, proceed to the location of the hit. If none of the trackers have marked the shooting location, drop a marker at that spot; so it can be located later. Have them locate the spot where the hit took place. Without disturbing the area too much, have them analyze the hit location by the hair, evidence on the shaft, and the color and amount of blood. Ask them what type of strategy should be used in following up on a hit of that type. For example, a solid heart-lung hit requires only about 20-30 minutes of waiting time, while a paunch hit needs 8-12 hours. Have them work the trail in small groups (3-5 people, if possible) avoiding any trampling or walking directly on the trail. If they failed to mark the entry point into the denser cover, have them return to the point of the shot and try to work out the location from there.

Once all teams have had a chance to finish the trail, bring them to a common location to review and discuss the exercise and the things they learned from it. Be sure to discuss the amount of blood loss needed to recover an animal with archery tackle and the amount they saw on the trail. Reinforce the essentials of good tracking and trailing, challenging them to practice on their own at every opportunity. Encourage the use of tracking tape or other aids to assess the direction the game has taken and aid in making decisions about where it was headed. Discuss game behavior, knowledge of topography, and other aids to recovery. Finish up by stating that any vitally hit animal should be recovered and that it is the responsibility of the hunter to search for the animal until it is either recovered or there is no further hope of recovery.

FIELD CARE AND PROCESSING OF GAME

Participating young people and adults will:

1. Relate field care to table quality of game
2. Practice simple field dressing skills
3. Practice game processing skills
4. Prepare game for cooking
5. Have fun while learning

Roles for Teen and Junior Leaders

1. Assist in killing rabbits or chickens
2. Observe participants and assist as needed
3. Demonstrate field dressing and processing techniques
4. Assist with packaging and labeling meat
5. Prepare a rabbit, chicken or game meal

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above.
2. Arrange for or provide teaching space
3. Arrange for or provide equipment
4. Arrange for or provide live animals for the exercises
5. Arrange for or provide wrapping or cooking materials
6. Arrange for or provide transportation
7. Arrange for or provide wrap-up meal ingredients

Best Time: Prior to hunting season

Best Location: Rural area or backyard

Time Required: 4 hours (2 for each section)

Materials/Equipment

(listed per participant)
small sharp knife
domestic rabbit
plastic garbage bag
domestic chicken
2 large sealable bags or barbecue grill
big game carcass (check with conservation agency)
carpenter or meat saw
sharpening tools
freezer paper
plastic wrap
ice chest, cooler or refrigerated storage

References

Basic Hunters Guide, National Rifle Association, 11250 Waples Mill Road, Fairfax, VA

Field Care of Harvested Game, Jim Knight, New Mexico State University, Cooperative Extension Service Circular 507

Processing Your Deer at Home, Jim Knight, New Mexico State University, Cooperative Extension Service. Circular 508

LESSON OUTLNE

Presentation	Application
I. Importance of proper field care	
A. Assuring quality table fare	Ask participants to **DISCUSS** the why proper field care of game is Important. **LIST** their answers and add any conditions that might have been missed in the discussion. **NOTE** that ethical hunters are careful to maintain the highest quality possible in the game they bag so it will be enjoyed at home.
1. Removing source of contaminants	
a. Intestinal contents	
b. Crop contents and food particles	
c. Bladder contents	
2. Removing damaged tissues	Ask participants to **LIST** some of the sources of contaminants that might reduce the quality of their game animal. **NOTE** any special considerations, like pheasants that eat skunk cabbage seeds, that occur in your area.
a. Source of off flavors	
b. Source of bacterial damage	
3. Allowing rapid cooling	
a. Greatly reduced enzyme activity	
b. Greatly reduces bacterial activity	
c. Preserves quality	**ASK** participants why they keep food in a refrigerator. Note the similarity with keeping game animals fresh and useful. **STRESS** any conditions that might be peculiar to your area extreme heat, cold.
B. Demonstrates respect for the game	
1. Proper care of the carcass promotes use	
2. Use is part of the reason for taking game	
C. Rapid field dressing important	
1. Importance varies with conditions	
a. Critical in warm or hot weather	
b. Less important in very cold weather	
c. Critical with shotgunned game	
d. Critical with game hit in the abdomen	**NOTE** that conditions often impact the need for immediate field dressing, particularly for upland birds and waterfowl which are less prone to damage at modest temperatures than most mammals.
2. Importance varies with species	
a. Critical with big game	
b. Very important with small game mammals	
c. Important with most birds	**ASK** why game killed with shotguns and fine shot or game hit in the abdomen might need particular care and rapid field dressing.
D. Demonstrates respect for the game	
1. Proper care of the carcass promotes use	
2. Use is part of the reason for taking game	Note that conditions often **IMPACT** the need for immediate field dressing, particularly for upland birds and waterfowl which are less prone to damage at modest temperatures than most mammals.
E. Rapid field dressing important	
II. Elements of good field care	
A. Field dress as soon as possible	Have a parent or teen leader **DEMONSTRATE** field dressing of a small game mammal or a domestic rabbit as the principles of field dressing are discussed, **INVOLVE** the participants in drawing conclusions about the quality of the animals and-their food value.
B. Allow for rapid cooling	
1. Cool as soon as possible	

2. Maintain carcass below. 40°F if possible
3. Handle as field conditions demand
    a. Skin if legal and suitable for conditions
    b. Retain wing intact on migratory birds
    c. Retain intact if required or conditions dictate

C. Avoid contaminating meat
1. Crop or intestinal contents
2. Hair or feathers
3. Soil, stones, grass or other foreign material
4. Secretions or other materials on knife or hands

D. Protect carcass from flies
1. Cloth bags as a barrier
2. Dusting with pepper
3. "Liquid game bag"
4. Caution about plastic bags in warm weather
5. Remember need for ventilation

E. Clean and dry inside of carcass
1. Clean dry cloth
2. Clean water only if necessary
3. Dry grass or leaves in a pinch

F. Take enough time to do a good job
1. Avoid hurried mistakes
2. Avoid longer clean up time
3. Enjoy better game on the table

III. Safety considerations

A. Caution with sharp objects
1. Knife blades or shears
2. Bone splinters
3. Broadhead blades
4. Arrow shaft materials

B. Wisdom of using gloves
1. Kitchen gloves or surgical gloves
2. Keeping hands clean
    a. Avoiding rust on firearms
    b. Avoiding chapped hands
3. Protection from disease
    a. Infections
        1) Potential from any cut or scrape
        2) Mild to life-threatening
    b. Pathogens in blood or tissue fluid
        1) Concerns vary with season
        2) Concerns vary with species
        3) Concerns vary with region or area

SHOW a variety of ways to protect game from flies and other contamination after it has been field dressed. **NOTE** that the skin is an excellent protectant for the outside of the animal if it can be left until final preparation, but that some field conditions might dictate removing the skin quickly.

NOTE that washing the carcass with water is acceptable if required, but that potable water should be used.

Have participants **DISCUSS** some of the safety considerations associated with field dressing game animals. **EMPHASIZE** the value of gloves as a barrier, discussing any disease agents that might be encountered in the local area. **DO NOT DWELL** excessively on disease. The objective is to educate, not create fear.

4) Much more important with mammals

4. Avoiding allergic reactions
    a. Contact with gut contents (e.g. poison ivy)
    b. Other possible allergies (rare)

IV. Field care and processing small game
A. Decide whether to skin or leave skin in place
1. Skin cased if hide is to be saved
a. Cut skin from heel to heel
b. Remove skin by turning inside out
2. Middle of back cut if skin discarded
a. Small- cut in center of back
b. Insert fingers in either side of skin
c. Pull in opposite directions
d. Cut off head and feet (can be done first)
3. Skin and tail useful for fly tying or other uses

NOTE that this process removes the skin like a glove. Only the initial cut and cutting around the ears, eyes and lips necessary. Remainder is freed by pulling carcass and hide in opposite directions.

B. Remove entrails
1. Midline cut from pelvis to chin or front of chest
a. Careful not to cut entrails
b. Careful not to cut bladder
2. Grasp chest contents with fingers
3. Pull toward tail to free entrails
4. Split pelvis
5. Remove remainder of gut and bladder
6. Save heart, liver (remove gall bladder), kidneys if desired

C. Protect from flies and foreign materials
D. Cool quickly
E. Process for the table now or at home
1. Remove front legs by cutting around shoulder blades
2. Remove hind legs by splitting pelvis
3. Trim flanks and ribs if desired
4. Separate back behind last rib
5. Pick out any shot, hair or badly bloodshot area
6. Produces six table-ready pieces

After having a parent or teen leader **DEMONSTRATE** this field dressing and preparation technique, have each member or team **FIELD DRESS** and **SKIN** a rabbit and **PREPARE** it for cooking or preservation at home. Be sure to have parents or teen leaders available to **ADVISE** or **ASSIST** in the procedure. **EMPHASIZE** that the same approach can be used with any game animal with the major differences being in size and minor differences in technique for birds.

V. Field dressing game birds
A. Legal requirements
1. Comply with state and federal law
2. Evidence of species and sex
a. One fully feathered wing on migratory birds
b. Evidence of sex in some species

B. Feathers as protection for carcass
1. Ease of plucking

a. Best when hot
b. Next best when cold

2. Feathers useful
   a. Fly tying
   b. Decorations
   c. Pillows or clothing (down)
3. Ethical considerations for field plucking or skinning
   a. Appropriate locations
   b. Demonstrating respect for game
   c. Demonstrating respect for other people

C. Removing entrails

1. Alternative cutting methods
   a. Single midline cut, tip of breast to vent
      1) Simple
      2) Quick
   b. Two cuts
      1) Cut around vent
      2) Horizontal cut behind breastbone
      3) Leaves strip of skin for tucking legs
      4) Preferred for packaging
2. Reach as far forward as possible with fingers
3. Pull entrails out as a unit
4. Save heart, gizzard, liver (remove gall bladder) if desired
5. Remove crop
   a. Midline cut at base of neck
   b. Hook crop with fingers
   c. Pull free

DEMONSTRATE the cutting methods and **EXPLAIN** the reasons for them. **NOTE** that either one is fine for eviscerating the bird.

Have a parent or teen leader **DEMONSTRATE** the field dressing process on a freshly killed chicken, then have each member or team **PLUCK** and **FIELD DRESS** a chicken with advice and assistance from experienced parents or teen leaders.

D. Cool and protect from flies and trash

1. Need for ice in hot weather
2. Game bag or bird carrier adequate in cool weather
3. Transport cold

NOTE that the crop contents can be very useful in discovering what the birds are eating and where they might be found. They could also be saved to make a foods collection for the species.

E. Processing game birds

1. Leave whole
   a. Roasting, boiling, smoking, rotisserie grilling
   b. Keeping options open
2. Split for broiling or barbecue
3. Cut into serving pieces for frying
   a. Remove wings at base
   b. Remove thigh at hip joint
   c. Remove drumstick from thigh
   d. Remove breast from back
   e. Split breast along breast bone
   f. Halve back
   g. Package as compactly as possible

DEMONSTRATE each of these techniques if possible, at least showing the procedure, even if it is not carried out at this time.

VI. Field dressing big game
    A. Comply with all state regulations
        1. Tagging
        2. Evidence of sex
        3. Best pictures before field dressing
    B. Handling urogenital organs
        1. Cut along side of penis and testicles
            a. Just through the skin
                1) One side if to be .left on carcass
                2) Both sides if to be removed
        2. Flop penis away from carcass
        3. Press fist into pelvis to expel bladder contents
        4. Cut around aims and vulva on females
    C. Make a midline cut from crotch to breastbone
        1. Sharp knife or hooked blade
        2. Guide with fingers to prevent cutting intestines
    D. Cut around the vent
        1. Core ligaments attaching to inside of pelvis
        2. Pull last few inches of intestine free
        3. Tie with cord or dental floss
        4. If penis is being removed
            a. Cut ligaments at pubic bone
            b. Dissect free from pelvis
    E. Clear chest cavity and remove internal organs
        1. Cut diaphragm free from chest wall
        2. Reach forward and locate trachea and esophagus
        3. Guide knife carefully to cut them as high as possible
        4. Pull on trachea and esophagus
            a. Cut only as needed on the diaphragm
            b. Avoid tearing tenderloins
            c. Pull and roll internal organs from the cavity
        5. Pull tied anus through
        6. Pull bladder and penis through
        7. Salvage heart, liver, kidneys and testicles if desired
            a. Set aside to cool in a clean spot
            b. All edible organ meats
    F. Drain body cavity
        1. Hang or roll body over
            a. Head uphill or held up
            b. Keep it clean
        2. Wash or wipe clean if necessary
    G. Prop cavity open to dry and cool
        1. Elevate above ground if possible

2. Use stick to hold chest and abdominal wall open
3. Open chest as soon as possible for your handling technique
4. Remove trachea and esophagus as quickly as technique permits

H. Handling hide and carcass
1. To mount or not to mount?
a. Minimize cutting and dragging if mount desired
b. Leave chest skin intact for shoulder mount
c. Not mounting allows splitting chest and neck
d. No need to "cut throat"
2. Getting the carcass out of the field
a. Dragging - leave incision minimum size
b. Vehicle access
1) Skin or quarter if legal and desired
2) Minimally, split neck and chest, remove trachea and esophagus
3) Protect from dust, trash, flies
4) Allow adequate air circulation
c. Backpacking
1) Bone if legal
2) Quarter if legal
3) Safety!!
a) Cover with fluorescent tape
b) Cover with blaze orange vest

VII. Processing big game
A. Boning recommended
1. Easy to learn and do
2. No special equipment required
3. Not demanding on location
4. High quality, boneless, straight grained meat

B. Equipment and supplies needed
1. Flat surface (counter or table)
2. Meat saw or fine tooth carpenter saw
3. Sharp narrow-bladed knife
4. Containers for meat and scraps
5. Wrapping paper

C. Advantages of boning
1. Separates choice meat from connective tissue
2. Dirt, hair and bloodshot meat can be easily removed.

3. No bone dust or marrow.

4. Less space in freezer.
5. Lighter weight to pack out if done in the field.

D. Basic boning process.
1. Remove the front shoulders
2. Cut front legs into three parts: shoulder roast, arm roast and shank.
3. Remove the loins or backstraps
4. Remove the flanks
5. Remove the neck
a. Bone neck for stew or hamburger
b. Save as a roast
6. Handle ribs
   a. Bone ribs for ground meat
   b. Cut into serving size plates
7. Remove tenderloins
8. Cut spine into sections if desired (soup stock)
9. Bone hind legs
   a. Separate from pelvis
   b. Separate major muscle groups
   c. Cut as steak or roast as desired
   d. Grind shank meat or cut for stew
10. Package in meal-sized portions

Summary Activity

Have participants bag and freeze their animals for later preparation at home or hold a family barbecue in which the main dish is the "game" they have prepared.

Hunting from Stands or Blinds

Participating young people and adults will:
1. Understand why stand hunting is effective
2. Compare hunting from stands to other hunting tactics
3. Practice selecting good stand locations
4. Place and conceal a stand
5. Practice and discuss ways to make stand hunting more successful
6. Practice and discuss ways to increase comfort on a stand
7. Have fun while learning.

Roles for Teen and Junior Leaders
1. Demonstrate blind building
2. Demonstrate stand location selection
3. Assist with blind construction
4. Lead small group discussions
5. Ask leading questions to reinforce learning
6. Assist members having difficulty learning or doing

Potential Parental Involvement
1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide equipment
3. Arrange for or provide teaching sites
4. Share personal experiences with blinds and stands
5. Arrange for or provide areas for practical blind building
6. Arrange for or provide transportation
7. Arrange for or provide refreshments

Best Time: Year round

Best Location: In brushy wooded areas.

Time Required: 4 hours

Materials /Equipment
tree stands
camouflage netting or cloth
pruning clippers
saw
climbing blocks
folding seat
5 gallon bucket
additional equipment (your choice)

References
Basic Hunter's Guide, National Rifle Association, 11250 Waples Mill Road, Fairfax, VA.

BowhuntingDeer, International Bowhunter Education Foundation, Murray, KY.

State hunter education guides

LESSON OUTLINE

Presentation

I. Why use stands
   A. Puts odd in hunters favor.
      1. Game is moving not hunter.
      2. Hunter is always at a prime location
      3. Hunter is always in position for a shot.
   B. Stand-hunting takes less energy
   C. Known distances for shots
   D. Takes advantage of other hunters moving game.
   E. Allows the use of baits and decoys where legal

II. Challenges of stand hunting
   A. Requires great deal of patience
   B. Requires pre-season preparation
      1. Locate stand location
      2. Build stand
   C. Lack of movement results in cold hunters
   D. See little new country during actual hunting season

III. Types of stands
   A. Ground blinds
      1. Box blinds-made from framed plywood
         a. Allows movement without detection
         b. Holds warmth (some have heaters)
         c. Require early placement to get game used to them.
         d. Must be close to trail because of bulky materials
         e. Usually left permanently at site
         f. Usually illegal on public land
      2. Natural blinds-made from area materials
         a. Blends in surrounding
         b. Tailored to fit needs
            1) Small and inconspicuous for one hunter
            2) Spacious for a party of hunters
         c. Height variable with needs
            1) High enough to allow comfortable seat
               a) Bench
               b) Chair or stool
               c) Five gallon bucket
            2) Low enough to sit on ground

Application

Have participants **LIST** some of the reasons for hunting from stands. **DISCUSS** some of the species that can be hunted successfully from a stand in your area.

Ask participants to **DISCUSS** some of the skills required and the challenges encountered by hunters using this technique. **RECORD** those responses and **EXPAND** them using leading questions if necessary.

Have small groups of participants **DESIGN** and **SKETCH** plans for a box blind for a specific type or types of game. Have each group SHARE their plans with the larger one, then **DISCUSS** ways that the designs can be improved for economy, comfort, utility, portability, security and durability. After the sharing session, have individuals **REFINE** their designs and **DEVELOP** a materials list needed for building their design.

Have small groups of participants **CONSTRUCT** a blind for specific species and specific numbers of hunters using natural materials on the site. Once the blinds are constructed, let the members **TOUR** the group of blinds to **COMPARE** and **CONTRAST** the techniques and materials used and the probable effectiveness of each blind.

a) Hole for feet
b) Low silhouette

3. "Stump sitting"
   a. Simply locate a likely spot and sit down
   b. Requires no building
   c. Generally less concealment
      1) Must sit perfectly still
      2) Concealment added or selected
   d. Exposed to elements
      1) Cold
      2) Heat
      3) Precipitation
      4) Wind
   e. Easy to move to another spot

NOTE that this type of stand hunting is easily mixed with still hunting or other types.

B. Elevated stands
   1. Characteristics
      a. Increased visibility, even over brush
      b. Portability in many types
      c. Usually not large or comfortable
      d. Require potentially dangerous climbing
      e. Keeps scent above animal
      f. Often exposed to greater chill factor
   2. Tower stands
      a. Free standing-no trees required
      b. Usually easy to climb ladder
      c. Very visible-require pre-season placement
      d. Usually used only on private land
      e. Cumbersome and bulky
   3. Portable tree stands
      a. Variety of choices
         1) Climbing
         2) Hang-on or lock-on stands
         3) Homemade tree stands
      b. Usually very portable
      c. Movement with game or conditions
      d. Useful on public and private lands
   4. Platform or tree house stands
      a. Inexpensive
      b. Simple board to enclosed structure
      c. Normally limited to private lands
      d. Damage to trees
      e. Potential damage to loggers or sawyers
      f. Potential damage from rust, rot and tree growth
      g. Generally not recommended
   5. Elevated stand safety
      a. Climbing
         1) Climbing blocks

DISPLAY or have catalogs listing a variety of elevated stands. **DISCUSS** the advantages and disadvantages of each type and style. Have each participant **SELECT** a type or model that would be best for the type of hunting they expect to do.

Have participants **DISCUSS** possible safety hazards of using semi-permanent tree stands, including rot, rusting and weakening of nails or bolts, tree growth, and climbing safety. **DISCUSS** the ethical considerations of building permanent tree stands or using tree stands or climbing devices that damage trees.

Have participants **MAKE** a safety line, hauling line, safety harness or climbing blocks for use with their tree stands. **SEE** archery lesson plans and fact sheets for additional information.

2) Tree steps where permitted
3) Hauling line - never climb with equipment

b. Stand placement
1) Secure positioning
2) Understand how stand locks in place

c. Safety line and harness

C. Sub-surface stands
1. Pit blinds
2. Temporary pits or slit trenches
3. "Subsurface" waterfowl blinds
a. Aquatic "pits"
b. Sinkbox - illegal!
4. Low floating blinds
a. Layout boats
b. Gunning coffins
c. Scull boats

EXHIBIT examples of these types of blinds that might be used in your area. In waterfowl areas, **NOTE** that any subsurface blind used in the water must be firmly anchored to the bottom and may not float while offering the gunner concealment below the surface. In those situations **BE SURE** to mention the sinkbox and the fact that it is illegal for hunting waterfowl.

IV. Considerations for blind builders
A. Laws and regulations
1. Some prohibit anything permanent
2. Some prohibit tree stands
3. Some prohibit nails or screws in trees

B. Location
1. Consider:
a. Hunting pressure
b. Wind direction
c. Ease of finding in dark
d. Game concentrations
e. Availability of building materials
f. Distance to haul materials
2. Determine location by:
a. Experience with the area and game behavior
b. Scouting large areas
c. Well-used trails
d. Escape routes
e. Feeding areas or bait sites
f. Topographic features
1) Major saddles
2) Easy travel routes between habitat types
3) Areas well away from roads or other disturbance
4) Topographic maps as hunting tools

DEMONSTRATE the use of topographic maps as a scouting and hunting tool, then have participants USE them to **LOCATE** stand sites for specific species and **EXPLAIN** their reasons for selecting the site.

C. Safety considerations
1. Shooting directions
a. Safe zones of fire
b. Clear path for arrow or bullet

Have participants **DEVELOP** a set of safety rules for stand hunting. Use leading questions to **ASSEMBLE** a set of principles that go beyond the standards for safe hunting to include specifics of stand hunting.

c. Room for bow limbs or recoiling firearm

Hunting from Stands

2. Safe location
   a. Distance, direction from other blinds
   b. Safe backstops in shooting directions
   c. Safe zones of fire for all hunters sharing blind
3. Tell someone else location of blind.
4. Elevated stand safety
   a. Always use safety harness
   b. Use hauling line for gun, bow, arrows
   c. Stay awake in tree stands

D. Comfort

1. Adequate room
   a. Room for legs to stretch out
   b. Room for equipment
      1) Clearance for limbs, rifle barrel
      2) Space for needed gear
   c. Room to change position
   d. Standing and sitting room
   e. Room for all party members
2. Staying warm or cool
   a. Wind protection
   b. Looking from shade to sun
   c. Shade or ventilation
   d. Hay, grass or leaves for foot insulation
3. Comfortable seat
   a. Log, rock, stool, chair, bucket
   b. Back support
   c. Padding and insulation
   d. Contoured for comfort
4. Adequate screening
   a. Able to move without being seen
   b. Able to eat or drink
   c. Able to relax, read, nap ...
5. Handling the "call of nature"
   a. Urine bottle
      1) Different shape from drinking bottle
      2) Avoids contaminating stand area with scent
   b. More serious requirements
      1) Well away from stand site
      2) Downwind from stand site for mammals
      3) Away from water sources
      4) Bury feces and paper

V. Blind building principles and strategies

A. Principles of effective stand/blind building

1. Let game help with location

LEAD participants in discussing factors that must be considered in stand comfort. Use leading questions to **COVER** the range of considerations needed in stand comfort. Have each participant **PICK OUT** a stand site and **EXPLAIN** how they would build a blind and the reasons for their choices.

Lead participants to **SUMMARIZE** the principles of locating and building blinds or stands for hunting. **USE** the fact sheet on blinds for additional support if desired. **NOTE** that at least three major strategies are effective in locating and building blinds.

2. Hide hunter from prey
3. Blend with background

Hunting from Stands

4. Disrupt hunter outlines
5. Offer no disturbance to prey animals
6. Look for natural sites where possible

B. Minimum disturbance
   1. Blending with site
   2. Natural materials
   3. Minimum size for purpose
   4. Uneven contours
   5. Disruptive shape and background
C. Major disturbance
   1. Obvious change in area
      a. Large size
      b. Obvious structure
   2. Adequate time for acclimation
      a. Pre-season placement essential
      b. Locate near but outside primary activity area
D. Matching other odd sites
   1. Boat houses
   2. Hay bales or stacks
   3. Machinery or equipment

Summary Activity

1. Have each participant locate a blind site, taking into consideration the challenges presented by the game being hunted, the characteristics of the site, topography, prevailing winds and other factors that could influence its effectiveness. If possible allow them to build the blind on the site. Have other members of the group tour each site, looking for the blind. After locating the blind or having its location pointed out to them, have the group discuss the site, and any means of making the blind more effective.

2. Have each participant plan and carry out a hunt with a camera, firearm or bow from a stand or blind. After the hunt is complete, have them discuss their strategy, blind site and materials (if used), game behavior, success or difficulties, and possible ways the situation could have been improved to enhance success.

Stalking Game Animals

I. Stalking
   a. Involves skills that get better with practice and experience.
      i. Reading wind.
      ii. Blending with the foliage.
      iii. Moving silently.
      iv. Understand the behavior of prey.

II. Reading the Wind
   a. Always be aware of wind and air currents.
      i. Currents go down in the evening and up in the morning.
      ii. Use wind detectors.
   b. Know the limitations of masking scents and odor eliminators.
      i. Big game have amazing senses of smell.
      ii. Try to stay clean and reduce your odor.
   c. When the wind won't cooperate.
      i. Quarter
      ii. Understand increasing scent band.

III. Blending In
   a. Camouflage goes beyond the clothes
      i. Hunt in shadows.
      ii. Break your outline
      iii. Don't skyline!
      iv. Move very, very slow.
   b. Camo Clothing
      i. Disruptive camo
      ii. Cryptic camo
      iii. Field test different patterns
      iv. Color enhancers
      v. Blaze orange camo

IV. Moving Silently
   a. Moving more slowly
   b. Use background noise
   c. Boot selection
      a. Soft sole
      b. Wool socks over boots
      c. Stocking-footed
   d. Clothing
      a. Fleece, wool or other "quiet" fabrics
   e. Practice

IV. Understanding your Prey
   a. Exploit weaknesses
   b. Body action clues
      i. Chewing cud
      ii. Swishing tail
      iii. Foot stomping
   c. Movement behaviors
      i. Nocturnal or diurnal?

ii. Feeding and loafing areas different?
iii. Do males stay with others?

V. Practice and experience is key to being a good stalker.

QUIET STALKING ACTIVITY

The purpose of this exercise is to help participants will learn skills that allow them to walk quietly.

Have students form a circle around a blindfolded "sitter" on a chair or stump. When instructed to start, participants begin sneaking toward the sitter. When the blindfolded person (the sitter) hears someone, he or she points at that person and that person must stand still for the rest of the round. Point out that the sitter is very important and that the success of the exercise depends on the sitter pointing only when sure he or she hears someone. If the sitter starts "flash pointing" at imaginary sounds, the activity will not be worthwhile. It sometimes helps to allow the sitter to have only six opportunities to point out a stalker.

The other participants keep proceeding toward the center as quietly as they can until they are pointed out or they reach the center. It is important that the participants are instructed "DO NOT TOUCH the person in the center." The person in the center is very tense and is concentrating on hearing individuals at a distance. It is very unnerving to have someone touch you on the shoulder when you are in this position.

The participants should also be instructed to resist rushing quickly toward the sitter. The purpose of this activity is to practice walking quietly.

After the first round has been completed, switch sitters and repeat the process. Participants will begin improving.

After a few rounds, instruct the participants to remove their shoes. There will be remarkable improvement without the shoes.

Discuss with participants how they are able to be most successful approaching the sitter. Be sure they mention:

1. Place feet in areas there are no twigs, dry leaves or shell rock.
2. Step on bare ground when possible.
3. Move during natural or unnatural background noises such as wind, airplane, traffic, rain, etc.
4. Stand downwind of the sitter so noises tend to blow away.

Repeat the exercise in varying terrain and ground conditions allowing everyone a chance to be the sitter.

SPOTTING AND CAMOUFLAGE ACTIVITY

Participants will learn how the use of camouflage can help them blend into the woods. It will also show them how they can use natural features to hide in.

Do this in a wooded or brushy area. Have a selection of several patterns and styles of camo. Have clothing, netting, coats, maybe even pop up blinds.

Have a volunteer be the "spotter". The job of the spotter is to try to locate the "hiders".

Start the exercise without giving any of the hiders camouflage. The spotter turns his or her back to the area the hiders will be using. Hiders have 5 minutes to find a place to hide before the spotter is instructed to turn around. HIDERS MUST BE ABLE TO SEE THE SPOTTER. If the spotter holds up a certain number of fingers the hiders must be able to know how many fingers are being held up.

After the spotter turns around, he or she must keep their right foot planted. The spotter cannot move from one location to another. If the spotter can see a hider the spotter points at them and says what they see. For example: "I see someone by the base of that tree and you are wearing a red shirt." The person being spotted should be able to see the spotter pointing at them. When a hider is spotted they get up and come in to the spotter area.

When the spotter can not identify any more hiders, the spotter is instructed to face away from the hiding area and the hiders are told they have 3 minutes to move 10 yards closer to the spotter and they are reminded they must be able to SEE the spotter.

Then the spotter is told to face the hiding area again. Again, the spotter locates as many hiders as can be seen and the located hiders get up and come to the spotter area.

Spotter is again told to face away from the hiding area and the hiders are told to move 10 yards closer. Repeat this until all hiders have moved close enough that they have all been spotted.

After all hiders have moved to the spotter area, discuss why some participants were not found as easily. Expect answers like: "John and Ted were further away." "Sue hid behind a stump." "Joe had a dark shirt on". "Annie had a lot of bushes in front of her."

Also discuss why some participants were found sooner than others. "Tom had a red shirt." "Betty was out in the open." "Mary was too close."

Next, select a different spotter. Dump out the bag of camouflage and invite hiders to select something if they like.

Repeat the exercise reminding hiders they must be able to see how many fingers the spotter is holding up.

After the round, discuss reasons some hiders were more successful at hiding.

Repeat several times to allow participants to improve. Follow each round with discussion about what worked and what did not work.

THE SCENT ACTIVITY

Participants will learn how scent can be detected by animals and why hunting into the wind is important.

Open a bottle of skunk scent and have participants walk in a large circle around it. Start from at least 50 yards away. Flagging tied to clothes hangers are used to indicate the area in which the scent can be detected.

Repeat the exercise using other scents such as vanilla extract, cinnamon oil, perfume and commercial deodorizers.

Hunting With Dogs

Participating young people and adults will:

1. Understand the fundamentals of training hunting dogs
2. Observe trained dogs in action
3. Understand the need for using trained hunting dogs
4. Experience selecting a breed for their purposes
5. Experience the process of selecting quality puppies
6. Locate support for training personal gun dogs
7. Have fun while learning

Roles for Teen and Junior Leaders

1. Assist in setting up dog demonstrations
2. Guide small groups of participants
3. Assist dog handlers as needed
4. Provide personal dogs
5. Share gun dog preferences and reasons
6. Assist with puppy selection exercise

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide dogs for the demonstrations
3. Arrange for or provide dog handlers for demonstrations
4. Arrange for or provide training sites
5. Arrange for or provide game for demonstrations
6. Discuss personal gun dog preferences
7. Arrange for or provide transportation
8. Arrange for or provide refreshments

Best Time: Any time, best during state dog training seasons

Best Location: Hunting cover, breeding kennel

Time Required: 4 to 8 hours (1 to 2 hours per session)

Equipment and Materials
hound
flushing breed(s)
pointing breed(s)
retriever(s)
dog handling equipment
litter of puppies
training equipment
wild or planted game
dog handlers

References
The *Hunting Dogs of America.* J. Griffen. 1964. Doubleday and Co., Garden City, NY.

The Complete Dog Book. J. V. Rine, ed. 1964. American Kennel Club, Garden City, NY.

Gun Dog. R. A. Wolters. 1961. E. P. Dutton and Co., NY.

Water Dog. R. A. Wolters. 1964. E. P. Dutton and Co., NY.

Numerous other books and magazines on training gun dogs

Teaching Outline

Presentation	Application
1. Hunting with dogs A. Increasing hunting success 1. Extension of human senses 2. Covering more area 3. Aiding in game recovery 4. Untrained dogs often detrimental B. Ethical and aesthetic improvement 1. Better game recovery 2. Increased opportunity 3. Aesthetics and enjoyment	**ASK**: Who hunts with a trained dog? What kinds of dogs? **DISCUSS** how dogs might help or hinder hunting efforts, enjoyment and ethics.
II. Basic care and training of gun dogs A. Selecting A Gun Dog 1. Matching breed to desired use 2. Importance of hunting stock 3. Matching personalities	If possible, have one or more breeders, trainers or veterinarians. **DISCUSS** this section as guest instructors. Be sure to discuss and demonstrate picking a puppy.
B. Basic health care 1. Immunizations a. Distemper-leptospirosis-hepatitis b. Rabies c. Parvo virus 2. Parasite control a. Heart worm b. Intestinal worms c. External parasites 1) Ticks 2) Fleas	Briefly **DISCUSS** the basic health care of gun dogs. If a veterinarian is available, ask him/her to discuss the fundamentals of keeping their dogs healthy.
3. Food and water a. Diet to match activity b. Balanced, scientific rations c. Free water	**STRESS** the importance of providing a balanced, high quality food source and one that the dog can become accustomed to eating. Consider the advantages and disadvantages of different feeding and watering strategies, including providing *ad lib.* food and water.
C. Housing 1. Confinement and control a. Importance to training b. Importance to safety c. Importance to health	Have participants **DISCUSS** the importance of keeping their dogs under control. Note that the implications for training, safety and health as well as theft prevention are all in favor of some type of confinement and control.
2. Living with people a. Pet and gun dog b. Requires training 3. Chaining or staking 4. Kennels	**DISCUSS** some of the options for housing a gun dog. Present an array of viewpoints on housing, allowing the participants to decide on an option that would be best for their own dogs.
a. Warm shelter b. Surfacing 1) Sanitation 2) Conditioning	**REVIEW** the options on substrates for kennels. **EMPHASIZE** the needs for foot conditioning, parasite and disease control and basic sanitation and the differences among the options available.

3) Soil
4) Gravel
5) Concrete

C. Basic Obedience Training
1. Building a relationship
a. Small amount of time each day
b. Who's the boss!
c. Reward and punishment
2. Handling commands
a. Sit
b. Stay
c. Come
d. Heel
3. Social commands
a. No!
b. Quiet!
c. Down
4. Special commands for specific breeds

Have one or more young dogs and their handler(s) **DEMONSTRATE** their skills with these basic commands using voice, hand and whistle commands where appropriate.

III. Types of gun dogs
A. Hounds
1. Trailing animals
2. Hunter intercepts trailed, treed or bayed game
3. Hunter hunts with hound
4. Independence and drive
5. Voice

For graphic impact, **STAGE** a beagle field trial or similar event with a hound owner/handler.

B. Retrievers
1. Works for handler-partnership
2. Basic job retrieving wounded or killed game
3. Works air scent and ground trails
4. Eager, powerful and responsive
5. Flushing dog, too
6. Down, back, over and in

PUT a retriever through its paces in field and water. **SHOW** marking the fall, multiple retrieves, and blind retrieves. **NOTE** that the ideal dog should be biddable, determined and enthusiastic.

C. Flushing Dogs
1. Close working dogs that flush game birds
2. Must be under control of handler
3. Retrieving as a strength
4. Energetic and responsive
5. Hup!

Flushing dogs and pointers can easily be worked sequentially on planted birds or call-back quail. **NOTE** that flushing breeds must operate under the strict control of the handler.

D. Pointing Dogs
1. Range appropriate to cover and game
2. Systematic coverage of cover
3. Wide variety of personalities
4. Retrieving may need to be taught
5. Style and bird sense

If possible, have several breeds of pointing dogs available for comparison of their style and range. **NOTE** that different breeds are adapted to differing types of cover and species of game birds. Have handlers **DISCUSS** their reasons for selecting their preferred breed.

Summary Activity

1. Arrange a series of demonstrations that will allow the participants to see trained dogs or young dogs being trained in each of the major classes of gun dogs. Where work on live game or planted birds is possible, concentrate on real situations.
2. Have each participant select a hunting situation or assign hunting situations that use dogs. Let them pick a breed, discuss training, and explain why the selection was made. If the group is large, divide it into smaller ones for discussion.

HUNTING RABBITS AND HARES

Objectives
Participating young people and adults will:
1. Identify common species of rabbits and hares in their area
2. Identify habitat requirements of local species
3. Use appropriate hunting techniques for species and conditions
4. Understand rabbit natural history and management
5. Have fun while learning.

Roles for Teen and Junior Leaders
1. Assist with identification exercises
2. Demonstrate rabbit hunting safety
3. Guide small groups in mock hunts
4. Demonstrate hunting techniques
5. Demonstrate field dressing and preparation of game
6. Demonstrate or lead management exercises

Potential Parental Involvement
1. See "Roles for Teen and Junior Leaders" above
2. Teach portions of the lesson
3. Arrange for or provide dogs and handlers
4. Arrange for or provide refreshments or a rabbit dish food sampler
5. Arrange for or provide transportation
6. Arrange for or provide teaching sites
7. Arrange for a staged field trial
8. Arrange for or supply rabbit hound pups and discuss selecting a dog

Best Time: Late summer through early spring

Best Location: Rabbit habitat or field trial area

Time Required: 1 to 4 hours

Equipment and Materials
mounts or illustrations of local species
shotgun, rifle, handgun and bow
samples of #7 ½ to #2 shot
dummy rounds
arrows with blunts and broadheads
beagle or rabbit hound
knife
freshly killed rabbit (wild or domestic)
clothing used for rabbit hunting
locally important equipment (like snowshoes or snake leggings)

References
"Cottontail rabbit *(Sylvilagus floridanus)*" in *New York's Wildlife Resources.* Vol. 5. Goff, G.R., D.J. Decker, J.W. Kelley and R.A. Howard Jr. 1981. Department of Natural Resources, Cornell University, Ithaca, N.Y. 12pp.
"Varying Hare *(Lepus americanus)"* in *New York's Wildlife Resources* Vol. 1. Goff, G.R., D.J. Decker, J .W. Kelley and R.A. Howard Jr. 1981. Department of Natural Resources, Cornell University, Ithaca, N.Y. 10pp.
Many textbooks and reference manuals are available for various parts of the country. Watch for pertinent articles in the shooting press as well.

TEACHING OUTLINE

Presentation	Application
I. Introduction A. Most popular game animal B. Abundant and widespread C. Excellent table fare D. Variety of hunting methods	**ASK** what game animal is number one in terms of numbers bagged and time spent hunting?
II. Identification A. Rabbits and hares 1. Lagomorph teeth a. Four upper incisors 1) Small, rounded ones behind 2) Larger, chisel-shaped ones 2. Not rodents	**COMPARE** a skull or photo of a rabbit with that of a rodent. Note the peg-like incisors behind the front set in the rabbit skull and the lack of these additional ones in the rodent.
B. Rabbits 1. Female builds nest for young a. Usually above ground in cover b. Usually lined with plucked fur 2. Young relatively helpless, blind at birth 3. Naked to well furred at birth	**OUTLINE** the differences between the animals known as rabbits and those known as hares. Comment on the **altricial** (relatively helpless) young of rabbits as opposed to the **precocial** (able to move about on their own) young of hares.
4. Several species of rabbits a. Cottontails relatively similar 1) Relatively large ears 2) Relatively large hind feet 3) Small tail carried with underside visible b. Body length about 10 - 22 inches c. Weights variable with species 1) Females generally larger 2) Swamp rabbits largest species (up to about 6 pounds) 3) Pygmy rabbit smallest (about 1 lb) 4) Eastern cottontail most widespread a) Up to about 3.5 pounds b) Up to about 18 inches long	Use pictures, mounts or other aids to **ILLUSTRATE** the types of rabbits and hares locally available.
5. General appearance a. Pelage generally yellowish brown to rusty brown or gray 1) Agouti (banded) hairs give specked appearance 2) Young often have white blaze on forehead 3) Coloration varies within a species a) Describe local coloration (best to use local skins or specimens) b) White to gray below	Have participants **COMPARE** the locally available animals and **LIST** some of the characteristics that can be used to identify them.

C. Hares
    1. Nest or form without lining
    2. Young more developed at birth
        a. Eyes open
        b. Well-furred
        c. Leave "nest" quickly
    3. Generally larger than rabbits
        a. Longer ears
        b. Longer legs and feet
    4. White-tailed jackrabbit largest
        a. Length more than 22 inches
        b. Weight to about 9.5 pounds
        c. Fur (pelage) generally gray
            1) White in winter
            2) Ears
                a) Gray on front edge
                b) White on back edge
                c) Black at the tips
            3) Tail white
                a) May have narrow black stripe
                b) Stripe does not reach body
    5. Black-tailed jackrabbit nearly as large
        a. Length to about 25 inches
        b. Weight to about 8 pounds
        c. Pelage grayish brown with black wash
        d. Ears brown with black tips
        e. Tail white below, black above
            1) Black edged in white
            2) Black stripe extends onto lower back
    6. Varying (snowshoe) hare smaller
        a. Length to about 21 inches
        b. Weight to about 4.5 pounds
        c. Shape like an oversized cottontail
        d. Pelage changes from brown in summer to white in winter
        e. Ears tipped in black or dusky gray
        f. Large hind feet

III. Behavior
    A. Nocturnal (active at night) and/or crepuscular (active at dawn and dusk)
        1. Usually remain concealed during brighter parts of the day
        2. Black-tailed jackrabbits sometimes active during the day as well
    B. Preyed upon by many predators
        1. Rely on concealment and/or running for escape
        2. May delay flight to last moment

COMPARE the features of any local hares with those listed for cottontails. **ILLUSTRATE** any local species and. discuss their identifying features.

ASK participants when they have observed the most rabbit activity.

Have them **DESCRIBE** the areas where they have flushed rabbits. **USE** those features to show daytime habitat use.

Have the participants **DESCRIBE** the circumstances where they have flushed rabbits and how the animals behaved. Were they close or far away? How far did they run? What kind of cover did they go into?

3. Human predation relatively small

C. Reluctant to leave home range
   1. Home range size varies with species
   2. Most species use established trails
   3. Rabbits may take refuge in burrows or other dens when pressed
   4. Hares seldom use dens to escape
   5. Swamp rabbits, marsh rabbits, eastern cottontails, and black-tailed jackrabbits swim readily
   6. Rabbits and varying hares usually stay in heavy cover, even when pursued
   7. Jackrabbits use speed to escape, may take to open areas escape

IV. Habitat use
   A. Specific to species and area
      1. Cottontails
         a. Relatively dense cover
         b. Mixture of grasslands, shrubs, old fields and woodland edges
         c. Bottomlands and wetlands used heavily (particularly important to marsh and swamp rabbits)
         d. Row crops generally poor cover
         e. Interspersed cover types with escape cover and refuges needed
      2. Varying hares
         a. Dense, woody cover
            1) Evergreen swamps and thickets
            2) Cut-over areas
            3) Areas with dense understories
      3. Jackrabbits
         a. Relatively open areas
      1) Prairies and croplands
      2) Open shrub lands
   B. Foods vary with area, species and season
      1. Growing season - forbs important
      2. Winter - woody vegetation used
         a. Bark and twigs of shrubs, vines, brambles and young trees
         b. Re-ingestion of soft or green pellets important to rabbits
      3. Grasses used to lesser degree
      4. May cause significant crop damage
   C. Escape cover important to cottontails
      1. Dense vegetation

Have any participants who have hunted with dogs **DESCRIBE** how rabbits behaved when chased. **NOTE** their tendency to circle, staying inside their home range.

ASK participants if they have observed rabbits swimming. **NOTE** that some species swim both well and regularly.

Have participants try to **DESCRIBE** ideal cover for rabbits. **USE** their observations to start constructing a sketch of good habitat.

DRAW comparative cover types for the various rabbits in your area.

DISCUSS some of the foods that rabbits eat. Consider gathering cut twigs and other evidence of rabbit feeding and using them as pass-arounds to stimulate thought.

ASK if any of the participants have had significant crop or garden damage from rabbits. **DISCUSS** the fact that they can occasionally cause substantial crop losses.

Have participants **DESCRIBE** the types of cover used by rabbits in escaping predators. **EXPAND** the list if necessary to cover their refuge types. Remember that "the briar patch" is a good answer.

NOTE that rabbits often use abandoned burrows made by other animals as refuges from predators.

a. Shrubs, young trees and briars
b. Overgrown hedgerows

2. Burrows and brush piles as refuges
   a. Woodchuck burrows
   b. Dozer piles or stump piles
   c. Brush or slash piles
   d. Abandoned buildings
   e. Pipes and culverts
   f. Artificial burrows

V. Hunting equipment

DISPLAY or demonstrate proper clothing.

A. Clothing
   1. Boots for terrain and conditions
   2. Brush pants for heavy cover
   3. Vest or coat
   4. Hat or cap

B. Safety considerations
   1. Value of blaze orange
   2. Safety glasses

Have participants **REVIEW** why blaze orange and shooting glasses are good ideas. Consider using the camouflage game (Fact Sheet) to illustrate the increase in visibility.

C. Appropriate arms and ammo
   1. Shotguns most popular
      a. Nearly any gauge useful
      b. Medium to large shot (#6 to #2)
         1) Rabbits easy to kill
         2) Complete penetration and limited number of pellets in rabbit
      c. Chokes and loads to fit conditions
   2. Rifles and handguns
      a. Safety considerations important
      b. Match to conditions and range
      c. Match to conditions (for example, stalk sitting rabbits in the evening)
   3. Archery
      a. Both broadheads and blunts useful
      b. Picking sitting shots
      c. Flu-flu for easy arrow recovery

Ask a few rabbit hunters to **SHARE** their preferences in hunting arms and ammunition for rabbits. Allow time for participants to **DISCUSS** those choices with the volunteers.

D. Proper game handling
   1. All species good table fare
   2. Proper care and cooling helps maintain meat quality
      a. Field dress as quickly as possible
      b. Carry where cooling can take place
   3. Human disease possible from handling
      a. Tularemia and other flu-like diseases
      b. Allergic reactions
      c. Wear gloves when cleaning
      d. Properly cooked meat safe

SHOW examples as they're discussed.

   4. Game handling equipment
      a. Knife
      b. Gloves (kitchen gloves fine)
      c. Vest, game strap or bag for cooling

and carrying game

VI. Hunting techniques

A. Still hunting
   1. May be used with all species
   2. Best around dawn and dusk
   3. Silence and sharp vision needed
   4. All types of legal arms useful
      a. .22 rifle or handgun
      b. Light centerfire rifle
      c. Bow with blunts or broadheads

USE local or present examples of sites where this technique would be appropriate. **LET** them try it late, if time and conditions permit.

B. Jump shooting
   1. May be used for all species
   2. Nearly any time of day
   3. Cover resting cover thoroughly
   4. Most shots fairly close and fast ·
   5. Shotgun most often used
      a. Match choke to type to shots
      b. Medium-sized shot (#4, 5, or 6)
      c. Cottontails relatively fragile
      d. Jacks, hares bigger and tougher
      e. Some prefer small charges of large shot to reduce meat damage

Often two or more hunters are more effective working together. **SHOW** examples of good jump shooting cover. **ENCOURAGE** them to try the technique when the field exercise is being done. Pattern sheets with rabbit silhouettes may be useful here.

C. Long range shooting
   1. Most appropriate to jackrabbits
   2. Application of varmint technique
   3. Spotting in open country
   4. Precision centerfire rifles
   5. Game often left to scavengers

If used in your area, **SHOW** typical types of equipment. **DISCUSS** the ethical considerations of using living things solely as targets.

D. Using hounds
   1. Classical rabbit hunting
   2. Nearly any ground trailing dog
      a. Beagles and bassets
      b. Larger hounds
   3. Shotguns most common, but any arm could be used in appropriate areas
      a. Safety considerations
      b. Game may be running
      c. Shots vary with the species
         1) Most cottontails close
         2) Snowshoes longer
   4. Using rabbit's tendency to remain in their home range to advantage
      a. Waiting on travel lanes and crossing points
      b. Importance of remaining still and quiet
      c. Watching ahead of the dog
         1) Rabbit may move slowly far ahead

Usually a rabbit hound owner can be found to **SHOW** what such a dog should do. **STAGING** a hunt or trial is an excellent teaching tool.

Lead participants as they **DISCUSS** safety considerations and other choices that might influence the type of gear they are using.

STRESS the need for quiet and stillness when waiting for a rabbit or hare to return ahead of the hounds. Note that their eyes and ears are not merely for decoration.

of the dog
2) Easy shots often result
d. Get off the ground if possible
1) Better vision
2) Above much of the cover
e. Know where your companions are
f. Trust the dog - its nose knows more about rabbits than most of us do

Have participants use a stump or other elevated stand and **DESCRIBE** the difference in ability to see into the cover.

5. Hound etiquette
a. Let the owner handle dogs
b. Keep comments positive
c. Be careful of the dog's safety
d. Follow owner's instructions

This section could best be **LED** by a person who runs hounds.

E. Driving
1. Traditional method in some areas
2. Large group of hunters pushing rabbits toward area where they can be shot or killed by other methods
3. Usually used with jackrabbits or southern cottontails
4. Safety considerations

DEMONSTRATE on a freshly killed rabbit (wild or domestic). Take the animal from whole to table-ready.

VII. Field care of game
A. Immediate field dressing important
1. Possible contamination by gut contents
2. Faster cooling of carcass
3. Note precautions on parasites and possible diseases
B. Some skin the animal immediately
1. Make sure this is legal
2. Skins very easily when warm
3. Cools more quickly
4. Increases handling time
5. Must be protected from dirt and hair
a. Plastic bags may induce spoilage
b. Muslin better

STRESS the excellent table quality of wild rabbits of all types and the role of the shooter in making sure they are used once they are cleaned and pan ready.

C. Home care of game
1. Skin, wash and cut into serving pieces
a. Increases likelihood of use
b. Reduces probability of freezer burn
c. Reduces space required
2. Soak bloodshot portions in brine to remove the excess blood
3. Freeze or otherwise process meat to be held more than a couple days

VI. Management considerations
A. Population dynamics
1. Rabbits prolific breeders
a. First warm days of early spring usually start breeding
b. Multiple litters through summer

NOTE that rabbits do not need to be hunted to protect them from themselves, but that their populations may be hunted because of the high turn-over rate and prolific reproduction. **DEMONSTRATE** the population growth of rabbits by using a litter size of 4 or 5 and showing how many young are produced

c. Early litters breed before fall
2. High turn-over rate
    a. Reproduce rapidly, offsetting high predation losses
    b. Human predation relatively low in importance
    c. Adequate habitat assures good populations
3. Mix of breeding, feeding and escape cover important
    a. Feeding and breeding cover seldom limiting
    b. Escape cover may be planted or built
        1) Shrubs and brambles
        2) Brush piles, artificial burrows, and similar structures
        3) Wind breaks and hedgerows
4. Able to tolerate long seasons and heavy harvests

in a season with 3 or 4 litters being produced. Allow the females in the first litter to breed once, too. Example: (5x4) + (3x4) = 32 young from one female. (This is conservative!)

If the participants desire, lead them in a project to **BUILD** or **PLACE** some artificial structures or plant some cover to improve habitat.

Summary Activity

Have participants observe a beagle field trial or stage a mock rabbit hunt. Encourage them to try several techniques in small groups. Bring the group back together to discuss the things they observed. Have the hound people discuss what they look for in a rabbit hound, how to pick a puppy and related topics. Consider having refreshments that are based upon rabbit, like a rabbit stew, rabbit ala king, fried or barbecued rabbit. Encourage the consumption of rabbits as game animals, rather than targets merely to be shot and left in the field.

HUNTING SQUIRRELS

Participating young people and adults will:

1. Identify local squirrels and distinguish among them
2. Observe squirrel behavior and understand how that applies to hunting
3. Observe and discuss the habitat requirements of squirrels
4. Practice squirrel hunting techniques
5. Understand fundamentals of squirrel management
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Collect and prepare dried tails or study skins
2. Scout locations for teaching sites
3. Act as scavenger hunt referees
4. Guide individuals or small groups in a mock hunt
5. Demonstrate field dressing or table preparation

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 or a sampler of squirrel dishes
5. Discuss personal preferences in techniques and equipment

Best Time: Fall (may also be taught in spring or late summer)

Best Location: Good squirrel habitat (rural or urban)

Time Required: 1 hour to a full day

Equipment and Materials

squirrel tails from local species
photographs, mounts or study skins
red fox pelt (if available)
pencil, paper
scavenger hunt lists

References

"Gray squirrel *(Sciurus carolinensus)* and fox squirrel *(Sciurus niger)"* in *New York's Wildlife Resources.* G. Goff, D. Decker, J. Kelley and R. Howard Jr. 1982. Cornell University. Ithaca, N.Y.

Regional "faunas," e.g. *Mammals of the eastern United States* or *Mammals of the Great Lakes Region*

Publications by national, state or provincial wildlife agencies

Publications in the sporting press

Squirrel Hunting

TEACHING OUTLINE

Presentation	Application
I. Squirrel identification A. Gray squirrel 1. Two major color phases a. Gray (typical) phase 1) General body color gray-brown a) Brown hairs b) Black bars c) Silver tips 2) White to pale gray below 3) Flanks, legs, feet and face rusty brown b. Black phase (black squirrel) 1) Pelage generally black 2) Chest and belly rusty to brown	**DISPLAY** dried hides, study skins or mounts of the squirrel species found locally. **HELP** young people describe the characteristics used to identify each species. **PASS AROUND** samples of gray squirrel guard hairs or gray squirrel tails and let the participants describe the color pattern. **NOTE** that the black squirrel is a color phase of the gray squirrel, not a different species.
B. Fox squirrel 1. Red phase a. Back and shoulders rusty red or mixture of rusty and gray b. Hair not barred as with gray squirrel c. Yellowish to orange belly 2. Gray phase a. Silvery gray without brown cast b. White below c. Marked with black in some areas 3. Black phase a. Black pelage generally b. Light lips, nose and ears	**COMPARE** fox squirrel (red phase) tail or skin to red fox pelt to see origin of name. Be sure to include examples of all color phases of fox squirrels found in your area. **PASS AROUND** samples of guard hairs or tails from gray squirrels and fox squirrels and allow young people to make comparisons. If tails are used, this is a good time to **DISCUSS** their functions in communication, balance and insulation.
C. Red squirrel 1. Generally bright red-brown above 2. Grayish white below 3. Prominent black line between rusty sides and belly in some seasons 4. Grayish sides in summer	Where they are present, **COMPARE** red squirrel or flying squirrel specimens to the larger tree squirrels. If rock squirrels or other species are present in your area, compare them as well.
D. General size differences 1. Fox squirrel largest a. Total length - 21 inches (535-624 mm) b. Tail to 10 inches (244-308 mm) c. Up to 2 pounds (750-950 g) 2. Gray squirrel smaller a. Total length - 19 inches (439-487 mm) b. Tail to 9 inches (201-235 mm) c. To about 1 ½ pounds (500·710 g)	Briefly **REVIEW** the statistics on size and weight of each species present in your area.

3. Red squirrel smallest
    a. Length - 12 inches (290-318 mm)
    b. Tail - 5 inches (121 - 132 mm)
    c. Up to ½ pound (140-220 g)

II. Behavioral Characteristics
A. Food habits
1. Understanding food habits important
    a. Pre-season scouting
    b. In season locations
2. Primarily vegetation
    a. Seeds, fruits and nuts
    b. Fungi and bulbs or tubers
    c. Buds and bark
3. Evidence of squirrel activity
    a. Cuttings
        1) Seed husks
        2) Nut hulls, corn cobs or stripped pine cones
        3) Favored feeding locations
            a) Stumps, logs, rocks
            b) Near bases of trees
    b. Other signs
        1) Disturbed leaf litter
        2) Small holes in lawns
4. Caching abundant food for later use
    a. Buried or stored in cavities
    b. Located using acute sense of smell

B. Other signs of squirrel activity
1. Tracks in mud, soil or snow
2. Bulky leaf nests in trees
    a. Usually in trees 30 feet tall or taller
    b. Ten to 100 feet above the ground
    c. Globular or flattened slightly
    d. About 1 ½ feet in diameter
    e. Usually in a limb fork
3. Active tree cavities
    a. Worn areas near cavities
    b. Gnawed areas around cavity openings
    c. Hair caught in bark
    d. Scratches on bark or wood
    e. Cavities used for escape, winter cover
4. Calls
    a. "Barking"
        1) Sharp "kuk kuk..." sound
        2) Attract squirrels or elicit response
    b. Chirring
        1) Relatively soft trilling sound
        2) Usually during fighting or in breeding season

ASK why understanding of squirrel food habits might be useful to a hunter or observer? Relate the answers to being able to locate the animals when desired.

DISPLAY samples or photographs of selected squirrel foods in your area. Be sure to include a variety of food types.

SHOW some examples of squirrel feeding activity, including gnawed or split nut hulls. Include some items gnawed by smaller rodents for comparison. **NOTE** the size and spacing of the tooth marks. The Scavenger Hunt listed in the summary activities can reinforce this information.

Use a field trip or photographs to **SHOW** likely locations of feeding signs as well as various signs themselves.

Have participants **WATCH** foraging squirrels or **DISCUSS** personal observations of squirrels. **ENCOURAGE** them to record their observations in a field journal for later use. Strive for discussion of burying food for later use.

SHOW tracks or casts or photographs of squirrel tracks. **COMPARE** squirrel tracks with those of smaller rodents and rabbits.

LOCATE several squirrel nests or show pictures of them. Have participants describe the nests and draw some generalizations about them.

LOCATE or show photographs of tree dens, hair caught in bark, scratches on bark and wood surfaces and similar signs of squirrel activity.

ASK participants to discuss any types of calls they have heard squirrels make. Be sure to include barking, chirring and alarm calls. If possible, compare the calls to those produced by other animals active in the habitat, like chipmunks.

USE a squirrel call or observe squirrels being disturbed to demonstrate an alarm call.

c. Alarm calls
    1) Accompanied by rhythmic tail twitching
    2) Sharp barks
    3) Followed by descending chirr or trill
d. Calls useful to hunters
    1) Locating squirrels
    2) Spotting movements to locate

DISCUSS the usefulness of these calls to the squirrel hunter.

C. Movements and activity
1. Activity geared to season, weather, time
2. Most active in most comfortable part of day
    a. Almost entirely diurnal
    b. Morning and evening in summer, early fall
    c. Mid-day during coldest periods
    d. Prefer calm, warm days
    e. Seldom remain hidden for more than 15 to 20 minutes during prime activity times

Ask participants to **DISCUSS** when and under what conditions they have observed the most squirrel activity. Use specific questions to **ILLUSTRATE** typical activity patterns under various seasonal and weather conditions. **NOTE** the relationship between squirrel activity and the most comfortable parts of the day. If possible, use a **FIELD TRIP** to a well populated squirrel area. Have the participants **OBSERVE** squirrel activity, including the amount of time it took the squirrels to become active again after being disturbed. **ENCOURAGE** recording observations in a field journal for later use and study.

3. Fox squirrels and urban squirrels active throughout the day
    a. Acclimate to people readily
    b. Use distance as protection

Where good sites are available, **COMPARE** and **CONTRAST** the behavior of different species or urban-suburban squirrels relative to "wild" squirrels.

4. Stay in dens during foul weather in winter
    a. Emerge periodically
    b. Prefer warm, calm days
5. Squirrels most active in the fall
    a. Juveniles dispersing
    b. Adults concentrate on food sources
    c. Caching behavior very important

NOTE that squirrels are most abundant and most active during the fall. **ASK** why those two things might be true and **DISCUSS** the responses.

6. Species differ in habitat use
    a. All species use both trees and ground
    b. Fox squirrels most terrestrial
    c. Red squirrels most arboreal
    d. Gray squirrels more arboreal than terrestrial, but broad mix

DISCUSS the habitat use of various squirrels, using the experience of the members as much as possible to supply the basic information.

D. Senses
1. Excellent sight, smell and hearing
2. Minimum, careful movements advisable

Note the excellent senses of these animals and **CAUTION** the participants that quiet stalking and minimal movement are necessary for successful squirrel hunting under most conditions.

III. Habitat use
A. Cover preferences
1. Gray squirrel
    a. Forest or large woodlands
        1) Dense canopy preferred
        2) Mast (nut) production vital
    b. Upland forests

COMPARE and **CONTRAST** the cover references of the various squirrel species found in your area. When it is possible, **VISIT** several types of squirrel habitat and allow the participants to observe the differences for themselves.

c. Bottomland forests

2. Fox squirrel
   a. Open or patchy woodlands
   b. Uplands or well-drained bottomlands
   c. Forest edges
   d. Small woodlots
   e. Agricultural areas
   f. Hedgerows, fence rows as travel lanes
3. Red squirrel
   a. Coniferous forests
   b. Conifer patches in woodlands
   c. Forest edges

B. Food Preferences
1. Squirrel diets similar
2. Spring diet
   a. Sap
   b. Buds
   c. Flowers (trees and others)
   d. Fruits (maple keys)
   e. Bulbs and tubers
3. Summer diet
   a. Seeds (hard mast) of trees and shrubs
   b. Fruits (soft mast)
   c. Fungi
   d. Insects including caterpillars
4. Fall diet
   a. Hard mast (seeds and nuts)
      1) Beech
      2) Oak
      3) Hickories (including walnut, pecan, butternut)
   b. Corn and other seed grains
   c. Apples and other fall fruits
5. Winter diet
   a. Stored mast
   b. Agricultural crops
   c. Buds and bark
   d. Bulbs and tubers

REVIEW the seasonal food habits of squirrels found in your area. **ENCOURAGE** members to conduct a feeder study or food habits study of one or more species of squirrels. See Fact Sheet: Squirrel Food Habits.

IV. Hunting squirrels

A. Tactics similar to white-tailed deer
1. Habitats appropriate to the species
2. Time of day changes with season, weather
   a. Diurnal
   b. Most pleasant time of day
   c. Early and late in early fall
   d. Mid-day in winter

If possible, **CONDUCT** a mock hunt for squirrels using as many techniques as possible. Have individuals or small groups complete a hunt, then assemble all of them to compare results and discuss the use of their methods. **USE** as many of the techniques outlined here as possible in your area. Allow the "hunters" to choose their methods and equipment if possible, but make realistic rules on considering a squirrel "bagged" with the dowel or walking stick shotgun, rifle, handgun or bow. **COMPARE** results of the various types of "hunts" after the group has come back together.

e. Wind, heavy rain and squalls greatly reduce activity

B. Hunting from a stand
   1. Very effective method
      a. Stand location important
         1) Near dens, food and travel lanes
         2) Good visibility
         3) Concealment
         4) Comfortable (holding still)
      b. Useful in tough conditions
         1) Dry leaf litter
         2) Low activity levels
         3) Open habitats
   2. Technique
      a. Arrive before expected activity
      b. Make minimum disturbances
      c. Sit or stand still and quietly
      d. Wait a minimum of 20 minutes
      e. Keep all movements slow and quiet
      f. Allow area to settle after a shot

C. Still hunting
   1. Slow stalk with frequent pauses
   2. Hunting conditions
      a. When leaf cover is heavy
      b. When cover is quiet from dampness or snow cover
      c. When cover or terrain offer concealment
      d. When squirrels are active or sunning
   3. Stop frequently (intersperse with stand hunting)
      a. Long pauses every 10 to 15 steps
      b. Watch/listen for squirrel movements
      c. Camouflage may help
      d. Using a partner
         1) Alternate movements
         2) Squirrels often move around tree boles to hide from moving hunters
         3) Pick clear, safe shots

D. Hunting with dogs
   1. Most small breeds useful
   2. Both scent and sight hunters useful
   3. Tree squirrel and hold its attention

E. Float hunting
   1. Excellent technique where legal
   2. Both shotgun and rifle useful
   3. Often best with a partner

Briefly **DISCUSS** the principle elements of each of these squirrel hunting techniques. **DEMONSTRATE** the methods or have participants **EXPERIMENT** with using them when and where possible.

V. Squirrel hunting arms and ammunition
   A. Scoped .22 rifle

Assemble and assortment of arms and ammunition used in squirrel hunting. Have parents or leaders **DISCUSS** their personal preferences and hunting techniques and their reasons for choosing the arms and ammunition they prefer.

1. Shot placement important
2. Scope choices
    a. One inch tube helpful
    b. Better light -gathering
    c. 4x, 6x or variable scopes

3. Ammunition
    a. What your .22 prefers
    b. Shoot groups to test
    c. Long rifles preferred by most
    d. Standard velocity often best
    B. Shotguns best for running shots

ENCOURAGE participants to ask questions during the discussion on both methods and hunting tools. **BE SURE** to stress the Importance of shot placement and limiting shots to those with a high probability of a quick, clean kill.

1. Any gauge useful
2. Modified or full choke preferred
3. Heavy loads of 4, 5 or 6 shot
4. Some prefer combination guns

C. Muzzleloading rifles
    1. Any caliber useful
    2. Small caliber (.36 cal.) preferred.

D. Handguns
    1. .22 rimfire
    2. Small caliber centerfires

VI. Other gear

A. Appropriate boots and clothing
    1. Match the weather and terrain
    2. Quiet clothing helpful
    3. Camouflage (where legal) helpful

DISPLAY an assortment of clothing and other gear used in squirrel hunting. Allow plenty of time for questions or discussion and **ENCOURAGE** any experienced persons in the group to share their preferences and experiences.

B. Shooting glasses

STRESS the importance of using quality shooting glasses for eye protection and better vision.

C. Game pouch, bag or strap
D. Squirrel call
E. Field dressing equipment
    1. Sharp pocket knife
    2. Protective gloves
    3. Wiping rag or towel
    4. Muslin sack

LAY OUT your field dressing equipment and explain the use of each piece. If time permits, **DEMONSTRATE** one or more field dressing techniques. If legally taken squirrels are available, have youngsters TRY field dressing a squirrel with supervision and assistance.

VII. Care of game

A. Field dressing
    1. Field dress as soon as possible
        a. Prevents spoilage
        b. Improves meat quality
        c. Technique
            1) Slit underside from anus to throat
            2) Grasp viscera at front of chest
            3) Pull viscera free
            4) Avoid puncturing bladder or gall bladder
            5) Wipe cavity dry

DEMONSTRATE each step in this process or use a clear set of audio-visual aids to make the processes clear.

    2. Skin if legal and proper storage available
        a. Avoid getting hair and fur on flesh

b. Protect flesh from dirt, flies and heat
    1) Avoid plastic bags except in very cold weather
    2) Muslin meat sack better
c. Leave skin on to protect meat in cool weather

B. Skinning techniques
1. Two piece approach
    a. Cut off feet, tail and head
    b. Make a cut across the middle of back
    c. Insert fingers and pull skin both ways
2. One piece approach
    a. Cut off feel
    b. Cut base of tail from underside
    c. Insert fingers along hips
    d. Stand on tail
    e. Pull upward" on carcass
    f. Remove head

STRESS the need to keep the carcass clean, but be sure to **EMPHASIZE** the potential impacts of using plastic bags in mild or warm weather.

NOTE that some squirrels may have bots (fly larvae) living in their sk.ins. These animals may look gruesome, but they do not affect the quality of the squirrel. They are confined to the skin and will leave when the animal cools or be removed with the skin.

C. Making squirrels table ready
1. Make as ready to use as possible
2. Soak in salt water to remove bloodshot areas
3. Cut into serving pieces
    a. Cut behind pelvis to remove hind legs (two pieces)
    b. Cut under shoulder blades to remove front legs (two pieces)
    c. Trim belly and ribs off if desired
    d. Cut back in half behind the ribs (two pieces)
4. Animals to be boiled and boned may be left whole if desired

STRESS the relationship between making the game animal table ready and the probability of its being used. **EMPHASIZE** the hunter's responsibility to maintain food value and encourage use of bagged game.

D. Squirrels on the table
1. Squirrels excellent table fare
2. Cook as for rabbit or chicken
3. Beyond fried squirrel
    a. Brunswick stew
    b. Squirrel Stroganoff
    c. Squirrel ala king
    d. Try something you like

SHARE recipes for preparing squirrels and/or PROVIDE one or more preferred examples of squirrel dishes for all participants to try.

VIII. Squirrel management
A. Among the most popular game animals
1. Available over most of the country
2. Excellent training animal
3. High economic impact
B. Management considerations
1. Habitat quality
2. Hunting pressure

DISCUSS some of the important elements of squirrel management and **EMPHASIZE** the individual hunter's role in managing squirrels in their hunting areas. Consider posing some management problems with alternative solutions and using them as a basis for discussion.

3. Social carrying capacity
4. Reproductive success

C. Regulating harvests
   1. Season restrictions
      a. Populations can be over-hunted

      b. Removal of harvestable surplus
         1) Fall and winter seasons
         2) Late summer seasons
      c. Spring seasons in some areas
   2. Bag limits
      a. Equitable sharing of commons resource
      b. Spreads harvest over season
      c. Avoids waste
   3. Habitat management
      a. Maintaining mast and den trees.
      b. Artificial nest structures

Summary Activities

1. Conduct a mock squirrel hunt. Have individuals or small groups of young people try a specified squirrel hunting technique and record their results. Have them select their preferred equipment as well as the technique and list the requirements to "bag" a squirrel on the basis of that equipment. For .22 rifles, suggest that the squirrel must be in a safe field of fire, holding still and within 50 yards. For shotguns, suggest that the squirrels may be taken on the run, but they must be within 35 yards and clearly visible without heavy screening from twigs and foliage.

2. Conduct a Squirrel Scavenger Hunt in an area you (or teen leaders) have previously scouted for abundant squirrel signs. Give each small group of participants the following list and have them locate or bring back each item within a specified time period.

_____ evidence of squirrel feeding activity
_____ a squirrel food item
_____ a possible feeding site for a squirrel
_____ a leaf nest
_____ a potential den tree
_____ a mast tree
_____ a squirrel travel lane
_____ a squirrel hair
_____ a squirrel track
_____ other sign of squirrel activity

Review the items brought back or the notes they have made on the scavenger hunt. Use these items to review the high points of habitat use and squirrel behavior.

3. Keep a field journal of squirrel activity, feeding habits and behavior. If actual squirrel hunting takes place include hunting notes in the field journal. See the field journal activity sheet for supporting informa

Hunting White-tailed Deer

Participating young people and adults will:

1. Demonstrate the ability to identify white-tailed deer of both sexes
2. Understand the whitetail behavior as it relates to hunting and management
3. Learn local habitat and food preferences of whitetails
4. Practice skills and tactics for successful whitetail hunting
5. Understand and articulate basic whitetail management principles
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Demonstrate whitetail hunting techniques
2. Assist younger members or those experiencing difficulties
3. Assist with setting up teaching areas
4. Present brief portions of the lesson
5. Arrange for guest instructors
6. Lead small groups on field exercises
7. Discuss personal experiences in deer hunting

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 to and from teaching sites
4. Arrange for or provide refreshments during teaching sessions
5. Share personal experiences and preferences in deer hunting

Best Time: Early fall, pre-season

Best Location: Classroom, good deer habitat

Time Required: 1 to 15 hours, depending upon activities included

Equipment and Materials

mounts, posters or photographs of deer
examples of whitetail antlers
plaster casts of tracks
photographs or drawings of scrapes
rubs or photographs of rubs
legal deer hunting arms
rifles: all locally legal action types
shotguns: all locally legal action types
muzzle loaders: locally legal types
handguns: all locally legal types
archery equipment
dummy rounds
topographic maps
binoculars and spotting scopes
food habits guides and/or displays
field dressing equipment

References

American Wildlife and Plants: A Guide to Wildlife Food Habits. A. C. Martin, H. S. Zim and A. L. Nelson. 1951. Dover, New York.
Whitetail Deer Hunting. M. Strandlund, ed. 1988. National Rifle Association, Washington, D.C.
State Agency or Extension materials on white-tailed deer
Related lesson plans: "Hunting Arms and Ammunition" series t "Field Care of Game," "Hunting Optics"

LESSON OUTLINE

Presentation

Application

I. Identifying white-tailed deer
   A. General appearance
      1. Bright tan, reddish-brown, gray-brown to gray above
      2. White on belly and insides of upper legs
      3. Prominent white patch on throat
      4. Seasonal change in coat color
         a. Bright tan to reddish in summer
            1) White around eyes, inside of ears and muzzle
            2) Black patch on each side of chin
         b. Gray to gray-brown in winter
            1) Less contrast in face
            2) Chin pattern still obvious
      5. Fawns (young of the year)
         a. Reddish with white spots at birth
         b. Spots lost before first winter
   B. Distinguishing characteristics
      1. Bushy tail with erectile hairs
         a. Dark above - white below
         b. White "flag" when alerted
            1) Erect tail with white hairs spread
            2) Exposed white belly and inner legs
      2. Prominent white throat patch
      3. Small, white edged metatarsal gland
      4. Large tarsal gland
      5. Antlers of males
         a. Curve upward and forward
         b. Unbranched tines (usually)
         c. "Brow tines" present
   C. Size
      1. Extremely variable across range
         a. Northern animals heavier
            1) Mature bucks in excess of 220 pounds (100 kg)
            2) Does in excess of 150 pounds (70 kg)
         b. Smallest subspecies about half as large
         c. Weight also varies with age and nutrition
   D. Sexual differences
      1. Males (bucks) antlered

SHOW photographs or **OBSERVE** whitetails to pick out the characteristics that identify them most easily. **PUSH** participants to note things that differentiate the whitetail from mule deer or other species.

DISCUSS commonly observed sizes of bucks and does in your region, noting the influence of age and nutrition if those factors influence the weights significantly.

Ask participants to **DISCUSS** differences they have noticed between bucks and does. **RECORD** their observations and

a. Antlers after first year
b. Shed in winter (deciduous)

2. Males generally larger than females (does)
3. Females and young often form small herds
4. Adult bucks solitary or in small male groups
5. Other behavioral differences
   a. Cover preferences
   b. Rutting behavior
   c. Behavior under hunting pressure

II. Behavioral characteristics

A. Sensory abilities

1. Outstanding sense of smell
   a. Primary line of defense
   b. Scent extremely important
2. Excellent hearing
3. Good eyesight
   a. Better than commonly credited
   b. Modified color vision
   c. Best at detecting movement
   d. React to unusual shapes
   e. Seldom look up unless exposed to tree-stand hunters

B. Temperament

1. Cautious
2. Easily alarmed
3. Tends to stay "at home"
   a. Quick to enter dense cover
   b. Hides rather than running
   c. Avoids obvious hazards
   d. Holds when concealed
   e. Sneak back when pushed beyond range
4. Safety zone varies with region
   a. Learned responses to hunting methods
   b. Avoiding predators

C. Strongly habitual and seasonal

1. Well defined home range
   a. All requirements met
   b. Very well know sites
   c. Habitual trails
2. Does form matriarchal herds
   a. Disperse when bearing young
   b. Regroup in fall of year
   c. Usually contain several ages of deer
3. Bucks wander more widely
4. Active range size in good cover
   a. Most under 640 acres (260 ha)
   b. Varies with cover type and arrangement

DISCUSS those differences, adding any that they fail to mention.

NOTE that the sense of smell alone is usually adequate to send a deer into hiding or flight. **EMPHASIZE** the importance of keeping foreign scent and hunter scent away from a deer that is being hunted.

NOTE that hearing or sight is often used to confirm the other sense, and that both are better than many hunters believe. **NOTE**, too, that deer have a modified color vision that extends beyond our visual range to include some near ultra-violet light.

Where possible, have participants **OBSERVE** deer in natural habitat, testing their senses and responses to human disturbance by talking, making metallic noises, breaking sticks or scraping leaves, moving when deer are looking at them or allowing scent to drift to the animals. Have them **WATCH** for different responses: alert postures, challenges, moving to cover, or taking flight.

LOCATE well-used deer trails and evidence of feeding, bedding or other activities. **NOTE** that the same herd of deer may use an area for very long periods of time with traditions being passed on to herd members through older females. **EXPLORE** how all their needs are met on the site and how their movements could be used by a hunter to bag a deer.

NOTE that bucks and does often use different trails through their habitat, with bucks sticking to heavier cover and apparently less traveled trails which intersect periodically with trails used by the rest of the deer in the area.

EMPHASIZE the fact that a few hundred acres of good range may require much more area if poor habitat elements are interspersed with

NOTE that deer are extremely in tune with their environment and conserve their energy by selecting sites where active heating or cooling are minimized. Weather conditions tend to dictate the types of sites they use and the activity patterns selected.

5. Seasonal migrations in some areas
6. Avoid thermal stress
    a. Shade and breeze in heat stress
    b. Sunny slopes out of wind in cold
    c. Reduce metabolism in winter

D. Reproductive behavior
1. Chemical communication
    a. Glands
        1) Head
        2) Feet
        3) Legs
    b. Urine
2. Does with repetitive heats
3. Bucks with seasonal rut
    a. Day length and weather determined
    b. Increased testosterone and sperm production
    c. Early stages
        1) Antlers harden
        2) Contests with other bucks
        3) Rubbing activity
            a) Marking trees and shrubs
            b) Exercising aggression
    d. Full rut
        1) Rubbing trees and shrubs
        2) Making scrapes (rutting pits)
            a) Digging pits
            b) Urine marking
            c) Gland marking overhead
        3) Tending scrapes
        4) Heightened activity level
        5) Aggression toward other bucks
        6) Active pursuit of estrous does
            a) Estrous does urinate in scrapes
            b) Bucks follow does until breeding complete
    e. Greatly increased vulnerability to hunters

III. Habitat use

A. Seldom far from escape cover
1. Preference for dense cover
2. May use very small patches

B. Woodland use
1. Edge or mixed habitat preference
    a. Dense woody habitat
        1) Escape cover
        2) Shelter from wind
        3) Bedding cover

the local conditions to help participants understand that the whitetail is an extremely adaptable animal that can take advantage of a wide variety of cover types if enough escape cover is available.

NOTE that forest habitats are not the optimum for whitetails, but that they can survive at lower

        b. Shrub lands or open areas
            1) Source of browse
            2) Travel lanes
    C. Forest use
        1. Home ranges larger
        2. Densities lower
        3. Heavy use of openings or cut areas
    D. Agricultural land
        1. Woodlot or broken areas
        2. Shrub lands
        3. Cropland, hay fields and range
    E. Importance of cover dispersion
        1. Dense mixed or continuous cover
            a. Home ranges small
            b. Nearly daily patterns of use
            c. Seldom leave home range
        2. Open or dissected cover
            a. Used area about the same
            b. "String of pearls" cover
            c. Large amounts of unused habitat
            d. More erratic use of sites

IV. Food habits
    A. Ruminant herbivores
        1. Plant eating animals
        2. Chambered stomach
            a. Chews its cud
            b. Bacteria help digestion
        3. Selective feeder
            a. Forbs - non-woody broadleaf plants
            b. Browse - leaves and tender twigs
            c. Hard mast - acorns and nuts
            d. Soft mast - fruits
            e. Dried or mature grasses seldom used
            f. Avoids low-value foods
    B. Opportunistic feeder
        1. Selected by availability
        2. Selected by nutritive value
        3. Selected to avoid plant defenses

V. Whitetail hunting techniques
    A. Importance of pre-Season scouting
        1. Locate good habitat
        2. Locate prime areas to find deer
        3. Determine hunting techniques
        4. Observe movements and numbers of deer
    B. Stand hunting

1. Most successful for whitetails
2. Location critical
    a. Trail intersections
    b. Stream and ravine crossings
    c. Travel lanes to feeding or bedding area
3. Wind direction vitally important
4. Types of stands
    a. Open stands
        1) Break outline
        2) Keep still
        3) Remain quiet
        4) Be patient
    b. Tree stands
        1) May increase field of view
        2) Reduces scent near the stand
        3) Deer seldom look up
        4) Keep still and quiet
    c. Blinds
        1) Ground blinds
            a) Brush or other concealment
            b) Same restrictions as above
        2) Pit blinds
            a) Hide most of hunter
            b) Reduce scent movement
            c) Lower profile
            d) Provide protection from wind and cold
        3) Box blinds
            a) Reduce scent
            b) Increase hunter concealment
            c) Provide shooting support
            d) Restrict vision and hearing
        4) Tower blinds
            a) Similar to tree stand
            b) Similar to box blind
            c) Excellent for treeless or brushy areas

C. Driving popular in some areas
    1. Silent drives
        a. Small group, low disturbance
        b. Still hunting toward Stands
        c. Equal probability of shots
        d. Intimate knowledge of deer habits required
        e. Minor disruption of deer behavior
        f. Walking or standing shots common
    2. Organized noisy drives
        a. Extremely efficient in some area
        b. Modest to large groups needed
        c. Running shots most likely

Allow other group members and leaders to **CRITIQUE** the sites and offer helpful **SUGGESTIONS** on how to improve it or alternatives for that site.

Where the opportunities exist, have the group **PRACTICE** as many techniques of hunting deer as possible. Once they have tried various methods, ask them to **COMPARE** their success and satisfaction with the various methods. Be sure that local cultural factors are considered.

d. Demands tight organization and control
e. Demands strict safety rules
f. Best in patchy habitats
g. Dogs still used in some areas

D. Still hunting
1. Mis-named - hunter moving slowly
a. More looking than walking
b. Stalking through cover looking for deer
2. Most challenging form of deer hunting
a. Meeting deer of their terms
b. Spotting deer before being spotted
3. Demands quiet movement
4. Demands intimate knowledge of deer and habitat
5. Demands patience

E. Trailing or tracking
1. Useful where easy tracking conditions exist
2. Following deer to deer
3. Combines still hunting with stalking
4. Demands ability to read sign
5. Looping often effective
6. Patience and persistence important

F. Stalking
1. Locating deer for planned approach
2. Must be able to see deer at a distance
3. Varies in difficulty with terrain and conditions

VI. Hunting tools for deer hunters

A. Archery
1. Razor sharp broadhead most important
2. 50 pound class bows adequate

B. Firearms and ammunition
1. No "perfect" arm and ammo
2. Great topic for deer camp debate
3. Selection criteria
a. Acceptable accuracy
1) 2-3 MOA for short range use
2) 1-1 1/2 MOA for longer range shooting
b. Adequate energy
1) Minimum about 500 lb-ft at the animal
2) Desired about 1000 lb-ft at the animal
c. Adequate penetration
1) Give up most energy to the animal
2) Exit wound for easy follow up
d. Shootability
1) Recoil tolerance
2) Noise
3) Mass and size
e. Action type
1) Personal preferences

REFER to the lesson on bowhunting equipment for more information or have experienced bowhunters **DISPLAY** some of their equipment and **DISCUSS** the reasons for using it.

DISPLAY a selection of deer rifles and handguns along with the cartridges (or charges) they fire [Dummy rounds or inert materials **ONLY** in the class]. **ENCOURAGE** participants to discuss their thoughts on the types and calibers preferred. As discussion takes place, ask them to **SUPPLY** their reasons, including "because Dad [Grandpa, Mom, ...uses one like this." Ask participants to **LIST** some of the things that might be important in the selection of a deer rifle. **LEAD** them to mention at least these items, but allow any others that might be mentioned with some validity.

REMIND shooters that the combination of their skill and the accuracy of the arm and ammunition must be good enough to keep the projectile in the sure-kill zone of an animal at the longest range they intend to use. For eastern or southern hunters, shots are seldom over 150 to 200 yards; while western hunters or those who hunt in more open habitats may shoot at much longer ranges.

STRESS the responsibility of the hunter to make clean, quick kills. Most smaller handguns and .22 centerfires are eliminated by energy considerations. Although steady and experienced shots may be able to kill whitetails with a .22 Hornet or .218 Bee, most hunters should consider .24 caliber (6mm) rifles about the minimum for

EXPLAIN that good deer cartridges include rounds like the .243 Winchester, 6mm Remington, .257 Roberts, .25-0'6, .270 Winchester, .280 Remington, .284 Winchester, 7x57 Mauser, 7mm-08, .308 Winchester, .30-06 Springfield, .30-30 Winchester, .32 Special,

2) Reliability
3) Ease of operation

f. Other personal factors

C. Optical equipment
1. Telescopic sights
a. Single-plane sighting
b. Precise shot placement
c. NEVER observing other hunters
2. Binoculars
a. Locating game
b. Clear identification or evaluation
c. Observing other hunters or wildlife
3. Spotting scopes
a. Little use in dense cover
b. Almost essential in open habitats

D. Hunting clothing
1. Consider habitat, climate, conditions
a. Protection from the elements
b. Layerable clothing
c. Meeting local and seasonal conditions
2. Quiet and comfortable
a. Soft fabrics - wool, soft synthetics
b. Wicking moisture
c. Retaining or shedding heat
d. Keeping elements at bay
3. Suitable for hunting technique
4. Blaze orange to camouflage
a. Legal considerations
b. Safety considerations
c. Relationship to technique

E. Other equipment
1. Field dressing equipment
a. Knife
b. Bone saw
c. Honing kit
d. Heart-liver bag
e. Pen or punch for tags
f. Tape, string or dental floss
g. Meat sacks
2. Day bag or fanny pack
a. Minimal first aid gear
b. Minimal survival gear
c. Lunch
d. Extra clothing, ammo...
e. Toilet paper
f. Moist towelettes
3. Compass and map

VII. Role of hunting in whitetail management

A. Hunters as passive management tools

ASK if deer should be managed. **USE** "Oh, Deer" or a similar game to focus attention on the potential growth rate of whitetails and their impacts on habitat structure. **NOTE** that other species besides deer are impacted by

1. Population control
    a. Regulating total harvest
    b. Regulating doe harvest
    c. Managing hunting pressure
        1) Shifting pressure to problem areas
        2) Focusing pressure on does
        3) Matching population to carrying capacity
            a) Biological
            b) Sociological
    d. Meeting perceived societal needs/wants
2. Hunters as opportunistic predators

B. Hunters as active management tools
1. Generating hunter-based management plans
    a. Management for high productivity
    b. Management for trophy quality
    c. Management for maximum encounters
2. Limited access required
3. Control over hunter behavior required
4. Strong record keeping required
5. Easily applied in leased or restricted access lands
6. Selective harvest to meet objectives

VIII. Deer hunting aesthetics

A. Pleasure of providing food
1. Atavistic behavior
2. Enjoying venison
3. Hunting trophy venison

B. Trophy hunting
1. Any deer as a trophy
2. Trophies in the mind of the hunter
3. Saving experiences
4. Trying for the biggest, ...

C. Method hunting
1. Self restriction
    a. Methods
    b. Tools
2. How more important than what

D. Enjoying the total experience
1. Privacy and communion with nature
2. Sharing a camp with good friends or family
3. Keeping a journal or taking pictures
4. Sharing experiences - story telling
5. Just hunting deer

Summary Activities

1. Conduct a youth-adult deer hunt or mock deer hunt where the young people get a chance to apply the skills and information they have learned.
2. Have participants discuss what they have learned and how they plan to apply it to their hunting experiences.

HUNTING RING-NECKED PHEASANTS

Participating young people and adults will:

1. Distinguish ring-necked· pheasants from other game birds
2. Differentiate between cock and hen pheasants
3. Recognize pheasant habitat and hunting areas
4. Understand pheasant natural history and management
5. Use appropriate hunting methods and equipment
6. Practice proper field care of pheasants bagged
7. Have fun while learning

Roles for Teen and Junior Leaders

1. Prepare pattern sheets
2. Set up posters, photographs or mounts for display
3. Demonstrate hunting techniques
4. Demonstrate and help with cleaning techniques
5. Lead small "hunting" parties
6. Handle dogs during the mock hunt
7. Make dowel "guns" and enforce safety

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide fresh chickens
3. Arrange for or provide "hunting" sites
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Arrange for or provide gun dogs
7. Present personal insights on pheasant hunting

Best Time: Early fall to late winter
Best Location: Good, diverse pheasant habitat or managed shooting area

T**ime Required**: Approximately 1 to 4 hours

Equipment and Materials
mounts or illustrations of local game birds
pattern sheets (#4. #5 or #6 shot at 20, 30 and 40 yards with various chokes/gauges)
freshly killed chickens (one per group)
knives and sharpening equipment
assorted hunting clothing
"guns" made from broomsticks or dowels
pointing or flushing dogs

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Pheasants: Their Lives and Homes. Beebe, W. 1926. New York Zoological Society and Doubleday, Doran, NY. 309 pp.

The Upland Shooting Life. Evans, G. B. 1971. Alfred A. Knopf, New York.

The Ring-necked Pheasant and its Management in North America. McAtee, W. L.. 1945. American Wildlife Institute, Washington, D.C. 1945.

Lesson Outline

Presentation	Application
I. Identification and physical characteristics A. Roughly chicken-sized 1. Cocks larger than hens a. Up to about 31/2 pounds b. Total length nearly 36 inches c. Pointed tail about half that length 2. Broad rounded wings a. Wing span to about 32 inches b. Powerful take-off c. Acceleration then glide 3. Hens about 2/3 the size of cocks B. Plumage 1. Hen mottled a. Brown on buffy tan b. Reddish was on head and upper neck 2. Cock generally coppery to reddish on back, flanks and breast a. Head iridescent green b. Bare, red patch around eye c. Crown olive to tan d. White neck ring (may be incomplete) e. Rump rusty to powder blue 3. Long pointed tail in both sexes a. Up to 22 inches long in adult cocks 4. Lower legs bare of feathers a. Males with a tarsal spur, like chickens and turkeys	Using pictures or mounts of pheasants to stimulate observation, **ASK** participants to describe cock and hen pheasants. **COMPARE** both sexes with other game birds that may be encountered in the area or the region and **STRESS** ways of differentiating among them. Have participants **DEVELOP** criteria for differentiating cocks and hens in the field and related the importance of that distinction to following bag restrictions, if they exist. **NOTE** that the shape and length of the spur may help distinguish between young of the year and older birds.
II. Behavior A. Males vocal 1. Crow during breeding season (and sometimes in the fall) a. Coarse "kwaaaaa-kuk 1) First note long (1-2 seconds) 2) Second note short and explosive b. Territory advertisement c. Attracts females d. Spring crowing counts useful to locating good concentrations of birds 2. May cackle when flushed a. Rapid series of sharp "kak" sounds b. Series may be prolonged c. Explosive sound with an explosive flush	Have participants **LISTEN** to tapes of pheasant calls or to actual birds. **DISCUSS** possible functions of the territorial call and its value to hunters scouting for hunting areas in the spring. If live flushes are used, **ASK** participants to describe the effect of the flush and call on the "shooter.

B. Run rather than flush in good cover
1. Often move away from dogs or humans
2. May hide until nearly stepped on
3. May run to the end of cover and flush from the last remnant
4. Often frustrates pointing dogs by running

C. Usually alone or in small groups unless concentrated by food. cover or hunting tactics
1. May concentrate in good winter cover
2. Family groups of young early in the season
3. Herded by driving hunting tactics
4. Concentrated in escape cover by hunting pressures
5. Concentrated by rich food resources

D. Often fly to wooded or brushy cover when disturbed
1. Brief powerful flight with long glide
a. Short bouts of active flight may increase glide distance
b. Seldom fly less than 300 to 400 yards after a flush
c. May fly long distances to heavy cover
2. Flush very fast and often nearly vertical
3. Flight usually fairly straight

E. Excellent sight and hearing
1. Often run from sounds or sight
2. Caution needed to avoid driving birds out of hunting cover

III. Habitat use
A. Grasslands preferred
1. Shrubby areas marshes and dense hedge rows used as escape or winter cover
2. Grass or grass/forb areas preferred for nesting, brood rearing and roosting
3. Cropland areas used for feeding
a. Heavy use in agricultural areas
b. Food seldom limiting even in wild grasslands
4. Alternative cover types used for nesting if grasslands limited
a. Roadsides important in some areas
b. Hedges and fence rows (adequate width critical)
c. Hay field
1) Excellent cover

DESCRIBE pheasant behavior under hunting conditions. **EMPHASIZE** their running and skulking habits and the tendency to run until all cover is exhausted. **STRESS** the key points that you will be making later in mock hunting situations.

NOTE that pheasants are often found singly, but may be concentrated for a number of reasons.

POINT OUT or illustrate likely escape cover types.

OBSERVE a pheasant from flush to landing if possible, noting the length and type of flight.

Have shooters **DESCRIBE** the flush of a pheasant and **DISCUSS** shooting tactics relative to the flush characteristics.

CAUTION shooters about excessive noise.

Use illustrations, photographs or actual patches of habitat to **ILLUSTRATE** habitat preferences of pheasants. **STRESS** the need for all types of cover within close proximity and known local preferences in nesting cover.

DISCUSS seasonal differences in habitat preferences and vulnerability of birds to predators and weather when winter cover is inadequate.

2) Potential loss of hens and broods to mowing
d. Croplands selectively avoided where possible

B. Movement between preferred seasonal cover critical
1. Local "migrations" of two or more miles documented
2. Movement through poor habitat increases predation loss .
3. Predation loss linked to cover quality
4. Close proximity of all needed cover types beneficial

C. Behavior when hunted
1. Escape by running preferred
2. Able to use "tiny" patches of cover
a. Cut grain stubble
b. Sparse patches of cover
c. Extreme edges of good cover
3. Tough and tenacious
a. Adequate loads essential
b. Retrieving dogs extremely helpful

IV. Hunting methods

A. Many hunting techniques useful

B. Driving
1. Group hunting method
2. Hunters walk a piece of cover pushing birds to an edge
a. Need enough hunters to cover the area effectively
b. Cover breaks essential
c. Escape routes must be blocked by other hunters
3. Quick flurry of action when drivers reach blockers
a. Massed flush once action begins
b. Careful attention to safe zones of fire essential
c. Watch for stragglers in the last bit of cover
4. Often involves relatively long range shooting
a. Tight chokes
b. Heavy loads
c. Heavy shot
5. Small groups or single hunters may adapt technique to small patches or strips of cover
6. Recovery of downed birds challenging
a. Tough bird that runs to cover well
b. Dogs extremely helpful

C. Using dogs for pheasants
1. Learn and trust your dog

NOTE the tenacity of the bird when hit and its ability to escape when wounded. **STRESS** the value of a trained dog.

STAGE a mock pheasant hunt in good cover using as many of methods as practical. Have "shooters" use dowel or broomstick guns, treating them as though they were real in handling and estimating the number of birds bagged. Have a parent or teen leader **OBSERVE** each hunting group and serve as a guide.

Use pattern sheets fired at different distances with a variety of loads and chokes to **REINFORCE** the importance of load and choke selection.

STRESS the importance of using a trained dog and trusting the dog in the field.

a. Their nose is better than yours
b. Experienced dogs usually right

2. Pointing dogs challenged
   a. Running habit frustrates some dogs
   b. Dog must be staunch and persistent
   c. Many learn to hand1e pheasants
   d. Close range flushes, short shots
      1) Open chokes
      2) Lighter shot (#6 or #7 1/2)
3. Flushing dogs and retrievers
   a. Pursue bird to a flush
   b. Keeping flushes within shotgun range
      1) Well-controlled dog
      2) Well-conditioned (athletic) hunter
   c. Variable types of shOts
      1) Larger shot and load
      2) Tighter chokes useful
      3) Shot selection essential
   d. Types of dogs used
      1) Flushing spaniels
      2) Retrievers
      3) Beagles or other small hounds
         a) Many work well on pheasants
         b) Must keep up with the dog

COMPARE flushes by driven birds and pointed birds. Using the pattern sheets, **DISCUSS** load and choke selections over pointing dogs.

NOTE the importance of proper handling with a flushing dog.

V. Hunting equipment

A. Clothing
   1. Suitable boots
      a. Conditions
      b. Terrain
   2. Comfortable, protective field pants
      a. Match to weather
      b. Match to roughness of cover
   3. Coat or vest
      a. Match to weather
      b. Value of blaze orange
   4. Cap or hat
      a. Controls heat loss
      b. Shades eyes
      c. Value of blaze orange
   5. Upland bird clothing usually adequate
   6. Late season hunting may require some duck hunting gear

B. Shotguns and ammunition for pheasants
   1. 12 gauge or 20 gauge guns most common
      a. Choke selection depends on hunting style and cover
         1) Skeet or improved cylinder for close birds
         2) Modified a generalist's selection

DISPLAY a selection of pheasant bunting clothing and allow participants to **DISCUSS** the need to match that clothing to the weather, terrain and active hunting style used with these birds.

ILLUSTRATE the value of blaze orange in preventing "unseen hunter" accidents. Consider using the **Camouflage Game** (Fact Sheet) as a model.

REVIEW and discuss gun, choke and load selections for pheasants. Have experienced hunters **SHARE** their preferences and the reasons for them.

3) Full for big areas of cover and driving birds
4) Value of doubles, choke tubes and variable chokes

b. Quick swinging valuable in close covers

c. Longer barrels with more muzzle mass helpful on long shots

d. Stick with preferences, and good fitting gun

2. Ammunition

a. Adequate for tough birds

1) Heavy charges

2) High velocity loads

3) Medium shot (#6 or #5 shot most common)

4) Finer shot over pointers (#7 1h preferred by some)

5) Some prefer heavier shot (#4) in later part of season or in open cover

b. Adjust loads and guns to conditions expected

VI. Field care, handling and preservation of game

A. Pheasants superior table fare

1. Excellent, mild flavor

2. Gourmet food as a result of the hunt

Have experienced people **DISCUSS** pheasants as table birds or allow participants to **SAMPLE** a dish prepared using pheasant.

B. Gut or crop contents may impart foul flavor to bird

1. Drawing bird and removing crop immediately advised

a. Removes possible sources of off flavors

b. Cools bird and keeps it fresh

2. Crop contents

a. Evidence of feeding areas

b. Influence on flavor around shot holes

1) Rank - seeds like skunk cabbage

2) Bitter - Berries like nightshade, viburnum or dogwood

Using frozen samples of pheasant crops, allow participants to **SMELL** contents containing foods like skunk cabbage, nightshade, dogwood or similar materials. **ASK** how they think those things would taste and what they could do to prevent their contaminating the mild flesh of a pheasant. **ASK** how observing crop contents might help hunters locate more birds.

C. Drawing or field dressing simple

1. Cut around vent

2. Extend cut forward

a. Through thin flesh of belly

b. Use edge of breast as a guide

3. Remove viscera and wipe dry with grass or cloth

4. Free and remove crop

a. Locate, where neck meets breast

b. Cut carefully if needed

DEMONSTRATE field dressing using a fresh chicken or pheasant. If time and resources permit, have each pair of participants **DRESS** a bird, first field dressing, then making it pan ready.

D. Pluck or skin bird after reaching hole

1. Legal considerations.

2. Plucked birds tend to .dry out less in cooking
3. Pluck best when warm o,r well-~hilled
   a. Be careful to avoid tearing skin
   b. Consider skinning if too many pin feathers
   c. May be plucked wet, like a chicken
   d. Commercial pluckers work on dry feathers
4. Singe to remove hair-like feathers
5. Remove visible feather wads and shot

E. Remove head and feet

F. Rinse. body cavity and dry

G. Prepare as desired for cooking or serving
1. Match commercial cuts where possible
   a. Increases likelihood of use
   b. Reduces resistance to eating "game"
2. Try different uses
   a. Match "hits" to uses
   b. Experiment as with chicken

H. Keep birds fresh
1. Short term - refrigerate
2. Longer term - freeze (or otherwise preserve)
   a. Two to three days normally okay for short term
   b. Hanging not necessary

DISCUSS matching the use of the bird with the condition of the carcass. **NOTE** that lightly hit or head shot birds make excellent "company" birds, while hard hit ones might be better used in a pot pie, pheasant ala king or similar dish.

ASK why birds should be kept cold and fresh or preserved for later use. **EMPHASIZE** both improved flavor and reduced risk of contamination.

VII. Management and hunting

A. Range of ring-necked pheasants
1. Native of China
2. North American distribution
3. Local or state distribution

B. Amount and interspersion of habitat types critical to pheasant numbers
1. Increased populations and stability require
   a. All components available in sufficient quantity
   b. Close proximity of prime cover types
      1) Nesting cover
      2) Brood cover
      3) Feeding and loafing cover
      4) Roosting cover
      5) Escape cover (predators and weather)
2. Nesting and winter cover both very critical in most areas

C. Winter feeding seldom desirable

OUTLINE or discuss the origins of pheasants hunted in North America and the areas, either nationally or locally, where they are found.

REINFORCE the importance of adequate habitat and a mixture of habitat types in pheasant numbers.

1. Concentrates birds around food
2. Increases exposure to predators

D. Stocking pen-reared birds controversial
1. Sustained stocking not a management alternative
   a. High cost
   b. High loss rates on naive birds
2. North American populations established by stocking
3. Stocking strategies used
   a. Helping locally depleted populations as a side benefit of releases for the gun
      1) Release of young birds
      2) Pre-conditioning to predators
      3) "Gentle" release
      4) Minimum contact with people
   b. High initial loss rates to predators (60-85 percent)
   c. "Wild" birds by the fall
3. Direct releases for the gun
   a. Providing more recreational opportunity
   b. Release of older birds immediately before or during the season
   c. High initial loss rates
   d. Reduced "wild" behavior
   e. Minimal carry-over

DISCUSS winter feeding and stocking programs (if desired), addressing the issues and reasons for and against these programs.

E. Normal turnover rates of 70-80 percent annually
1. Fall populations dependent on breeding season success
2. Declines in pheasants from unknown causes

NOTE that high turnover rates in pheasants and other upland game birds permit harvest by hunters without damaging future productivity as long as harvest is regulated.

F. Cocks-only hunting not a factor in pheasant populations
1. Hunter success per unit effort
   a. Drops to quit stage
   b. Seldom reach desired cock:hen ratios
2. Excess cocks decrease productivity in food stressed situations
   a. Dominant over hens
   b. Pheasants polygamous
3. Cocks-only hunting influences future populations very little

DISCUSS the reasons for cocks-only regulations and the lack of impact on population size.

NOTE that declining hunter success usually results in decreased hunting pressure before desired cock:hen ratios are reached.

Be sure to allow participants to **REVIEW** and **ASK** questions before completing the lesson.

Summary Activity

Have participants stage a mock hunt. Pen reared birds might be used in typical habitat in areas of low population density. Post season "hunting" in good winter cover might be productive. Dogs of different types could be used. Discuss the relative observations of various groups after they have returned.

Waterfowl Hunting

Participating youth and adults will:

1. Recognize waterfowl habitat and likely hunting areas
2. Understand appropriate hunting methods and gear
3. Practice rigging decoys for waterfowl hunting
4. Select appropriate clothing for waterfowling
5. Select guns, chokes and shot charges for various waterfowling, conditions
6. Observe a trained retriever
7. Have fun while learnilig.

Roles for Teen and Junior Leaders

1. Prepare pattern sheets
2. Prepare wing boards
3. Lead or assist with identification activities
4. Prepare or conduct "hunting" demonstrations
5. Assist with decoy rigging activities
6. Assist with retriever demonstration
7. Assist with or construct demonstration blinds
8. Share personal waterfowling experiences

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide a teaching site
3. Demonstrate blind construction
4. Demonstrate how to rig decoys spreads for various species and situations
5. Arrange for or provide equipment
6. Arrange for or provide a retriever
7. Arrange for or provide transportation
8. Arrange for or provide refreshments
9. Discuss personal waterfowling experiences

Best Time: Early fall to spring

Best Location: Managed waterfowl area

Time Required: 1 to 4 hours

Equipment and Materials

waterfowl specimens or photos
waterfowl wing board
pattern sheets (various shot sizes, chokes and distances)
assorted field and floating decoys
chest waders
hip boots
waterfowling clothing
foul weather gear
duck and goose calls
trained retriever
various boats and canoes
waterfowl blinds, blind material or photographs

References

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

Prairie Ducks, L.K. Sowls. Stackpole, Harrisburg, PA. 1955.

Ducks at a Distance, B. Hines. U.S. Fish and Wildlife Service. U.S. Government Printing Office, Washington. 1963.

Water Dog, R. Wolters.

Lesson Outline

Presentation	Application
I. Waterfowl identification review A. Locally common species B. Restricted species	Use slides, photographs or mounted specimens to review. "*Watching Wild Wings*" is an excellent film to support this activity. Try to use birds on the wing as much as possible.
II. Importance of habitat, habits and flock size A. Being in the right place 1. Recognizing preferences a. Habitat preferences 1) Wooded swamps or beaver ponds 2) Freshwater marshes 3) Shallow bays or flats 4) Deep water feeding or resting areas b. Timing 2. Observing specific patterns a. Habitual movement pattern b. Habitually used areas c. The best duck call/decoy	**ASK**: How can you become the best duck caller in the world? After some discussion, point out that being where ducks or geese want to be is the best way to do so. Have participants share types of habitat where they have seen waterfowl. Be specific with the habitat structures, time of year or day, and other factors. Try for a sense of their habitat use locally. Show some slides or illustrations of good hunting locations like points, sheltered bays, open marshes, or other sites.
B. Gregariousness 1. Flocking habits a. Flock size b. Flock spacing and behavior 2. Decoy a. Size b. Numbers c. Placement	**DEMONSTRATE** various decoy types (silhouette, shell and full body, floating and field), sizes and species. Place them in typical spreads for field shooting, puddle ducks and diving duck rigs.
3. Calls a. Reed calls b. Diaphragm calls c. Flutes or whistles d. Types of calling needed 4. Movements and flagging a. Movement as an attractor b. Color flashes 1) White flags 2) Black flags 3) Stoning the decoys 4) Moving decoys 5) Kicking the water	**DEMONSTRATE** and have them try various duck and goose calls. Have a good caller show the basic set of calls needed to hunt locally. Ask an experienced person to share their experience with re- rigging decoys or being out of the blind. **ASK**: Why do birds seem to appear then? Work beyond general perversity to the movement and flashes of color.
III. Being prepared A. Safety 1. Waterfowling weather a. Adequate clothing b. Hypothermia 2. Water safety a. Common sense b. PFD's,and your future	Ask a waterfowler to share a particularly rough day or close call. Use that to introduce safety. **ASK**: What types of weather are best for waterfowl hunting? When nasty weather is defined, discuss need for being prepared.

c. Adequate water craft

3. Shooting safety

a. Zones of fire

1) From blinds

2) From boats

3) From pits

4) Jump shooting

b. Shooting cripples

c. Shot fall zones

4. Self protection

a. Awareness of danger

b. Decoy placement

SET UP demonstration blinds, boats and pits and have youth define safe zones of fire. **REVIEW** basic firearms safety. **USE** manufacturer information on pellet range and energy.

NOTE: Need to watch for others to make mistakes, e.g. shooting at decoys.

B. Arms and Ammunition

1. Waterfowling guns

a. Legal restrictions

1) 10 gauge maximum

2) 3 shell limit

b. Ethical constraints

1) Adequate for clean kills

2) Knowing personal limits

c. Matching your conditions

1) Ability

2) Game

3) Hunting situation

Show an assortment of waterfowling guns. Pass out state and federal regulations. **ASK**: What should be considered in selecting hunting arms and ammo. Refer to lesson on shotgun hunting and manufacturer's load selection guides.

2. Ammunition

a. Lead and "steel"

1) Legal considerations

2) Ballistic differences

b. Pattern density and pellet energy

c. Interaction of choke, shot size and shot charge

d. Value of patterning

DISCUSS differences in lead and soft iron shot. Use pattern sheets to illustrate patterns with various chokes, loads and shot sizes. Use bird silhouettes to measure potential hits. Have members discuss loads for different birds and hunting conditions.

C. Concealment

1. Blinds and hides

a. Boats

b. Stake or box

c. Pits

d. Available cover

2. Camouflage clothing

a. Matching the cover

b. Breaking up the outline

c. Skin camo

d. Importance of stillness

e. Hiding by being obvious

DEMONSTRATE various types of blinds and camouflage clothing. Show that outlines, flashes and movement can destroy the best camouflage. Show that camo can blend, disrupt or make an object obvious (e.g. white to match decoys rather than field).

IV. Basic waterfowl tactics

A. Fundamental Techniques

1. Jump shooting

a. Stalking locations

b. Fast, close action

c. Good cover

d. Careful movements

e. Shooting quickly

Have someone **DESCRIBE** a jump shooting experience. Let members develop the needs for that type of waterfowling approach.

2. Pass shooting
   a. Long-range shooting
   b. Habitual flight patterns
   c. Shooting at minimum range
3. Decoying
   a. Bringing birds to the gun
   b. Using habitat and habits
   c. Range varies with species
   d. Rigging for success
      1) How birds stool
         a) wind
         b) landing habits
      2) Normal flock behavior
      3) Confidence birds
   e. Shooting when they "break their backs"
      1) Relatively easy shots
      2) Incomers and outgoers

Have someone **DESCRIBE** a pass shooting situation. Let youth determine the needs and constraints.

Have some **DESCRIBE** a decoy hunting situation and let the young people determine the needs and constraints. **ASK**: Are needs for hunting small potholes the same as for large marshes, lakes or bays.

DEMONSTRATE decoy rigging showing wind, visibility, typical spreads, landing patterns, etc.

B. Estimating Range
1. Color pattern and detail
2. Comparison to muzzle width
3. Restraint

C. Shooting Techniques
1. Sustained lead
   a. personal computer
   b. Trial and error
   c. Estimating shot travel time
2. Swing through
   a. Swing speed
   b. Relation to basic shotgun
   c. Tip of beak as target
3. Spot shooting
   a. Not recommended
   b. Shooting where it will be

USE a mounted duck and marked distances to show how the bead or muzzle can be used as a range estimator. Compare with feather detail. **DISCUSS** various shooting techniques. Let young people and experienced waterfowlers discuss the use of each one and their success with it.

STRESS the importance of using the same techniques on the range and in the field to reinforce solid field shooting.

D. Hunting Tactics
1. When to shoot
   a. Minimum range
   b. Simple shots
   c. Easy recovery
2. Scouting for success
3. Selecting a technique
4. Selecting tools

Let participants set some parameters of best times to shoot.

ASK questions that lead to these ideas. Use the summary activities to reinforce the conclusions of the lesson.

Summary Activities

1. Give each participant a waterfowl hunting situation that fits local conditions. Have them select a location, method, equipment, gun and load. Have each member present their choices and the reasons for those choices to the group. Discuss them thoroughly, using experienced waterfowlers to discuss the effects of their choices on potential success.
2. Have small groups of participants rig decoys for various species under relatively natural conditions. Analyze their rigging relative to appropriateness of the spread, wind direction, visibility and blind location.

Be aware of distance from the blind, landing areas and potential shooting problems. Lead a discussion of each rig.

3. Have each member that anticipates hunting waterfowl bring a shotgun they intend to use. Pattern each gun with a variety of loads to see which ones-are most effective in that shotgun. Discuss effective killing ranges and ways to assure that shots are kept within that distance.

Hunting the Wild Turkey

Participating young people and adults will:

1. Identify wild turkeys, both hens and toms
2. Relate turkey behavior to hunting strategies
3. Relate turkey habitat requirements to hunting and management
4. Practice common turkey hunting techniques
5. Practice calling techniques and methods
6. Have fun while learning

Roles for Teen and Junior Leaders

1. Set up and conduct a camouflage game
2. Assist small groups in learning to call turkeys
3. Lead one or two novices on a "turkey hunt"
4. Discuss personal turkey hunting experiences
5. Lead arms/ ammunition selection discussion
6. Lead small groups in selecting calling locations
7. Lead small groups in range estimation exercise

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Act as a model or living manikin for demonstrations
3. Provide or arrange for teaching and field trip sites
4. Provide or arrange for transportation
5. Provide or arrange for refreshments
6. Act as assistant instructors

Best Time: Late winter and spring

Best Location: In turkey range

Time Required: 2 to 15 hours depending upon activities selected

Equipment/Materials

camouflage clothing (several patterns)
camouflage makeup
shotgun or other hunting tools
pattern sheets
choke tubes
turkey decoy
various turkey calls
crow call
owl hooter
vest or coat
safety tape, strap or vest

References

The Wild Turkey and It's Management. O. H. Hewitt.

"Return of the Wild Turkey" film or video

Turkey Hunting and Safety Tips. Quaker Boy, Orchard Park, N.Y.

State hunter education materials

Popular hunting magazines and videos

Lesson Outline

Presentation	Application
I. Identification A. General description 1. Large, chicken like. bird a. Similar to domestic turkey generally 1) Relatively longer legs 2) Relatively more slender body b. Broadly fan-shape tail 1) Folded except in flight or displays 2) Tipped with lighter colors c. Wigs broad and rounded, 1) Primaries light with darker barring 2) Secondaries mottled brown 2. Contour (body) feathers a. Generally brownish to black b. Lighter barring c. Color and amount varies with subspecies B. Sexual dimorphism 1. Males larger a. Hens to about 12 to 16 pounds b. Toms to about 25 pounds 2. Hens duller and paler in color 3. Toms with spurs on lower legs a. Up to about 1 inches in length b. Short and conical in jakes c. Long, curved and sharp in adults 4. Hens normally not spurred a. Flat "buttons" at spur location 5. Toms with a beard a. Clump of hair-like feathers b. Up to about 10-12 inches in length c. Limited in size by wear d. Multiple beards not uncommon e. Up to 10 percent of hens bearded 6. Head color and adornments a. Color variable on toms 1) Very pale blue to brilliant red 2) Colors may change very quickly b. Color more or less grayish in hens c. Hens with hair like feathers and less bare skin on the head d. Toms with obvious head adornments 1) Wattles - fleshy lobes from throat or chin 2) Leader or snood - pencil-like throat appendage near upper edge of bill	**ASK** participants if they have ever seen wild or domestic turkeys. If they have, lead them to **DESCRIBE** the animals they have seen, and then **EXPAND** on their description as needed. If not, **PROVIDE** a mount illustration or photographs of wild turkeys as a starting point for identification. If participants are familiar with tame birds, **RELATE** the structure of the wild turkey to the domestic bird. **COMPARE** the structure of wild turkeys with other chicken-like game birds found in your area. **NOTE** that their wings are for explosive flights of relatively short range. **USE** feathers from the locally available species to assist in describing feather patterns and coloraion.3. Head more or lessbare **DISCUSS** the sexual differences in the birds, stressing the importance of being able to distinguish between the sexes where and when hunting is limited to only one sex or the other. If live birds are available, a field trip to **VIEW** them might be valuable. If not, consider using photographs or videos of turkeys to help the participants **DISTINGUISH** between hens and gobblers. **EMPHASIZE** the importance of avoiding white, blue, yellow, orange or red clothing (including handkerchiefs and sock tops) when hunting where other hunters may be in the area. Unless required otherwise by legal restrictions, complete camouflage is the safest combination for the turkey hunter who is hunting by calling birds. **USE** a mounted bird, videotape, or photographs of adult males during the breeding season to **DISCUSS** the various head adornments of gobblers. **CONTRAST** them with the relatively plain, somewhat "hairy" or lightly feathered head of the hen.

3) Caruncles - wart-like projections on upper part of forehead

7. Droppings
   a. Toms have straight or curved droppings
   b. Hens with spiral or globular droppings
   c. Excellent evidence when scouting

STRESS that being able to differentiate the sexes by droppings is a great aid when scouting for birds in any season.

C. Sub-specific differences
   1. Eastern wild turkey
      a. Eastern arid southeastern forests and woodlands
      b. Florida to Maine, West to eastern Texas and the Great Lakes States
      c. Toms' iridescent black with chocolate to chestnut barring
      d. Hens nearly black with lighter feather tips
   2. Florida wild turkey
      a. Limited to parts of Florida
      b. Much like Eastern in appearance
      c. Very limited barring on primary feathers
   3. Rio Grande wild turkey
      a. Patchy woodlands and shrub lands
         1) Mixed grasslands and woodlands
         2) Deserts and prairies with riparian woodlands
         3) Texas and Oklahoma south into Mexico
      b. Paler than Eastern or Osceola
         1) Hens appear dusty gray-brown
         2) Toms' iridescent black with brown barring
         3) Feather tips tan to chestnut
   4. Merriam's wild turkey
      a. Western mountain woodlands and wooded breaks
      b. Dakotas through Rockies south to Arizona and New Mexico
      c. Paler than Rio Grande
      d. Feather tips tan to off white or creamy

DISCUSS any subspecific differences your participants might encounter. **NOTE** the subspecies used in any videotapes or other visuals you may use in instruction and **DIFFERENTIATE** them from local birds to prevent misidentification in the field.

II. Behavioral characteristics
   A. Very social birds
      1. Usually group by age and/or sex
      2. Flocks roost and feed together
      3. Family groups of hens and young birds
      4. Bachelor groups of adult (toms) and sub-adult (jakes) males

If participants have observed turkeys, ask them to **DESCRIBE** the groups they saw at different times of the year. **NOTE** that all turkeys are social, but that toms or gobblers tend to be in smaller, bachelor groups for most of the year, while hens and young birds tend to form family flocks or larger groups that are stable outside the breeding season. **STRESS** that their social tendencies are used in most types of turkey hunting.

   B. Strong communication within groups
      1. Visual communication
      2. Vocal communication
         a. Wide variety of calls for various situations

DEMONSTRATE or have a local expert demonstrate each of these calls as they are described. **NOTE** that turkeys make a wide variety of calls.

b. Some differ only in tone or rhythm
c. Cluck
1) Like a chicken cluck
2) Variable in volume, nearly monotonic
3) Basic flock organization
4) Contented or unalarmed birds
d. Putt
1) Explosive "cluck" - often repetitive
2) Variable in volume, but hard and sharply defined
3) Alarm or alert call
e. Yelp
1) Higher pitched, multi-toned call
2) Longer and variable in tone
3) Female advertisement call
4) Coarse, raspy yelp
a) Jake calls
b) Gobbler assembly call
f. Purr
1) Warbled, rising string of clucks
2) General flock talk
3) Contented or unalarmed birds
g. Whine
1) Softly rising whistle-like tone
2) General flock or family group talk
3) Contented or mildly nervous birds (poults)
h. Kee-kee run
1) Extremely variable among individuals
2) Combination of whine and yelp
a) One or more repeated rising whistled whines
b) One or more yelps
3) Assembly call of scattered hens and young birds
i. Cackle
1) Rapid series of clucks
2) Rising then falling in pitch
3) Slowing in tempo at the end
4) Often heard when birds fly down
5) Commonly thought to be an "excited hen" call
j. Gobble
1) Loud; rattling series of notes
2) Territorial or advertisement call of toms
a) Challenge to rival males
b) Invitation to receptive hens
c) Shock gobble

3. Flocking and reproduction bring birds together
a. Gobblers join hens and young birds before breeding season
1) Late winter to early spring

CAUTION participants about using gobbler calls in the spring where other hunters may be in the vicinity!

2) Displaying and fighting common by early spring
3) Gobblers disperse to breeding territories
4) Receptive hens come to gobbling toms
5) Rival gobblers may come to gobbles

b. Nesting hens disperse to hatch young

c. Young form flocks with adult hens
1) Family flocks may merge
2) Mixed flocks of hens and young jakes

d. Older jakes and adult toms form small flocks

e. All dispersed flocks tend to reassemble
1) Dispersed mixed flocks almost desperate to reassemble
a) Kee-keerun and yelps
b) Demanding repetition of calls
c) Often run to other birds
d) Useful to hunter in fall hunting
2) Dispersed bachelor groups reassemble "casually"
a) Hoarsely raspy, infrequent yelps
b) Very limited calling
c) Very cautious reassembly
d) Very difficult hunting

If fall turkey hunting is permitted in your area, have a fall hunter **DESCRIBE** a hunt where a broken flock was hunted. If experience with successful calling of adult toms is available, **COMPARE** that experience to hunting mixed flocks.

C. Flocks tend to have habitual ranges
1. Have preferred roost trees and sites
2. Seasonal foods used in a predictable pattern
3. Escape cover and shelter used consistently
4. Daily habits can be patterned

Have a local wildlife biologist or expert turkey hunter **DISCUSS** how these patterns of daily and seasonal habitat use could be valuable to a hunter, and how their behavior can be used by the hunter to increase his or her chances for success.

D. Normally extremely wary
1. Both sight and hearing excellent
a. Noise or unusual sounds alert them
b. Calling mistakes can often be covered
c. Movement or unnatural colors alert them
d. Extremely difficult to stalk
2. Usually react instantly to danger
a. React by running, flying or hiding
b. Run about 20 miles per hour
c. Strong, fast flight
d. Young birds or surprised birds may hide
e. Seldom hesitate once they are alerted

EMPHASIZE the fact that stalking calling birds in many areas results in stalking hunters, disturbing birds and increasing both frustration and danger. **NOTE** the need for full camouflage and keeping still.

III. Habitat preferences and use

A. Habitat use varies with region
1. Adaptable bird, needing roost sites
2. Variety of habitat types used
a. Mature forest and woodland
b. Grassy openings used heavily by broods
c. Mast crops very important
d. Seeps, springs, riparian woods and swamp lands used
e. Arid shrub lands occupied by some

DISPLAY a map of turkey distribution and **ASK** participants what kinds of cover exist in the areas they occupy. **NOTE** that the birds are adapted to many cover and habitat types as long as they can find roosts and the other habitat components they need for survival.

subspecies

B. Nuts and berries of all types important foods
   1. Strong preferences for some type.
   2. Heavy use during seasonal availability
   3. Wide variety of foods taken

C. Grassy openings with forbs and insects important
   1. Preferred brood cover and foraging areas
   2. Nesting sites often near thee features
   3. High protein diet essential for early growth
   4. Gobblers prefer open areas for displaying

D. Adequate roosting sites important
   1. Adaptable to many types of roost sites
   2. Often only one o two birds per tree in a roost
   3. Often remain on the roost during foul weather
   4. Much vocalizing in roosting areas
      a. When flying up and immediately after
      b. When preparing to fly down
      c. When flying down and immediately after
   5. Preferred roost sites
      a. Protected from prevailing or current winds
      b. South or east facing slopes
      c. Often in a hollow, flat or basin
      d. Often at mid to upper levels of slopes
      e. Usually have some open cover under the roost

Illustrate or show pictures of likely sites for brood rearing, spring/summer foraging and nesting. If aerial photographs of local turkey habitat is available, have participants identify prime openings that might be used by the birds at that time of year.

EMPHASIZE the importance of roost sites and selection of those sites for the conditions being encountered. Ask participants why the birds might select east or south facing slopes in hollows or basins. **REINFORCE** the notion that turkeys like to be as comfortable as possible and they like morning sun.

IV. Spring gobbler hunting techniques

A. Preparation
   1. Full camouflage very important
      a. Clothing
         1) Pattern that fits the area (during the season
         2) Pattern that disrupts your outline
         3) No releaser colors on any clothing
         4) Face and hand camouflage
            a) Net and gloves
            b) Camouflage makeup
         5) Caution to eliminate flashes
            a) Glasses
            b) Rings or watches
            c) Firearm or archery gear

DISPLAY a variety of camouflage clothing patterns and colors and encourage the participants to **EXPLORE** which ones blend with local terrain and vegetation and hide the hunter most effectively. Have each participant or small) group **PICK** a pattern and **DISCUSS** why they did so. If time permits consider using the *Camouflage Game* (see fact sheet) as an exercise to test the effectiveness of the patterns.

   2. Learn to call turkeys
      a. Basic types of calls
         1) Box call
         2) Peg and slate
         3) Tube call
         4) Bellows (for gobbling)
         5) Diaphragm call

Have a set of demonstration calls available, and allow the participants to **PRACTICE** with those that can be used without sanitation concerns. Use parents, teen assistants or local experts to **DEMONSTRATE** and to **ASSIST** the participants in learning some basic calls and techniques. Ideally each participant should bring a personal diaphragm call to learn how to use it. Small-frame, multiple reed calls, like the Quaker Boy Pro-Triple*, are best for beginners. *(*Mention of this brand name does not imply endorsement of the product or censure of others not mentioned. It is provided as an example of one call that can be used effectively to teach young people the use of a diaphragm call. Larger frame calls or those with heavy latex reeds are very difficult for a beginner to master.)*

CAUTION potential turkey hunters not to spend too much time "working" local birds, since this can make them call shy and much harder to hunt.

b. Master the hen yelp first
1) Only call that is absolutely needed
2) Add clucks, purrs and whines as skill is developed
3) Learn calling strategies for your region
4) Sources of help
a) Instruction tapes
b) Local callers
c) Turkey farms
d) Listening to real birds

Take a field trip to a good turkey area in the early spring. Have participants **SEARCH FOR** and **RECORD** any turkey sign they find. Ask them to **INTERPRET** what they have located.

B. Locating Turkeys
1. Pre-season scouting
a. Searching for tracks or scratching
b. Searching for droppings likely areas
c. Listening for gobblers
1) Early morning and late evening best
2) May gobble almost any time
d. Looking for dusting areas

NOTE that some gobblers will gobble in response to almost any noise - birds singing, passing cars, car doors slamming - while others are quiet on the roost.

2. During season
a. Listen for toms at dawn and dusk
1) Calling birds
2) Create a shock gobble
a) Owl hoot
b) Crow call
c) Sharp noises
b. Prospect for toms with a hen yelp
c. Continue watching sign

C. The hunt

If an actual turkey hunt is not practical, the students can **PARTICIPATE** in a camera hunt as described in the *Camera Hunt* fact sheet.

1. "Set up" 100 yards or so from a gobbling tom
a. Sight selection
1) Tree or bush to your back
2) Facing the tom's expected direction
3) Relatively open cover
4) Ideally some cover that permits mounting the gun
b. Gun or bow set for minimum movement
2. Begin calling
a. Start with a soft slow yelp (tree yelp)
b. Call only as needed
1) Every 5 to 10 minutes
2) "Demand" calling in some situations
c. Listen for gobbler to fly down
1) May stop calling
2) May come in silently
3) Be prepared and patient
d. Wait at least 30-45 minutes before moving
3. With the tom in sight

a. Remain absolutely motionless
b. Check to be sure the turkey is legal.
c. Determine the best place to shoot
1) SAFE shot
2) Sure shot
3) Any other turkeys clear
d. Raise gun or bow to shooting position
1) When turkey cannot spot movement
2) Before the bird gets too close
e. Aim at the mid-neck region
f. Fire when the head is extended
4. After the shot
a. Be sure to remember safety
1) Muzzle control
2) Finger off the trigger
3) Move carefully
4) Be prepared for follow up shot if needed
b. Get to the bird quickly
1) Pin the bird down
2) Beware of spurs and wings
c. Fill out and attach your tag
d. Cover with bright tape or cloth to transport

V. Fall hunting techniques
A. Preparation
1. Select and acquire full camouflage
a. Suitable for the area being hunted
b. Suitable for the seasonal conditions
2. Learn kee-kee-run call
3. Practice using your sporting arm effectively
B. Scout the hunting area thoroughly
1. Locate feeding and loafing areas
2. Locate preferred foods
3. Search for sign indicating turkey activity
4. Gobbling and other calls seldom useful
C. Hunting mixed flocks
1. Locate a flock
2. Scatter the flock
a. Shooting in the air
b. Rushing the flock (safety first!)
c. Using a dog where legal
d. Object is to get them to fly
3. Pick a stand in the immediate area
4. Use the kee-kee run to call the flock back together
a. Answer the first bird that calls
b. If 10 to 15 minutes pass start the calling yourself
c. Watch for birds running or flying in
d. Pick a safe and sure shooting location
e. Shoot and follow up as with spring birds

CONDUCT a scouting field trip or a Camera Hunt for fall turkeys. In an area with mixed flocks and low hunting pressure, a camera hunt should be very successful. Young birds often nearly run into the caller if all goes well.

D. Hunting fall gobblers
1. Very challenging hunting
2. Try to scatter a flock
3. Find a good calling location
4. Wait 20 to 30 minutes or until a bird calls
5. Answer with one or two coarse, raspy yelps
6. Watch and wait, calling only as a response
7. Patience critical
8. Alertness critical
a. Expect birds to sneak back in
b. Expect extreme wariness

VI. Still hunting turkeys
A. Seldom the best method
1. Not recommended during spring seasons
a. May be dangerous in heavily hunted areas
b. May disrupt birds working you or others
2. Do not stalk a gobbling if other hunters around
a. Low probability of success
b. Interferes with other hunters
c. May intercept a bird working others
B. Must see birds before being seen
1. Very difficult to approach flock without being seen
2. Stalking turkey haunts
3. Use terrain as cover
4. Keep eyes and ears active
a. Use binoculars
b. Listen for flock conversation or scratching
c. Use extreme caution in feeding areas
C. Resist shooting beyond reasonable range
D. Be prepared to switch techniques
1. If it flock is scattered
2. If suitable calls are heard

Strongly **DISCOURAGE** still hunting as a turkey hunting method during the spring season. It is suitable for persons who love the challenge in the fall, but the still hunter must be aware of other possible hunters in the same area. **EXTREME CAUTION IS ESSENTIAL!**

VII. Stand hunting turkeys
A. Patience and planning required
1. Must locate intensely used areas
2. Commit to long, still waiting
B. Locating a site between food and roosts
1. Use topography or cover types to locate
2. Combine with a still hunting partner
3. Feeders used in some areas, illegal in others
C. Rifle (where legal) increases effective range
1. Select for accuracy
2. Select for minimum damage
3. Select for sure killing power
4. Low to middle power .22 centerfires

D. Resist shooting beyond effective range

VIII. Turkey management
- A. Habitat management
  - 1. Maintaining and creating meadows
    - a. Important for early spring food
    - b. Important to provide insects for brood food
  - 2. Preservation of traditional roost sites
  - 3. Diverse forest growth stages
    - a. Old growth important for mast crop
    - b. Middle-age forests used as nest sites
    - c. Denser regeneration
      - 1) Escape cover
      - 2) Brood loafing cover
  - 4. Riparian (drainage) areas
    - a. Provide snow-free areas in winter
    - b. First green-up in spring
    - c. Water source
  - 5. Hunter cooperation in research
    - a. Crops provide food data
    - b. Leg provides age and sex· data
- B. Population Management
  - 1. Can sustain 25% annual harvest
  - 2. Fall hunts
    - a. Harvest prior to high mortality in winter
    - b. Additional hunting opportunity
  - 3. Spring gobbler-only hunts
    - a. No real population impacts
    - b. Seasons planned after breeding
      - 1) Hens bred once have fertile eggs
      - 2) Hens usually on eggs when hunts scheduled
      - 3) Gobb1ers mate with multiple hens
    - c. Gobblers breeding life span about 10 years

INVITE a wildlife biologist to present a discussion of turkey management in your state.

Summary Activity

Conduct a turkey hunt, scouting trip, or camera hunt for turkeys in an area with reasonable chances for success. After the hunt allow each member to share what they learned about turkeys and turkey hunting from their experience.

APPENDIX A

4-H Hunting Curriculum
Website Materials

Available to Hunting Curriculum Leaders at:
http://www.4-hshootingsports.org/index.php

Waterfowl Hunting

1. **Waterfowl identification**
2. **Making a waterfowl wing board**
3. **Hunting boats**

Shooting and Hunting Aids

1. **Determining Eye Dominance**
2. **Sighting in a Rifle**
3. **Sighting Exercise**
4. **Sighting in a Bow**
5. **Patterning a Shotgun**
6. **Optical tools for teaching**
7. **Building observational skills**
8. **Observational games**
9. **Parallax Exercise**
10. **Broadhead demonstration**

Species to Hunt

1. **Hunting Mule Deer**
2. **Pronghorn Hunting**
3. **Elk Hunting**
4. **Quail Hunting**
5. **Ruffed Grouse Hunting**
6. **Woodcock Hunting**
7. **Raccoon Hunting**

Teaching Tools

1. **Food Webs**
2. **Field Notes**
3. **Antihunting Organizations**
4. **Hunter Ethics Word Game**

Making Things

1. **Creating a Photo Exhibit**
2. **Making tree climbing blocks**
3. **Making meat sacks.**

Miscellaneous

1. **Boning Venison**