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Preface

The Wildlife Project Idea Book is a 15 program video tape encyclopedia of ideas and activities that can be implemented by citizen conservationists to benefit waterfowl and other wildlife populations. This manual, developed to accompany the video package, provides additional information to assist individuals or groups in completing the projects identified.

The Wildlife Project Idea Book manual is a product of the North American Waterfowl Management Plan, Prairie Pothole Joint Venture and the NDSU Extension Service.

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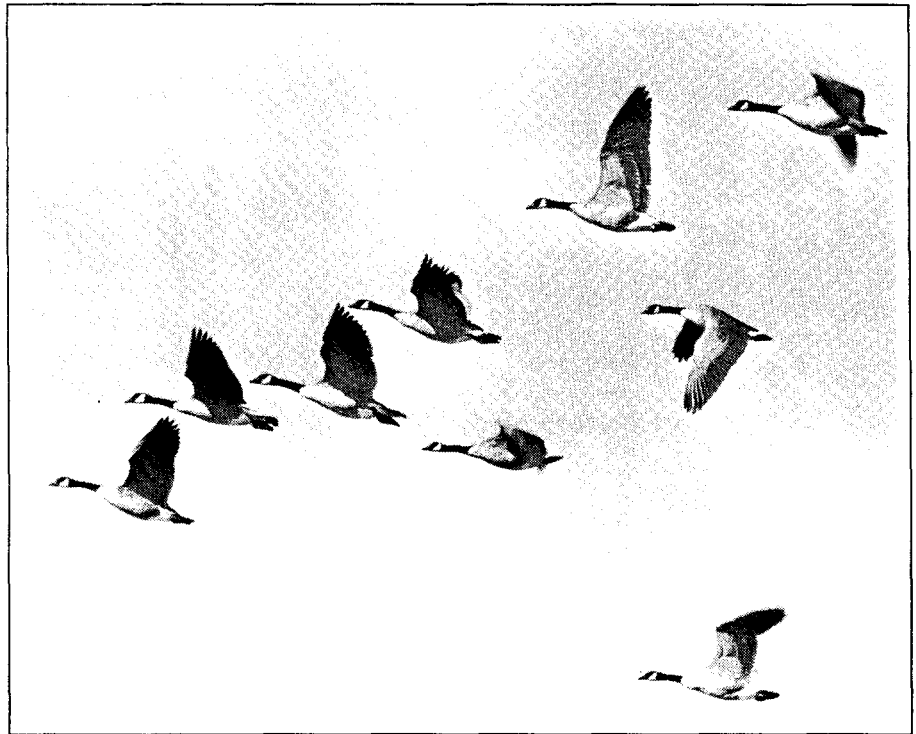
THE WILDLIFE PROJECT IDEA BOOK

Wildlife management is a blending of science and art aimed at achieving sound human goals for wildlife resources by working with habitats, wildlife populations and people. The key word in this definition of wildlife management is people. People alone have the ability to set goals and then manipulate the environment and its resources in attaining these goals for better or for worse.

People manage wildlife by managing wildlife habitat. The responsibility for this management has been delegated to governmental agencies such as the US Fish and Wildlife Service and state game and fish departments. In order to comply with this legally mandated responsibility, wildlife agencies employ persons with a variety of scientific training and vocational skills. Often, however, these agencies lack not only the number of personnel but also the funding necessary to conduct this enormous conservation task.

To assist them in accomplishing their wildlife conservation mission, wildlife agencies must continually draw on the time, talent, and resources, of private organizations, industrial interests, businesses, and the individual citizen. All these groups in turn call on this country's other wildlife managers, our farmers, ranchers, and landowners, to function effectively. Together these groups form an important wildlife conservation partnership.

The importance and urgency of this partnership became readily evident in 1986. On May 14 of that year, the signing of the North American Waterfowl Management Plan committed the governments of the United States and Canada to work for the continued survival of an abundant population of ducks, geese, and swans while benefiting all other wildlife, agriculture and water development needs. Essential to the success of this plan is the commitment and total involvement of the citizens of both nations.



The continued survival of abundant populations of ducks, geese and swans depends on citizen involvement.

The costs of putting the North American Plan into effect are staggering. The costs far exceed levels currently budgeted for waterfowl and wildlife management by both countries, and large budget increases are not in the foreseeable future.

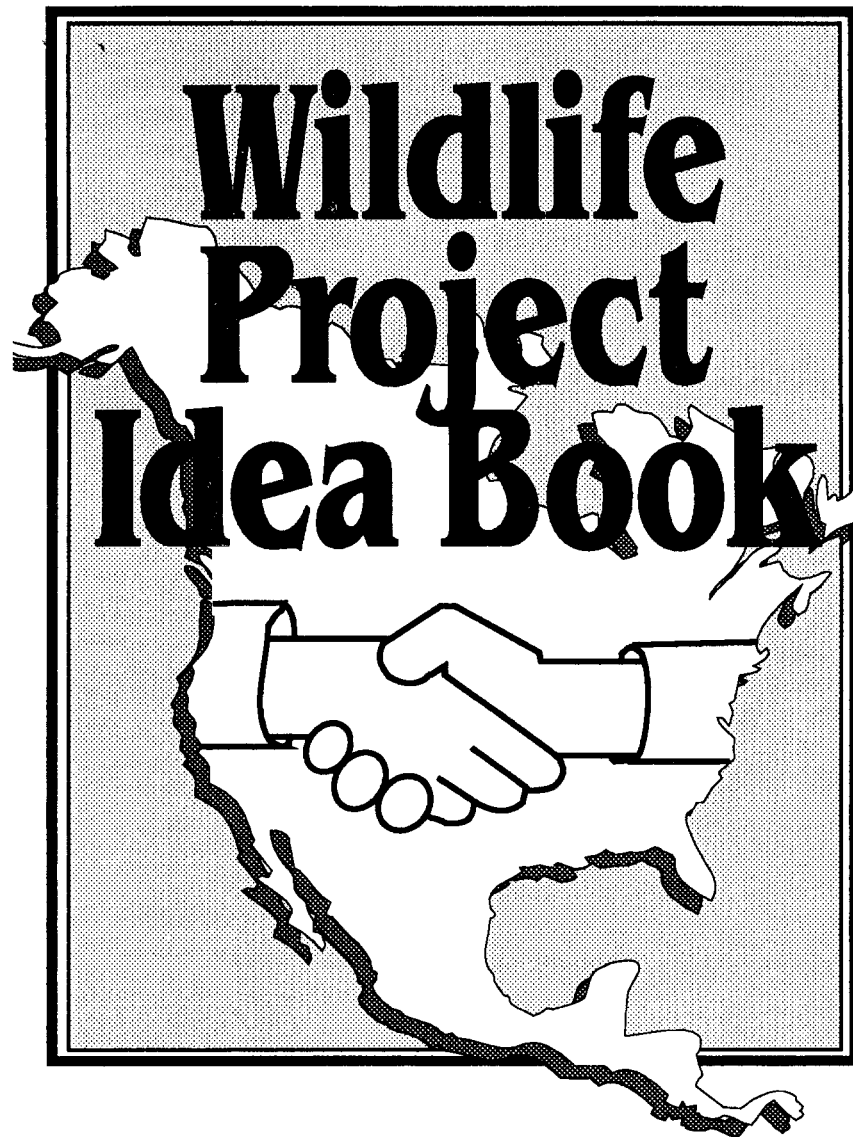
Therefore a public and private partnership motivated to make significant contributions to this effort, either through direct funding of or voluntary cooperative efforts in completing wildlife conservation projects, is essential.

All too often windows of opportunity to manage wildlife open and close before resource agencies have time to react. These windows need not close if groups or individuals concerned about wildlife conservation can be mobilized.

When asked why they haven't become more involved in conservation affairs, the overwhelming response is, "What can we do?" Because of time constraints and other commitments, many concerned individuals and groups are frequently unable to identify, let

alone develop, fund and carry out, wildlife enhancement activities in their communities. If such activities do occur, closer scrutiny reveals that it usually is the same handful of people that are responsible.

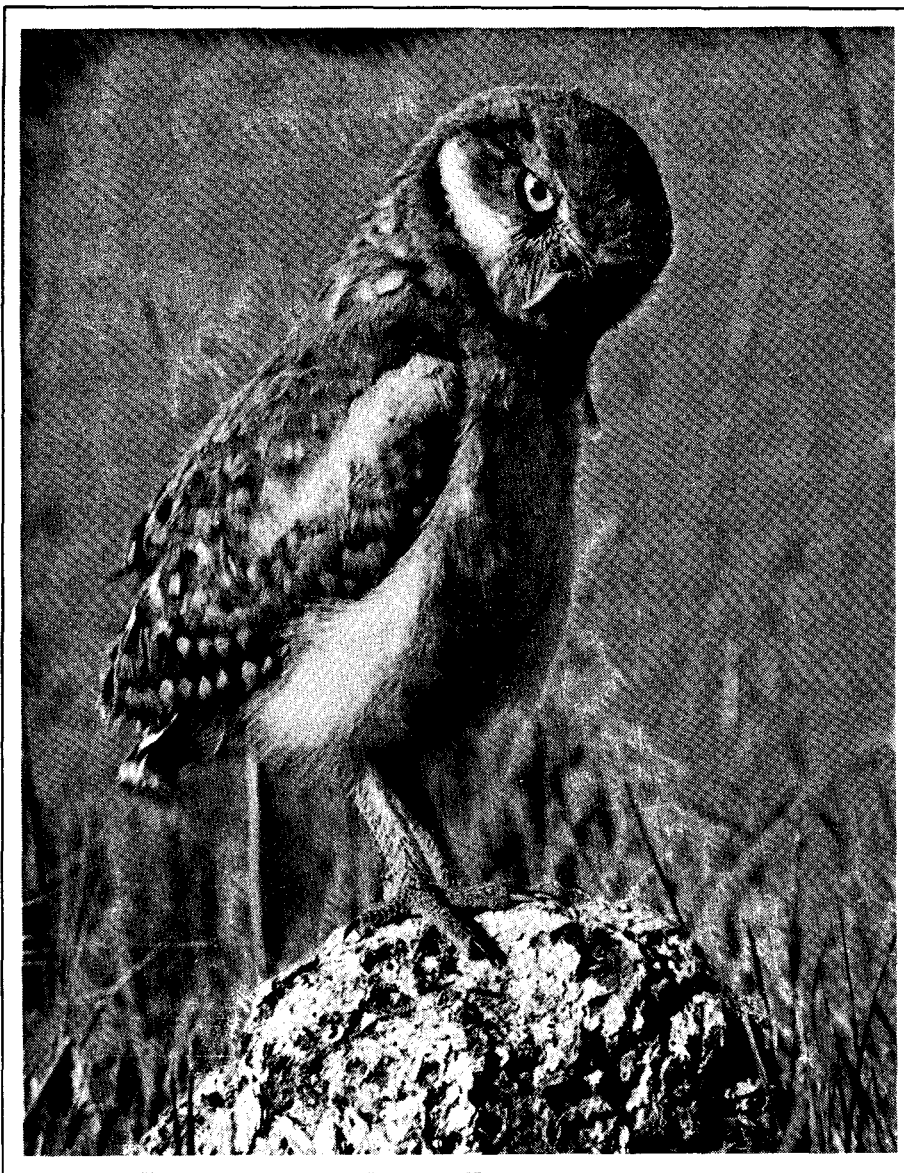
The Wildlife Idea Book is an attempt to solve this dilemma. It offers individuals and groups wildlife conservation project ideas that can be turned into reality. In addition to presenting an idea, the book demonstrates how an activity can be undertaken, its costs and time obligations, and more important, the results that can be anticipated.



Section One:

The Conservation Organization

Chapter 1: Organizing a Citizens Conservation Organization



Wildlife is the one common thread binding citizen conservation organizations.

Citizens all across the country who share similar interests and ideas about wildlife conservation have continually banded together in common purpose. Premier examples of this are the National Wildlife Federation, Ducks Unlimited, The Nature Conservancy, and The National Rifle Association. On the local level we find hundreds of rod and gun, fishing, shooting, wildlife and sportsman clubs. Although each has different memberships and different levels of activity, the one common thread binding them together is wildlife. And together, unified and cooperating, they make a difference.

Organizing a club

The success of a citizen conservation or sportsmen club may rest on how well it has been organized. Therefore, it is important each and every club adopt a constitution and by-laws that contain certain provisions basic to the group. The constitution should include provisions for the following: 1) name, 2) purpose and objectives, 3) membership, 4) officers, 5) board of directors, 6) club meetings, 7) dues and fiscal year, 8) amendments and bylaws.

Name: What's In a name?

The name of the club should be selected to give identity within a community, county or state. For example, the North Dakota Wildlife Federation, the Cass County Wildlife Club, the Fargo Area Sportsmen, the Cormorant Lake Sportsmen.

Purpose and Goals

Why the club was formed should be spelled out. For example, The purpose and goals of the organization are:

- 1) Create, foster, and promote the ideas of true sportsmanship, and to aid the restoration, propagation, protection and conservation of all wildlife resources.
- 2) To cooperate with all agencies, groups, associations, departments, commissions, local, state and federal similarly dedicated to the welfare of wildlife resources.

Other objectives might address public conservation education, supporting conservation legislation, and landowner sportsman relationships. No matter what the purpose and goals of the club, the only way to establish a firm direction is to write them down.

Membership

The constitution should state who can become a member and how.

Some eligibility considerations might include that potential members be of legal age, good moral character and a citizen of the city, county or state.

Members could be approved by a vote of the board or the membership. The entity giving approval power could also expel members for good cause.

An additional provision in the constitution could be developed to cover family members. Family members whose parents or guardians are members in good standing could become non-voting, non-dues paying associate members.

Officers

A description of the number and title of officers should be found in the constitution. For example the officers shall be president, first vice president, second vice president, secretary-treasurer, and board of directors. The term of the officers and method of election should also be specified.

Board of Directors

The composition and powers of the board of directors should be described in the constitution.

For example, the board of directors shall consist of elected officers. They shall serve as the executive body of the club, and their decision shall be final, subject only to review of the membership. The board shall also manage the business of the club to include distribution of funds and payment of bills.

Meeting of the Club

The constitution should state when and how often the club will meet. For example, the club will hold its regular meetings on the second Tuesday of the month. The presence of _____ directors and _____ additional members in good standing shall constitute a quorum at regular membership meetings.

Dues, fiscal year, and finance

All matters concerning fiscal arrangements and operations should also be included in the constitution. The amount of the dues, date payable, and fiscal year should be established. Most fiscal years begin on July 1 and end on June 30.

The secretary-treasurer should be required to make a full accounting of the club's finances as directed by the board. The club's books and records should be open for inspection by the membership and all disbursements of the club should be countersigned by at least two officers.

Amendments and By-laws

The constitution should contain a provision for adding amendments.

For example: The constitution may be amended by a two thirds majority vote of members present at any regular meeting.

The by-laws in effect contain provisions that govern day to day club operation. Often, newly formed clubs write too many by-laws and thus find many unenforceable. Select by-laws which are basic to the club operation and add others as the club grows. Some topics that should be considered when writing by-laws include disciplinary procedures, appointment and operation of committees. Club members conduct a process for developing and selecting wildlife projects, club communications and publicity (newsletters, news releases, mass mailings).

Epilogue

The North American sportsman has traditionally been the backbone of the conservation effort. The uniting of hunters, fishermen, and other outdoor enthusiasts into citizen conservation clubs will increase the effectiveness of the individual and provide a mechanism for promoting the highest and best use of our wildlife resources.

Chapter 2: Fundraising and Fiscal Management

A wildlife club in Casselton raises over \$30,000 annually to conduct club functions and projects by sponsoring a wild game feed. A Fargo sportsmen club raises \$8,000 annually used to develop pheasant habitat in southeastern North Dakota through its annual pheasant benefit. Several wildlife and sportsmen clubs in southeastern North Dakota host an annual fishing tournament at Tewaukon National Wildlife Refuge to raise money for refuge projects. A sportsmen's club from Carrington got involved in charitable gaming and raised enough in two years to purchase a 480-acre wildlife management area.

What made them successful? Besides having dedicated volunteers, they also have popular projects identified as recipients of the funds, and they have a budget.

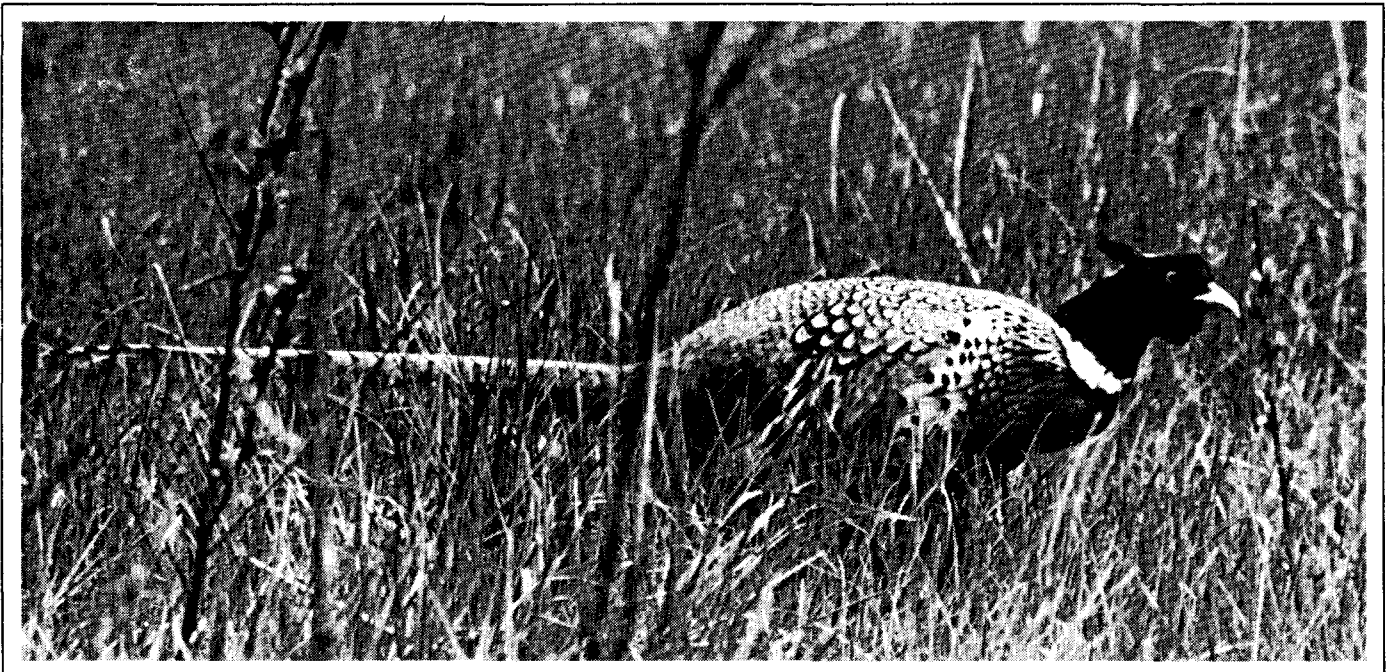
Budgeting

Simply put, a budget is a plan of action. It is a blueprint of an organization's activities for the coming months and or years expressed in dollars and cents. There is nothing mystical about it.

Successful budgeting usually involves four elements. It must be well thought out and approved by the organization membership. It must reflect reality in terms of the clubs ability to raise money and conduct activities.

Second, successful budgets are broken down into segments. This allows for ease in accounting.

Third, budget or financial statements must be prepared for membership review on a timely basis. this allows for incourse comparisons with reality and adjustments if needed. And last, if adjustments are warranted, the organization's governing body must be prepared to take action.



Pheasants are one species that have benefited greatly by funds raised at local events.

A typical budgeting process involves good planning. The first step in the process is to develop a wish list. Many clubs that use a committee system to carry out club activities ask the committee chairperson to submit work priorities and funding requests to a special budget committee. This committee, appointed by the president with representation of the governing board, then sorts through the requests and establishes priorities.

During the next step, price tags are attached to the activities. Just to be safe, be sure to add a 10 percent "fudge" factor. Once you have developed a list of expected costs, it is now time to look at income over the budget period. Look at all sources of income. Generally income can be broken into two categories, dues-related, and non-dues income.

The next step is to compare projected income and expenses. Hopefully, it either balances or leaves a rainy day surplus. If not, the next logical step is to reduce expenditures or increase income. If you need to raise more income, it may be time to explore additional fundraising opportunities. Figure 1 provides an example of a simple budget sheet.

Figure 1.

CASS COUNTY WILDLIFE CLUB	
Projected Budget	
1989	
PROJECTED FUNDS AVAILABLE BALANCE	\$8,000.00
Projected Income	
Membership Dues	\$ 2,000.00
Fund Raiser	25,000.00
Trap Range	2,000.00
Pheasants	2,500.00
Misc. Meeting Income	<u>300.00</u>
	\$31,800.00
Projected Expense	
Legislative	\$ 2,500.00
Pheasant Release	5,000.00
Trap Range	1,700.00
Habitat	5,250.00
Rifle Range	1,500.00
Youth Program	1,000.00
Office Supplies & Labor	1,200.00
Fund Raiser 1989	14,000.00
Fund Raiser 1990	5,000.00
Meeting Expenses	<u>1,800.00</u>
Total Projected Expenses	<u>\$38,950.00</u>
PROJECTED FUNDS AVAILABLE BALANCE	<u>\$ 850.00</u>

Fundraising

Once a budget has been prepared and settled on, it is now time to turn attention to fundraising. Fundraising, like budgeting, need not be particularly difficult. Granted, it does demand careful consideration, planning, execution, and the support of the membership.

Fundraising basically falls into four categories. These are dues, donations, events or activities, and grants. Each affords certain advantages and disadvantages.

Dues

Dues come from the members. If the dues are too high, membership might suffer. If the dues are too low, the club might be affected. For the most part dues are not used to cover club projects, but rather are used to assist in day to day operations.

Donations

Donations involve soliciting funds from sponsors. This usually involves a direct face-to-face request. When soliciting such donations, bear in mind the following rules. Always solicit for people, not things. For example, if you're looking for money to plant a food plot, make the appeal from the standpoint of benefitting wildlife, thus creating additional recreational opportunities for sportsmen and young hunters. Additional recreational opportunities can translate into increased community income, thus benefitting everyone.

Always ask for a specific amount and don't be afraid to ask big. When asking, never assume the potential donor knows about your organization. Always be prepared to sell your organization to a donor. Accentuate the positive.

Tell the donor what the donation will enable your group to do, not what will happen if you can't raise the money. Also, let potential donors know where the money donated went. And finally, conduct a well-planned periodic program of solicitation that involves several funding sources. The worst thing you could do is get locked into one source.

Fundraisers

Fundraising activities and events appear to be the most popular among organizations. These events not only raise large amounts of money but also function as community social events. Planning for such events will be addressed in greater detail later in the program.

Obtaining grants, either from public or private foundations, is a very tedious

undertaking. In some cases, foundations require complete audits be included in grant requests. For more information on the types of grants available, visit your local library and ask for a copy of the Foundation Center Sourcebook Profile.

Planning fundraising

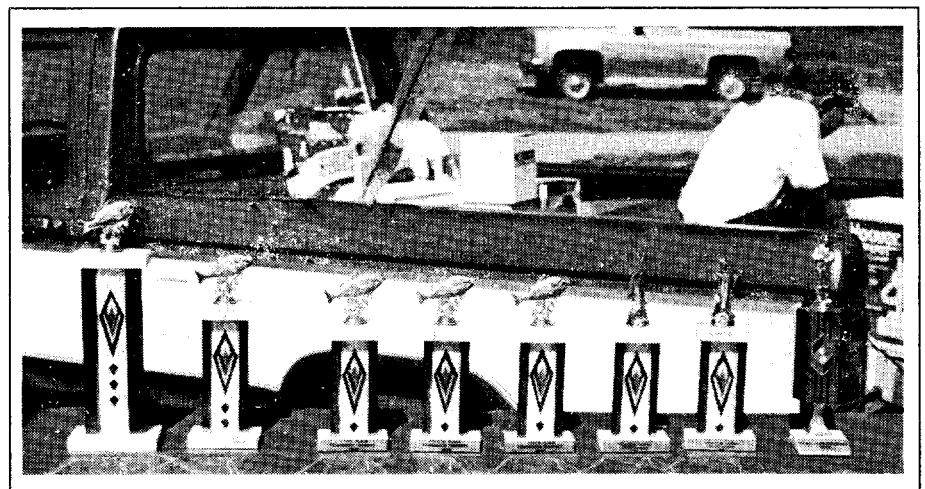
Success comes to those who plan. The first step in the planning process is to identify what the money will be used for. A clearly defined purpose helps you determine how much you need to raise. Make sure the membership understands and agrees with the purpose. If you haven't sold the membership you might as well forget it.

The next step is to establish a committee of volunteers to carry out the planning. It is this committee's responsibility to check legalities. Many states and communities regulate fundraising activities. A quick check with the states or city attorney should answer any questions.

Now select the type of activity. Be sure its appropriate for your organization. (Not many sportsmen clubs hold bake sales.) Next set up appropriate committees to help administer the event and recruit additional volunteers. Be sure to appoint a publicity chairperson. All too often, publicity is overlooked. Lack of publicity for an otherwise well planned fundraising event will surely cause it to fall short of the planner's expectations.

The following is a checklist for planning fundraising activities:

- 1) Set a target date
- 2) Develop a timetable
- 3) Arrange advertising
- 4) Secure a site
- 5) Arrange supplies/raffle/auction items
- 6) Recheck laws/obtain permits
- 7) Prepare invitations/raffle tickets, etc.
- 8) Arrange for food/sale of tickets
- 9) Set up the day before
- 10) Early arrival of volunteers
- 11) Supervise the event
- 12) Arrange for cleanup
- 13) Celebrate and send appropriate thank yous



Some clubs coincide fundraising events with regular seasonal activities. A local lake provides an excellent opportunity to fish for more than walleye.

- 14) Evaluate and prepare a written report for successors

Since fundraising activities are also club projects they must also be budgeted for. Be certain to include costs for printing, telephone, postage, permits, refreshments, supplies, advertising and door prizes.

When planning the event you should be certain to establish event prices, which will not only cover costs, but yield the desired surplus.

The type of event scheduled is only limited by the imagination of the group and its willingness to work. In general the more novel and social the event is, the greater the participation and the more money raised for worthwhile wildlife conservation activities.

Chapter 3 Working with the Legislative Process

The legislative process represents the finest opportunity for citizen conservationists to express their will not only in the enactment of legislation, but also in the development of policy and the administration of programs. Since it is the citizen who elects the lawmaker, and if the lawmaker wishes to remain in office, they tend to express the will of the people they represent.

As a consequence, all responsible lawmakers welcome and even solicit citizen input. This situation allows interested individuals and groups to have a major role in the legislative decision-making process.

Persons interested in wildlife conservation have a responsibility and duty to become involved in the legislative process. If they don't take it upon themselves to express their views in the legislative marketplace, they only have themselves to blame when wildlife resources are lost.

In the early 1900s, the first conservationists realized this basic tenet. Their early involvement in the legislative process fostered the enactment of state and federal wildlife laws. As the conservation movement gathered steam, major pieces of legislation were enacted which today still yield significant benefits to wildlife conservation efforts. Some of these include the Migratory Bird Conservation Act of 1929 and the Federal Aid in Wildlife Restoration Program of 1937.

This would have not happened if concerned conservationists had not banded together to communicate their viewpoints and lobby for the passage of legislation supporting the same.

Communicating with legislators and government officials

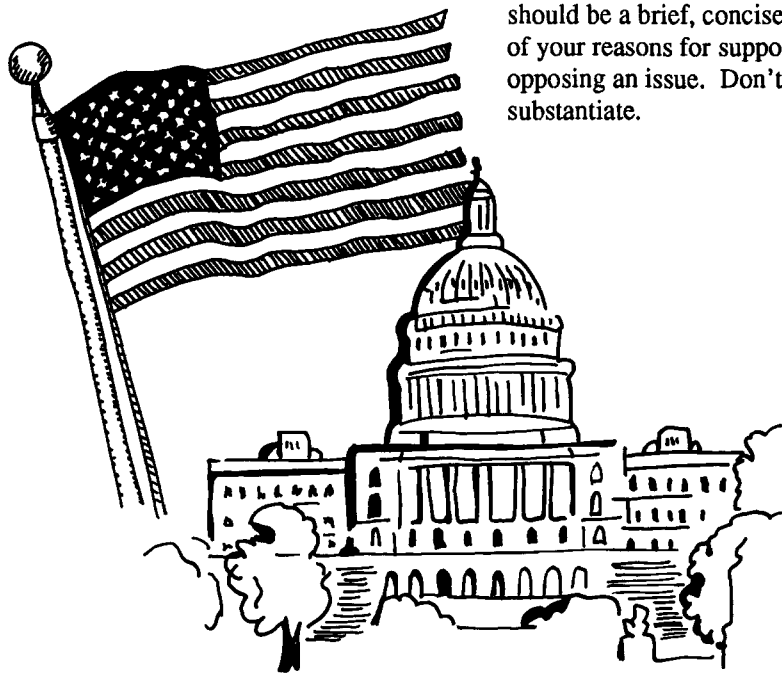
Legislators and government officials cannot read your mind or be privy to your every conversation. Therefore if you have an opinion or personal experience on a wildlife issue, you must tell them.

Probably the easiest way to accomplish this is through intelligent, well thought out letters, phone calls and personal contacts that clearly present your opinion. Since these officials often deal with a wide variety of issues, such contacts from people with first-hand experience often do make the deciding difference.

Communication guidelines for letters

Following are some guidelines for communicating with legislators and other government officials. Use of these guidelines in preparing letters will result in more efficient use of the time you spend writing them.

- 1) Write only on one subject. Identify the issue by referring to a bill number, program name or policy. This information should be included at the beginning of the letter.
- 2) Write readable letters. If your writing isn't what it used be, please type. Always include your address and phone number. Use appropriate stationery. Postcards can be used to relate brief messages.
- 3) Organize your thoughts. Your letter should be a brief, concise statement of your reasons for supporting or opposing an issue. Don't demand, substantiate.



- 4) Explain what you want done and why. Try to limit the letter to one page.
- 5) Personalize your letter. If you are writing to several officials on the same issue, don't send them a memo. Write to each separately, using your own words.
- 6) Be courteous. Never threaten or brag about your influence. Inform.
- 7) Just like in telling a good joke, timing is everything. Write shortly before or at the time an issue is being discussed or decision being made.
- 8) Close with a thanks and an expression of continued interest.
- 9) Follow up with a note of appreciation. A short thank you might help facilitate future contacts.

How to address letters

Most elected officials (mayors, governors, legislators) are addressed as:

The Honorable (_____)

Address

City, State, Zip

Dear Mayor, Senator, (_____)

Where to send letters

Addresses of local and state officials can be found by calling local or state offices. Federal addresses are as follows:

The President of the United States
The White House
Washington D.C. 20500

U.S. Senators
Russell Office Building
Washington D. C. 20510

U. S. Representatives
House Office Building
Washington D. C. 20515

Using the telephone and personal contacts to communicate

The ease of contacting officials by telephone makes this medium one of the most efficient communication tools.

Many officials either have local or toll free numbers where messages can be left.

If you happen to be visiting the state or federal capitol and want to see a public official, be sure to set up an appointment in advance. If they cannot meet with you, staff people will usually be available if your schedule is flexible.

Lobbying

Lobbying is nothing more than a refined process of conducting personal contacts. Anyone concerned about an issue can lobby. Often organizations appoint or hire individuals to lobby for them and their interests.

Who should lobby? The answer is simple. Anyone and everyone who feels strongly about an issue. If you don't want to get left out in the legislative process, lobbying today is a must.

Regardless of what you may have heard, lobbying is nothing more than trying to persuade elected officials throughout the decisionmaking process. It is an honorable activity and it doesn't have to involve lavish and expensive treatment of those you wish to influence.

All you need to remember to be an effective lobbyist are three things. You need a few basic facts, a firm belief in your cause, and common sense.

Probably the most important of these is the facts. A lobbyist needs to know the subject. A lobbyist with a creditable track record of providing accurate, unbiased information is worth his or her weight in gold. Such lobbyists may actually be sought out by decisionmakers.

A good lobbyist spends time on getting to know the decisionmakers. What are their interests, their backgrounds, and positions they hold? Finally, a good lobbyist knows the system, how it works and where the power rests. All this information should be provided to or obtained by the one doing the lobbying.

Sometimes having the facts alone is not enough. A conviction or dedication to a cause translates into a tenacity. A

true believer is the volunteer who is greeted not only by name but by, "Oh yes, let's see now. You're with the wildlife people." When your greeted like that, your battle is half won.

Lastly, common sense is essential. The minimum principles you need to know are: be brief, be clear, be accurate, be persuasive, be timely, be persistent, and be grateful. These principles apply whether you're lobbying by phone, letter or in person.

In face-to-face meetings or phone calls, as in letter writing, be brief. Make appointments for meetings, be on time, state your case, and leave. Try to cover your topic in five minutes, 10 at the most. If you get hit with a question you can't answer, admit it and provide the answers later. Don't bluff.

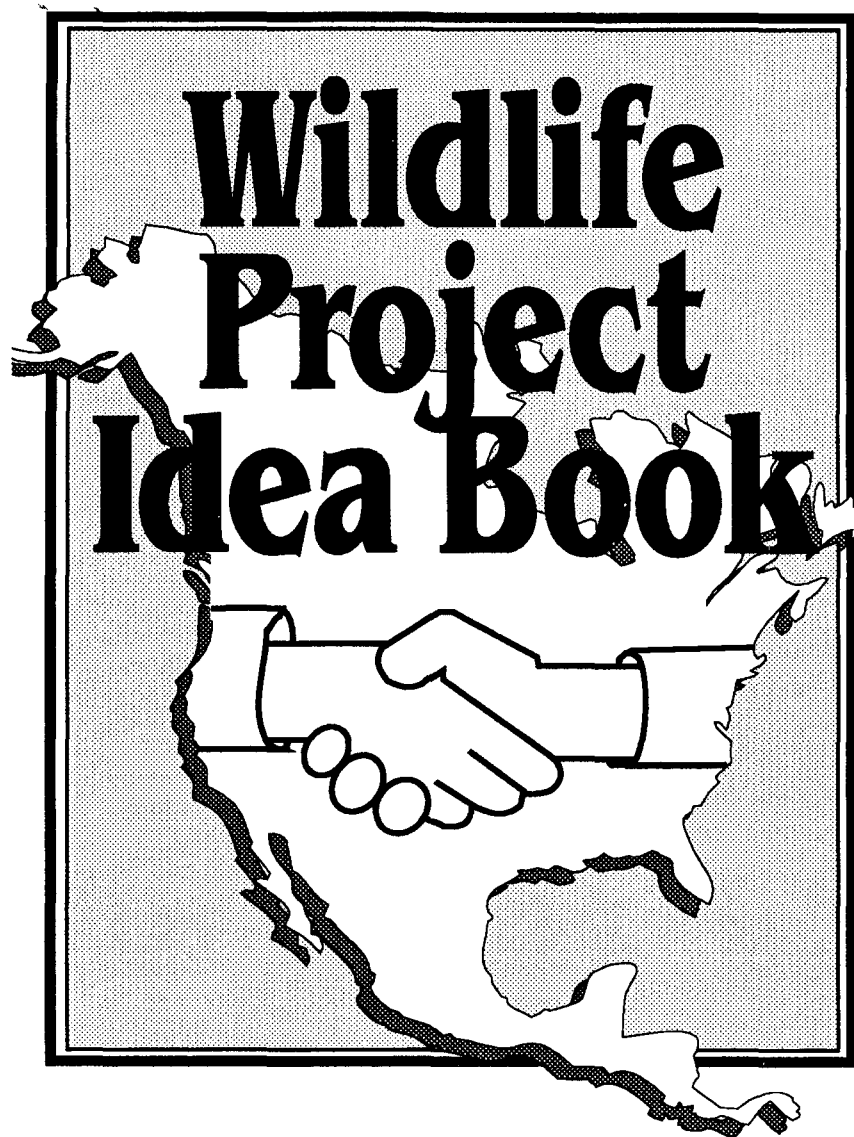
When leaving, hand your host a brief written summary of your position. The summary should state exactly what action you want taken.

Again, as with any contact with decisionmakers, if you have achieved the support sought, be sure to let the decisionmaker know that you appreciated it. A short thank you note may really score for your cause.

No matter what the result of your efforts, always report back to your organization. Keeping them informed is essential to your lobbying efforts. You may need to call on the group to write letters or make other contacts with decisionmakers in support of or opposition to an issue. Providing them with feedback will make this task easier for them and more effective in the final result.

Conclusion

Everyone has a right to the legislative process. The successes of past wildlife conservation efforts resulted entirely from the abilities of those who enjoy and value wildlife to effectively sell their views in the political marketplace. However, the battle is not yet won. To assure wildlife's place in tomorrow's world, concerned citizens must be ready to take up the challenge and participate in the legislative process.



Section Two:

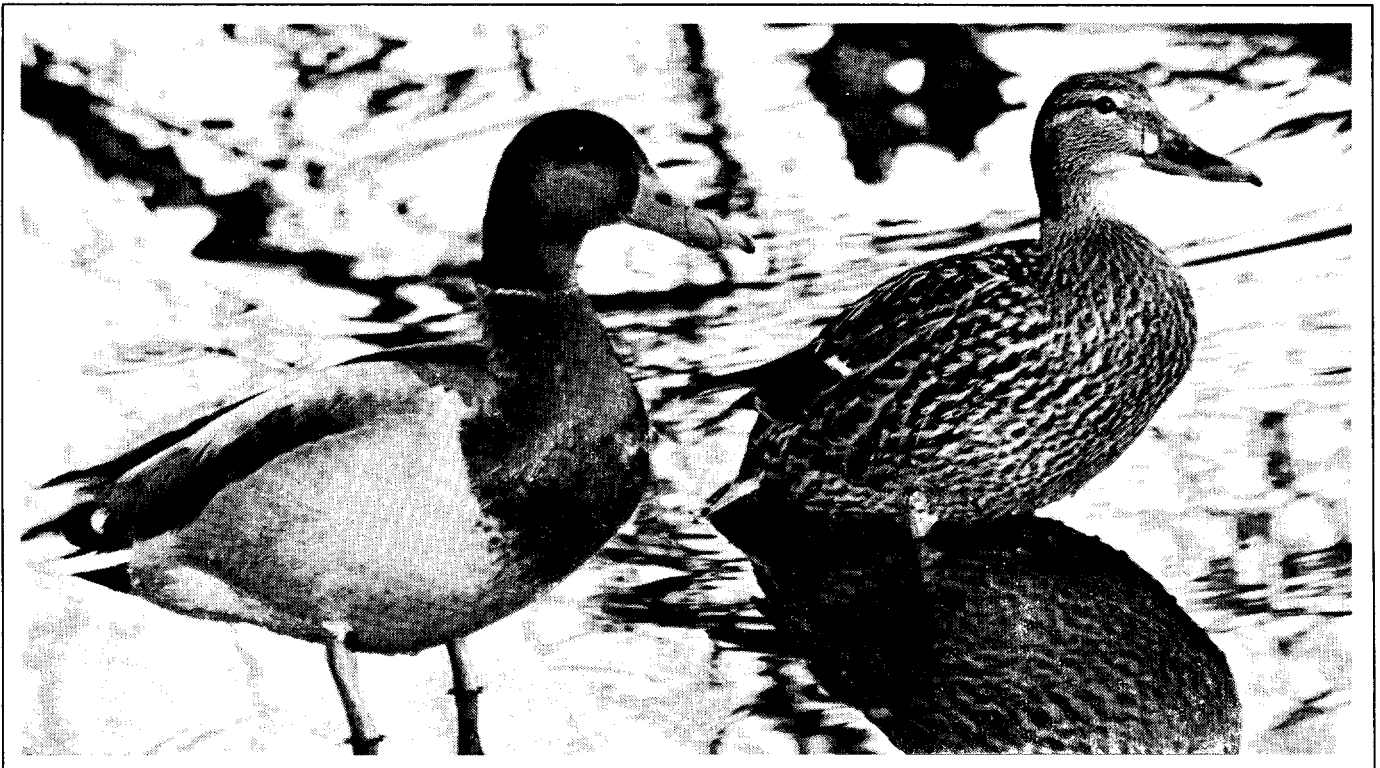
Nest Sites for Geese and Waterfowl

Section Two: Nest Sites for Geese and Waterfowl

Over the years a number of home-made nest sites for Canada geese and mallards have been developed and used throughout the U.S. and Canada. The most successful of these have a number of things in common. They must be attractive to nesting geese, economical to build, and easy to install and maintain. In addition, they must provide a nesting site secure from predation, flooding and other factors which may destroy the eggs.

Objectives

The primary objective of a nesting basket project is to increase mallard production by inducing them to nest in a more secure site, thus reducing nest losses. In 1967, trials of basket nests on prairie marshes in east central North Dakota showed exceptionally high use (69 percent) and nesting success (89 percent) by mallards. Nesting basket projects need not be carried out only by state and federal wildlife agencies; it is a project for conservation organizations, youth groups, devoted individuals, public spirited industries, and others. The use of nesting baskets is environmentally acceptable since the structures are removable and do not permanently alter the landscape or marsh.



Mallards will readily use homemade nest sites.

Chapter 4: Two Elevated Nesting Structures for Canada Geese and Waterfowl

Two types of elevated nesting structures that have been successfully used are wire basket structures and fiberglass structures. Both are of similar shape and design. Both types are accepted equally well by mallards, and Canada geese also will nest in them.

Wire Basket Structure

The wire basket structure consists of two parts: the basket and the support pipe. The nest basket is 1/2-inch galvanized mesh cone (hardware cloth), 12 inches deep with a 26-inch diameter open top. It is wired to a frame of welded, 1/4-inch diameter steel rods which in turn are welded to a 24-inch length of pipe of a diameter that will fit snugly into a support pipe.

Materials Needed

- 1 7- or 8-foot length of 1 1/2-inch I.D. pipe
- 1 2-foot length of 1-inch I.D. pipe
- 1 11-foot length of 1/4-inch hot rolled steel rod
- 1 36-inch x 36-inch piece of 1/2-inch hardware cloth
- 1 3/8-inch x 1-inch N.C. capscrew

Construction

The wire cone is cut from 1/2-inch hardware cloth, 36 inches wide. The cloth is first cut into 36-inch squares, and then the 18-inch square unused portion is cut out (Figure 1). The cloth is then formed into a cone and is tied in

this position with soft wire. The basket frame is constructed from a 24-inch section of 1-inch I.D. pipe and four 1/4-inch rods are welded to the pipe and then bent out to accommodate the basket frame rim as shown in Figure 2. An additional 82-inch length of steel rod is used to form the rim of the basket frame. The wire cone is inserted into the basket frame and the corners of the wire cone are bent down over the rim. The cone is fastened in place with soft wire.

The inside diameter of the basket frame pipe shown is 1 inch but can be changed to match the available material used for the nest support pipe. This pipe can fit either inside or outside the nest support pipe. If it is fitted outside the nest support pipe, two holes should be drilled opposite each other about 3 inches from the top and 1/4-inch or larger steel rod inserted to prevent the nest support pipe from punching through the bottom of the wire cone. The nest structure support may be any metal

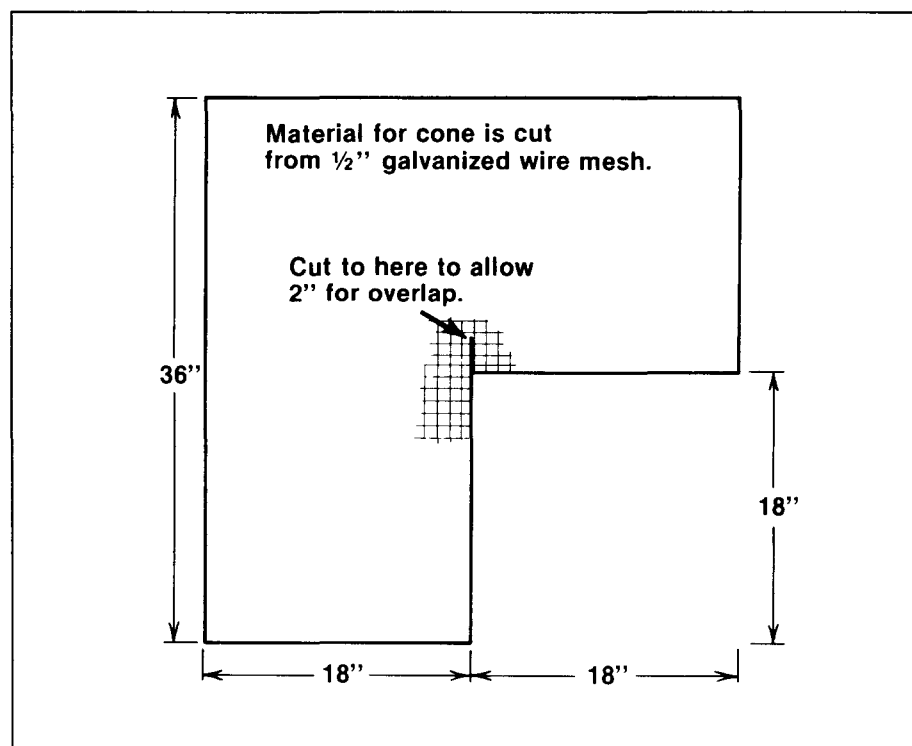


Figure 1. Wire basket pattern.

material available that is rigid enough to support the nest basket and attaching assembly. A smooth, round, non-corrosive pipe is preferred as it is harder for predators to climb.

A threaded hole for a setscrew should be tapped about 3 inches from the top of the support pipe. When tightened, this setscrew will give stability to the basket and permit raising or lowering it as water levels change from year to year. A 7- to 8-foot support pipe usually is satisfactory. The pipe length, however, will depend on the firmness of the marsh bottom and water depth (Figure 3).

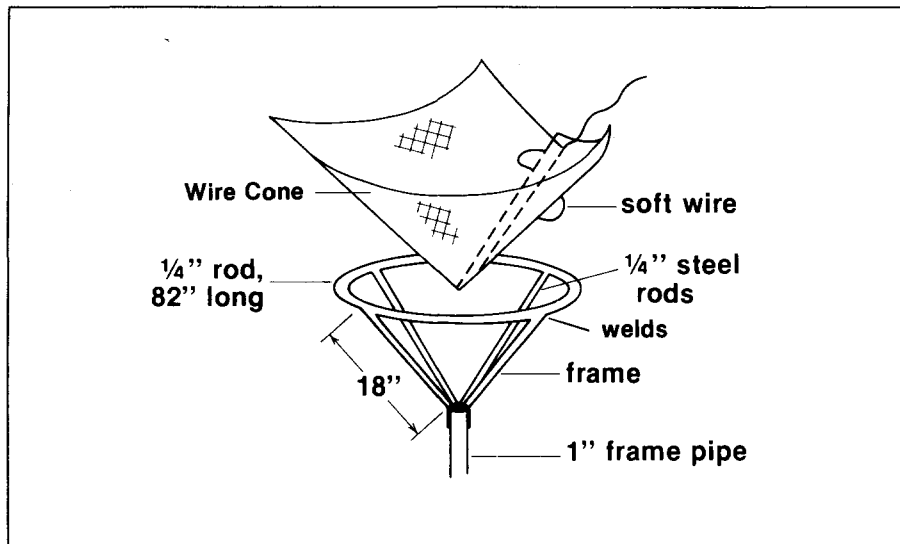


Figure 2. Wire basket assembly.

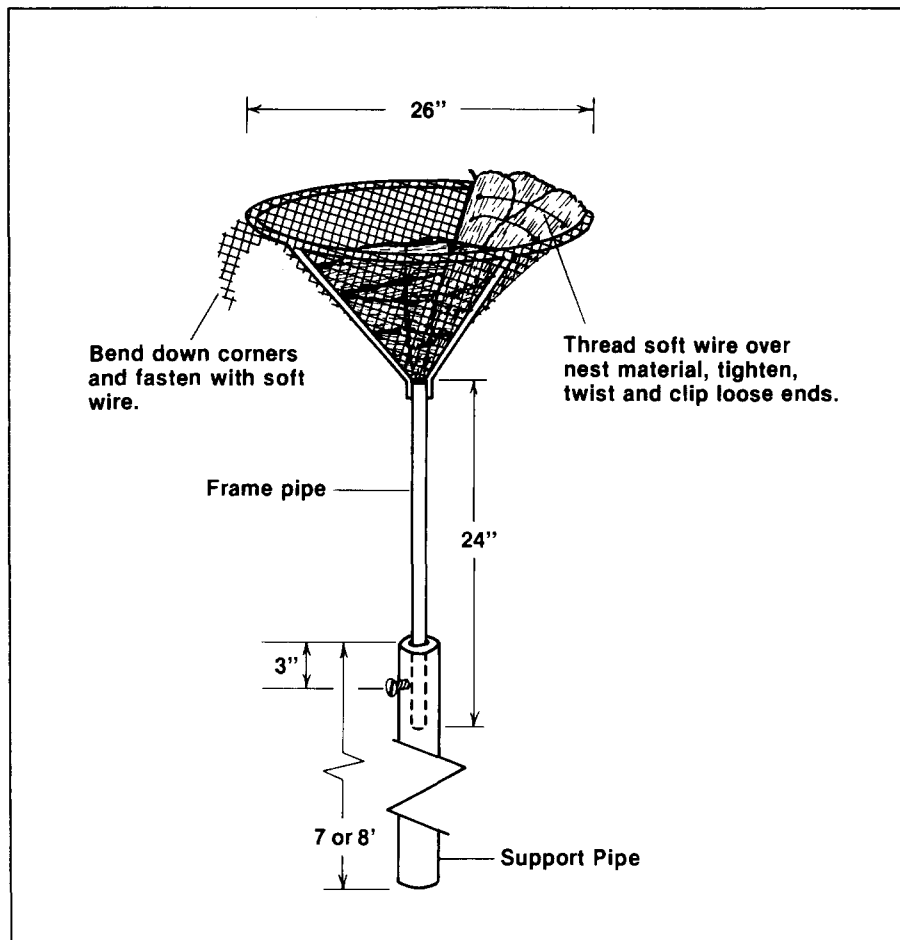


Figure 3. Wire basket structure.

Fiberglass Basket Structure

The fiberglass basket structure consists of a fiberglass basket cone; a floor flange, a 2-foot length of pipe and 7- or 8-foot length of supporting pipe. Fiberglass basket cones are available from the following sources:

Hanson Manufacturing, Inc.
P.O. Box 536
Turtle Lake, ND 58575-0536

Kenco Plastics Co., Inc.
P.O. Box 39
Necedah, Wisc. 54646

Pleasure Products Manufacturing
2461 16th Avenue South
Moorhead, MN 56560

Raven Industries, Inc.
Plastics Division
Box 1007
Sioux Falls, SD 57101

Dakota Waterfowl Nesting Structure, Inc.
P.O. Box 251
Jamestown, ND 58402
(701) 252-0927

The interior of the cone should have a roughened surface to enable the ducklings to climb to the top and leave the structure. One way to roughen this surface is to apply a mixture of small shavings and woodchips with the last coating of fiberglass.

An enlarged version of the basket structure has been used by giant Canada geese and mallards. This jumbo-sized structure has a basket diameter of 36 inches and it is supported by a 2-inch pipe.

In localities where both giant Canada geese and mallards are found, it may be advisable to put out the larger nesting structures which are recommended for geese. Mallards will also nest on these larger structures.

It is very likely that any of several types of basket-like structures would be acceptable to mallards. For this reason, there is much room for innovation in constructing nesting structures from excess or surplus materials, thereby reducing the costs.

Materials Needed (Mallard basket)

- 1 29-inch diameter x 11-inch deep fiberglass basket
- 1 7- or 8-foot length of 1 1/2-inch I.D. pipe
- 1 2-foot length of 1-inch I.D. pipe which is threaded to screw into the floor flange (0.85/ft)
- 1-inch floor flange
- 1 3/8-inch x 1-inch N.C. capscrew

Construction

The supporting 2-foot piece of pipe is attached with an ordinary floor flange. This is done by drilling four holes in the flat base of the cone to match those in the flange and then bolting the flange in place with small bolts and washers of appropriate size. One end of the 2-foot length of pipe must be threaded so it can be screwed

into the flange. The size of the flange depends on the pipe available. A satisfactory combination is a 1-inch floor flange into which is screwed on to a 2-foot length of 1-inch I.D. pipe. The 1-inch I.D. pipe telescopes into a 1 1/2-inch I.D. support pipe which is driven into the marsh bottom. A 5/16-inch hole is drilled 2 inches from the top end of the 1 1/2-inch I.D. support pipe and is threaded with a 3/8-inch N.C. tap and fitted with a 3/8-inch x 1-inch N.C. capscrew, as in the wire basket structure. Four 3- to 3 1/2-inch diameter holes are drilled into the sides of the fiberglass baskets prior to their installation. This is done to permit wiring of the nest material in place and also to enable ducklings to escape if the level of nest material becomes too low, preventing the young birds from leaving the nest structure. These four holes are spaced evenly around the basket, the upper edge of the holes being 5 inches below the basket rim. In addition, one to four 1/2- to 1-inch diameter holes are drilled near the bottom of the cone to allow drainage (Figure 4).

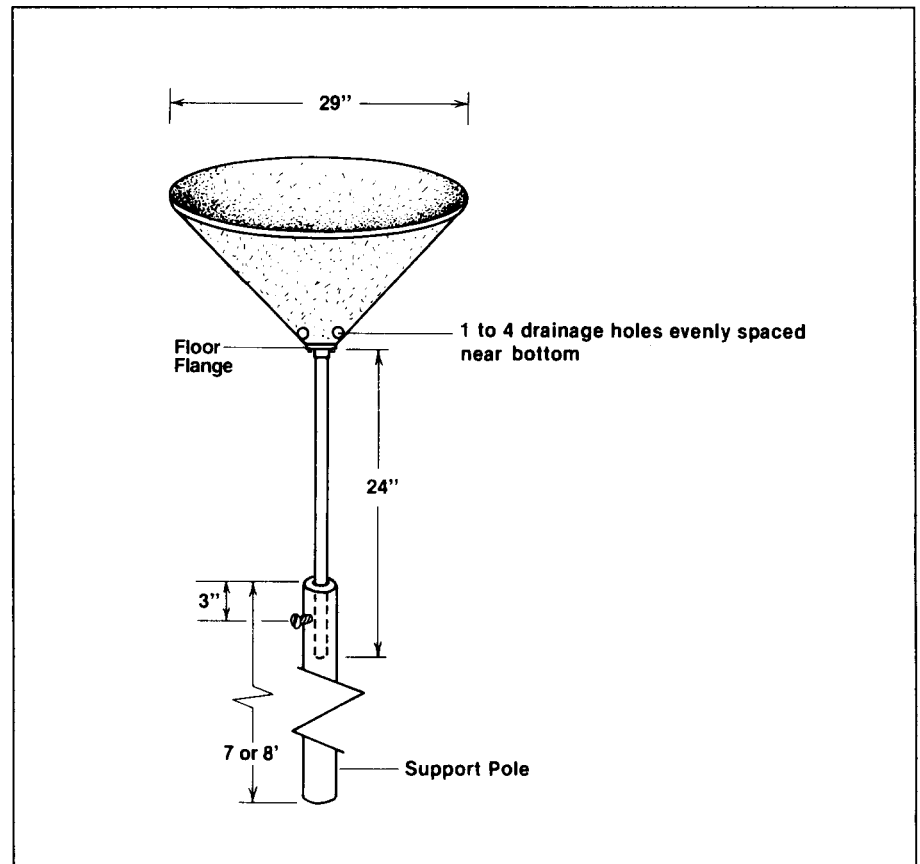


Figure 4. Fiberglass basket and support assembly.

Materials needed (Goose Basket)

- Fiberglass tub: One 32- to 36-inch diameter, with 8-inch side wall and 2-inch drop bottom from side wall with 818o18 sidewall for stacking-purposes and 5 x 7-inch escape opening. In earth tone tint and made of 1/8-inch fiberglass laminated of 70% polyester resin with U.V. stabilizer and 30% glass content.
- Steel disc: One 20- to 24-inch steel farm implement disc or suitable substitute
- Wood: One 20- to 24-inch circle of 3/4-inch exterior grade plywood.
- Pipe: One 1-foot length of 3 1/2-inch I.D. (3 1/2-inch O.D.) pipe
- Bolts: One 4 1/2-inch or 5-inch long 3/16-inch bolt with nuts and flat washers and four 3/16-inch eyebolts of appropriate length with flat washers and nuts.
- Bale: One-half bale of flax straw

Construction

Structure support pipe can be purchased either new or used from local scrap dealers. Tubs can be obtained from sources identified previously or other manufacturers.

Four holes are burned through the steel disc with an acetylene torch and four matching holes are drilled through the bottom of the fiberglass tub and the plywood circle. The 1-foot length of 3 1/2-inch inside diameter pipe is welded to the disc. These components are then assembled and bolted together with four 3/16-inch eyebolts, using washers as necessary (Figure 5).

Matching holes are drilled in the 1-foot length of pipe and at the top of the 9-foot support pipe. A 1/2-inch diameter drain hole must be burned in the support pipe. This hole should be about 18 inches down from the matching hole. This drain hole will prevent water from remaining in the support pipe over winter. Past experience has shown that water confined within undrained support pipes may expand enough, upon freezing, to break the weld between the disc and the 1-foot length of pipe.

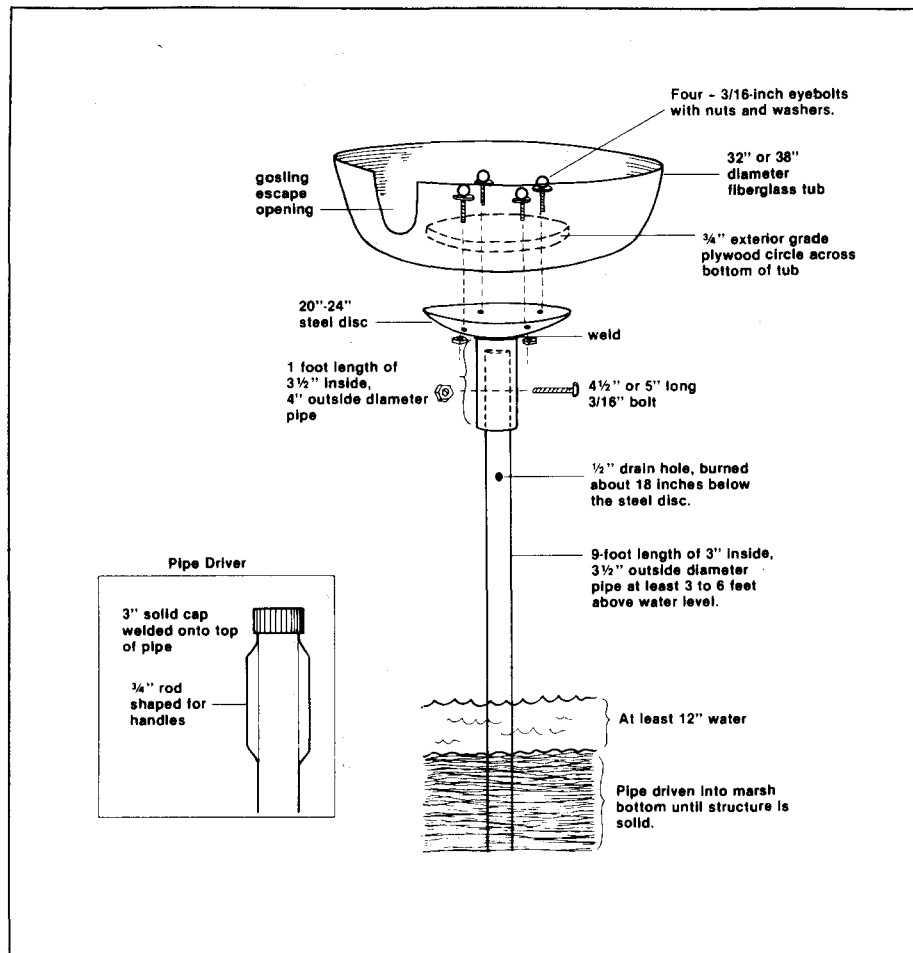


Figure 5. Construction of the structure and pipe driver is relatively simple although welding equipment is required.

The 9-foot length of 3-inch inside diameter support pipe is driven into the marsh bottom at a selected location. The tub assembly with nesting material installed can then be set in place on the support pipe. A 3/16-inch bolt is inserted in the previously drilled holes in the two pipes and the nut is tightened.

Nest Material

After the basket and frame are assembled, the inside must be lined with nesting material. Flax straw is the best nesting material since it holds together well and resists being blown from the structure by wind. The flax straw should be soft and fluffy with the fine fibers clinging together, providing a texture resembling cotton or wool. Coarse, unbroken stems of flax straw should not be used. The coarse stems can be softened by running them through a combine straw chopper a second time. If such equipment isn't available, the straw can be softened manually by kneading it repeatedly by hand until the desired consistency is obtained. Native hay, small grain straw or marsh vegetation can also be used for nesting material but they are less



Figure 6. Flax straw is the best nesting material since it holds together well and resists being blown from the structure by wind.

desirable than flax straw. Alfalfa hay crumbles too easily and is quickly blown away, so it should never be used as nesting material (Figure 6).

The nest material is installed by packing loose straw or hay into the

lower half of the basket. Above this is placed a circle of straw or hay which extends slightly above the level of the rim of the basket. This doughnut shaped arrangement of nest-ing material is secured in place on four sides of the basket with light wire (Figure 7). The wires are threaded from the outside into the hardware cloth in the side of the basket, up through the nest material and over the rim of the basket. These wires should not cross the center cavity where the eggs will be deposited. The center cavity should be about 4 inches deep. If necessary, ad-ditional loose nest material should be pressed into the center to provide this depth (Figure 8).

For fiberglass baskets, wires are threaded from each of the four escape holes into and up through the edge of the doughnut shaped circle of nesting material and over the rim of the basket. The wires are then pulled together, twisted, and the ends clipped off.

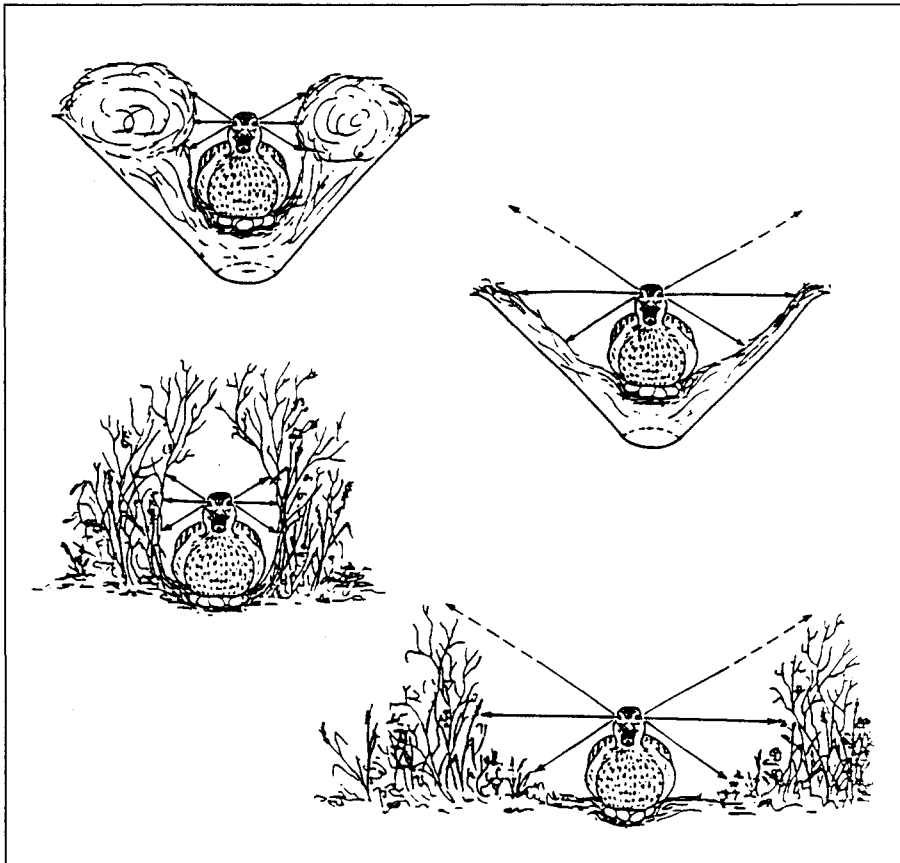


Figure 8. Properly installed nest material provides cover conditions during year 1 (top left) that are comparable with acceptable natural nest sites (bottom left). During year 2, or when nest material is installed improperly (top right), cover conditions equate to unacceptable natural sites (bottom right).

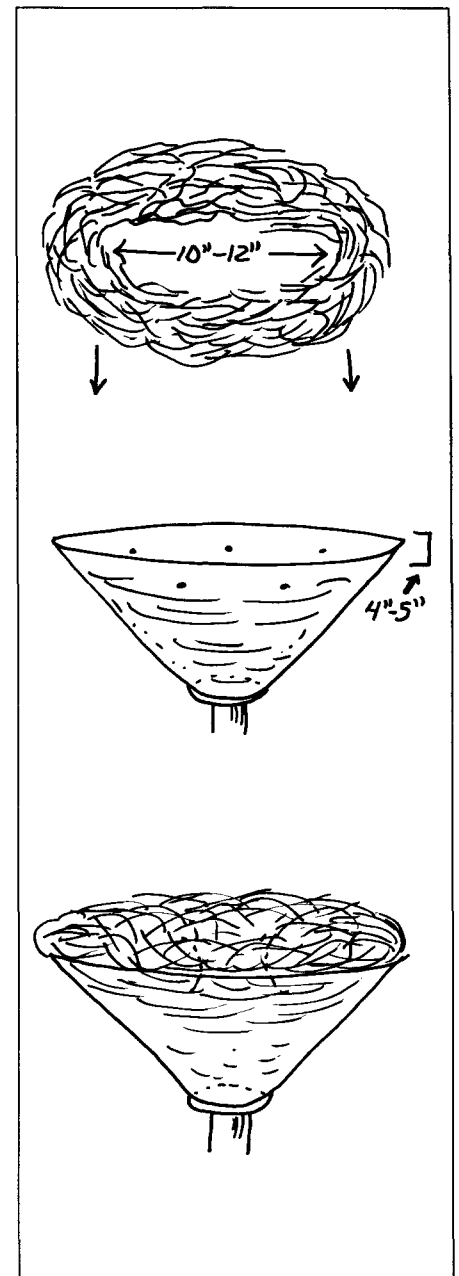


Figure 7. Recommended method for installing nest material. The "donut" or wreath provides lateral cover and prevents the loose nest material from blowing out.

Placement (Wires and Fiberglass Structures)

It has been speculated that a reason why mallards take to the elevated structures so readily is that from the air the circular structures may resemble a muskrat house or hummock in the marsh. Open water at the edge of cattails, bulrushes or other emergent cover, or small patches of open water in stands by such cover provide good placement sites. The nearby emergent marsh plants will help protect the structures from ice, wind and water action (Figure 9).

The support pipe should be driven into at least 1 foot of solid earth in the marsh bottom. Place the structures where they will not be exposed to excessive ice and wave action during the spring breakup. Late fall or early winter is the best time to drive the support pipes into the marsh bottom. After the ice is thick enough to support a person, it is relatively easy to pick up suitable locations and drive the pipe. An ordinary steel post driver is satisfactory for installing the pipe after a hole has been made in the ice. At this time, the marsh bottom will be unfrozen, and it will be easier to determine whether the pipe is firmly anchored so it will stay in place. If the ice is thick, a power driven ice auger of the kind used by winter fishermen can simplify the task. Some

augers have a special attachment for the blade which enables it to cut into the solid earth of a marsh bottom. The nest structure need not be attached at the time the support pipe is driven, but it is desirable to do this before the ice breaks up in the spring. Support pipes may also be driven in during other seasons by standing in the water or working from a boat.

When in place, the bottom of the basket should be at least 30 inches above the water level, but heights of 36 to 48 inches above water are recommended. Ordinarily, water depths of from 1 to 3 feet are satisfactory for installing the structures. The possibility of changing water levels should be considered and structures should not be placed in situations where the level is likely to rise to less than 18 inches from the base of the basket. It is recommended that structures be placed on ponds that hold water at least through mid-summer. Ice, wind, or wave action may cause some structures to tilt or fall after the first year. This fault may be corrected by moving the baskets to sites which are more protected or have firmer bottoms, or by driving the support pipes deeper.

A rule of thumb is to situate the structures as far from shore as possible, staying within adjacent emergent cover types and range of water depths. Another rule of thumb is to avoid placing large numbers of structures in a marsh. A single structure may be sufficient for a small pond or pothole. However, four to six may be placed in a marsh 25 acres in size or larger by spacing them as far apart as possible. If these structures are used, more can then be added.

Maintenance (Wire and Fiberglass Structures)

It is very important to properly install and maintain the structures to prevent predation by raccoons. A raccoon will climb a rusty support pipe or one that is not smooth. The pipe should be maintained in an upright position, for if it starts to lean, a raccoon may be able to climb into the basket. Nesting baskets should be inspected and serviced annually, preferably before April 1. Fresh nesting material should be installed annually and all retaining wires checked and replaced as needed. (Figure 10). While flax straw is the best nesting material, it has to be replaced annually. The basket life will be extended if the assembly is removed

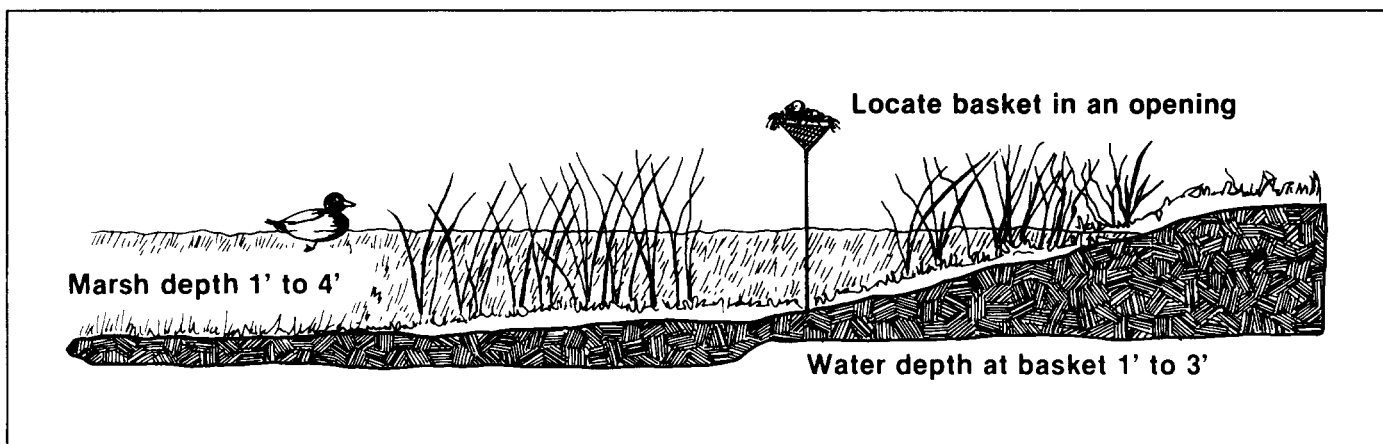


Figure 9. Open water at the edge of cattails, bulrushes or other emergent cover, or small patches of open water in stands of such cover provided good placement sites.

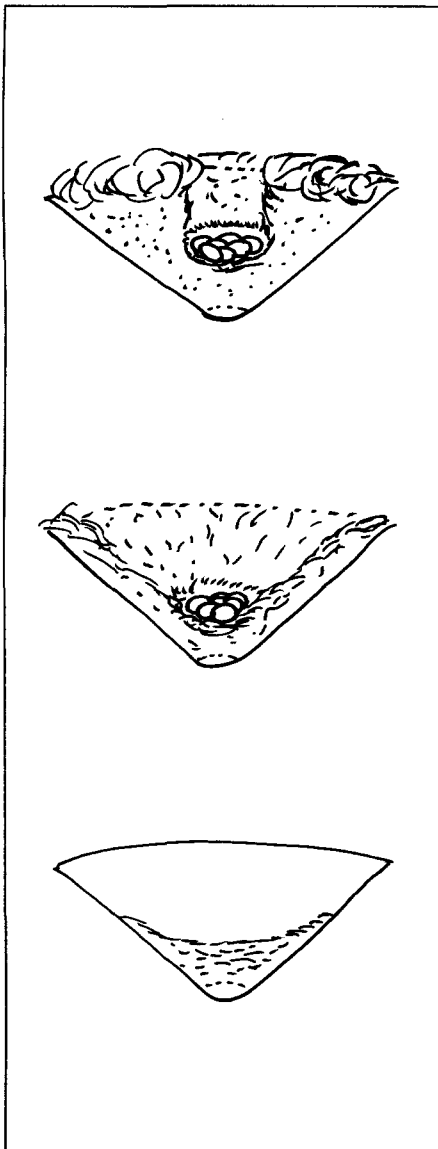


Figure 10. Properly installed nest material provides good lateral cover during year 1 (top), but cover conditions deteriorate severely by year 2 (center). We suggest that cover conditions in year 2 (or when nest material is improperly installed) are inadequate to attract new hens. Structure use by geese virtually destroys cover (bottom).

from the support pipe after each nesting season and is repaired and serviced prior to being replaced again before the beginning of the next nesting season.

Structures that consistently receive no use may be moved to new locations.

Both wire and fiberglass baskets will stand in place and otherwise hold up in usable conditions for many years. Many have stayed in place for 12 to 15 years.

When installing or servicing baskets in winter, the nest material can be secured in place in a shop or warm indoor situation. Then the completed basket assemblies are taken to the field and mounted on support pipes which are already in place. This procedure may involve removing the baskets, servicing them, and returning them to the field, but in periods of very cold weather it may be worth the added time and effort.

When servicing the basket during the winter by driving on ice, avoid leaving trails that lead directly to the basket. Vehicle trails through emergent cover make excellent predator lanes. If using a vehicle, it is better to enter the pond from the shore opposite the basket.

Hawks and owls may occasionally perch on or nest in these elevated nesting structures. Usually the incidence of this type of use is quite low and is not great cause for concern.

Conclusion

Nest structures are no substitute for good waterfowl habitat (Figure 11). Wetland complexes with adjacent tall, dense, undisturbed blocks of nesting cover are still essential to maintaining a diverse waterfowl population. Many waterfowl species have not demonstrated the adaptability in the use of homemade nest sites. Thus their survival still hinges on the availability of many kinds of waterfowl habitat.



Figure 11. Nest structures are no substitute for good waterfowl habitat.

Chapter 5: Flax Bales and Culverts for Giant Canada Geese and Waterfowl

Large Round Bales For Goose and Waterfowl Nesting

One of the more recent and practical types of homemade nest sites for Canada geese is the large round bale. During the past few years, many bales have been placed for goose nesting through-out the Prairie Pothole Region.

One shortcoming in using large bales for goose nests is that they may be usable only a few years.

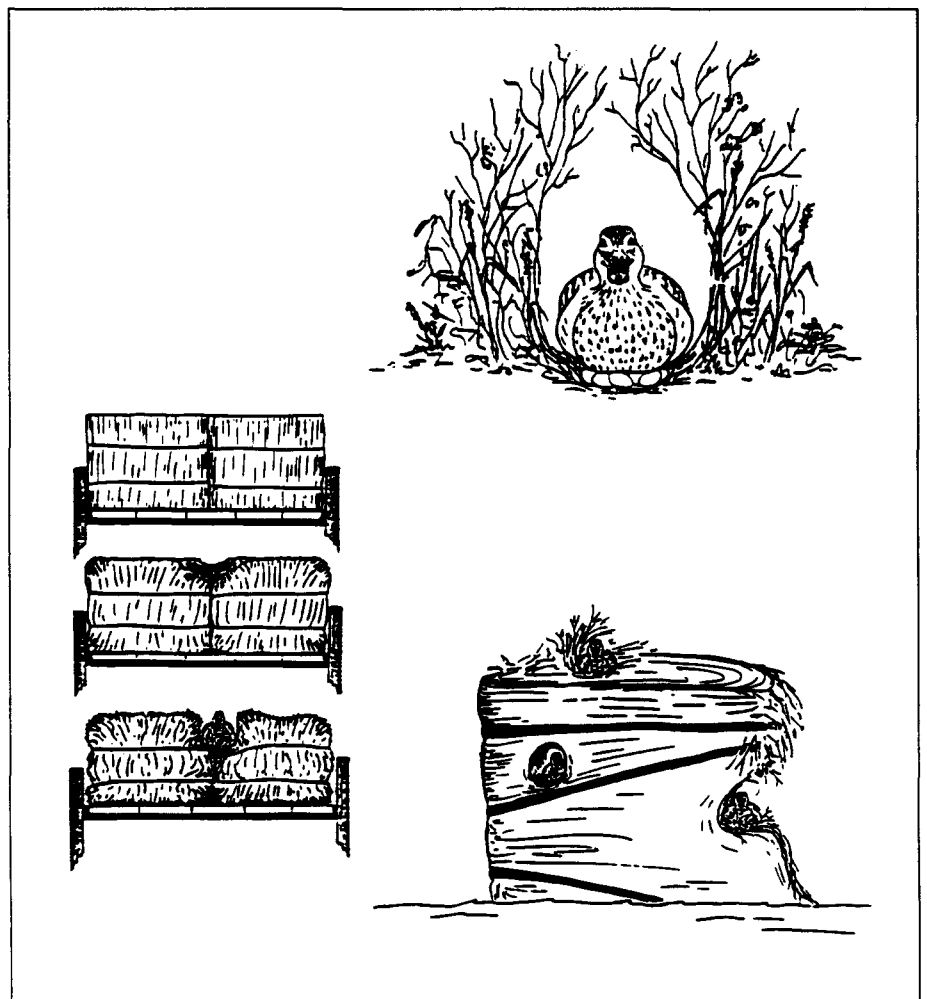
Some, however, last as long as five years under favorable circumstances, especially if they are reinforced with woven wire. In general, high quality, tightly wrapped bales will last the longest.

Bale nest sites are more accessible to raccoons and other predation. Bales are also more likely to be damaged by abnormal rises in water levels than the other types of homemade nest sites discussed. A nesting bale is relatively easy to install since it can be transported onto the ice during the winter. The nest bale, in some circumstances, may be the most economical of all the homemade nest sites discussed.

Bales are a good choice for wildlife club projects because of their availability and general lack of maintenance. In addition, geese generally will begin nesting on the bales almost immediately. Other structures, such as fiberglass tubs, may require more time to develop consistent use by geese.

Although the technique is relatively new and not yet perfected, the results have been excellent. To date most bales placed are for nesting Canada geese. However, ducks, especially

mallards, also nest on the bales. Large round bales also provide excellent loafing sites and are used extensively by ducks and geese throughout the spring and summer. (Figure 1)



Under natural conditions, mallards select nest sites that provide lateral cover (top). The same basic trait is obvious on platforms with small bales (lower left) and on large round bales (lower right).



Figure 1. Large round nesting bales will be used by mallards as well as Canada geese. Note the mallard nest on the right side of the bale below the incubating goose.

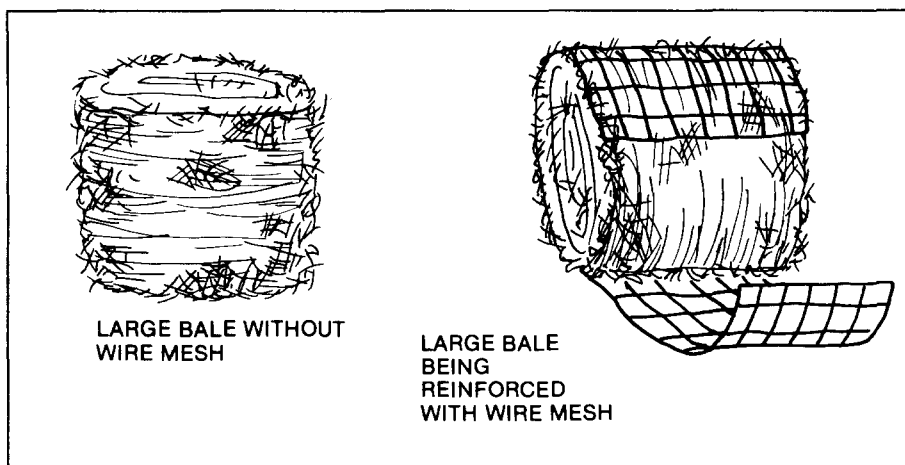


Figure 2. Wrapping of bale with wire will greatly increase its longevity.

Materials needed

Bale — Flax straw, coarse grass, straw or marsh hay

Wire mesh — 4 x 16 ½-foot pieces of wire mesh

Construction

The ideal size of the round bales is about 5 feet high by 5 feet in diameter. These bales can weigh up to 1500 pounds.

The bales should be tight and securely tied. They will last longer if additional plastic twine is applied to them during the baling operation. Some individuals have wrapped the bales with plastic strapping similar to that used to bind crates or lumber in order to increase bale life. (Figure 2)

Large round nesting bales will also last longer if the bales are wrapped with wire mesh or woven wire. If wire is used, the bales are wrapped so that a minimum of three-quarters of a bale is covered with wire mesh. Bales should be wrapped with wire mesh prior to handling and transporting. A disadvantage of the wire wrapping is that it will remain to clutter up the wetland after the bale has deteriorated unless removed.

Flax straw is the best material for a nest bale because of its coarse nature and resistance to rotting. If flax is not available, other straw or grasses may be used but they will not last long. Coarse grass or marsh hay is probably better than fine grass or straw. Alfalfa is very crumbly and should not be used to make a nesting bale.

Placement

Although bale nest sites are not completely predator proof, they offer a Canada goose protection from predators such as fox, coyote and skunk, and a determined pair can frequently defend a bale against raccoons. Proper placement in a marsh will also reduce the chances of predation.

The best time to place large round bales on a wetland is in early winter when the ice is strong enough to support a vehicle and before snow has accumulated. (Figure 3) When placing bales by driving a vehicle on the ice, be

sure to enter the pond from the shore opposite the site. Vehicle tracks through emergent vegetation last for a number of years, creating an excellent predator travel lane. Entering the pond directly by a bale will draw attention to the bales and at the same time make it more accessible to mammalian predators.

The bales can be placed in a variety of wetland sites. It is best to locate them in or near stands of bulrush, cattail or other vegetation. If possible, place on the leeward side of the wetland where they are somewhat protected from winds and ice action. Bales placed on small wetlands will probably last longer than bales on lakes because of reduced wave action in the summer and less ice action in the spring.



Figure 3. Large round bales may be placed in wetland during the winter using standard farm trucks equipped with hoists.

No more than two bales should be placed on sloughs or wet-lands of less than five acres in size. Bales should not be located closer than 100 yards apart on any wetland. This spacing will avoid or reduce conflict between nesting pairs. It is also advisable to avoid placing bales close to well-traveled roads where human disturbance may occur.

Bales are less likely to be visited by predators if they are located at least 150 feet from the shoreline. This distance might be less in cases where the bale is partially concealed by emergent vegetation so it cannot be seen from shore by raccoons or other predators. Bales should not be placed in deep water or river systems where they will drift or float away. Water depth of 1 to 2 feet and no deeper than one-half the height of the bale are ideal. Generally, the deeper the water, the shorter the bale's life span.

Bales placed on the ice sometimes tip over when the ice melts unevenly. Tipped bales are of little value as nesting sites. To avoid tipping, set the bale into a hole cut into the ice. A circular hole the size of the end of the bale can be cut in the ice with a chain saw and the chunks of ice removed with an ice tong. The bale is then laid on its side next to the hole, tipped up, and set into the hole so an end goes down through the hole settling on the marsh bottom. Experience has shown that if the distance from the surface of the ice to the marsh bottom is a foot or less, the bales can be set on end on the ice without much risk of it tipping.

Tipped bales that cannot be uprighted can be made usable for nesting geese. To do so, a small depression and loose straw must be provided on the top side of the bale. This can be done simply by cutting or chopping into the bale until enough loose material is available to form a nest bowl.

Bales should not be placed in pasture wetlands which dry up during the summer and fall. There are very few things that could destroy a nesting bale faster than livestock having free access to one.

Concrete Culverts

Introduction

Culverts are a relatively new approach to nesting structures. Preliminary information suggests that initial occupancy rates of ducks and geese on culverts are roughly equivalent to those on any other easily accessible open structure if cover/nest material conditions are equal. Thus the major benefit of culverts is that they grow their own nest material and cover, ensuring good conditions while eliminating or minimizing maintenance. A second advantage is excellent resistance to ice damage, at least in the larger sizes.

Disadvantages are that specialized techniques are required for installation and removal, if desired, would be difficult.

Obtaining Culverts

Surplus culverts often can be obtained free as salvage. Culverts with outside diameter greater than 30 inches are recommended. These culverts represent the best compromise between resistance to ice damage and weight.

When "shopping" for salvage culverts, remember that construction people almost always refer to inside diameters when relating sizes. As a general rule, the depth of the water where the culverts are to be placed should not exceed the culvert diameter. This will ensure that the culverts will remain upright. (Figure 4).

Large culverts (48 inches inside diameter) are extremely resistant to ice damage and can be set up for concurrent use by geese and ducks. However, 6 inch -8 inch walls on standard 48"+ culverts make their weight prohibitive unless extremely heavy equipment can be used.

Site selection and installation

Height of culverts should be 3 feet - 4 feet above the water surface, which in most cases means a 6 foot culvert length. At shallow sites, 4 foot lengths may be preferable for aesthetic reasons and are acceptable if there is little chance that predators or livestock will reach the site.

Culvert Installation

- A. Harness for lifting culvert — see your local concrete plant. (optional).
- B. Seat culverts firmly using loader bucket or by prying substrate from around base with a shovel, then fill with soil..
- C. Pit run sand/gravel is adequate fill to water line, but fill above water line should be good quality silt/loam soil. Avoid clay and alkali soils. Screen rocks from top 6 inches - 8 inches if necessary.

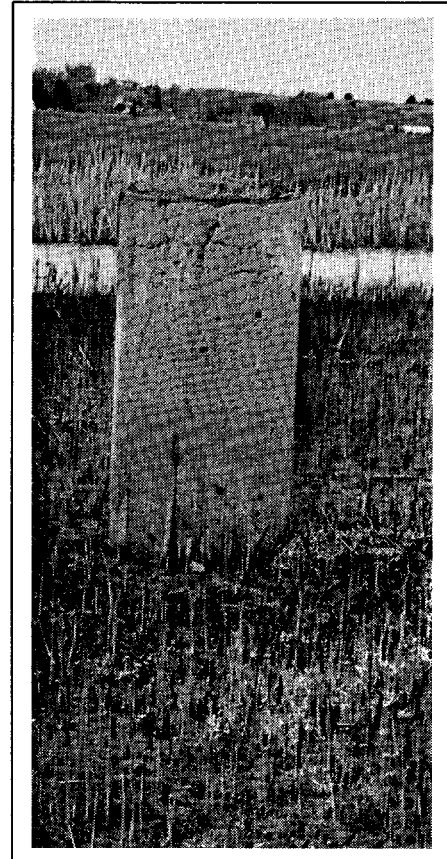


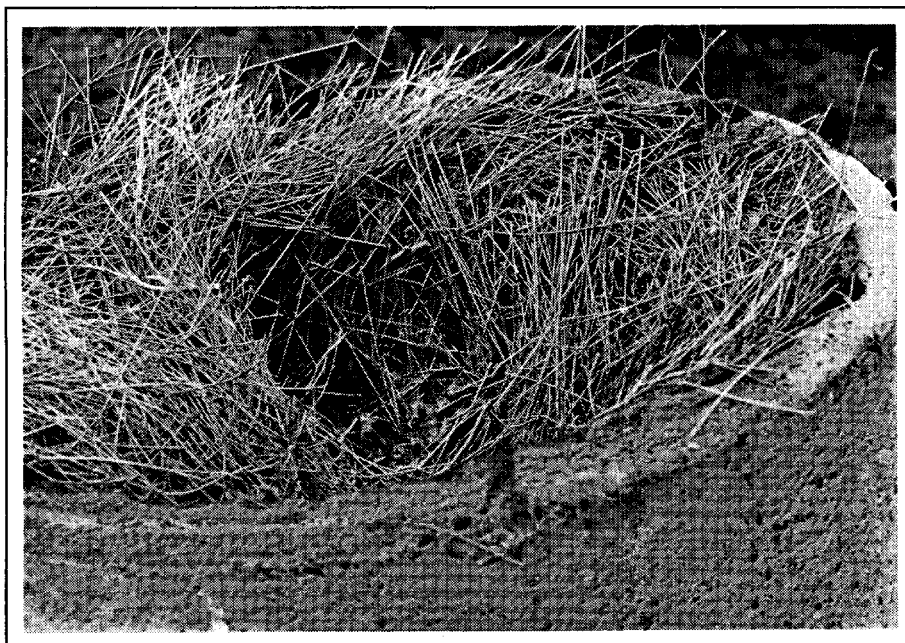
Figure 4. Concrete culvert.

- D. Bottom sediments make adequate fill if not saline or alkaline. In dry-basin installation, fill will settle when it becomes wet. Most efficient approach is to saturate to cause settling, then cap to level.
- E. Dig handfuls of straw into the upper layer of soil. This reduces wind erosion and provides first year nest material. Seed as desired.
- F. Return to check soil levels and add additional soil if needed.

CONCLUSIONS

Canada geese and mallards readily use nest-structures placed in good wetland habitat. Permanent wetland complexes of large and small marshes are essential for brood rearing activities. Such complexes permit broods to move away from disturbances with a minimum of overland travel.

Once you have built and/or placed a nest structure site, you have made a commitment to maintain it. By participating in a nest structure project, you will be fulfilling a major partnership role in restoring North American waterfowl numbers.



Chapter 6: Nesting Sites for Cavity Nesting Waterfowl

Four species of ducks that normally nest in tree cavities are the wood duck, hooded merganser, common goldeneye and bufflehead. While these birds are of lesser importance as game species, they are beautiful birds that add much to our enjoyment of the natural environment.

When natural cavities are scarce or absent, these ducks may not reproduce successfully. Fortunately, they readily accept and nest in a variety of homemade nest boxes. Actually, homemade nest boxes have the potential of providing safer nesting sites than do natural cavities because they can be made predator-proof.

This chapter contains information and plans for construction, predator proofing, placement and maintenance of one metal and two wooden types of nest boxes for cavity-nesting ducks. The advantages or disadvantages of each type are discussed. In addition, there are a number of commercially available nest boxes on the market. A list of addresses is provided for those who wish to purchase nest boxes.

Homemade Nest Boxes

A variety of materials have been used to construct homemade nest boxes. Most nest boxes have been made out of wood or metal, each having certain advantages and disadvantages. The wood nest box is sometimes more readily accepted by wood ducks, but the metal nest box can provide a safer nest site.

While the metal box tends to be predator proof, additional measures will need to be predator proof, additional measures will need to be taken to deter predation of nests in wooden boxes. The wood nest box is easy to build, while sheet metal required to build the metal nest box can be hard to work with and may require special tools. The wood nest box generally blends in well with the natural landscape. Squirrels

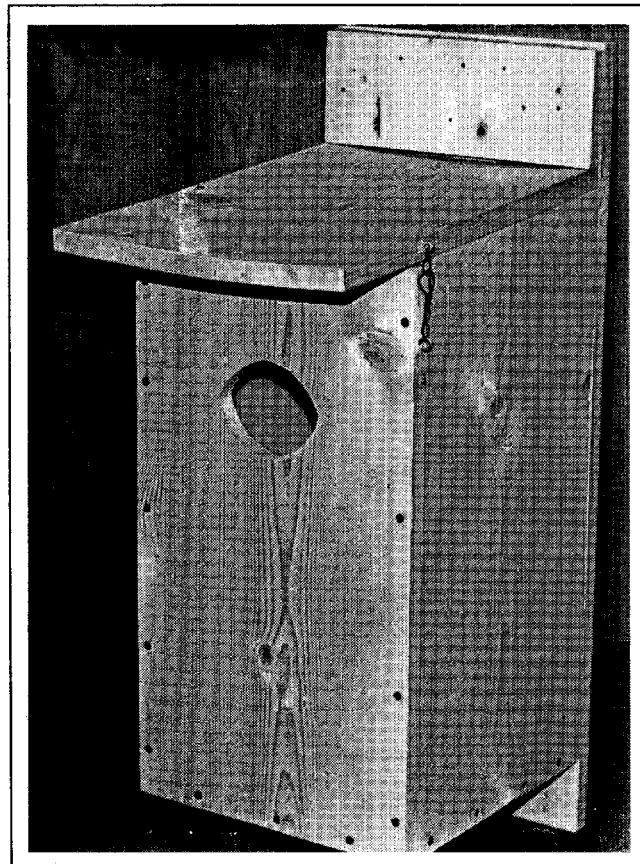


Figure 1. The single compartment wood nest box is easy to build. If properly placed and maintained, these boxes can provide secure nest sites for cavity nesters in your area for many years.

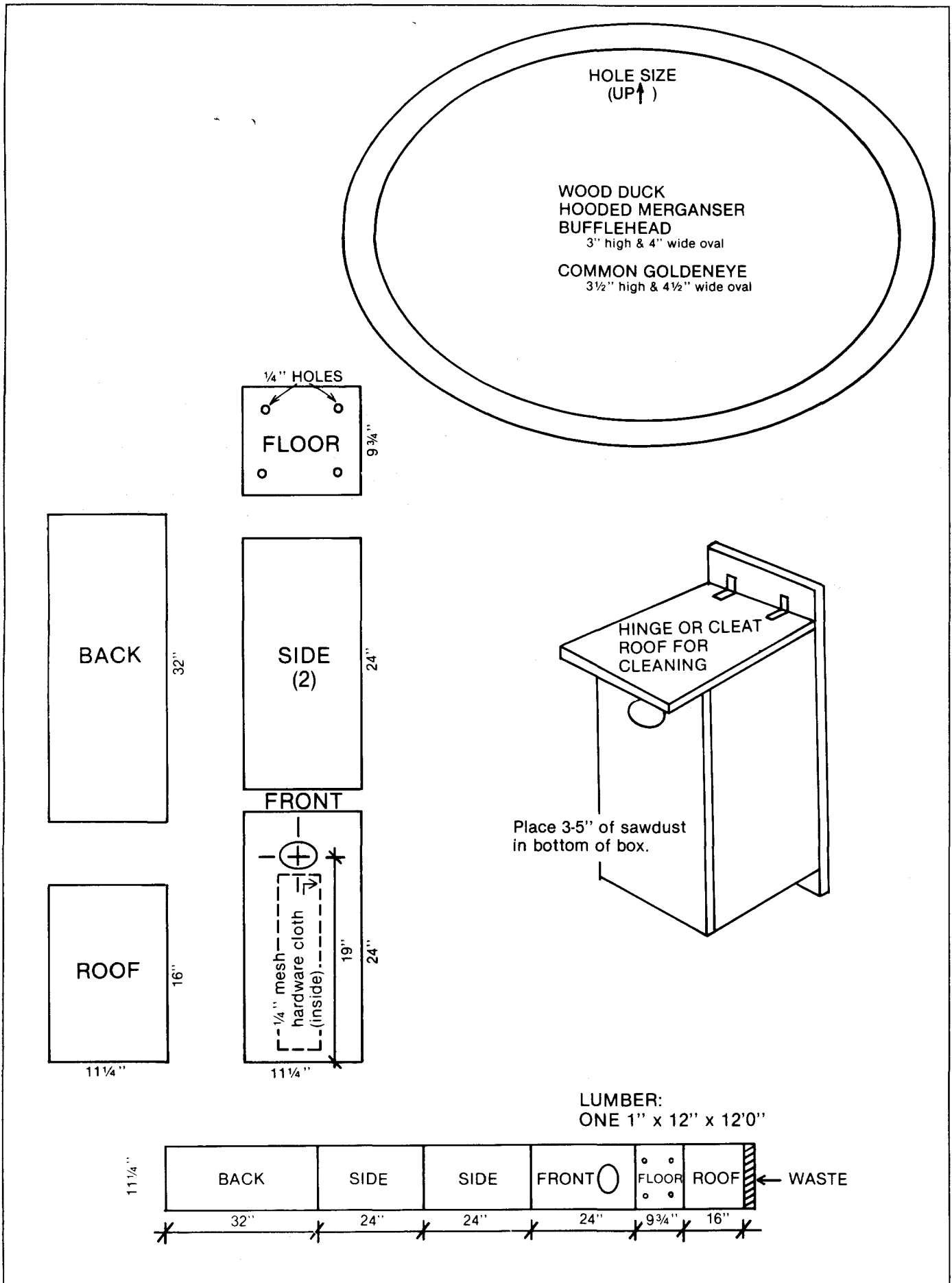


Figure 2. Sufficient lumber for one single compartment nest box is contained in a 1-inch x 12-inch x 12-foot board.

tend to avoid metal boxes while both squirrels and starlings prefer to nest in wood boxes. The metal nest boxes will last 10 to 15 years while the life-span of the wood nest box may be considerably shorter depending on such factors as types of wood used, quality of construction and weather.

Whether you use wood or metal to build your nest box, you must remember that ducks do not carry nest material to the nest. Therefore suitable nesting materials such as coarse sawdust, wood chips, or shavings must be provided in the bottom of every nest box. It is important to include some wood chips or shavings since sawdust alone tends to pack. Even the best built nest boxes will not be used if nesting material is not provided.

Single Compartment Wood Nest Box

The single compartment wood nest box shown (Figure 1) is simple and easy to make. Sufficient lumber for one nest box is contained in a 1-inch x 12-inch x 12-foot board. The wood should be well-seasoned and can be either dressed or rough-cut. The box should be made of good lumber to avoid light and water leaking in through knotholes and cracks. Redwood and cedar are considered best but fir, pine and other kinds of lumber are satisfactory even though they may not be as weather resistant. It may be desirable to treat the wood with some type of non-toxic wood preservative. Treated structures should be dried for several weeks before they are put out for ducks to use. In addition to treating the wood, the outside can be painted or stained with a natural color to blend in with the environment. The inside should not be painted.

Materials needed:

Lumber: one 1-inch x 12-inch x 12-foot board or suitably sized pieces.

Nails: 25 8- or 10-penny, ribbed or hot dipped galvanized

Hardware cloth: one 14-inch strip 1/4-inch mesh cut at least 3 inches wide (smaller nails or staples can be used to attach the cloth)

Nest material: enough sawdust, wood shavings, woodchips, or similar type material to form a 3- to 5-inch deep nest base in box.

Construction

When constructing the nest box (Figure 2), it is advisable to use nails that are long enough to hold securely despite rough handling and weathering. Hot dipped or ringed galvanized 8-penny or 10-penny nails are best. Depending on the condition of the wood used, it may be necessary to drill pilot holes to avoid splitting the wood.

It is important to bore four 1/4-inch drain holes through the bottom of the nest box. The floor of the box should be recessed 1/4-inch up from the lower edge of the sides to retard rotting.

Figure 3 shows four design variations which can be used to provide easy access for inspection, cleaning and general maintenance. These variations are

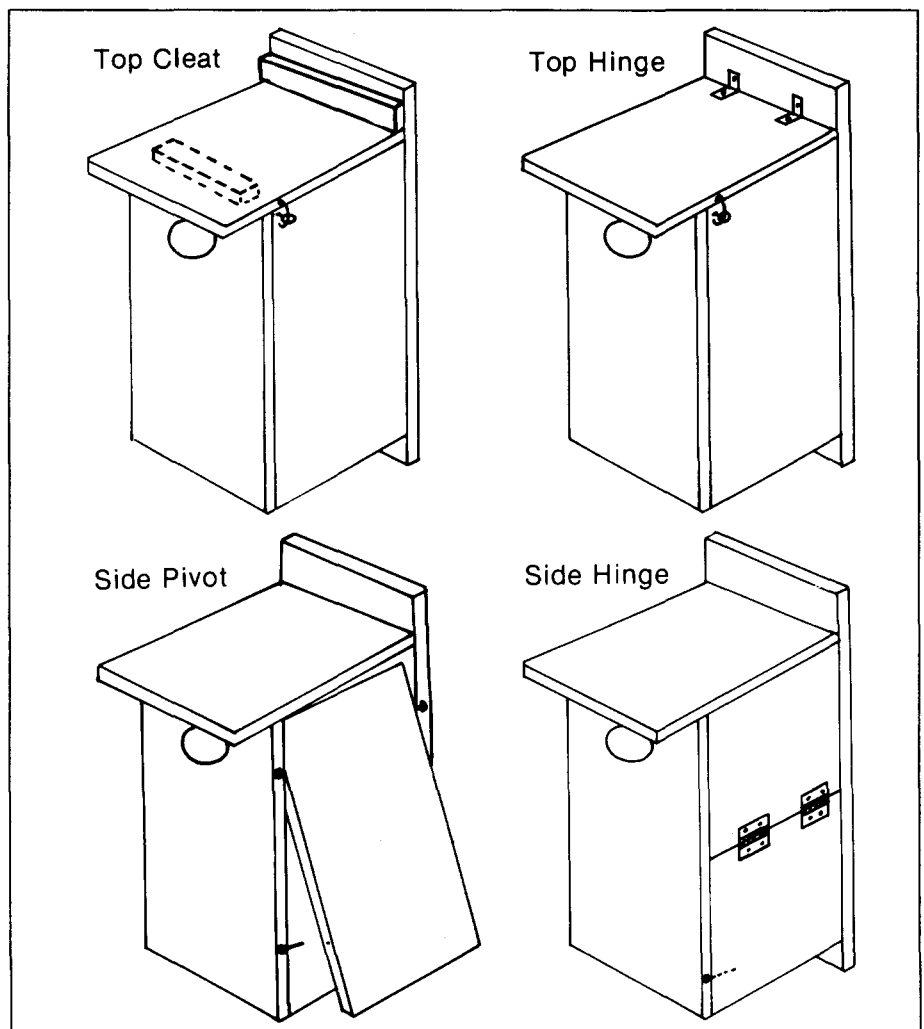


Figure 3. It is essential to provide easy access to nest boxes for maintenance purposes. Four design variations commonly used are the top cleat, top hinge, side pivot and side hinges.

a top hinge, a top cleat, a side hinge and a side pivot design. The two variations employing side door opening designs should be used in situations where it would be either difficult or impractical to service the nest box from above.

As shown in the plan, the entrance hole should be an oval, 3 inches high and 4 inches wide for wood ducks, hooded mergansers and buffleheads, and 3 1/2 x 4 1/2 inches for common goldeneyes. This hole excludes most raccoons. The hole should be centered about 19 inches above the floor. A 3- to 4-inch x 14-inch strip of 1/4-inch hardware cloth mesh should be attached inside the box under the entrance to function as a ladder when the newly hatched ducklings leave the box (Figure 4).

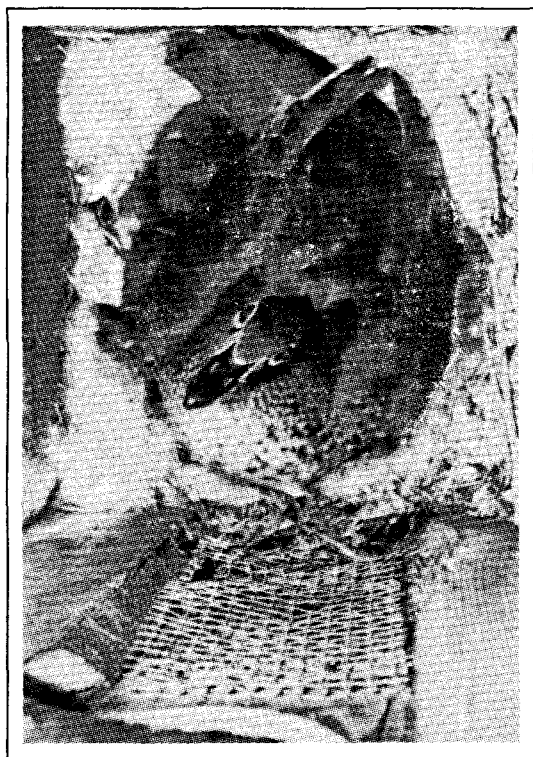


Figure 4. A 3- to 4-inch x 14-inch strip of 1/4-inch hardware cloth mesh attached to the inside of the box under the entrance hole serves as a ladder to assist newly hatched ducklings in leaving the box.

Double Compartment Wood Nest Box

The double compartment wood nest box (Figure 5) is similar in design and construction to the single compartment

nest box. Sufficient lumber for a double nest box is contained in a 1-inch x 12-inch x 18-foot board. Nesting boxes should be made of well-seasoned wood, either finished or rough. Rough cut lumber is generally preferred since it is cheaper and the rough surfaces

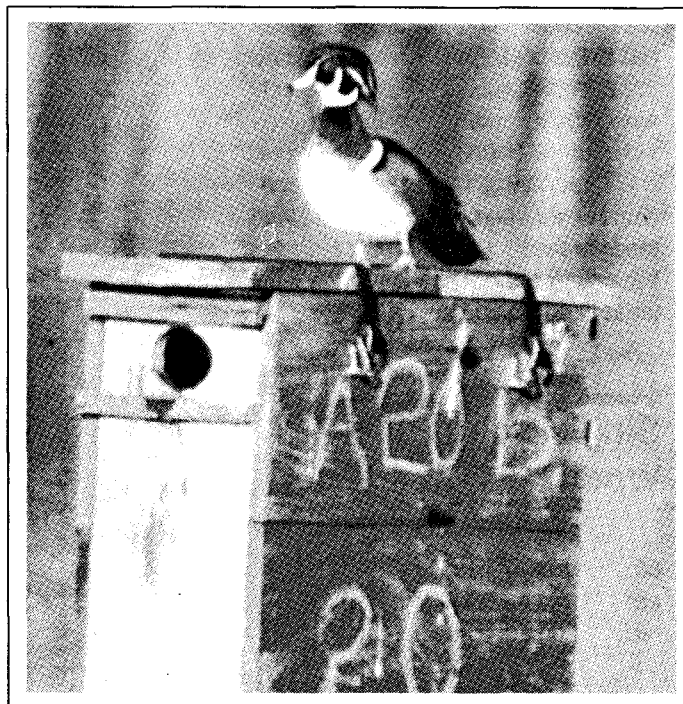


Figure 5. Double compartment wood nest boxes offer an additional opportunity to attract two nesting hens to a single location, thus doubling wood duck production potentials.

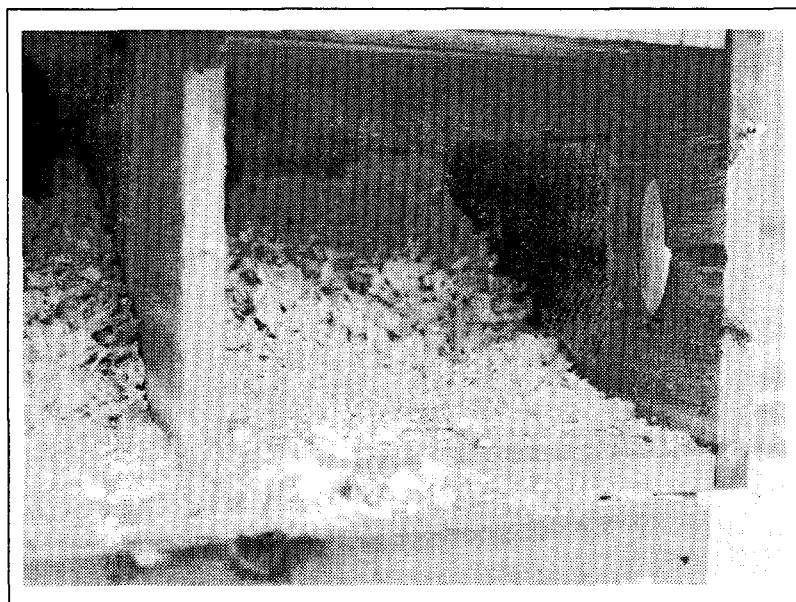


Figure 6. As with the single compartment wood nest box, each section of the double compartment wood nest box must have a 1/4-inch hardware cloth mesh ladder fastened below the entrance. In addition, 3 to 5 inches of nest material must be provided in each compartment.

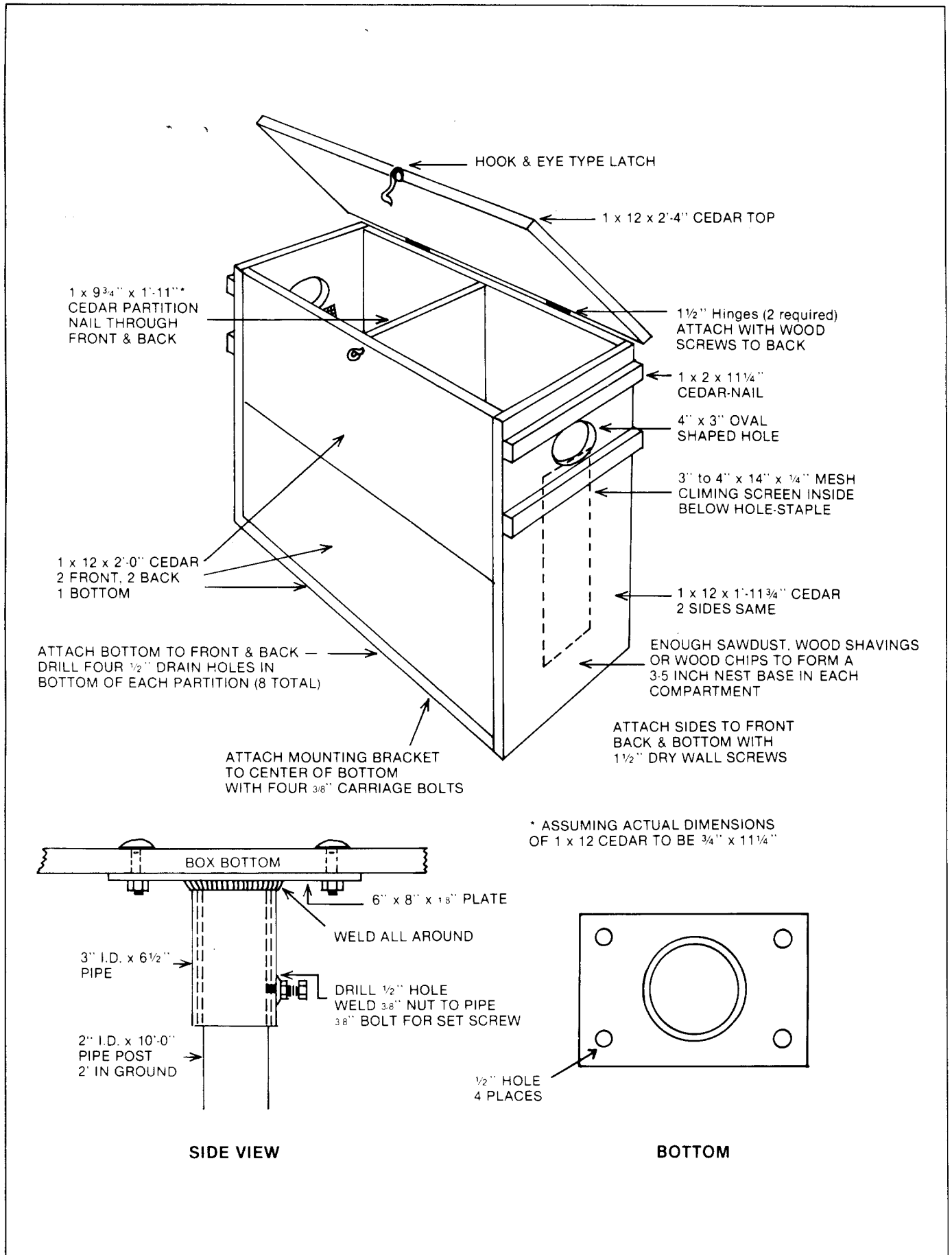


Figure 7. The double compartment wood nest box is similar to the single compartment wood box. If properly placed and maintained, it can double the wood duck production potentials of an area at less cost.

provide toeholds for ducklings as they attempt to exit the box.

To further assist ducklings in making their escape, a hardware cloth ladder must be attached to the interior of the box beneath each entrance hole to provide an additional climbing surface (Figure 6). Redwood and cedar are considered best, but fir and pine are satisfactory as long as they are not full of knotholes and cracks. The outside of nest boxes may be painted, stained or treated with a non-toxic wood preservative to blend in with natural surroundings. The inside of the box should not be painted or stained.

Materials Needed

Lumber: one 1-inch x 12-inch x 18-foot board

Nails: 50 8- or 10-penny hot dipped or ribbed galvanized

Hardware cloth: two 14-inch strips 1/4-inch mesh cut at least 3 inches wide

Nest material: enough sawdust, wood shavings, woodchips or similar type material to form a 3- to 5-inch nest base in each box.

Construction

The double compartment nest box construction is similar to the single compartment wood box. An important aspect to remember is the use of the proper nails. It may be necessary to drill pilot holes to avoid splitting the wood. It is also important to drill four 1/4-inch drain holes through the bottom of each nest box compartment (Figure 7).

The double compartment nest box plan shows design variations which can be used to provide easy access for inspection, cleaning and general maintenance. These variations, in addition to the top hinge shown in Figure 7, are the top cleat with wing nut and side hinge (Figure 8).

Again all entrance holes should be patterned after the guidelines established for the single compartment nest box. The entrance hole should be an oval 3 inches high and 4 inches wide for wood ducks, hooded mergansers and bufflehead. Also, it is important to remember to attach a 3- to 4-inch x 14-inch strip of 1/4-inch mesh hardware cloth to the inside of each box under the entrance (Figure 4).

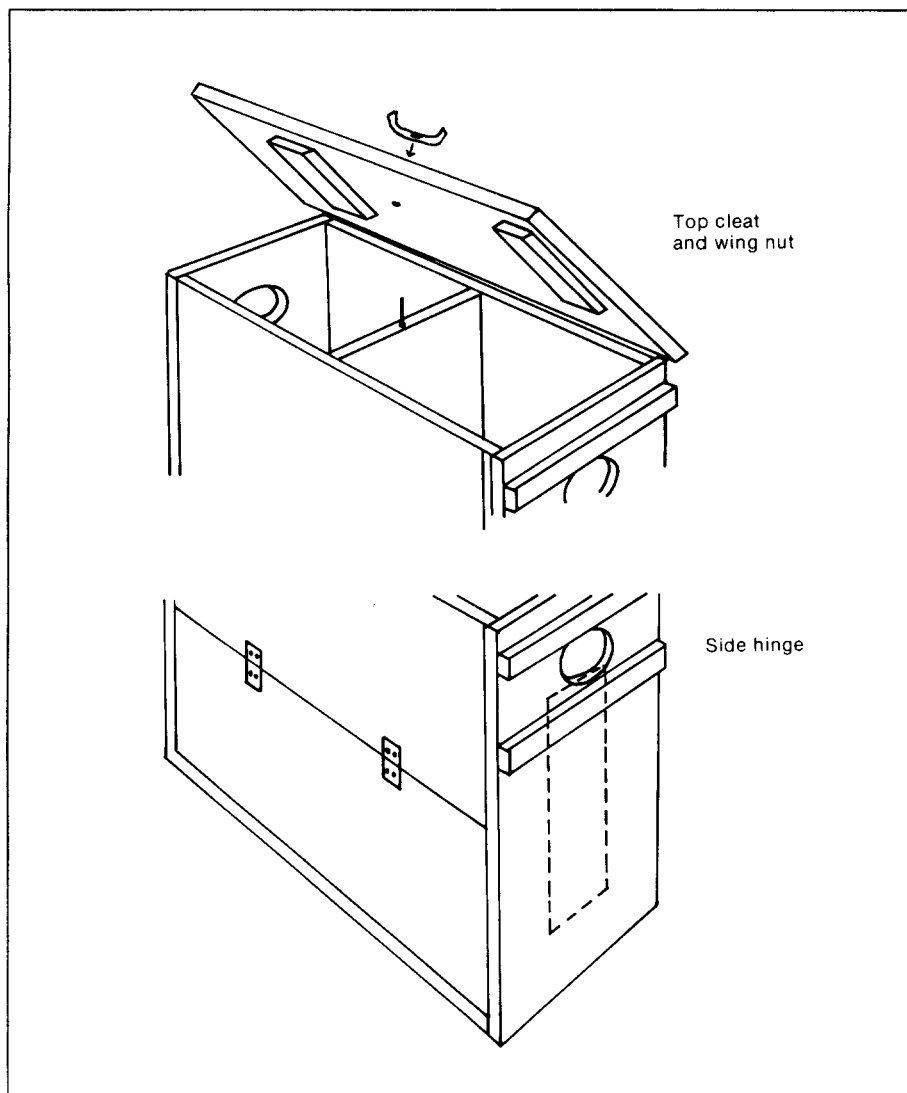


Figure 8. The above cut away shows the wing nut and side hinge variations.

Nest Box Enhancement Considerations

Use of nest boxes by cavity-nesting ducks can be greatly increased by giving proper consideration to entrance holes, placement, method of attachment, the use of predator guards, selection of nesting material, and annual inspection and maintenance.

Entrance holes

It is important to make the entrance hole large enough to accommodate the largest cavity-nesters found in your area. In most cases, an oval entrance hole 3 inches high by 4 inches wide will be suitable for wood ducks, hooded mergansers, and buffleheads. If common goldeneyes are found in your area, an oval entrance 3 1/2 inches high by 4 1/2 inches wide is needed (Figure 9).

Entrance Placement

Cavity-nesting ducks are found along streams, lakes and reservoirs which have wooded shorelines. Nest structures erected in ponds in open country far from trees are not likely to be used by cavity-nesting ducks. On the other hand, nest boxes placed on ponds near wooded streams may be used.

Wood ducks tolerate some human activity and will often nest in boxes placed in trees in towns and cities which are located along a river or stream. All the cavity-nesters discussed have been known to nest in trees as far as one-half mile from a stream or lake. In general, however, nest boxes placed closer to water are more likely to be used and are considered safer because they reduce the distance newly hatched ducklings must travel to water.

Cavity-nesting ducks usually do not object to others of their kind nesting nearby. For this reason two or more boxes placed together may be used successfully in the same season. In general, it is recommended that one to six nest structures be placed in an area during the first year. Houses should be placed in the best locations at least 50 to 100 feet apart. If the nest boxes are used successfully, and the population in-

creases, more structures can be added in the area.

Because some cavity-nesting ducks begin to nest in late April or early May, it is advisable to have the houses in place by late March.

Nest boxes may be placed either over water or over land. Generally speaking, structures over water receive more use by cavity-nesters than those

far from water. Overwater structures can be supported by trees or snags surrounded by water, or by poles or pipes driven into the pond or lake bottom.

When placed over land, nesting structures are attached to trees, wood poles, metal pipes or posts. If nest boxes are placed close to water's edge, extra precautions must be taken to ensure that raccoons can not reach the

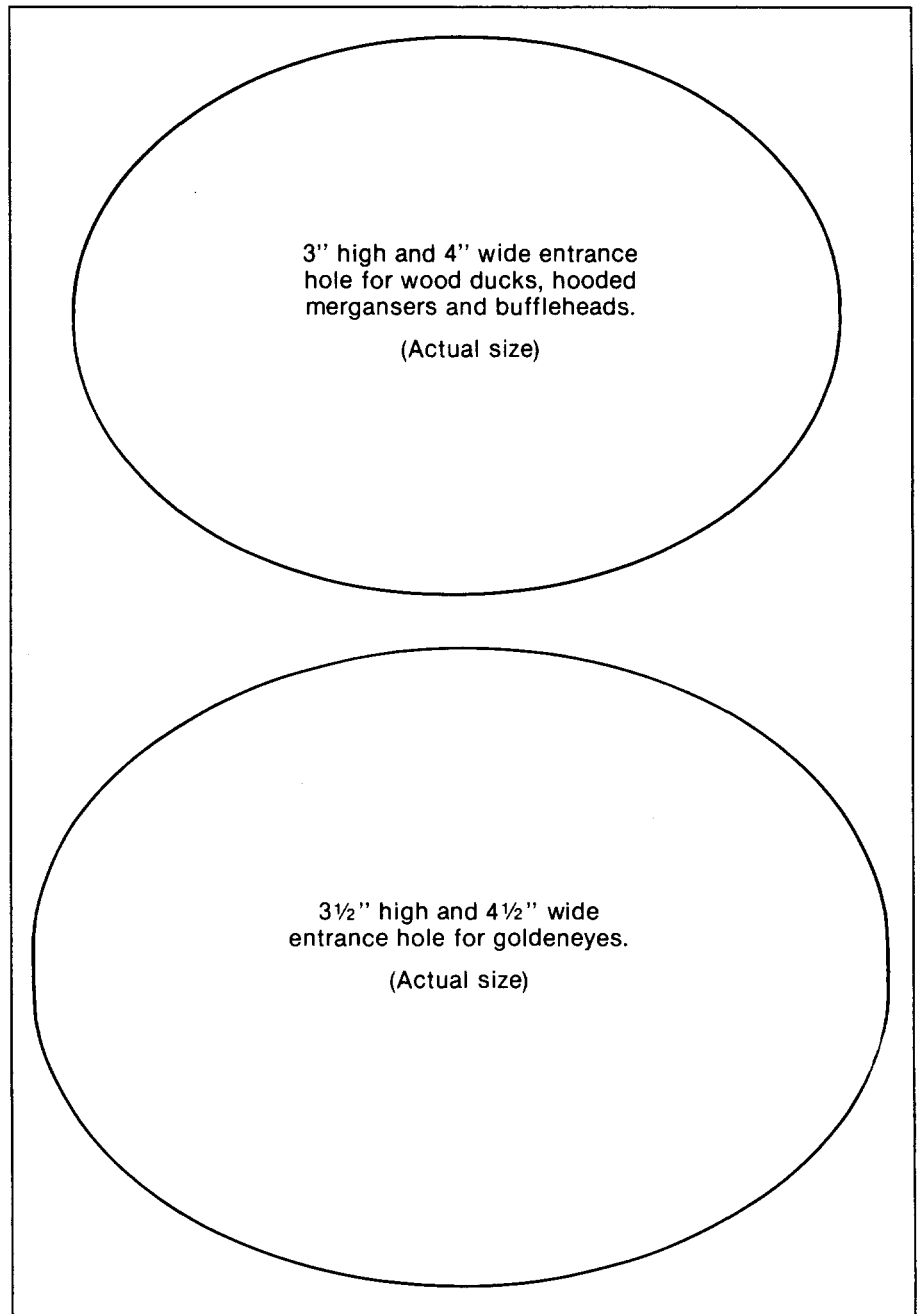


Figure 9. The above templates can be used to insure your entrance holes are of the proper dimensions.

nests. Raccoons travel along the shoreline, and boxes placed there are more likely to be found and the nests destroyed. Those nest boxes placed a distance back from the shore are less likely to be encountered by raccoons.

In general, nest structures should never be located far from water or trees. Ideally, boxes on land should be 30 to 100 feet from the water's edge. While nest boxes can be placed up to half a mile from lakes, ponds, marshes and rivers, some precautions should be taken when putting them this far from water. Since the hen must lead her ducklings to water after they hatch, the terrain between the nest box location and the water's edge should be free of major obstacles like highways, fences with small mesh wire, and high street curbing. When hatching occurs away from the water, the female will immediately lead the young overland to water. At that time the ducklings are extremely vulnerable to predators. These factors should be carefully considered in the selection of nest site boxes.

Nest boxes placed over land on trees or on poles or other supports should be at least 8 feet above ground. It is recommended that the box entrance face the water, and that there be no branches or other obstacles for at least 30 feet in front of the entrance. Place the house so that the entrance is clearly visible, with no limbs or branches obstructing the ducks' view or flying approach. Hens tend to avoid selecting houses that are shielded by saplings or overhanging branches. It appears that nest boxes placed in comparatively open stands of mature trees with large spreading limbs are more likely to be used than houses placed in dense stands of young trees. Cavity-nesting ducks prefer to fly to their nests through a relatively open canopy and to perch on large, horizontal limbs near their nests. In some situations, dead trees provide a satisfactory place to locate nesting boxes. Boxes should not be placed on or near trees where they are vulnerable to predators that may reach the box from above by means of branches or other trees.

Attachment

The nest boxes can be attached to trees or artificial supports in a variety of ways. The simplest and cheapest way to mount a nest box is to attach it to a tree. However, in many circumstances it will be necessary to use wood or steel supports in order to place the box over water or at other favorable locations. Support poles should be cedar, redwood or treated wood either 4- x 4-inch square or 4- to 6-inches in diameter. Generally speaking, it is more difficult to predator proof nest boxes attached to trees than those mounted on wood or metal poles. In all cases, the boxes and support poles should be securely installed so as not to sway in the wind.

The usual method of attachment to a tree or wood pole is to insert a 4- to 6-inch lag bolt through a hole bored in the back of the box, opposite the entrance, and turn the bolt until the box is drawn

firmly against the tree or post. Drill or punch a small hole into the tree in order to get the lag bolt started. Large washers should be used between the head of the lag bolt and the box. With a lag bolt the strain imposed on a box by a growing tree can be readily relieved every few years by a few loosening turns of the lag bolt. If heavy steel pipe or posts are used, it may be necessary to drill one or more holes in the pipe or post to bolt the box in place. The nest box should be fastened to its support so that it has a slight forward tilt. A backward tilt may prevent ducklings from climbing out and may also allow rain to enter.

When placed over water, structures should be high enough so that they will not be flooded. Four to 6 feet above the water's surface is acceptable to cavity-nesting ducks and also permits easy inspection and maintenance from a boat (Figure 10). It is best to place posts in

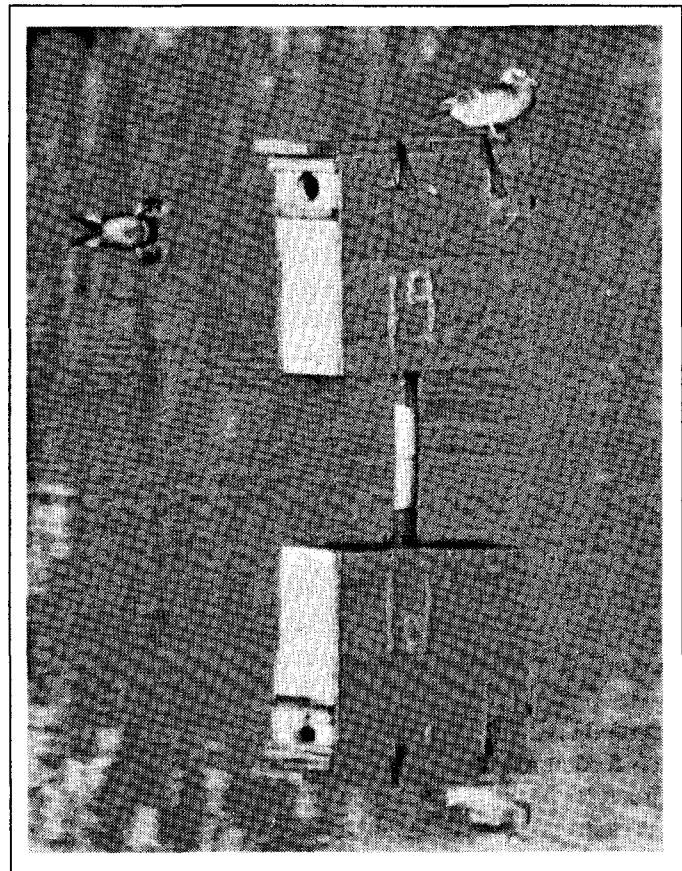


Figure 10. Support piles and pipes driven in to the marsh bottom should provide several feet of free space between the bottom of the nest box and the surface of the water.

water areas where they will not be destroyed by spring ice action.

Poles for over water nests can be placed in winter when the ice is thick enough to safely support a person and/or vehicle (see chart). A hole slightly larger than the pole is cut through the ice with an auger or chisel. A special attachment for the auger blade is available which makes it possible to drill the hole into the frozen bottom of the lake. After the hole is drilled, a metal pipe or a 14-foot 4-inch x 4-inch wooden pole, with one end sharpened, is placed in the hole and forced by hand into the bottom as far as possible. The pole can be driven deeper into the marsh bottom with a post driver; several feet of the pole or pipe should extend above the high water level.

Attachment using a mounting board

Top and bottom extensions of the back piece of the single compartment wood nest box allow for easy attachment to trees or poles (Figure 11). If the back piece does not leave extensions, a piece of 1-inch lumber 32- to 36-inches long and 4- to 12-inches wide can be attached to the rear of the nest box for this purpose.

Attachment using a pipe mount floor-flange assembly

Another method for mounting either wood or metal nest boxes is to use a floor flange-pipe assembly. A floor flange is bolted to the bottom piece of the nest box. The bottom piece of the nest box must be sturdy. Four holes are drilled in the center of the bottom piece

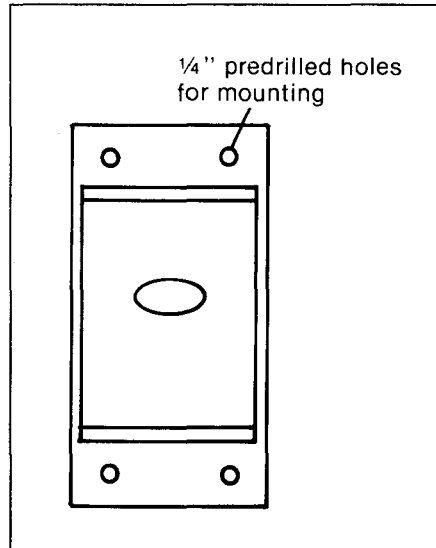


Figure 11. Front view of single compartment wood nest box showing holes for mounting.

to match the holes in the pipe flange. The pipe flange is then bolted in place with small bolts and washers of appropriate size. For the metal box, the floor flange should be bolted in place before the components of the nest box are assembled.

Materials needed

Pipe: one 7- or 8-foot length of 1 1/2-inch inside diameter pipe

Pipe: one 2-foot length of 1-inch I.D. pipe which is threaded to screw into the floor flange

Flange: one 1-inch floor flange

Capscrew: one 3/8-inch x 1-inch N.C.

Bolts: four bolts with nuts and washers to attach floor flange

Construction

A 2-foot piece of pipe, threaded at one end, is screwed into the flange (Figure 12). The size of the flange depends upon the pipe available. A

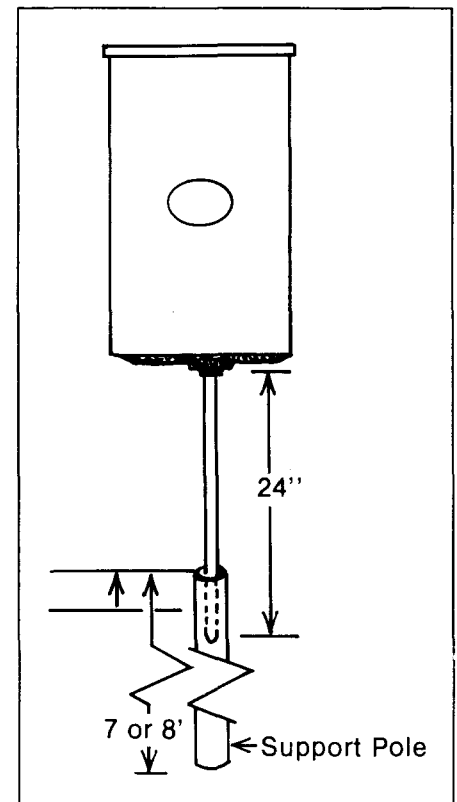


Figure 12. The pipe flange assembly offers an easy method of attaching nest boxes to supports. This method allows the boxes to be removed for maintenance.

Guidelines for determining when ice is thick enough to support humans and vehicles.

Ice Thickness	Permissible Load
Less than 2"	STAY OFF!
2"	One person on foot
3"	Group in single file
7 1/2"	2 ton truck gross (car or snowmobile)
8"	2 1/2 ton truck gross
10"	3 1/2 ton truck gross
12"	8 ton truck gross

If the ice is soft and slushy you will need twice the ice thickness to insure safety. Beware of crossing rivers, beaver lodges and lakes at their inlets and outlets since the flow of water under ice impedes freezing.

satisfactory combination is a 1-inch floor flange into which is screwed a 2-foot length of 1-inch ID pipe. The 1-inch pipe telescopes into a 1 1/2-inch ID pipe which is driven into the marsh bottom or ground with a post driver. A 5/16-inch hole is drilled 2 inches from the top end of the 1 1/2-inch ID pipe and is threaded with a 3/8-inch N.C. tap and fitted with a 3/8-inch N.C. cap-screw. This method of support can be

used to place nest boxes either over water or land at many of the same sites previously recommended for wood or metal poles. A simpler method involves screwing the floor flange directly to a threaded pipe driven into the ground.

Predator Guards

Nest boxes, especially those made of wood, whether on trees or on wood or metal support poles or over land or water, should always be protected from below by a metal shield to prevent raccoons, mink, squirrels and other animals from getting to the box. Raccoons are responsible for the destruction of many duck nests in both natural cavities and homemade nest boxes. Proper precautions must be taken to keep them away from the nest. Raccoons are found throughout the country, so precautions

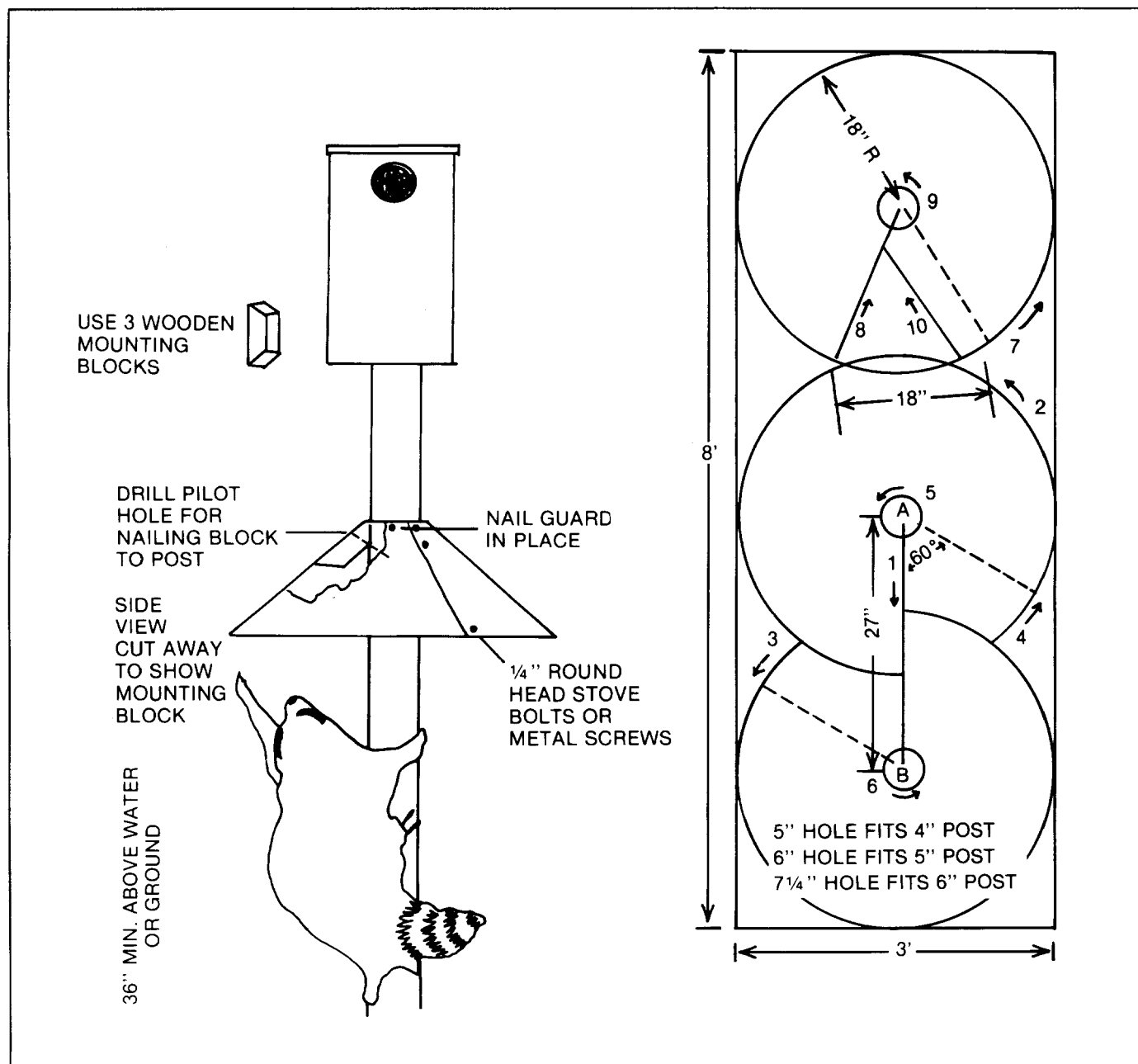


Figure 13. The cone-shaped sheet-metal predator guard offers protection from ground predators such as raccoons to cavity nesters using nest structures.

must be taken to keep them away from nest boxes placed in any suitable habitat throughout the state.

Materials needed

Sheet metal: one 3-foot x 8-foot sheet of 26-gauge sheet metal (for three predator guards)

Wood mounting blocks: Three

Stove bolts or metal screws: Three

Nails: six (for nailing mounting blocks and predator guard in place)

Construction

The previous plan (Figure 13) shows how to construct a cone-shaped, sheet-metal guard for protecting nest structures from predators. The diagram shows how to cut three predator guards from a 3-foot x 8-foot sheet of 26-gauge galvanized metal.

When installing the guard, overlap the cut edge to the dotted line. The sequence of numbers on the solid lines is provided to facilitate cutting. Make circular cuts in a counter clockwise direction. The initial cut on line A-B can be started by making a slot at A with a chisel. Then proceed with a tinsnips. Be sure to wear gloves.

These cone-shaped predator guards work best on trees or wooden poles with a trunk diameter of up to 6 inches. As is shown in the plan, the cone-shaped predator guard is secured to the pole or tree with wooden mounting blocks and galvanized nails. The lower edge of the cone should be at least 36 inches above the ground or water.

Trees with a diameter over 6 inches can be guarded with a 33-inch band of sheet metal about 3 feet high which completely encircles the trunk. This type of guard can be attached with a nail and flat washer at appropriate places on the overlap. The band should be loose enough to allow for growth of the tree. This "wrap-around" type of predator guard is an option that can be used on any size tree and wood or metal support poles (Figure 14).

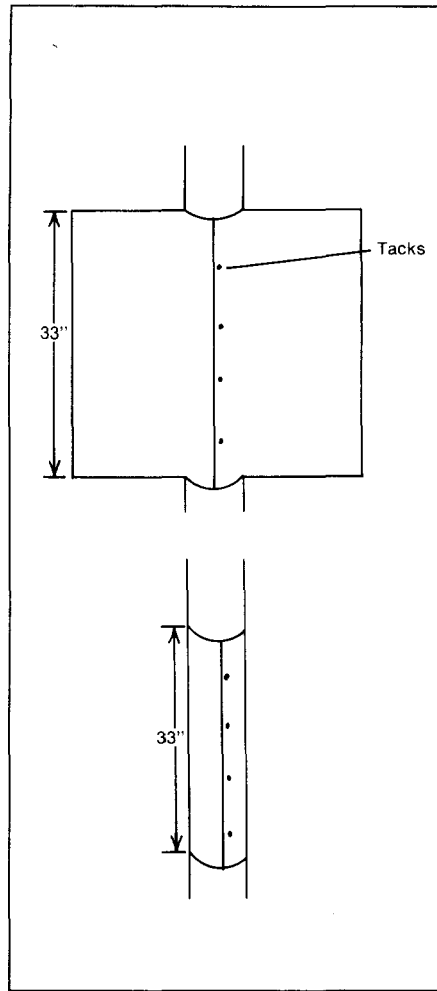


Figure 14. Sheet metal "wrap-around" predator guards can be used to protect nest boxes placed in trees with diameters of greater than 6 inches.

Nest Material

The importance of placing nesting material in constructed nest boxes cannot be overemphasized. Even the best built nest boxes will not be used if nesting material is not provided (Figure 15).

Whether you use wood or metal to build your nest box, you must remember that ducks do not carry nest material to the nest. Therefore, suitable nest material must be maintained in the bottom of every nest box. As a guideline, place from 3 to 5 inches of coarse sawdust, shavings, wood chips or rotted wood in the bottom of the nest box. It is important to include some shavings or chips since sawdust alone tends to pack. Most of these materials are readily available at any carpentry or millwork shop. In addition, pet stores and farm and ranch supply stores often carry wood chips suitable for bedding materials.

Landscaping wood chips from any nursery or garden store will also work well. Another option is to use natural materials found at the placement site such as bark, chips or rotting wood.

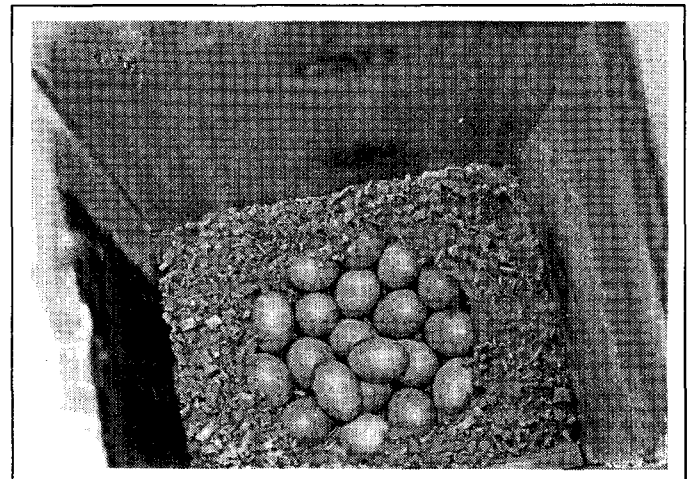


Figure 15. Cavity nesters do not carry nest material to nest boxes. Therefore, 3 to 5 inches of suitable nest material must be provided for them.

Maintenance

Nest boxes must be checked at least once each year, preferably in late March, shortly before the birds return to nest. At this time repairs can be made, debris cleaned out, sawdust and shavings loosened, and fresh material added. Also, the nest box contents can be examined for evidence of egg shells, membranes and down indicating use in the previous year (Figure 16). One may find the house filled with nest material carried there by other animals or birds such as squirrels, starlings or sparrows. Each box should be opened, cleaned, thoroughly inspected and refilled with fresh material.

In some areas, starlings and house sparrows may occupy boxes, making them unavailable to cavity-nesting ducks. Whenever this happens, it is advisable to promptly remove the nest and eggs. The starlings and house sparrows are the only songbirds which are not federally protected.

Other Nest Boxes

The enterprising or innovative naturalist may improvise suitable nesting boxes by utilizing materials at hand. For example, plastic pail nest boxes have been made from two 5-gallon plastic pails attached by fitting the open ends together. Undoubtedly, there are many such potential innovations.

Nest boxes are also available from a number of commercial outlets. Some of these are:

Robbinsdale Farm and Garden
4125 Railroad Ave. North
Robbinsdale, MN 55422

Minnesota Valley Nature Center
6601 Auto Club Road
Bloomington, MN 55431

River Cities Chapter,
Ducks Unlimited
P.O. Box 309
Fulton, IL 61252

Dakota Waterfowl Nesting
Structure, Inc.
P.O. Box 251
Jamestown, ND 58402

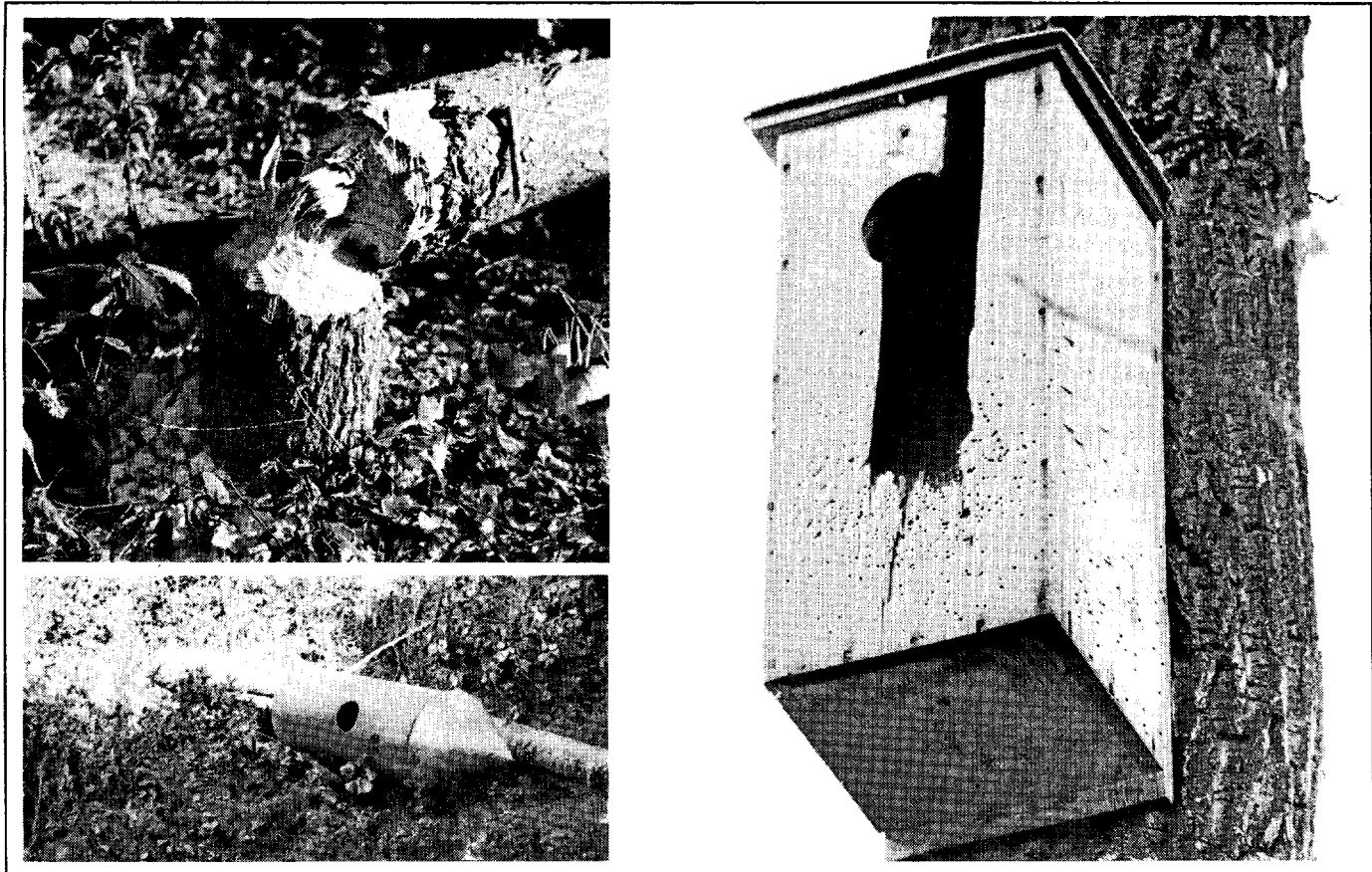


Figure 16. Sometimes even the best plans for mounting nest boxes in trees can go awry. The above picture depicts the fate of one metal nest box that was placed in a tree that beavers had other ideas about and a wood box that was vandalized. Annual maintenance is the only way to assure your nest box will be available for use.

Summary

Don't be disappointed if ducks do not use your nest box the first year, for it may take a year or two for them to do so. If the box still has not been used after 2 or 3 years, try moving it to another location. Remember, however, once you have put a box out, you have made a commitment to maintain it annually. If you fail to do this, you will have just wasted your time and done nothing for the cavity-nesters in your areas (Figure 17).

By engaging in the projects described in this circular, you can establish cavity-nesters in areas where none have nested before. Once you get birds established, you are well on your way to building local populations that will readily accept and use your safe homemade nest boxes.

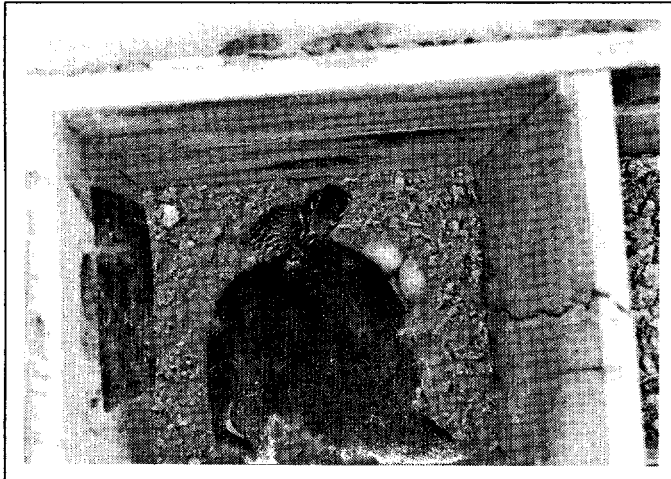


Figure 17. The end result of your efforts to build, properly place and maintain your nest boxes is that cavity nesters will use your boxes to lay, incubate and hatch a clutch of eggs.

Above, a wood duck hen incubates her eggs in a double compartment wood nest box provided for her along the James River south of Jamestown, ND.

Chapter 7: Nesting Islands

Canada geese, mallards and gadwalls have a strong preference for islands as nesting sites. Studies have documented very high densities (and nesting success) on islands. Nesting success as high as 90 percent has been reported for island nesters. This compares to less than 20 percent nesting success reported for waterfowl nesting on uplands in many areas. An island provides a nesting place which is safe since it usually cannot be reached by fox or raccoons

and other typical nest predators. While providing a secure site for nesting, islands are also safe resting places for broods to use after hatching. In heavily pastured areas, the islands may have much better nesting cover than is found on shore where livestock frequent.

Type of Islands

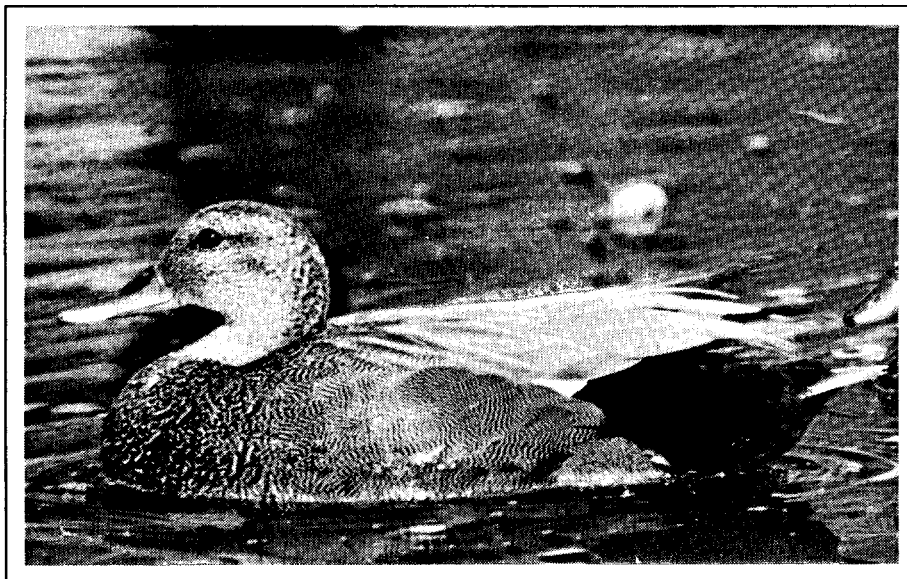
In general, there are two types of islands: (1) natural and (2) man-made. Natural islands occur in many shapes and vary in size from a fraction of an acre to many acres. While natural islands are often found in reservoirs, lakes and wetlands, they may also occur in larger streams as sandbars. Many of them are very beneficial for nesting waterfowl.

What can you do

Landowners, sportsmen's groups, government and private organizations and others can help waterfowl by constructing nesting islands. Several types of man-made islands have been used with good results and four of these are described in this chapter.

General Considerations

As a general rule, islands should be spaced at least 200 feet apart, but this distance could be less in cases where there is heavy emergent vegetative cover. On larger wetlands, care must be taken to pick locations that offer some protection from ice, wind and wave action which can seriously damage the island. Sheltered bays often afford good locations for islands. Islands placed on the upwind side of a marsh may in some situations be less likely to be damaged by wave action.

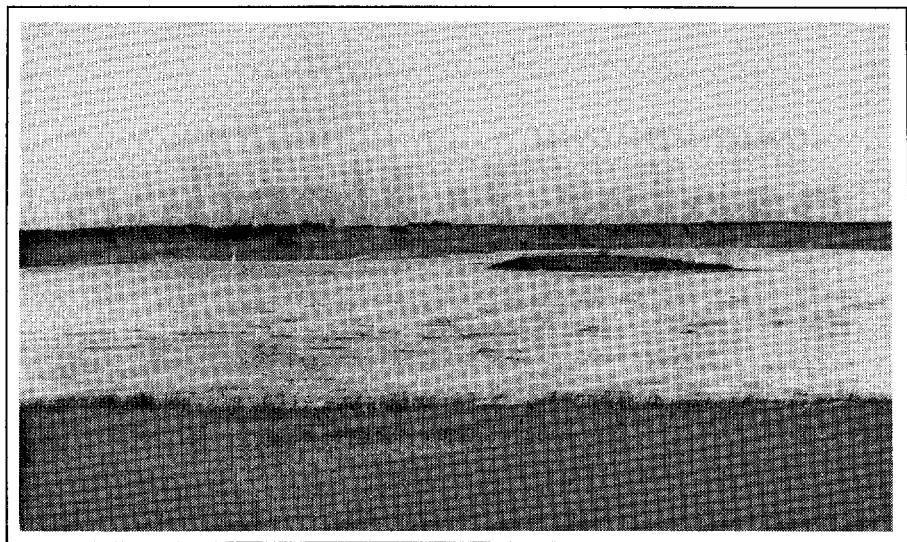


Gadwalls also readily use nesting islands.

If the pond or wetland has vegetation such as cattails or bulrushes, it is advisable to construct an island within this vegetation. The vegetation will afford some protection to the island from wind and wave action. The vegetation will also help conceal the island so that it is not seen by predatory animals as they travel along the shore.

The distance of an island from shore can vary with circumstances. If an island is well concealed in a clump of vegetation, the distance to shore might be as little as 50 feet. However, if the pond is relatively open and the island cannot be concealed in vegetation, it should be constructed at least 150 feet from shore. In the case of a small pond the island should be placed near the middle of the pond. A general rule of thumb is to place the island as far from shore as possible, giving due consideration to protection from wind and wave action.

It is recommended that islands be constructed at sites where the normal water depth is from 1 to 3 1/2 feet, and where much of the water between the island and shore is at least 1 foot deep. This totally eliminates red fox predation and provides a better chance of controlling raccoons by making it tougher for the animals to get to the island. Most raccoons find it necessary to swim if the depth of the water is 1 foot or more.



As a general rule, nesting islands should be placed as far from the shore as possible.

Rock pile islands

Rocks or rock piles are often considered a nuisance by landowners. Rock piles may occupy space that might otherwise be used as cropland or for other agricultural purposes.

Wildlife managers have found a way to use these rocks to benefit waterfowl and farming operations. Rocks can be used to build small islands in stock dams and wetlands. Ducks and geese prefer these islands for nesting places, and hatching success is generally higher for nests on islands than nests on uplands.

General considerations

Rock pile islands can be constructed on ponds and wetlands of varying sizes. For example, a 5-acre pond might be suitable for only one island, whereas larger wetlands could accommodate several.

There can be considerable variation in the size and shape of a rock pile island. The shape may be circular, oval, square or rectangular. The size of the surface area may be as small as 12- x 12 feet or if circular having a 12-foot diameter. A 20 x 20-foot or equivalent

surface area is a very practical size from the standpoint of permanency and attractiveness to nesting waterfowl.

Materials needed:

- Grass seed, brush seedlings
- Field rock, concrete pieces
- tractor/loader
- trucks

Construction

A good time to construct islands is during a period of drought when ponds are dry or water levels are low. The work can be done in the summer if the pond bottom is solid enough to support tractors, trucks or other equipment. If the pond bottom is not firm enough to support motorized equipment, the island can be built in the winter when the ground is frozen solid.

Rocks are used as the island foundation. Pieces of concrete such as those from an old building foundation can also be used along with the rock. The rocks or pieces of concrete are placed to form the desired size and shape of the island. More rocks are then piled on this base until it is built up to a height of about 1 to 1 and 1/2 feet above the expected normal water level

of the pond. The top is kept flat so that soil or earth can be piled on top. The soil that is used to complete the surface of the island can come from the marsh bottom or from shore. When completed, the top of the island should be fairly level and about 2 feet above the expected normal water level.

Another way to make an island when the pond basin is dry is to push up a large soil mound with a bulldozer or other heavy equipment and rip-rap it with rocks. If this is done in winter, be sure the earth does not contain large chunks of ice, as these will cause considerable settling when the ice melts. After the soil mound is built to the desired size and shape for an island, the sides are rip-rapped. This rip-rapping involves stacking the rocks in place by hand. Although this method involves more hand work than some of the others, the result is worth the extra effort, for these islands will resist erosion by wave action and hold up for many years.

A different approach to island construction is necessary for ponds in which the water is at or near the normal levels. In this case, construction work should be done in winter after the ice is thick enough to support heavy equipment. After a suitable location is selected for an island, rocks are placed or piled on the ice in the shape of the island. Allow for settling and use enough rocks so that after the pile settles in the spring the top will project above the level of the water. The top is flattened and soil is placed on top of the rocks.

A procedure that has been found satisfactory by some farmers, is to pile the rocks on the shore of the pond in spring, summer or fall, and push them out onto the ice in winter with a bulldozer. The rockpile is formed in the shape of the island and soil is put on the flattened top.

When islands are made in this manner by placing rocks and soil on the ice in winter, considerable settling may take place after the ice melts, and the island may fall short of what was expected. Usually this can be corrected the next winter by adding more rocks and soil as needed.

Island maintenance

In most cases, it will not be necessary to seed the island to provide vegetation. However, the seeds of various grasses can be planted if natural vegetation does not become established within a year after construction. To speed up the vegetation process, transplant clumps of shoreline vegetation to the island. Besides providing nesting cover, the vegetation helps hold the soil in place and reduces erosion.

Some periodic maintenance may be required, especially after the first year when the rocks and earth fill have had a chance to settle. Additional rocks and soil can be added in the winter. Manure can also be placed on top of the island to encourage the growth of vegetation.

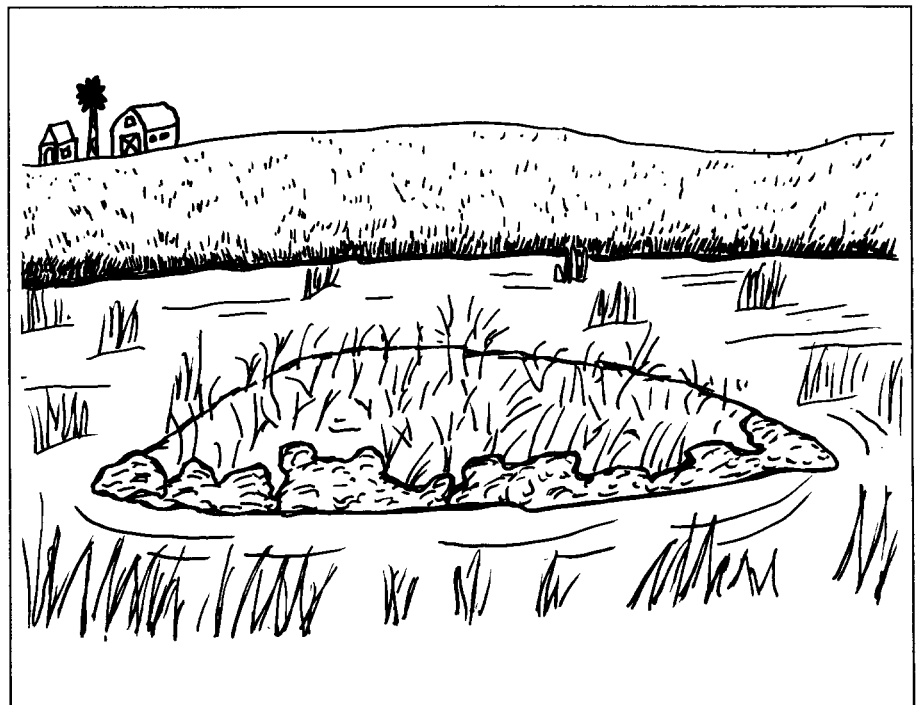
Special considerations

A 5:1 slope is generally recommended for the sides of an island. However, in some circumstances where the island is well protected from wind, wave and ice action, and where the sides are rip-rapped, a 3:1 or 4:1 slope may be satisfactory.

Raccoons, skunks or other animals may get to the islands, especially in winter. If it is found that animals such as these are living on or frequenting an island, they should be removed by trapping or other means.

Based upon observations of rock pile islands, it has been estimated that many of them can be expected to hold up well enough to be useful to nesting waterfowl for 20 or more years.

In the case of wetlands under contract in the U.S. Fish and Wildlife Service easement program, landowners should contact the Fish and Wildlife Service before constructing an island to be sure they would not be in violation of any provisions relating to putting fill in the marsh.



Rock pile island.

Islands on Impoundments

Impoundments vary in size and type from relatively small stock ponds to large reservoirs. It is desirable to consider island construction during the planning and designing stage of an impoundment or reservoir. Rock pile islands or other types which are described elsewhere in this chapter are easier to build when the impoundment is being constructed rather than after the basin is flooded. However, islands can be built on existing impoundments, especially during low water periods.

Materials needed

- Earth moving equipment

Construction

Push-up islands can be made by pushing and compacting earth with a bulldozer and sloping it with a scraper. It is important that the island be properly sloped in order to reduce wave erosion. A slope of about 5:1 is recommended.

At many impoundment sites, points of land or peninsulas are present which provide opportunities for construction of cut-off islands. This method involves cutting off the tip of the peninsula, separating it from the mainland so it becomes an island. Sometimes a combination of butting and pushing of earth is used to increase the width of the span of water between the island and the mainland. The width of the channel from the island to the mainland should be at least 50 feet, but 100 feet is recommended. Water depths of 1 foot to 2 feet in the channel are adequate to deter raccoons and other mammalian predators.

Cut-off islands have advantages over push-up islands in that they normally have a more natural slope which makes them less subject to wave erosion, so they last longer. Also, established vegetation will likely be present on at least a portion of the island, providing nesting cover immediately. Figure 1 is an example of island development in an existing reservoir. Figure 2 shows methods for creating cut-off islands.

Ducks Unlimited Islands

Ducks Unlimited is an excellent source for information on nesting islands for waterfowl. Figure 1 is a diagram for a standard nesting island of the type Ducks Unlimited is constructing on freshwater basins. Ducks Unlimited also provided the following criteria for island construction which are based upon an evaluation of over 1000 islands which they had built. While these criteria recommend a larger island than the one shown in Figure

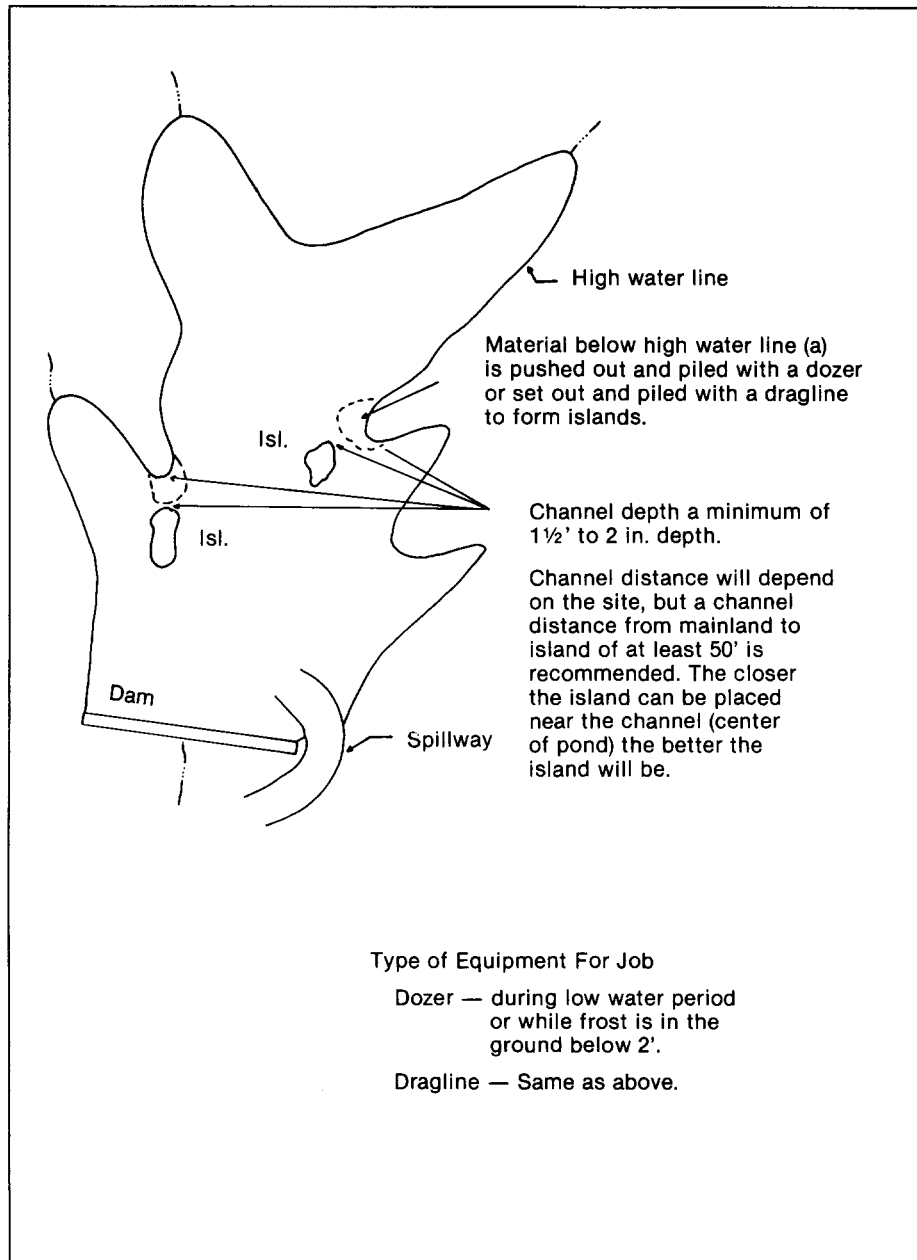


Figure 1. Example of island development in existing reservoir.

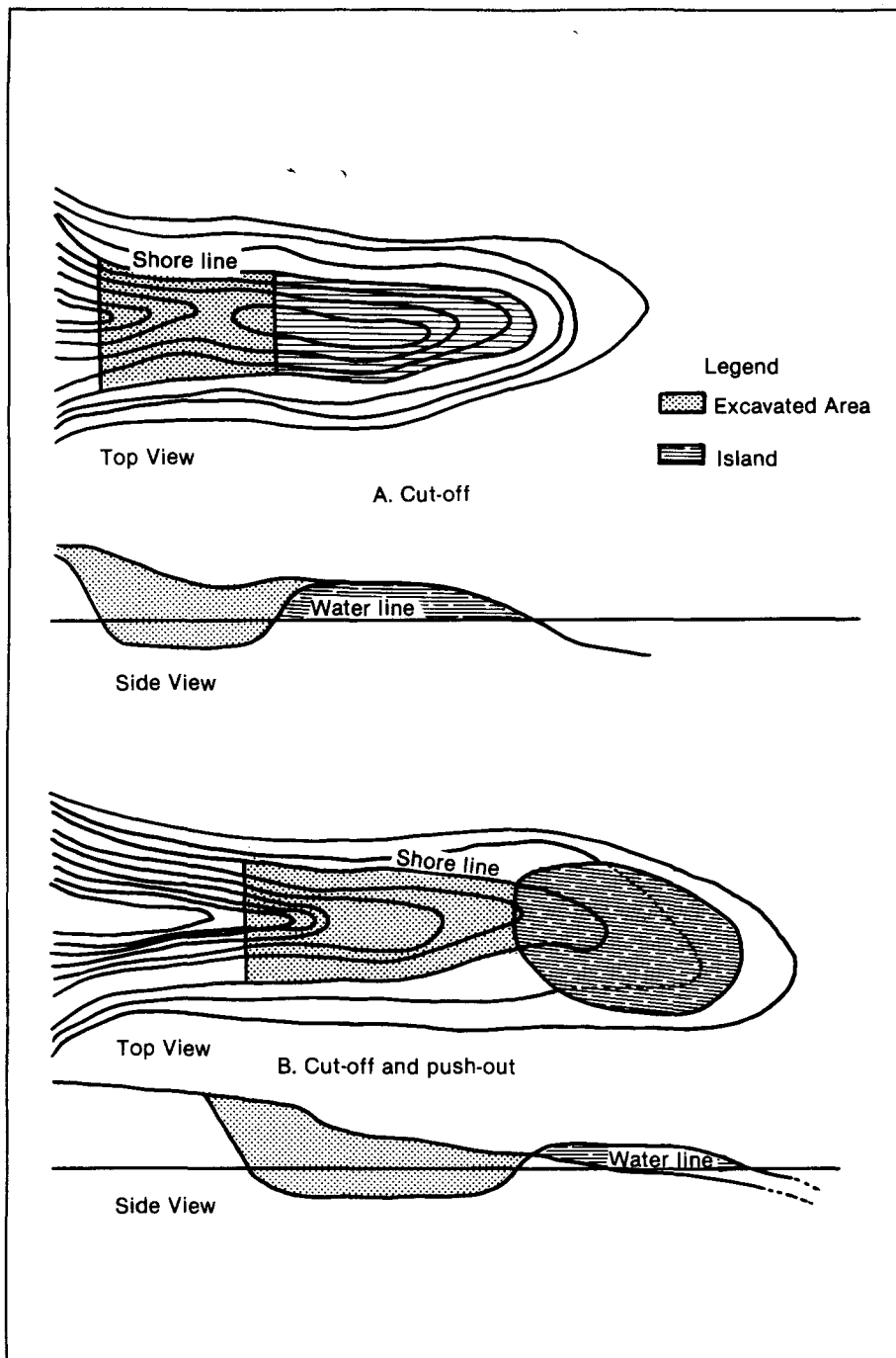


Figure 2. Two methods for creating cut-off islands.

1, many of the guidelines can apply to any island construction.

1. **Size of island.** The most desirable island size for fresh-water marshes in terms of cost, durability, duck production, ease of construction, etc. is about 1/10 acre (dry nesting area).
2. **Shape of island.** The island should have an approximate rectangular shape; the most common size measuring about 10 yards wide by 25 yards long. The minimum width is 6 yards.
3. **Slope.** The side slopes of the island should be 5:1, with a berm width of 5 yards if possible.
4. **Size of wetland.** Islands should only be constructed in wetland basins of 25 acres or more.
5. **Density of islands.** A maximum density of one (1/10 acre) island per acre should be followed.
6. **Distance from shore.** Islands should be placed so that a minimum of 100 yards separates the island from shore.
7. **Distance from islands.** At least 65 yards should separate the islands from each other.
8. **Water depth.** Islands should be placed in areas where the normal depth is 1 foot (min.) to 3 feet (max.), and the island should be entirely surrounded by a moat formed by the borrow ditch. The borrow ditch should have a minimum water depth of 3 feet.
9. **Vegetation.** Islands should be built in moderately dense vegetation which helps protect against erosion, and the islands must be seeded or sodded to the taller nesting cover grasses and legumes and/or low growing brush species. Vegetation or the berm should be disturbed as little as possible during construction.
10. **General Comment.** If islands are constructed in winter, they should be constructed with no ice in the fill and ice on or over the foundation should be removed prior to construction.

Ducks Unlimited is also building islands on alkaline basins which are usually quite large and seldom if ever have emergent vegetation. A larger island of at least one acre in size is constructed on these areas because extensive erosion from wind and wave action may occur. These large islands are built in the winter. The soil is piled on the ice in winter, and it settles in the spring as the ice melts. This works fairly well, but the island surface may crack as the ice melts, and you may have to go back the second winter and smooth the rough surface. Also, if the island is to be ripped, this is done the second winter after the island has settled and stabilized. To date, the biggest problems Ducks Unlimited has encountered with this large island is getting the island in an alkaline basin to revegetate.

Soil Conservation Service Islands

Excavated ponds or "dugouts" can provide safe nesting sites for ducks and geese if they are placed in relation to an existing wetland in such manner that the spoil becomes an island surrounded by water. The Soil Conservation Service (USDA) has developed standards and specifications for construction of excavated ponds (dugouts) which include islands for waterfowl nesting.

For more information contact your local Soil Conservation Service representative.

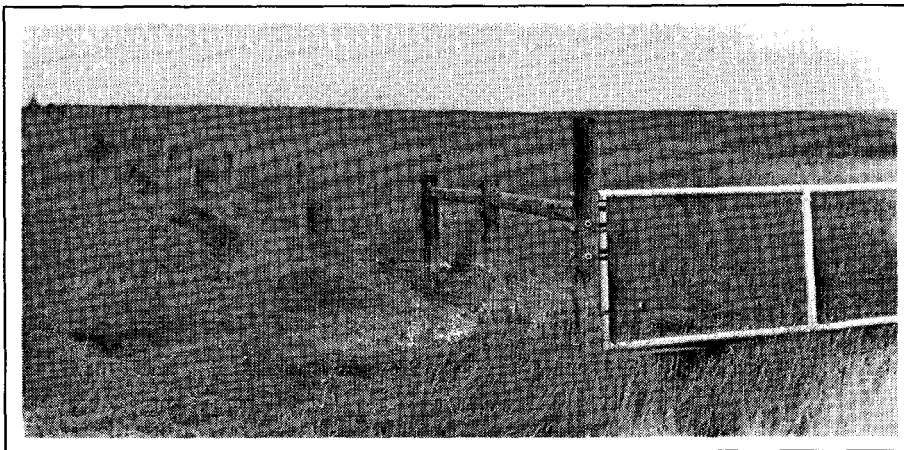


Figure 1. Predator fences consist of wire, posts, and power sources.

Predator Fences

Construction of electric predator barrier fences along with an active predator removal program dramatically increases duck production on small parcels of land, yet affects a minimum number of predators.

Several sportsmen groups and wildlife clubs have constructed electric fences that are designed to prevent predators from reaching nesting waterfowl.

What does a predator-proof fence consist of?

The predator fence basically consists of several strands of wire which carry an electrical charge. The charge is either produced through the use of batteries or a solar power system. The power units are hooked up each spring and removed in the fall. (Figure 1)

How are predator fences used?

Electric predator fences can be used to completely enclose a nesting area or to cut off a peninsula, in effect creating a predator free island.

Each spring the area enclosed must undergo some type of predator management to remove any predators that may have moved into the area.



Red fox are nesting waterfowl's number one nemesis.

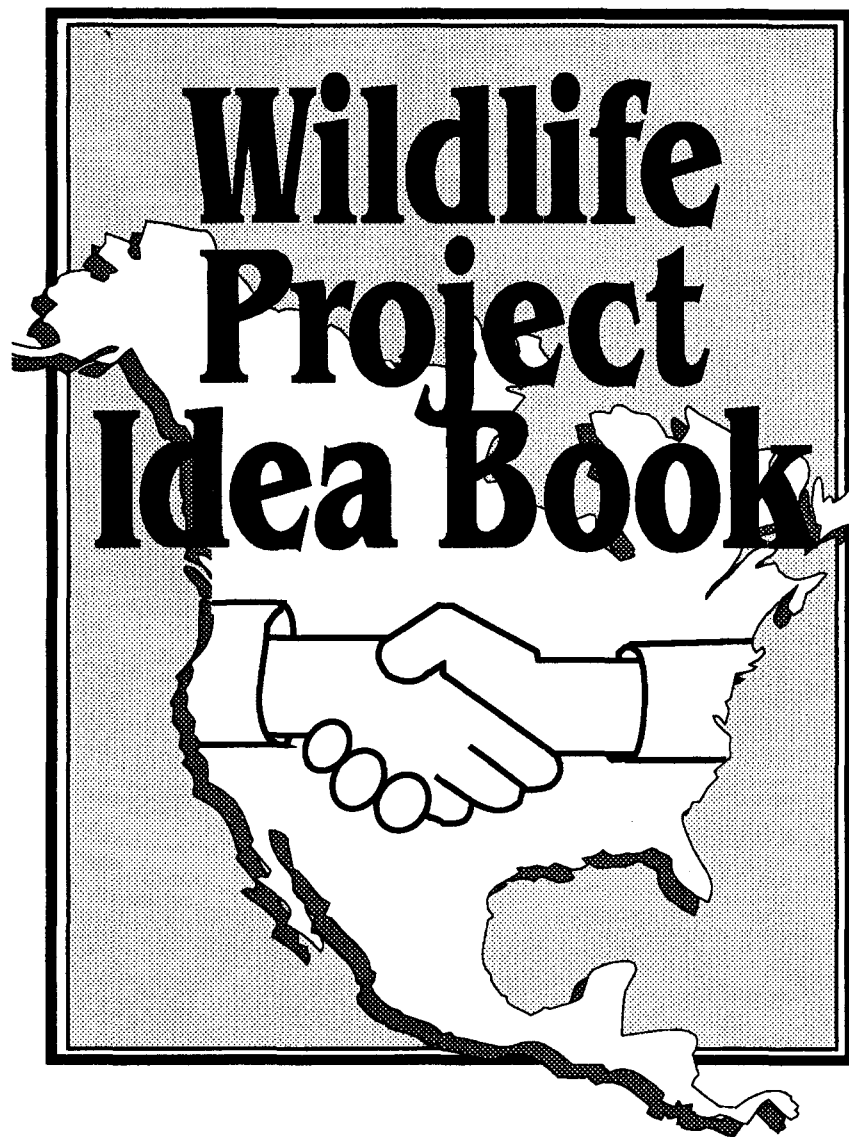
What kind of tools are needed to put up a fence and how long does it take?

Regular fencing tools found on most farms and ranches are all that is required to construct a fence. A half dozen volunteers can enclose a 20 acre area in a couple of days. The use of tractor mounted or motorized post hole diggers will greatly reduce construction time.

What kind of maintenance is needed?

Once a predator proof fence is constructed, it should be maintained annually. With proper maintenance the fences can remain functional for 10 years or more.

For more information on predator management activities designed to benefit upland nesting waterfowl and other game birds, contact your local wildlife agency representative.



Section Three:

**Sustaining and
Restoring Wildlife**

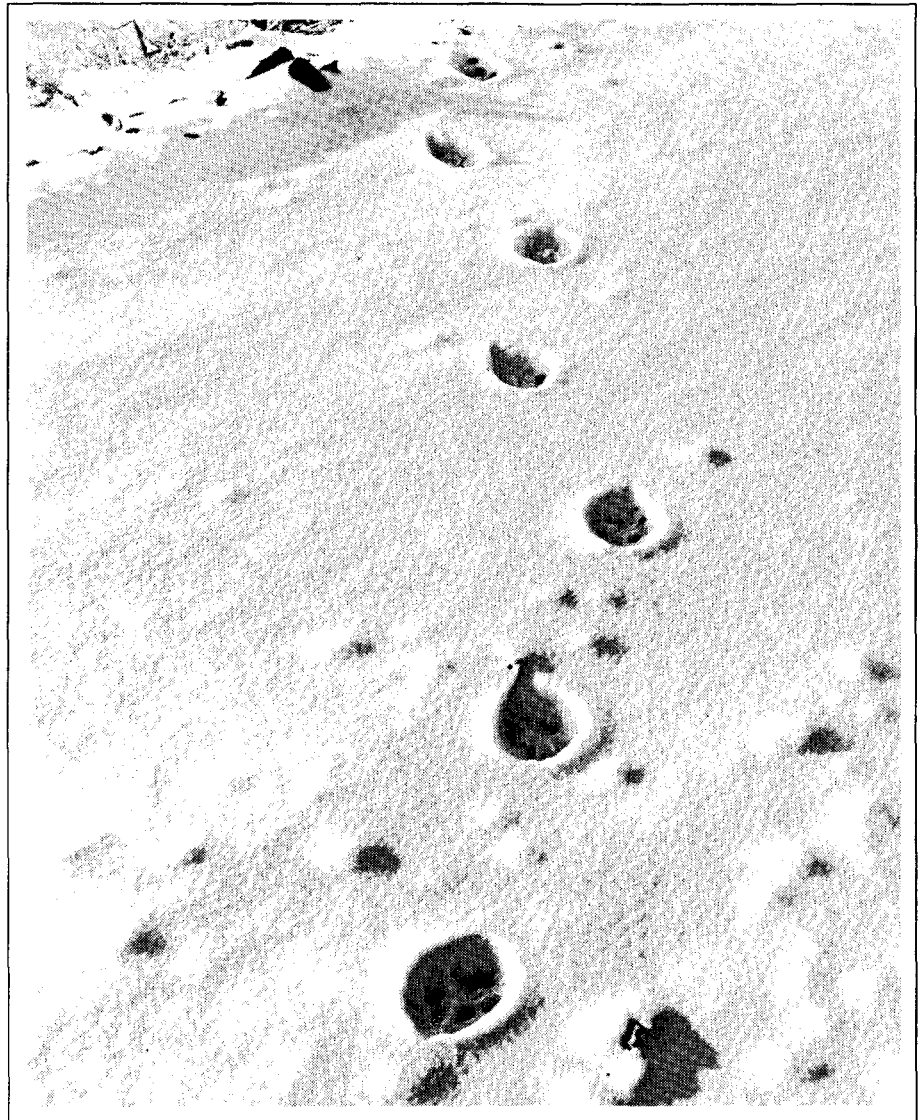
Section Three: Sustaining and Restoring Wildlife

Introduction

Wildlife habitat is simply the place or home where wildlife live. Within this habitat, wildlife find the basic needs for survival: food, water, shelter, and living space. It is the ability of the habitat to meet these basic needs that determines what kinds and numbers of animals a piece of land can support. The number of animals this habitat can support at a given time is called its carrying capacity.

A habitat's carrying capacity may vary by season and year, being greatest in late spring through fall and lowest in winter. A deficit in one of the four basic requirements, regardless of the abundance of the others, will also reduce a habitat's carrying capacity.

The key to managing wildlife then becomes a matter of matching the animal's habitat needs with the habitat. Attracting the greatest kinds and numbers of wildlife requires providing variety in food and cover. The following two videos identify how concerned citizen conservationists can work to provide wildlife with food and water, by planting food plots, engaging in wildlife winter feeding operations and the development of wildlife watering areas through the creation or restoration of wetlands.



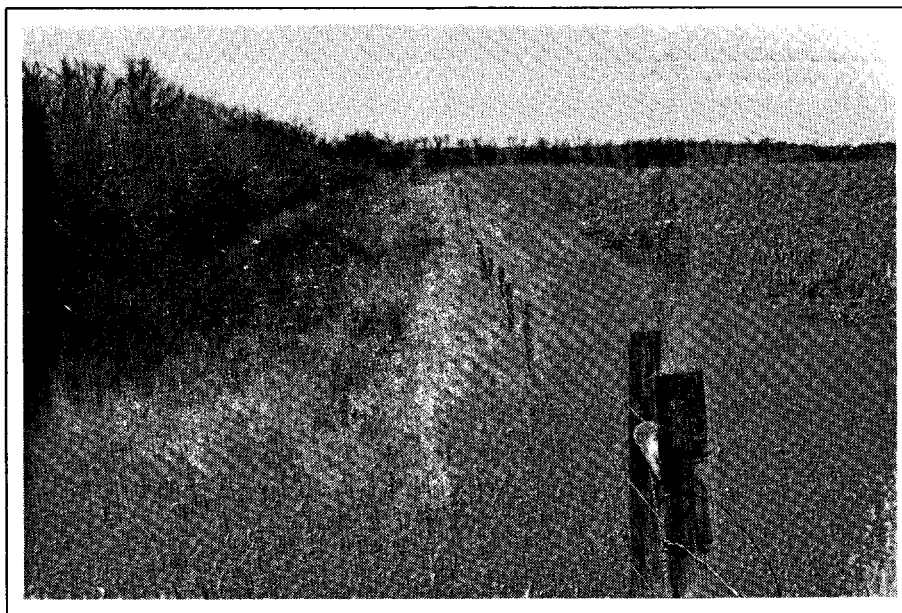
A habitat's carrying capacity is lowest in winter.

Chapter 8: Providing Food for Wildlife

General Considerations

Almost every agricultural crop has some value to wildlife, depending on the season and the availability of other suitable habitat. Unharvested blocks of small grains and row crops such as corn, sunflowers, grain sorghums, and soybeans adequately spaced across a field, yet adjacent to fence rows, shrubby cover, or wetlands provide supplemental wildlife foods. Many farmers are willing to provide such areas for wildlife.

As a general rule, particularly in northern climates, blocks of unharvested crops of 2 acres or more in size are better than a few rows of narrow strips. Narrow strips tend to be flattened by wind or choked with snow.



Blocks of unharvested crops provide essential sources of food for wintering wildlife.

Plot Site Selection and Planting Guidelines

- 1) The plot should be a solid block shape for the greatest benefit to wildlife. This square shape will help to provide food and perhaps some cover for some of the resident wildlife species during the coldest months of winter, and it is a much better design than long narrow plots which have a tendency to become choked with snow. A 1-acre plot is about 208 feet by 208 feet. These dimensions will help you to lay out your plot.
- 2) Select a plot site that is close to natural, permanent wildlife cover, such as trees, shrubs, wetlands, water bank, Conservation Reserve Program acres, or other idle and overgrown areas. Adjacent cover helps to provide a more secure winter home for wildlife during severe weather. Trees or shrubs on the north or west side of a food plot can help to trap blowing snow and keep the food plot more open for feeding wildlife. Feed plots located on south and east facing slopes provide maximum warmth for wintering wildlife and often help to reduce snow depth in the plot. Food plots may be seeded on ACR (set-aside acres), ACP, and CRP acres.
- 3) It is recommended that you avoid planting your plot in areas where there are high levels of human activity, which might result in unnecessary disturbances and limit the usefulness of your plot to wildlife.
- 4) Be sure to plant your plot early enough so that it has a chance to mature before frost. It is recommended that plots be planted prior to May 15, weather permitting.
- 5) A good food plot should be put in with good attention to detail. Soil erosion should be kept to a minimum by farming on the contour. The ground should be adequately treated and seed properly placed at the right time. Weed control will help to get a good yield of the selected crops, but weeds may provide another food source and may also provide cover for wildlife while they are using the food plot.

6) Cost share is available under ASCS guidelines SP31A, Interim Wildlife Food and Cover - Establishment of Food Patches for Wildlife. Under this practice, however, food patches have to be a 2-acre minimum size with 4 acres maximum per quarter section, unless otherwise approved by the Soil Conservation Service (based on need). In addition to ASCS cost sharing, additional assistance may be available through your local wildlife agency representative.



A one acre food plot near 10 acres of woody cover will winter one deer.

Special Considerations

If you have knowledge about the wildlife population wintering in your area, the following guidelines may help you in determining the size and type of food plot you may want to establish.

Average winter population of wildlife in newly developed cover in the Northern Great Plains for figuring food plot dimensions are as follows:

10 acres of herbaceous cover for one wintering deer

4 acres of herbaceous cover for one wintering pheasant

Thus an 80 acre herbaceous (grass or grass-legume) cover tract may winter 20 pheasants and eight deer. Deer may move out to a traditional wintering area, however, if one is nearby.

20 pheasants use 4 bu. corn/mth. x 5 mths. = 20 bu.
8 deer use 13 bu. of corn/mth. x 5 mths. = 65 bu.

Average total food needs for winter = 85 bu.

bushels of corn per acre - need about 2 acres of corn to winter an average high population of deer and pheasants.

Since these are fairly good population averages, use about 2 acres of food plots per 80 acres of cover for newly developed plots. Check use periodically over the winter. If all is utilized by April, increase. If not fully utilized, stay at the same rate or reduce. If only about 40 percent to 50 percent is utilized, consider leaving food plot for another year. If more food is needed, than the plot will provide any time during the winter - add grain to the food plot field in piles on straw or on hay or place in self feeders. You could also add millet or oat bales to the field, if they are available. (See Table 1 for winter wildlife food needs).

These figures will vary a lot if other adjacent woody or herbaceous cover areas are near to the 80 acres of newly established cover plot.

For a quarter (160 acres) of newly developed herbaceous cover, use a 4 acre food plot until such time as a check of wildlife utilization in late March or early April indicates a decreased need or an increased need.

If herbaceous cover areas are less than 40 acres, croplands are adjacent to the tract, and no other wildlife cover is located near the cover area, it may be more feasible to not set up a food plot but to prepare to feed cereal grains in self feeders or to place grain on small piles of straw or hay. Oat bales or millet bales can also be placed in the area to help feed wildlife in the area.

Deer Wintering Areas

Key wintering areas are another matter. Fifty deer can utilize about 80 bushels of corn per month or roughly 10 acres for a five month winter. (Using 40 bushels per acre average).

Food plots should be planted on the east or south side of the cover tracts if possible, so that they will be better protected from drifting snow. Food plots should be adjacent to habitat areas, if possible. They do little good if they are located out in the middle of a big field that is fall plowed or tilled black.

Make these food plots as wide as possible. Square shapes are best in most cases. Long narrow plots can fill in with deep snow. But they may have to fit in with normal farming patterns, so make as wide as feasible.

10'	x 1/2 mile	(2640') = 1 acre
33'	x 1/2 mile	(2649') = 2 acres
33'	x 1/4 mile	(1320') = 1 acre
66'	x 1/4 mile	(1320') = 2 acres
99'	x 1/8 mile	(660') = 3 acres
66'	x 1/8 mile	(660') = 1 acre
99'	x 1/8 mile	(660') = 1-1/2 acres
132'	x 1/8 mile	(660') = 2 acres
132'	x 1/4 mile	(1320') = 4 acres
132'	x 1/2 mile	(2640') = 8 acres
165'	x 1/8 mile	(660') = 2-1/2 acres
165'	x 1/4 mile	(1320') = 5 acres
165'	x 1/2 mile	(2640') = 10 acres

If using corn and sunflower mixture, keep sunflower down to no more than 1/2 pound per acre.

If you are seeding for good mature corn, it's better to underseed slightly than overseed. Again, always try to use early maturing varieties of corn and sunflowers, and oil type sunflowers are best for wildlife.

Table 1. Wildlife Food Needs

Data are based on the amount of feed needed by a deer for a 14 day period.

Deer need 2 to 3 pounds of feed per day. To be on the safe side, figuring waste, etc., we will use a 3 pound per day average figure.

We recommend using the type of grain that is grown locally in the problem area.

When in doubt, use the oats or oats-barley feeding schedules.

Oats - Barley (14 days)			
5 Deer - 2 bu. Oats	10 Deer - 5 bu. Oats		
3 bu. Barley	5 bu. Barley		
15 Deer - 8 bu. Oats	20 Deer - 10 bu. Oats		
8 bu. Barley	11 bu. Barley		
25 Deer - 13 bu. Oats	30 Deer - 16 bu. Oats		
13 bu. Barley	21 bu. Barley		
35 Deer - 19 bu. Oats	40 Deer - 21 bu. Oats		
18 bu. Barley	21 bu. Barley		
45 Deer - 23 bu. Oats	50 Deer - 26 bu. Oats		
24 bu. Barley	26 bu. Barley		
55 Deer - 29 bu. Oats	60 Deer - 31 bu. Oats		
29 bu. Barley	32 bu. Barley		
65 Deer - 34 bu. Oats	70 Deer - 37 bu. Oats		
34 bu. Barley	37 bu. Barley		
75 Deer - 40 bu. Oats	80 Deer - 42 bu. Oats		
39 bu. Barley	42 bu. Barley		
85 Deer - 44 bu. Oats	90 Deer - 46 bu. Oats		
45 bu. Barley	48 bu. Barley		
95 Deer - 50 bu. Oats	100 Deer - 52 bu. Oats		
	(4208 lb)		
50 bu. Barley	53 bu. Barley		

Barley Only (14 days)	
5 Deer - 4-1/2 bu.	10 Deer - 9 bu.
15 Deer - 13 bu.	20 Deer - 17-1/2 bu.
25 Deer - 22 bu.	30 Deer - 26 bu.
35 Deer - 30-1/2 bu.	40 Deer - 35 bu.
45 Deer - 39-1/2 bu.	50 Deer - 44 bu.
60 Deer - 52-1/2 bu.	70 Deer - 61 bu.
80 Deer - 70 bu.	90 Deer - 79 bu.
100 Deer - 87-1/2 bu.	90 Deer - 79 bu.

Oats Only (14 days)	
5 Deer - 7 bu.	10 Deer - 13 bu.
15 Deer - 20 bu.	20 Deer - 26 bu.
25 Deer - 33 bu.	30 Deer - 39 bu.
35 Deer - 46 bu.	40 Deer - 53 bu.
45 Deer - 59 bu.	50 Deer - 66 bu.
60 Deer - 79 bu.	70 Deer - 92 bu.
80 Deer - 105 bu.	90 Deer - 118 bu.
100 Deer - 131 bu.	

Corn - Oats (14 days)			
(210 lbs.)	5 Deer - 3 bu. Oats	(420 lbs.)	10 Deer - 6 bu. Oats
	2 bu. Corn		4 bu. Corn
(630 lbs.)	15 Deer - 9 bu. Oats	(840 lbs.)	20 Deer - 12 bu. Oats
	6 bu. Corn		8 bu. Corn
(1050 lb.)	25 Deer - 15 bu. Oats	(1260 lbs)	30 Deer - 18 bu. Oats
	10 bu. Corn		12 bu. Corn

Corn Shelled to Eared			
Shelled	Ears	Shelled	Ears
100 lbs. =	125 lbs.	4,000 lbs. +	5,000 lbs.
500 lbs. =	625 lbs.	5,000 lbs. +	6,250 lbs.
1,000 lbs. =	1,250 lbs.	6,000 lbs. +	7,500 lbs.
2,000 lbs. =	2,500 lbs.	7,000 lbs. +	8,750 lbs.
3,000 lbs. =	3,650 lbs.	8,000 lbs. +	10,000 lbs.

Factor is .8 or 4/5 to convert eared corn to shelled corn

Other wildlife feeding options

With heavy use, many plots may be totally used up prior to late winter. In such cases supplemental wildlife feeding using feeders or food bales may provide suitable alternatives.

Caution should be taken to prevent wildlife becoming totally dependent on feeders. If used, they should be placed in suitable habitats and properly maintained.

Wildlife Feeders

Following are several plans of wildlife feeders that have been built by sportsmen clubs to assist them in wintering local wildlife.

Deer - Pheasant Feeder

Materials Needed:

Lumber:

Dimensions:

- 8 - 2" x 4" x 14'
- 8 - 2" x 4" x 12'
- 2 - 2" x 6" x 8'
- 2 - 2" x 6" x 8'
- 2 - 6" x 6" x 10' (Treated) or 5" x 6" will suff.

Plywood

- 7 sheets 3/4" - 4' x 8'
- 2.5 sheets 1/2" - 4' x 8'

Paint

- Primer - 1 gal (oil base)
- Finish Coat 3 quarts (oil base)

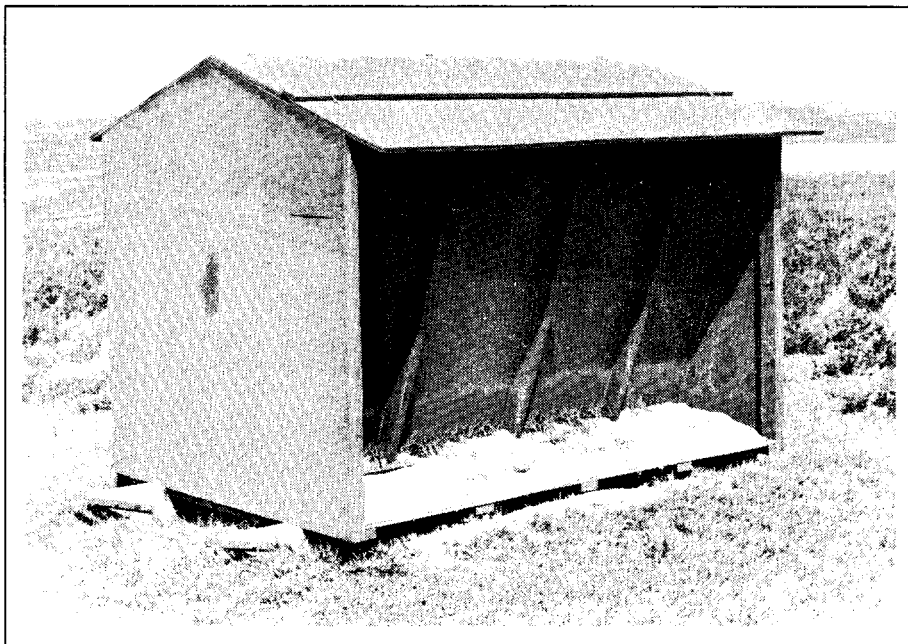
Hardware:

- Machine bolts - 52 - 1/4" x 2 1/2"
- Flat washers - 104 - 1/4" hole
- Hex nuts - 52 - 1/4" machine three
- Strap Hinges - 4 - 2 1/2" x 6"
- Stove bolts - 32 - 1/2" x 1 1/2" hole

- Steel Rod (threaded on one end) - 1 - 1/2" x 6'

Construction: (Figure 1)

1. Prepare skids and construct floor and attach to skids
2. Install 2 x 4's on each end on 2 x 6 supporting roof peak
3. Install the 4 corner 2 x 4's
4. Install the 2 x 4's that run along each side at the top of the wall which are notched into the corner posts.
5. Install the 2 x 6 that runs lengthwise on floor forming the divider.
6. Install the divider (1/2" plywood)
7. Install bottom sheet of 3/4" plywood on each end of feeder
8. Install first sheet of plywood (1/2") on inside walls
9. Install the two (2) end rafters for the roof
10. Install intermediate rafters
11. Install the top portion of the 3/4" plywood end walls at *one* (1) end.
12. Install remaining 1/2 plywood on inside wall, each side
13. Install the remaining 3/4" plywood end wall at the other end
14. Install roof and doors
15. Install the steel rod that prevents bulging
16. Prime and paint



Deer - pheasant feeder

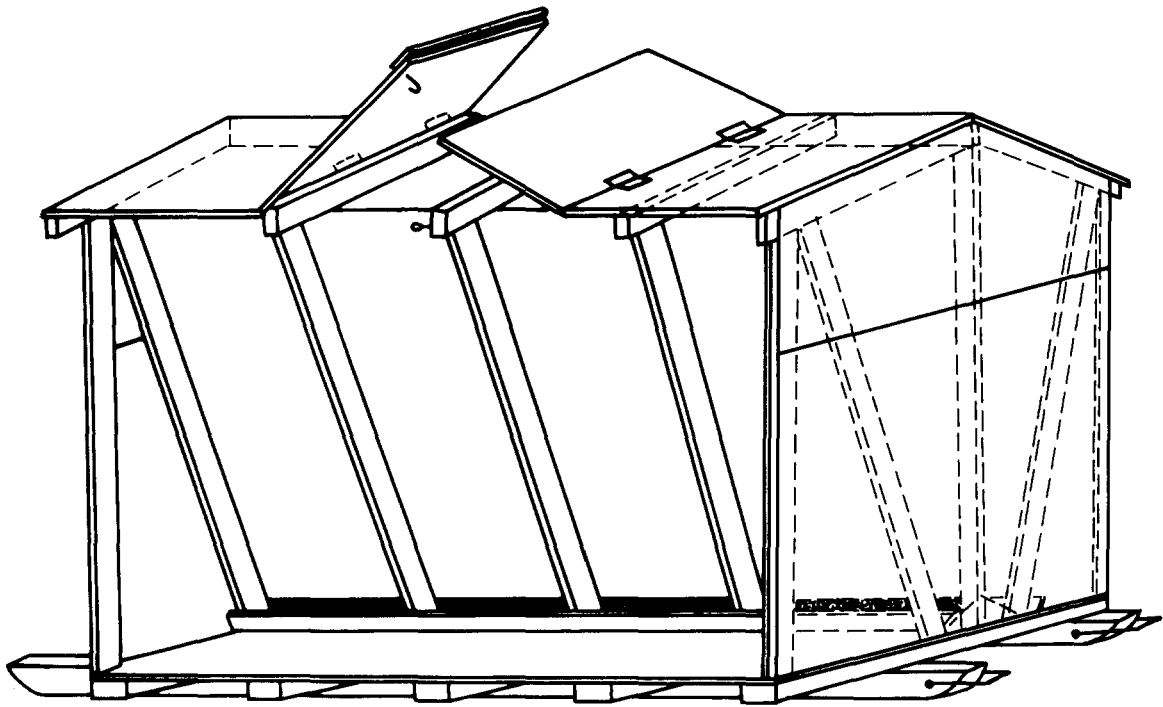
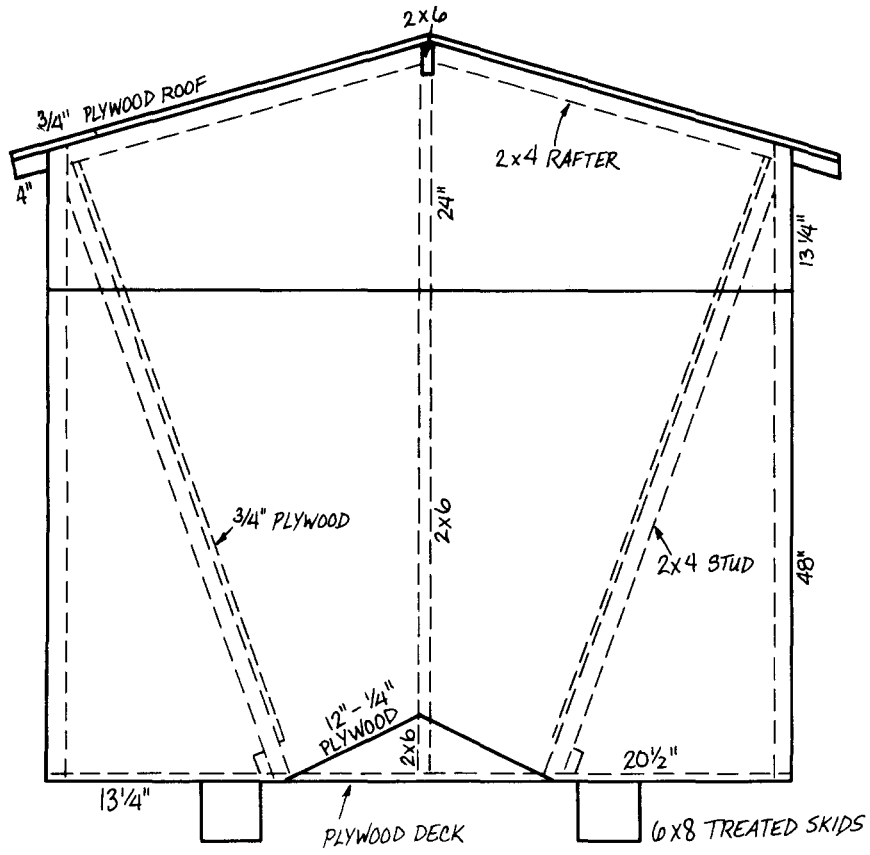


Figure 1. Large self feeder.

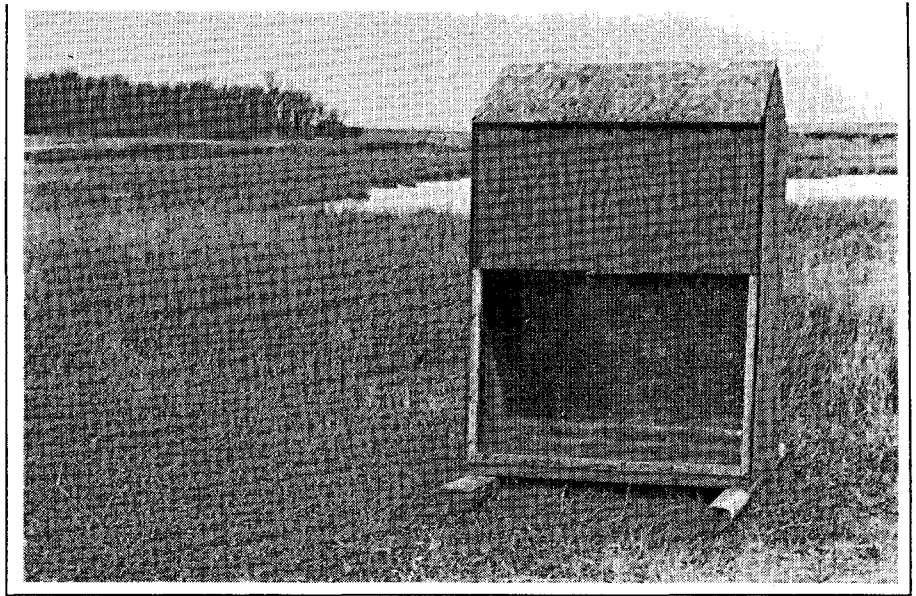
Pheasant Feeder

Materials Needed:

- two sheets of 1/2 inch exterior plywood
- two and a half 8' 2 x 4 studs
- two hinges, one hasp, bolts for the hardware, nails and paint

Construction:

1. Measure and cut plywood and assemble according to dimensions given in Figure 2.



The above shows a pheasant feeder that has been modified to increase capacity.

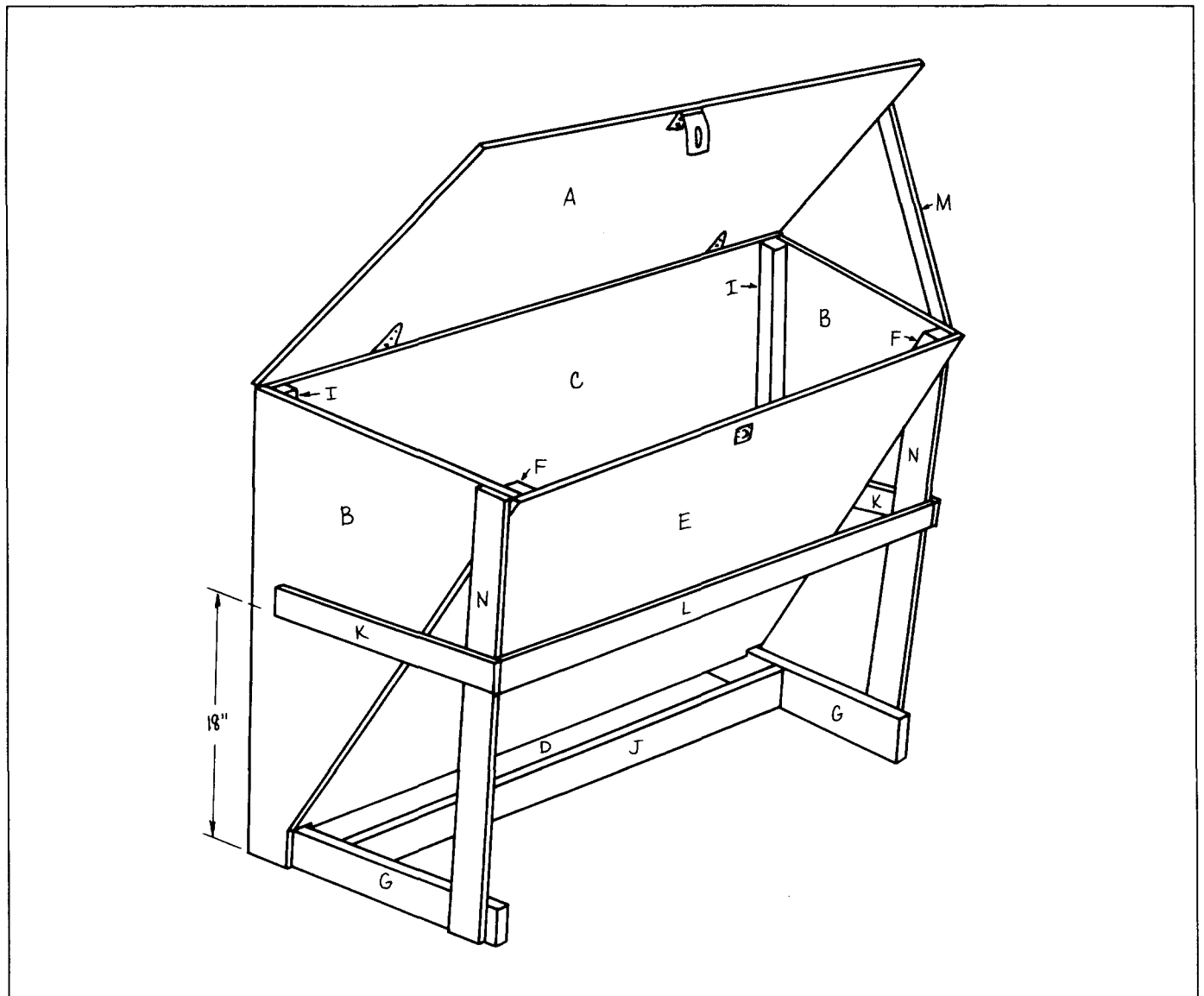


Figure 2. (part 1)

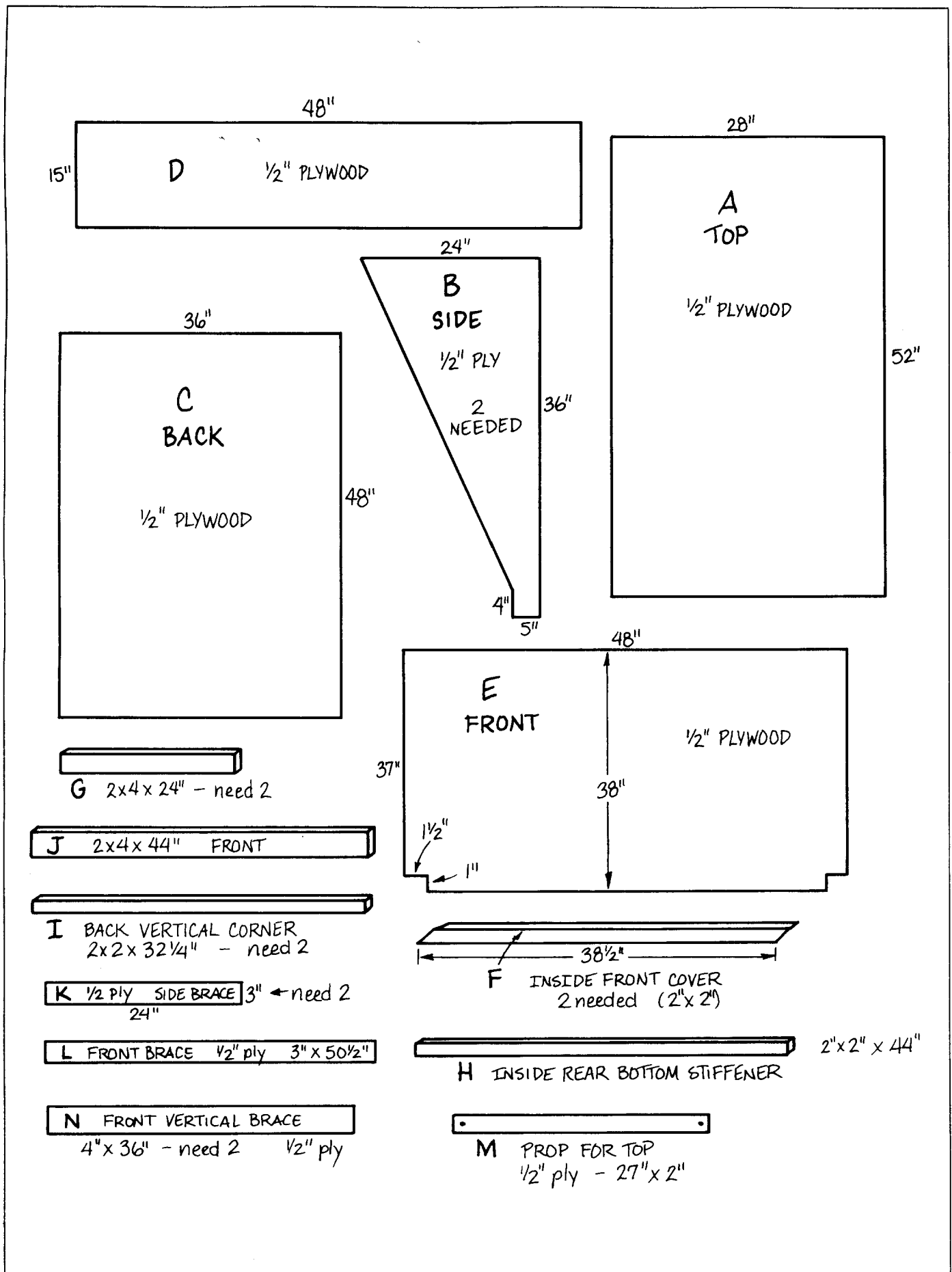


Figure 2. (part 2)

Feed Bales

Several wildlife clubs and landowners cooperate in providing feed bales for wildlife. In most cases these consist of large round bales made up of primarily millet. The bales are transported to areas of good winter wildlife cover and the baling twine cut and removed.

A Barrel Feeder for Wildlife

The simplest small feeder is made from a 55 gallon barrel. The best barrels to use are those which are used to store honey as they will have a removable lid.

Do not use barrels which have contained pesticides or like chemicals.

Do not attempt to cut the end out of any barrel with a cutting torch as the vapors in the barrel may be very explosive.

Make a 12-inch long cut three inches above the base of the barrel. The easiest way to make this cut is to drill a 5/16 inch hole at each end of the planned cut and then saw between the holes with a very fine tooth blade in a sabre saw. Then take a good sized hammer and bend the metal above the cut in to make a pocket in the barrel.

If your barrel did not come with a lid, a 24-inch square of exterior plywood will serve. Nail on some cleats to keep it from shifting on the barrel and weight it down with a rock or tie it on with rope or wire.

A 55 gallon barrel holds about 5 bushels of grain.

To double the capacity, cut both ends out of a barrel and tack weld two together at about 6-inch intervals, or bolt them together using a half dozen 4 inch long pieces of strap iron and 1/4 inch stove bolts. Caulk the joint between the two barrels to keep out moisture.



Barrel feeders, set up close to good cover, can sustain a number of wildlife during a tough winter.

Chapter 9: Managing Water for Wildlife

Water is a basic requirement of life. For this reason rivers, streams, lakes, and wetlands have been hubs of both human and animal activities since time began.

With proper management, such areas will continue to yield substantial benefits to all creatures that depend upon them.

This chapter will deal specifically with activities that landowners and other concerned conservationists can participate in to develop and manage one of these important water resources: our wetlands.

Role of wetlands

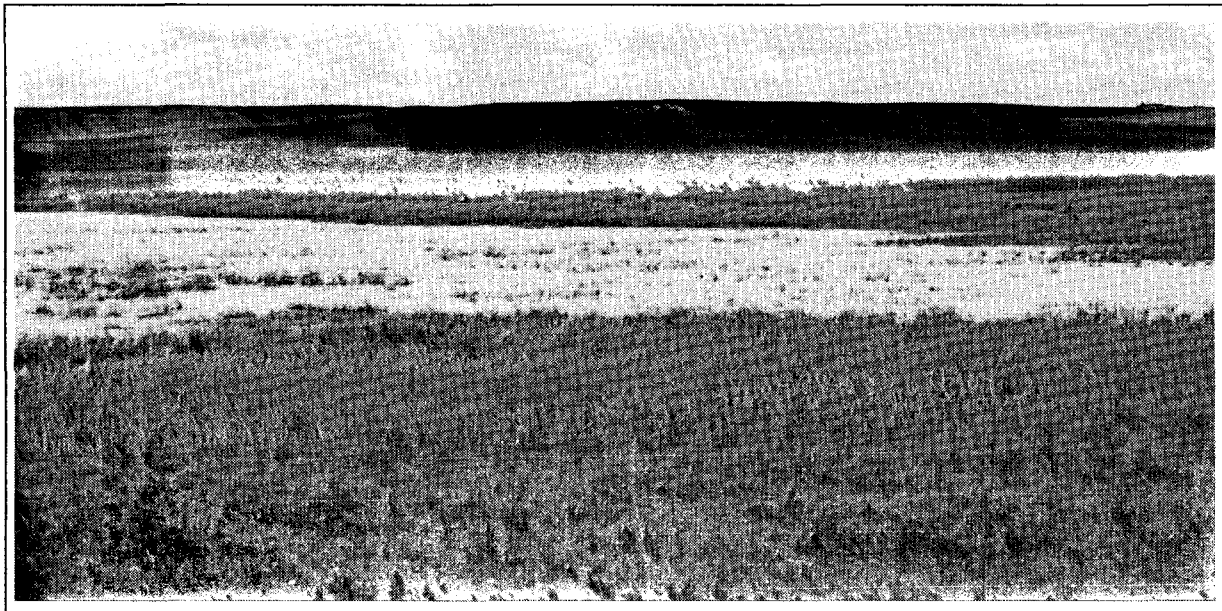
Wetlands are vital components of the habitat needs of migrating waterfowl and wetlands of all sizes are important to waterfowl. Large, small, shallow, and deep wetlands are all important to the different life cycles of prairie waterfowl.

Wetlands also can provide substantial flood control, groundwater recharge water quality and livestock forage benefits.

Wetlands restoration opportunities

With the advent of the Conservation Reserve Program (CRP), opportunities presently exist for developing wetland habitats for wildlife.

Lands that qualify for the CRP program must be seeded or returned to some type of permanent cover. Under CRP guidelines water is acceptable as a permanent cover. Thus, if drained wetlands exist on enrolled CRP acres, they can be restored. And, as with other CRP practices, the cost of restoring a wetland is shared between the landowner and ASCS.



Prairie wetlands provide a multitude of benefits.

Additional state and federal programs are also operating to pick up the landowner's cost of the wetland restoration. Landowners who restore or develop wetlands under CRP may not have to bear any expense of the restoration activities. Sports-men and wildlife clubs have also assisted in wetland restoration by paying for the associated costs.

In addition to the cost sharing program available for wetland restoration, similar types of programs are available to assist landowners in developing wetland areas for wildlife.

In order to maximize the wildlife benefits of restored or developed wetland areas, the surrounding uplands should be seeded to suitable upland cover. This cover in addition to providing secure nesting habitat will also minimize soil erosion from adjacent croplands into wetlands. To further enhance these areas, consider constructing earthen islands or using elevated nesting structure to attract waterfowl and geese.

For more information on restoring or creating water areas for wildlife, contact your local wildlife agency or Soil Conservation Agency representative.

Chapter 10: Restoring Wildlife

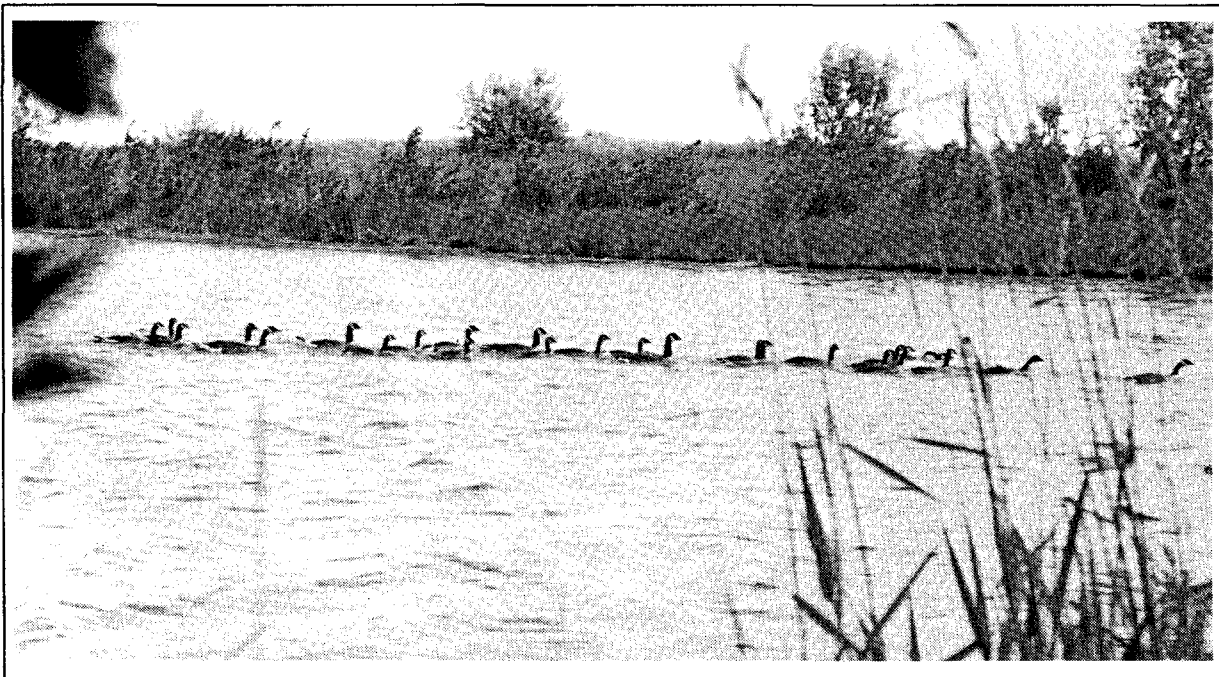
One of the goals of the Conservation Reserve Program is the enhancement of our nation's wildlife population. The program proposes to accomplish this by taking millions of acres of marginal cropland out of production and seeding it to some type of permanent cover. Since water is an acceptable cover under program guidelines, and often cheaper than seeding grass or planting trees, many landowners enrolled in the program have opted to restore wetlands in conjunction with seeding cover.

In effect, they have created new wildlife habitats. Many conservation groups have found ways to assist Mother Nature in restoring wildlife to these areas. Two such popular projects in the Great Plains involve giant Canada geese and the ring-necked pheasant.

Restoring Giant Canada Geese

Background

At first, private game breeders had the only available breeding stock for starting new flocks of giant Canadas. Eggs, goslings, yearlings and paired birds of the strain were in great demand as wildlife agencies and private organizations sought to start free-flying flocks. So successful were these ventures that large scale operations soon became commonplace.



Canada geese.

In later years, after the number of free-flying giant Canada geese had increased substantially as a result of successful restoration efforts, there was some shift in emphasis from releasing captive-reared birds to transplanting. The transplant method involves capturing flightless molting adults and goslings and moving them to suitable habitats not occupied by breeding Canada geese. Once free flying flocks were successfully established and the flock size had reached optimum level, some young could be removed for transplanting without harming the flock.

Each autumn, the adult geese in a transplanted group lead the young in migration to a traditional wintering area. The following spring, the adults return to their usual nesting area where they had been captured, while the young tend to "home" back to the transplant area where they experienced their first flight. This homing behavior is an important basic principle which makes it possible to establish new flocks by releasing captive-reared or transplanting wild-reared geese. Young females or older females that have not flown tend to "home" back to nest at the release or transplant sites where they had their first flight experience. Some flocks, especially in the southern Great Plains, are non-migratory and for them "homing" is irrelevant.



Local wildlife clubs can assist in rounding up the geese, banding and release.

What can you do?

An outstanding characteristic of the giant goose is its ability to adapt to a wide variety of habitats and other environmental conditions. It may breed on large reservoirs, natural marshes, streams, stock ponds, or even ponds in reclaimed strip-mined lands. It is very tolerant of human activity and will nest in metropolitan and suburban areas as well as in remote wilderness situations. It is partial to isolated nest sites like islands and muskrat houses which cannot be reached by raccoons or other predatory animals which destroy goose nests. The giant's great adaptability - which seems to exceed even that of other Canada geese - makes it possible for people to help it, since it readily accepts artificial nesting sites provided



Local clubs often know the best sites for releasing the giant Canada geese.

especially for its use. Traditional nesting structures have been an integral part of many restoration programs, and literally thousands have been put out by government agencies, ranchers, farmers, sportsmen and others. Both nesting success and nesting density can be improved by providing artificial structures, islands or other safe nesting places. In recent years, the use of large round hay or straw bales placed in marshes for goose nesting has come into prominence.

The goose has made a comeback due to the combined efforts and teamwork of many agencies, organizations and individuals. The work continues in varying degrees in parts of the vast region - notably North Dakota, South Dakota, Minnesota, Wisconsin and Michigan. Giant Canada geese are now found nesting in suitable habitats almost anywhere in the three states.

For more information on giant Canada geese restoration projects in your area, contact your local wildlife agency representatives.

Restocking the ring-necked pheasant

The ring-necked pheasant is one of the most popular upland game birds in the Great Plains. They were introduced into the plains states to fill the gap created when prairie grouse habitat was damaged by farming.

Ring-necked pheasants are more closely dependent on man's agricultural activities than any other North American game bird. This dependency makes pheasant populations extremely sensitive to change in local farming practices.

Although stocking appears to be responsible for pheasants early success, the ultimate controlling factor is that these birds need a place to feed, live and reproduce.

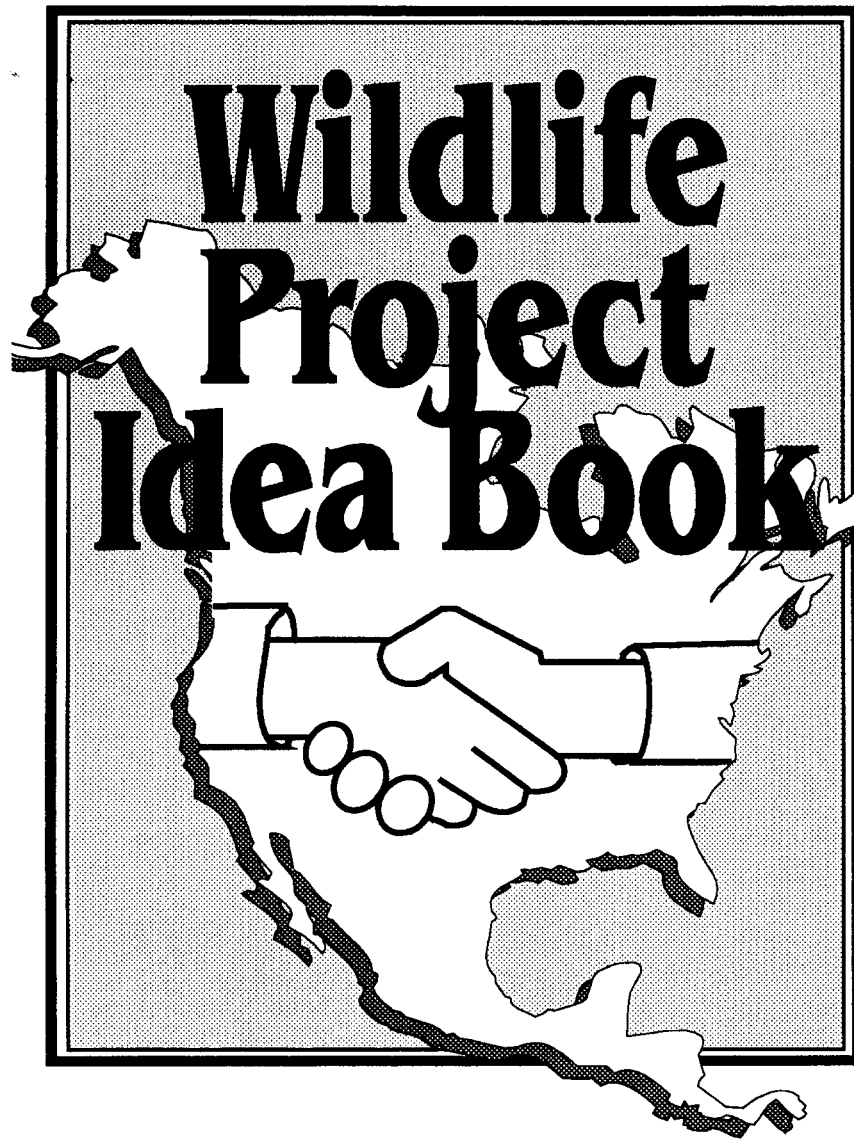
The advent of the Conservation Reserve Program, which takes highly erodible land out of production and puts it into permanent cover, has rekindled an interest among sportsmen groups to restock the wily pheasant.

Several state wildlife agencies offer assistance for pheasant stocking. Stocking efforts are made primarily to increase hunting opportunities. Only to a limited extent do such efforts work to increase local breeding stock. Prior to beginning a local restocking effort, check with local wildlife officials to determine your area's ring-necked pheasant restocking potentials.



Ring-necked pheasants may be more dependent on man's agricultural activities than any other species of wildlife.





Section Four:
**Managing Land for
Wildlife**

Section IV: Managing land for wildlife

The land is home to us all. It provides both human and wildlife with the food, water, and shelter that is so essential for survival. To fulfill this role the land must produce and we are constantly looking for ways to have it produce more. This search often leads to intensified use. The costs of this intensified use can be high as evidenced by skies darkened and waters muddied by wind swept soils. Conservationists seek to reconcile this use of the land to provide places for wildlife. Our wildlife refuges, nature preserves, game management and waterfowl production areas are such places. These areas, however, once created, must also be managed.

The next two chapters identify two ways concerned citizen conservationists can work with private, state, and federal agencies or organizations to create and manage places for wildlife.



Chapter 11: Adopt-A-Wildlife Area

Several public and private natural resource management organizations have programs that encourage citizens to become involved in managing land for wildlife. One such program initiated by the U.S. Fish and Wildlife Service offers local conservation groups the opportunity to become involved in waterfowl production. It is known as the Adopt-A-WPA program.

How does the Adopt-A-WPA program work?

Organizations or individuals interested in becoming involved in local wildlife management efforts should first contact local U.S. Fish and Wildlife Service representatives to see if the program is operational and if there are areas in need of adoption.

Once an area is selected, the interested group, with input from the area manager, develops a five year management plan. The plan sets forth the management practices that will be implemented annually.

Once the plan is approved, the group is issued a special use permit to conduct the work.



The Adopt-A-WPA program offers citizen conservationists a chance to actually manage wildlife and its habitat.

What kind of work can be conducted under the special use permit?

The only management practice that can't be performed is prescribed burning and weed control. If required, prescribed burning or weed control will be done by the U.S. Fish and Wildlife Service managers in accordance with federal guidelines.

Activities that are permitted include the development of nesting areas, food plots, tree planting, and placement of approved nesting structures.

Who pays for the management costs?

Managing a wildlife area takes a lot of time and money. Many groups in addition to using volunteer labor, call on local landowners for assistance. The money needed to do the work comes from local fundraising efforts.

In addition, the U.S. Fish and Wildlife Service offers a challenge grant program. Under program guidelines, organizations can receive a dollar for dollar match from the agency to carry the management practices. If a group raises \$2,000, the USFWS will match it with another \$2,000.

Summary

Cooperative land management programs such as the Adopt-A-Waterfowl Production Area program in addition to benefitting wildlife can make local conservationists true wildlife management partners.

To get started, contact your local wildlife agency representative.



A local wildlife club from Casselton, N.D., plants trees as part of their Adopt-A-WPA program.

Chapter 12 - Preserving Land for Wildlife

Conservationists, in addition to donating money to support the work of public and private wildlife resource management organizations, have also raised funds to preserve local areas for wildlife by direct purchase of land. One such project completed was by the Central Dakota Sportsmens Club from Carrington, ND. Involved conservationists from all across the state made an effort to provide a 480 acre living tribute for a local wildlife biologist who had dedicated his life to the people and the wildlife of area. Their story provides a model of what it takes to fulfill the ultimate conservation commitment, the purchase of a permanent home for wildlife.

Making the decision

Making the actual decision to acquire land for wildlife is often the only easy part of the process. Completion of the process requires membership commitment, patience, persistence and ingenuity.

Raising the money

Since money often becomes the bottom line in completing a land purchase, clubs without collateral to borrow against must be willing to use several fundraising alternatives.

Some of these alternatives may include activities identified in Chapter 3. Additional ways to raise funds include direct contacts with other sportsmen groups. Many clubs have found such groups willing to contribute to habitat work even though this money may not be used locally.



The purchase of land for wildlife purposes by a citizen conservation organization requires commitment and perseverance.

MAKING THE PURCHASE

Once the money has been raised, it now becomes a matter of finding a suitable piece of land to purchase. State and federal wildlife management agencies may have programs available to assist with completing the purchase. Once the purchase is completed, the agencies may assume ownership of the property and all responsibility for taxes and management.

After the purchase

Acquisition of an area for wildlife is just the beginning. Consideration must now be given to managing the area. Often this responsibility can be shared by a wildlife management agency and the organization that initiated the purchase. Cooperatively, the groups can develop a management plan for the area.

PAYING FOR THE MANAGEMENT

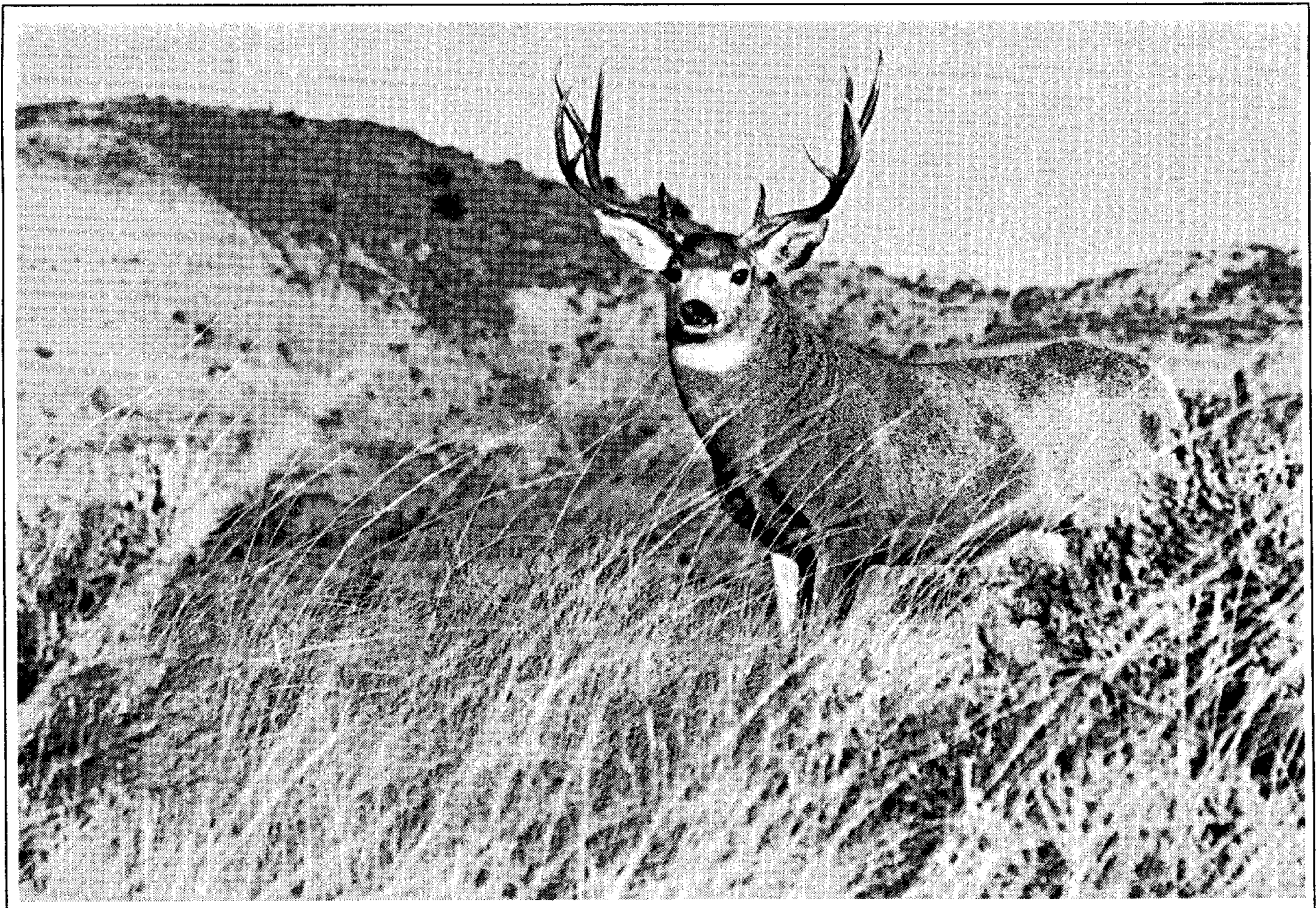
Once management plans have been developed for the purchased area, funds to help carry out certain management practices may be available through state or federal wildlife management agencies or other federal agencies such as the Soil Conservation Service.

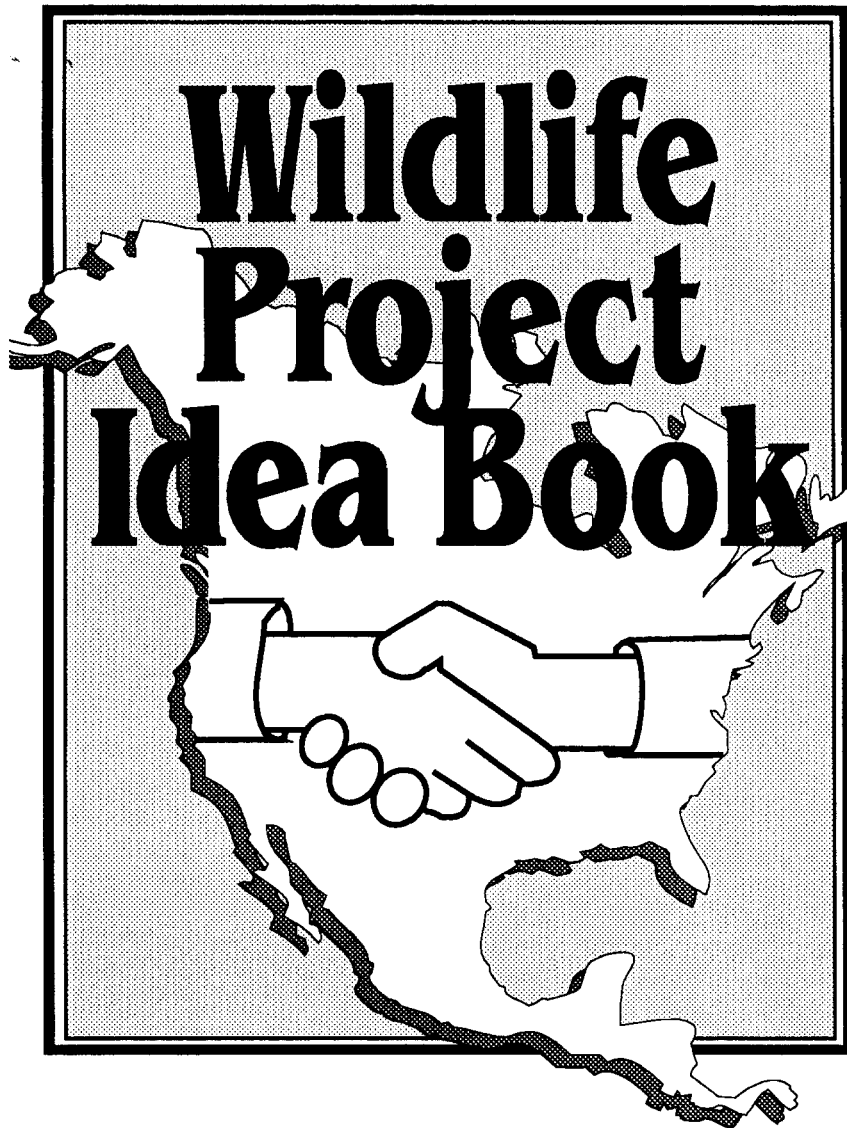
One program available through the Soil Conservation Service is the Resource Conservation Development Program. This program is a nationwide program. The goal of the program is to help complete projects that are in the public's best interest. Soil Conservation Service district conservationists are your first points of contact to get involved in the program. And, receiving project cost-sharing through the program does not exclude your club from getting additional agency cost-sharing.

SUMMARY

The acquisition of land for wildlife is a huge task for most private conservation organizations let alone the individual. However, there are many ways to succeed and once acquired, there are several agencies and organizations that are willing to devote money and time to enhance and develop the habitat for wildlife.

For more information or assistance in getting started, contact your local wildlife agency representative.





Section Five:
Resource Education
Opportunities for the
Sportsman

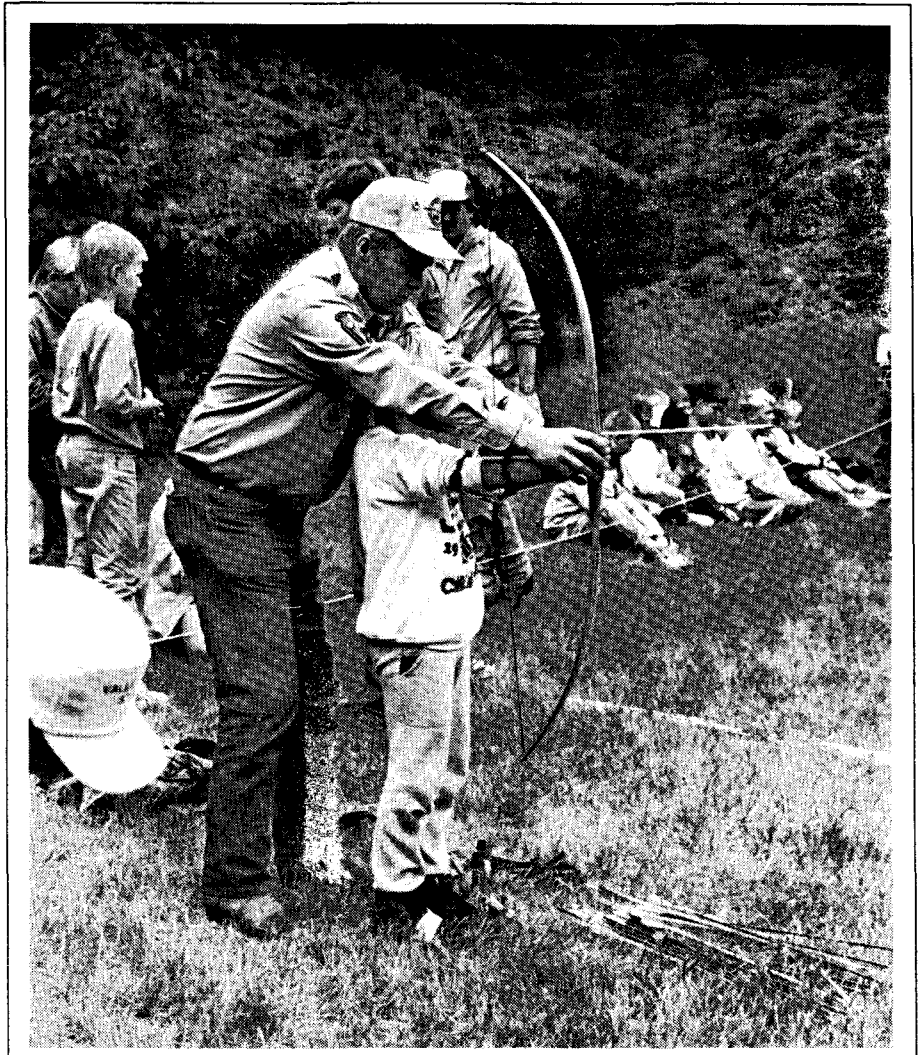
Section V: Resource Education Opportunities for the Sportsman

Nearly all the funds used to conduct wildlife conservation activities come from the users of that resource, notably those who hunt and fish.

Given that fact alone, most would agree that sportsmen needn't have to do any more to support wildlife. Many sportsmen, however, feel quite differently.

Being concerned conservationists, many sportsmen realize that to just pick up the tab for conservation is not enough. They must also be actively involved in educating youth, the non-hunting public as well as their own, about the importance of conserving wildlife and the role responsible hunters play in conservation.

The following identifies several ways that sportsmen have and will continue to be involved in as they work to tell the wildlife conservation message.



Chapter 13: Hunter Education

Every state has some type of law that requires young hunters to participate in and complete a hunter education safety course before they can buy a hunting license. Sportsmen not only are instrumental in working for the passage of these laws, but also are the volunteer instructors that carry out its intent.

Nationwide, hunter education has progressed from basic firearms safety to more inclusive courses covering almost all aspects of hunter responsibility.

Several states offer advance hunter education to address specific problems or needs.

Objectives

A major objective of these programs is to teach hunters to continually monitor their ranks in an effort to eliminate unsafe practices and unsportsmanlike behavior.

Teaching responsible gun handling is an important component of hunter education.

Who can become an instructor?

The backbone of hunter education is the volunteer instructor. Each has his or her own reasons for devoting countless hours to this unpaid work. Volunteers may be male or female, young or old, even a husband-wife team. Volunteers also come from diverse backgrounds which include every conceivable occupation or trade.

How can I become an instructor?

Every state has a certification program that prepares volunteers to instruct hunter education courses. The first step in becoming an instructor is to enroll in a certification program. Information or certification requirements can be obtained from local certified instructors or by contacting your state's hunter education program coordinator or local wildlife agency representative.



Once certified, the program coordinator will provide you with the necessary materials to get you started. As a certified instructor, you are a bona fide representative of your state wildlife agency.

What other assistance can a state hunter education program provide?

In addition to providing training and materials, state hunter education programs can provide guidance and funds to assist in development of target shooting facilities. For more information on programs available in your state, contact your local wildlife agency.

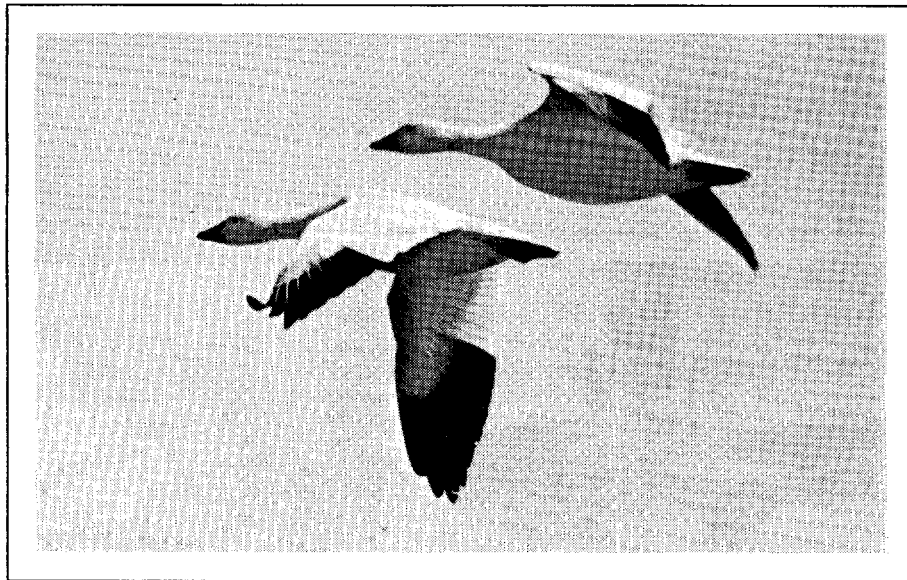
Summary

Hunting is a privilege. As such, it carries with it a responsibility for the general public's impression of hunting and the need to eliminate unsportsmen-like behavior. Hunter education is designed to create an awareness in each hunter how his or her behavior affects others. By your participation in hunter education, as a certified instructor, you will be doing your part to protect your hunting privilege.

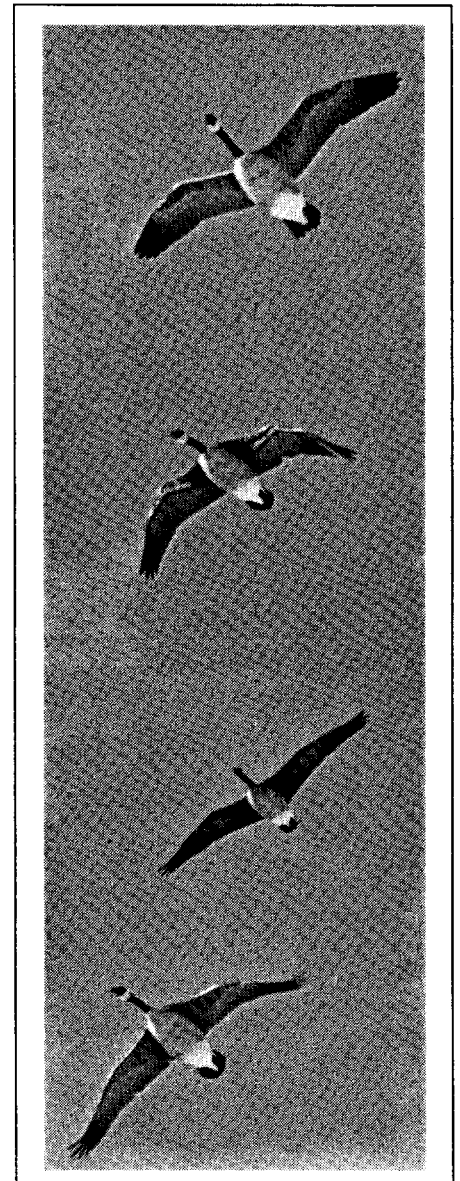
Chapter 14 - Waterfowl Identification Workshop

In an era when waterfowl face many challenges in their struggle to survive, it becomes increasingly important that these waterfowl and their habitat be managed correctly. This monumental task usually falls on the shoulders of state wildlife agencies and the federal government, primarily the U.S. Fish and Wildlife Service. This effort can not be handled solely by those agencies. Sportsmen and citizens must share in the responsibility as well.

One effort is the money earmarked for such work, which comes from the sale of federal duck stamps. Another effort, though it may seem small, is simply abiding by and following season regulations established to help harvest and manage our nation's waterfowl. In essence, it simply means to shoot only the number and species of birds set up in your particular area. This may vary from state to state, or even within a state. Special shooting zones have been established to reduce the kill and help manage populations.



Lesser snow geese.



Canada geese.

In order to aid waterfowl hunters who may have problems identifying birds, sportsmen groups have developed and sponsored workshops to improve hunter waterfowl identification skills.

Workshop objectives

The objectives of a waterfowl identification workshop are as follows:

- A. Provide waterfowl hunters with a chance to become more knowledgeable in duck identification.
- B. Make hunters more aware of regulations and changes.
- C. Give the wildlife agencies a chance to display ideas, techniques and purposes of managing waterfowl.

Materials Needed

- Duck Wings
- Duck Wing Cases
- Film (Waterfowl Identification)
- Slides
- Projector (Movie) (Reel)
- Projector (Slides)
- Sign Display
- Literature
 - Ducks At A Glance (Waterfowl Identification booklets)
 - Workshop Agenda leaflets
 - Proclamations
 - Public Use Guides
 - Quiz
 - Targets
 - Refuge Leaflets
 - Trash Bags
- Camera
- Duck and Goose mounts
- Tape
- Markers
- Easel and Paper
- Extension Cord
- Refreshments
- Door prizes
- Targets, shells, traps (optional)
- Wildlife Agency representatives

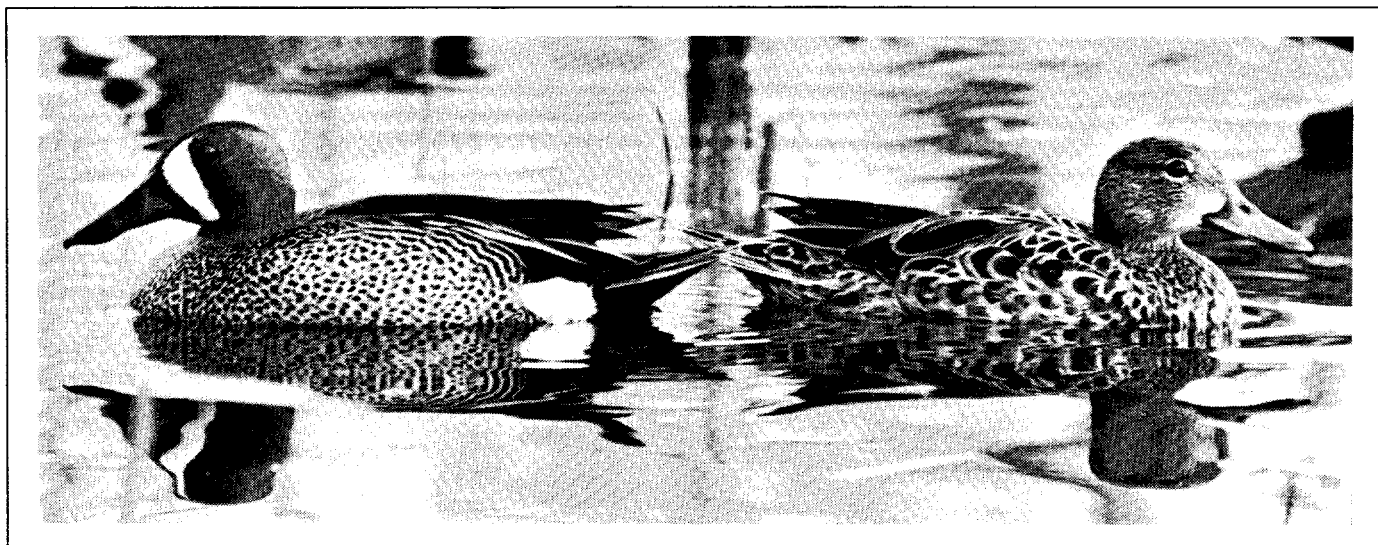
Publicity

Publicity consumes a large majority of time in preparing for the workshops. Club members circulate pamphlets, send out news releases, put up posters and do as much verbal recruiting as possible. Additional contacts with local TV and radio personalities will increase coverage.

The Workshop

A workshop can be divided into five parts: (1) waterfowl identification (movie, wing boards, mounts), (2) fall flight forecast and production, (3) hunting regulations, (4) quiz, (5) special presentation by an area resident on duck decoying and calling.

Following a general introduction to the workshop (welcome, thank-you, etc.) a video movie can be shown. Following the movie, the mounts and wing boards can be reviewed to stress characteristics. Characteristics such as speculum, wing beat, body shape, coloration and flight patterns should be discussed for each species.



Blue Wing Teal pair.

After the identification portion a short presentation on the production and fall flight forecast can be given to inform the participants as to what they can expect this fall. This information is provided by wildlife agency representatives.

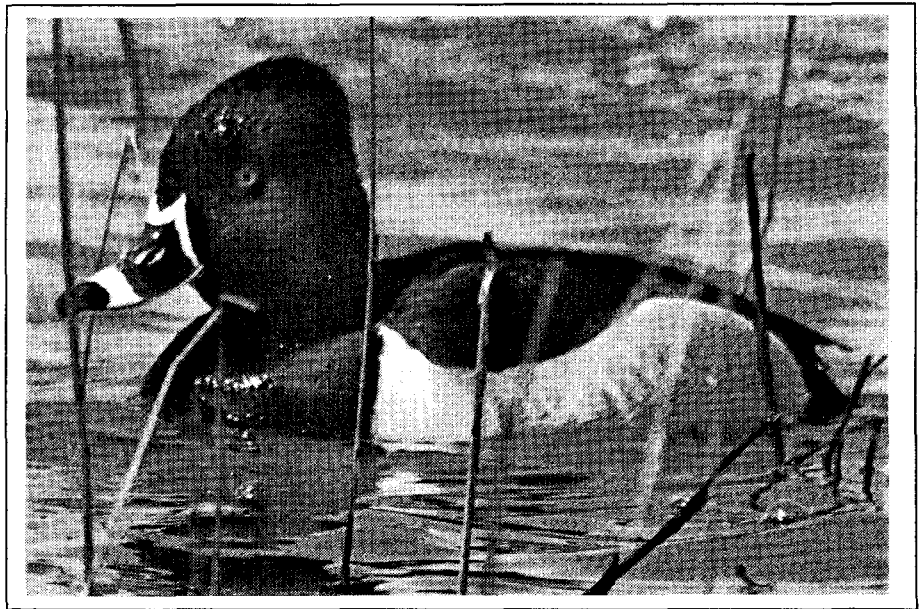
Hunting regulations, changes in regulations, sign display and meaning are also presented. This gives the participants a chance to voice their opinions about signing and regulations. This session can be a very positive part of the workshop if handled correctly.

Following the program, a special presentation such as on the use of duck decoys can be given by an avid local waterfowl hunter. A voluntary quiz can be held at the end of the session.

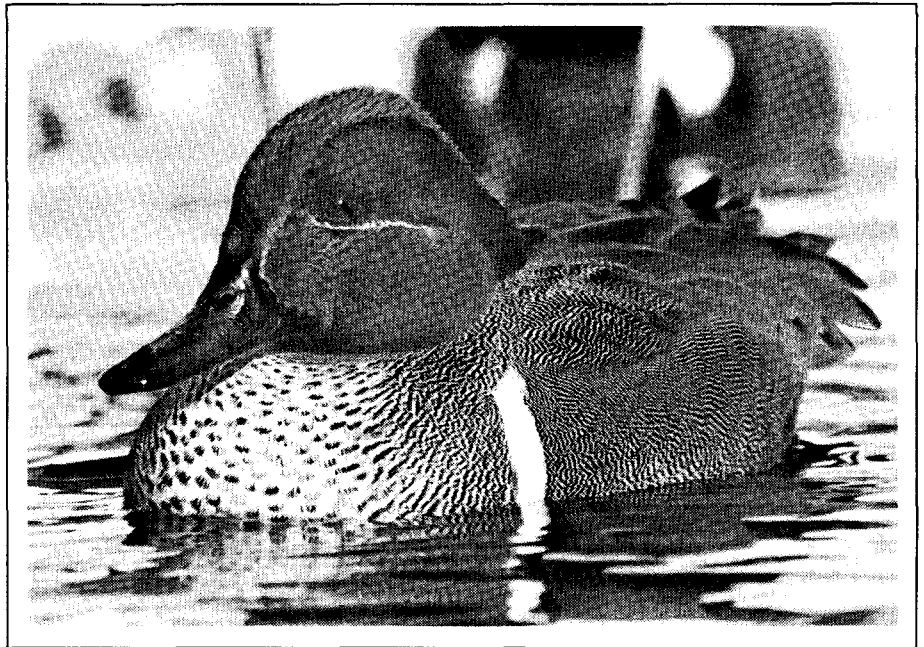
Followup to workshop participants can be given a chance to put together a "workshop packet" which may contain the following:

- A. "Ducks At A Distance" booklet
- B. Public use guides
- C. State hunting proclamation
- D. Refuge, wetland management districts, fish and wildlife pamphlets and maps.
- E. Trash bags

A shotgun patterning target can also be handed out separately to interested people. If the workshop is conducted at a local range, participants can be given the opportunity to pattern their shot-guns.



Ring-necked drake.



Green-winged teal drake.

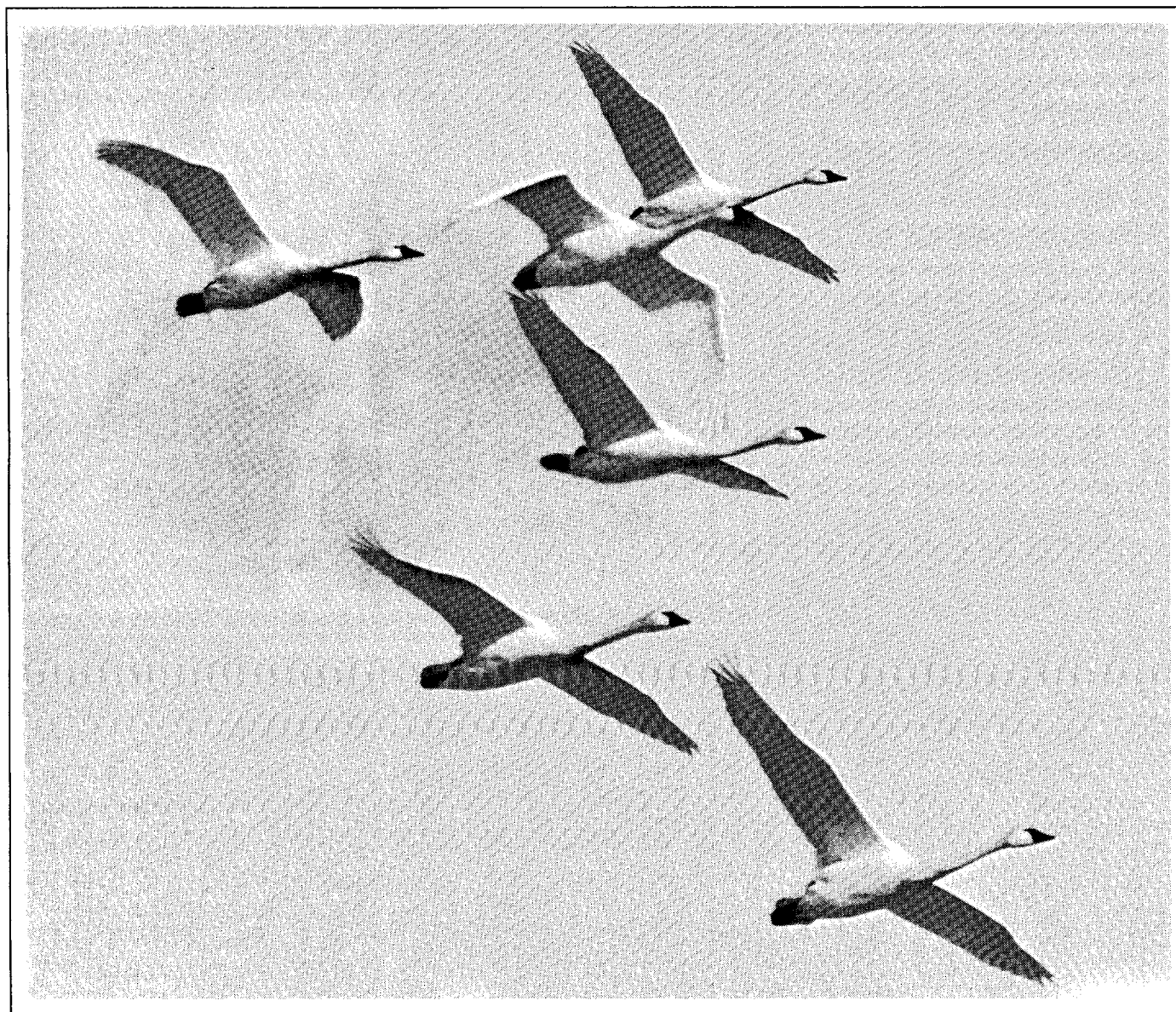
Scheduling a workshop

The best time to schedule a workshop is late August or early September, well in advance of the waterfowl season. Most workshops should start by 7 p.m. and conclude by 10 p.m. if conducted on a week night. Weekend workshop schedules can be adjusted to local preferences. Figure 1 provides a typical workshop agenda.

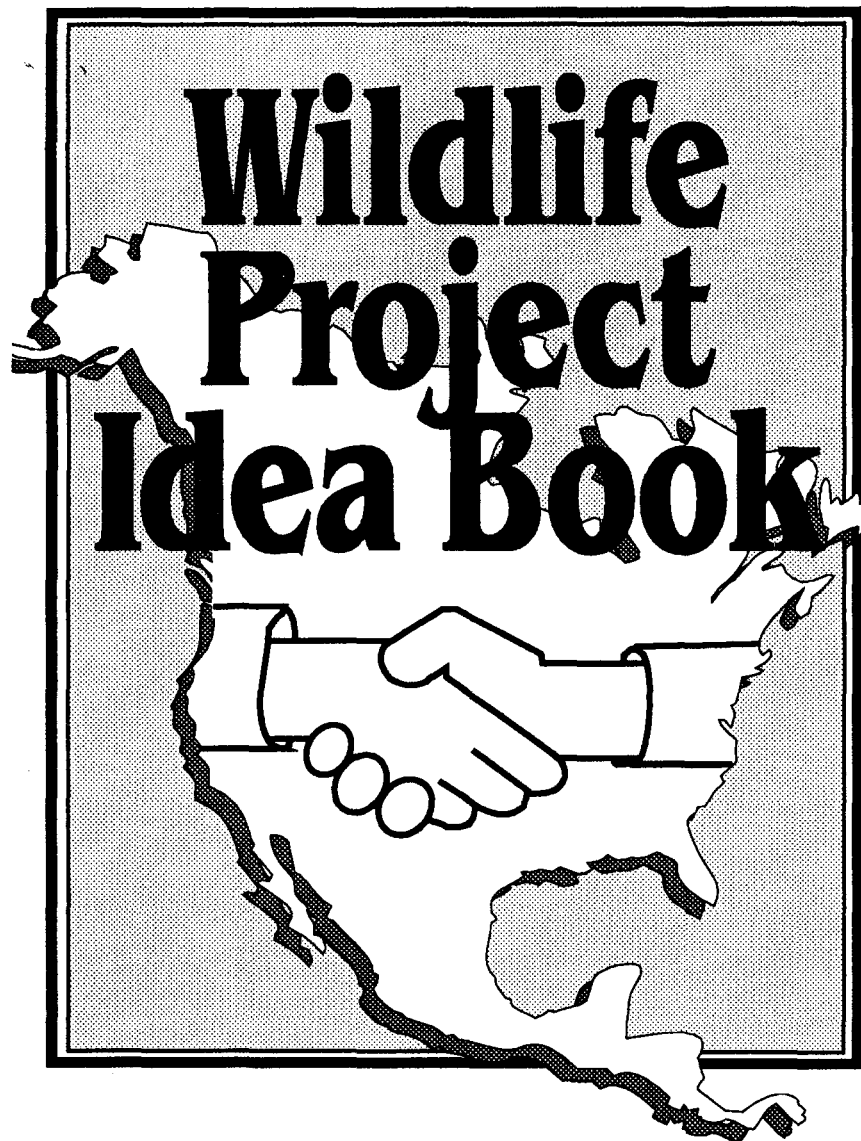
For more information or assistance on how to set up local sportsmen workshops, contact your area wildlife agency representative.

Figure 1. Waterfowl Identification Workshop Sample Agenda (week night)

7:00 - 7:10	Introduction
7:10 - 8:00	Duck ID movie/video Wings, Mounts, Posters, etc.
8:00 - 8:15	Fall Flight Forecast and Production - Fish and Wildlife Service or ND Game and Fish
8:15 - 8:30	Break and Door Prize Drawing
8:30 - 9:00	Hunting Regulations (Signs, Proclamations, Public Use Guides, Leaflets)
9:00 - 9:15	Voluntary Quiz
9:15 - 9:45	Decoy Demonstration/etc.
9:15 - 9:45	Closing remarks and balance of drawings (If any)



Tundra swans.



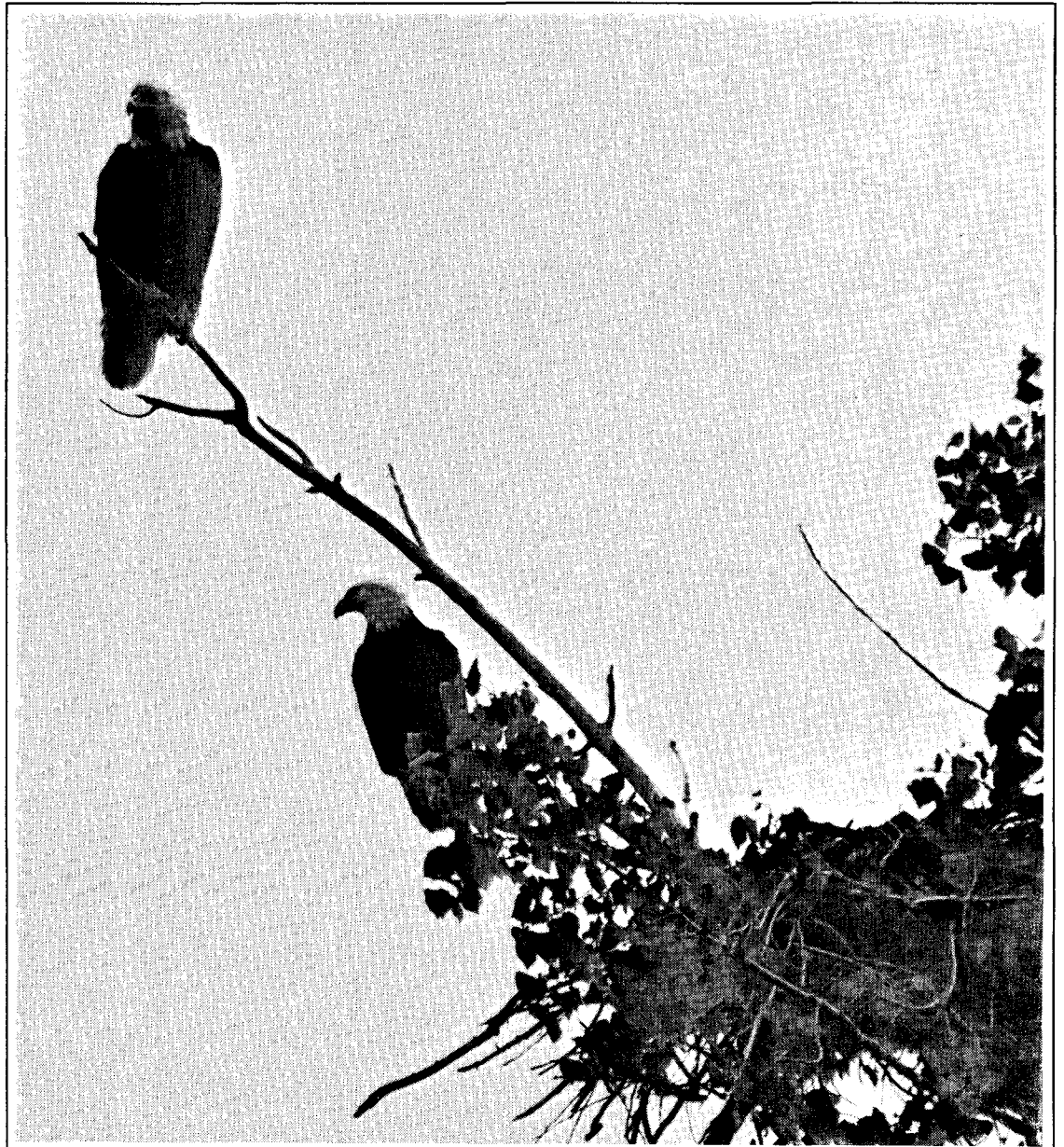
Section Six:

Giving Conservation A Helping Hand

Section VI: Giving Conservation a Helping Hand

The fate of North America's wildlife populations is in each and every one of our hands. Although you may not hunt or fish, the decisions you make on a daily basis affect our wildlife resources. Something as simple as whether to request paper or plastic carry-out bags at a local supermarket can have far reaching implications in conserving our natural resources.

The point is that earth is home to us all, both human and wildlife. As humans, we are the only creatures capable of manipulating our environment, for better or for worse. Conserving its resources is our shared responsibility.



The fate of nongame animals are also a primary concern of the North American sportsmen.

Chapter 15: Epilogue

The ideas and activities presented in the Wildlife Project Idea Book are but a smattering of things you as a concerned conservationist can participate in. Here are some additional opportunities.

Things YOU can do NOW to help wildlife

- Buy a duck or habitat stamp

Proceeds from the sale of these stamps are used to preserve wetland habitats for waterfowl and other wildlife. It's a small price to pay for helping wildlife.

- Join and support local and national conservation groups.

Groups such as Ducks Unlimited, The Nature Conservancy, Audubon, the Isaac Walton League, National Wildlife Federation, Pheasants Forever and others constitute a strong network of national, state, and local organizations dedicated to natural resource conservation work.

- Contact and work with private landowners to develop wildlife habitat.

Landowners managing a certain portion of their land to create new habitats can be of tremendous benefit to wildlife. Providing landowners with the dollars, time, support and recognition can go a long way.

- Learn basic waterfowl and wildlife biology.

A basic understanding of wildlife biology can enhance your appreciation of wild animals and the role they play in our daily lives. Did you know that all our domesticated plants and animals have roots in the wild?

- Participate in urban, rural, or regional planning meetings.

Often the decisions made at such meetings can have long term impacts on wildlife. Make sure wildlife is represented.

- Report suspected disease outbreaks and wildlife die-offs.

Although disease is one thing we have little control over, early reports may lead to actions that can minimize the losses. This is particularly true in cases where pesticide poisoning may have occurred.



Increased knowledge of wild animal life histories will enhance the outdoor experience.

- Take full advantage of recreational opportunities to legally harvest furbearers.

By legally harvesting fox, raccoons, skunk, mink, and coyotes, you will be reducing populations that are important predators of upland nesting birds and their nests.

- Work with youth groups.

Youth are tomorrow's future conservationists.

- Spread the word

Tell three friends about the groups you belong to and why. Write letters to the editors of newspapers and other publications.

- Write your state and federal legislators about:

Tax incentives for wetland owners.

Full funding for U.S. Fish and Wildlife Service payment-in-lieu of taxes.

Development of a national wetlands policy.

Habitat management on CRP, waterbank and public lands.

- Before, during and after the hunt:

-Don't shoot hen mallards

-Use steel shot when hunting waterfowl

-Hunt with a trained retriever and make a special effort to retrieve downed birds.

-Practice your shooting skill to reduce crippling losses.

-Report poachers.

-Learn waterfowl identification.

- As a landowner:

-Plant cover on set aside acres

-Plant shelterbelts and windbreaks

-Implement grazing systems

-Create or restore wetlands

-Plant vegetative filter strips around wetlands, rivers, streams. Maintain these areas as chemical free.

-Minimize use of agricultural chemicals, particularly pesticides.

-Fence portions of arm ponds and plant grass around them. This increases waterfowl nesting habitat and reduces erosion.

-Delay haying of alfalfa until as close to July 10 as possible. This allows birds nesting in in such areas time to hatch their nest.

-Visit your local county agent, soil conservation, ASCS, and wildlife agency offices. These offices have information and programs available to financially assist landowners in implementing many of these practices as well as programs that many provide annual economic returns for landowners to manage their land to benefit wildlife.



Legally harvesting furbearers can be an enjoyable sport, and will also benefit upland nesting birds.

Summary

The Wildlife Idea Book as a product of the North American Waterfowl Management Plans Prairie Pothole Joint Venture is designed to involve the citizen conservationist, the landowners, sportsmen, and local, state, and federal governments in a new working partnership. The goal of this partnership is the restoration of our dwindling waterfowl numbers, enhancement of local wildlife populations, and the economic vitality of the community.

Never before has such a partnership been attempted. But then again, never before have the stakes ever been so high.

No one person or group can be expected to do each and every one of the activities identified in the idea book. The secret is to pick one, maybe two, that work for you but **DO IT TODAY.**

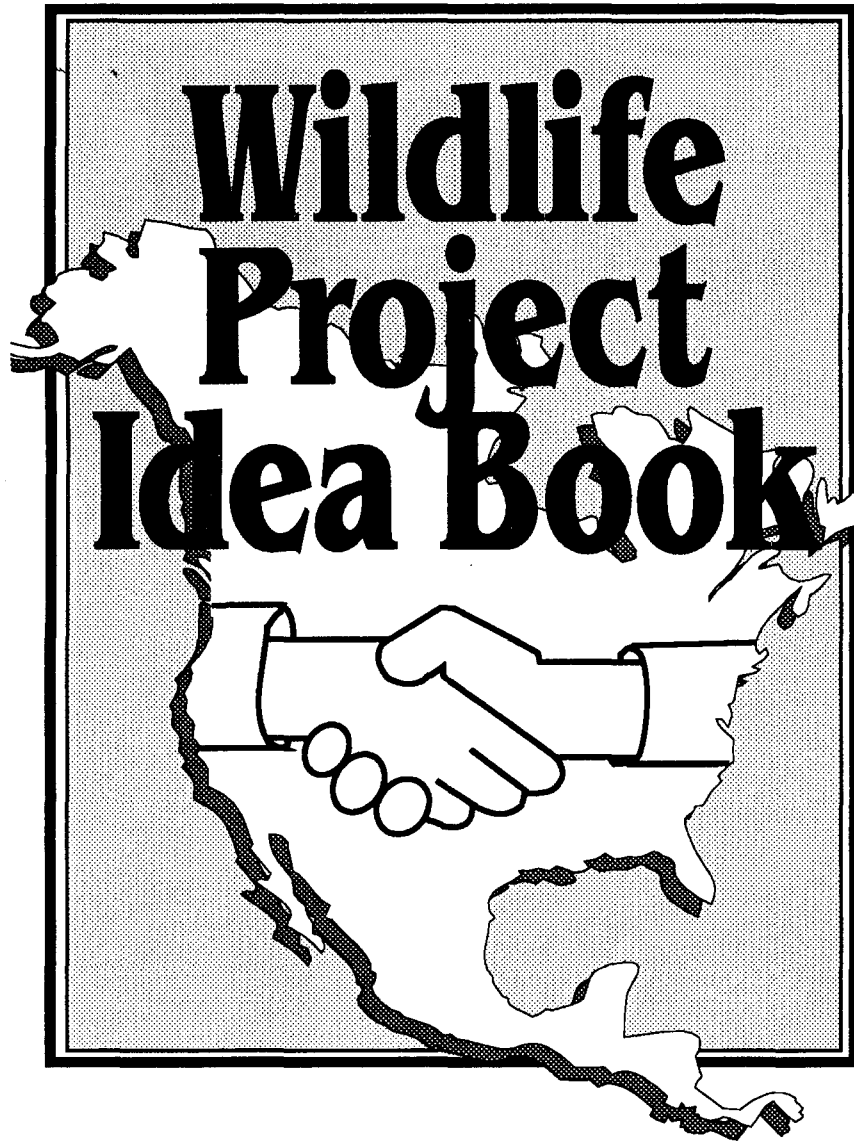
DEDICATION

The Wildlife Idea Project Book is dedicated to the memory of S. Gay Simpson, former waterfowl biologist with the South Dakota Department of Game, Fish and Parks. After a long battle with cancer, Gay surrendered her body to the disease. Her spirit, however, lives on in the men and women who continue on to carry out the wildlife conservation work

Acknowledgements

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Jamestown United Sportsmen
Lewis and Clark Wildlife Club
Cogswell Gun Club
Central Dakota Sportsmen Club
Tewaukon Rod and Gun Club
Anamoose Wildlife Club
Robinson Wildlife Club
UND Wildlife Club
Sargent County Pheasants Forever
Bottineau County Wildlife Club
Red River Area Sportsmen
Rep. Steve Tomac
Gene Goven
Frank Virchow
Henry Schander
Gary Hogle
Duane Anderson
Joe Ball
Forrest B. Lee
Michael J. Johnson
Ed Bry
Bob Morgan
Gail James
Dave Dewald



Appendix

Appendix

Time To Get Started

Over the course of the next few pages, you will find several additional specific management techniques and suggestions for different habitat types which not only are designed to benefit wildlife, but may also if implemented help a landowner to increased outputs and reduced in soil erosion. The habitat types discussed will include grasslands, woodlands, waterlands, croplands, and the backyard.

If you have any questions about specific practices or your chances of being successful in restoring wildlife habitat for certain species, contact your local wildlife agencies or organizations, Soil Conservation Service or Extension Service representative. They can help you develop a conservation plan for your property that incorporates wildlife habitat needs.



Sandhill cranes.

A: Managing Croplands For Wildlife

Croplands can be or are beneficial to wildlife. For example, wildlife use waste grain and weed seeds as winter food. Alfalfa crops provide nesting and brooding areas for birds such as waterfowl, pheasant and grouse.

Just how farming affects wildlife depends on the production scheme. All farming changes the height, variety and mix of vegetation as we plow, plant, cultivate and harvest crops. In response to these changes some animals have flourished, but others have been harmed.

Growing the same crop on a large acreage in the same field year after year sharply reduces the variety of plant cover and may eliminate winter cover, nesting areas and food plants. This practice, called monoculture, may also result in diseases and pests having "a field day" at the expense of the producer.

Other agricultural practices such as fall plowing or tillage bury waste grain and other residues that can provide food or cover to help wildlife survive the winter. Stubble left standing reduces accumulations of soil and snow in shelterbelts and marshes which are tradi-

tional wildlife wintering areas. Elimination of fall plowing or tillage increases crop residues and reduces soil loss from wind and water.

Although fall plowing may increase yields over the short term, yields will eventually benefit under spring tillage management because of soil and water savings. However, once a field is tilled, wildlife loses nearly all the benefits of cropland.

Specific agricultural practices benefiting both wildlife and the producers are: land set-aside or retirement programs, minimum and no-till cultivation crop rotations, cover and green manure crops, contour and stripcropping, grass waterways, terraces, field windbreaks, "odd area" maintenance, and field border management.

Each of these practices will reduce wind and water erosion, maintain soil fertility and productivity, and prevent pesticide runoff to waterways. Many of these practices are eligible for cost-sharing through federal farm programs as administered by the Agricultural Stabilization and Conservation Service (ASCS). Additional help both financial and technical, is available through a number of other public and private programs.



Stubble mulching conserves valuable residues and reduces losses of upland nesting birds and their nests.

Land retirement or set-aside opportunities

The U.S. Department of Agriculture offers a variety of programs to encourage farmers to set aside or idle portions of their land. The most recent of these is the Conservation Reserve Program (CRP), designed to remove marginal lands from crop production and return them to some type of permanent grass cover.

Conservation tillage, minimum or no-till

Reducing cropland tillage destroys fewer nests and remaining crop residues provide food and cover for animals feeding in the field. Recent studies from no-till winter wheat fields in North Dakota indicate they support a greater number and variety of nesting birds than clean tilled fields.

Cover and hay crops

Alfalfa, clover and grass in a cropping system provide forage and hay, reduce soil erosion, add organic matter to the soil, and also provide nesting and brood rearing areas for birds. However, annual haying usually coincides with peak nestings, and haying may destroy many nests.

To reduce haying impacts on wildlife, consider starting in the center of the field, then working toward the perimeter. By doing so, broods contained within the field will have a better chance to escape. Effects of mowing on wildlife can also be reduced by leaving a 20 to 30 foot field border. A majority of nesting hens tend to nest within 50 feet of the field perimeter.

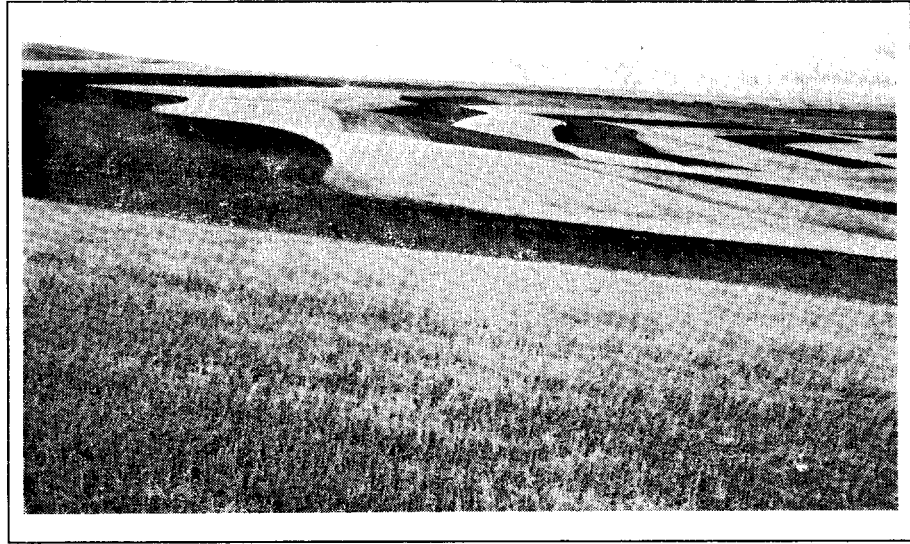
Reducing mowing speeds to under 3 mph as well as delaying first crop cutting until early July will also decrease haying mortality of nesting birds and young. However, by delaying mowing of alfalfa past the 10 percent bud stage, the protein quality of the forage will decrease. (Note - there currently is a federal wildlife program that may compensate landowners for delaying haying to benefit waterfowl production.)

Contour and stripcropping

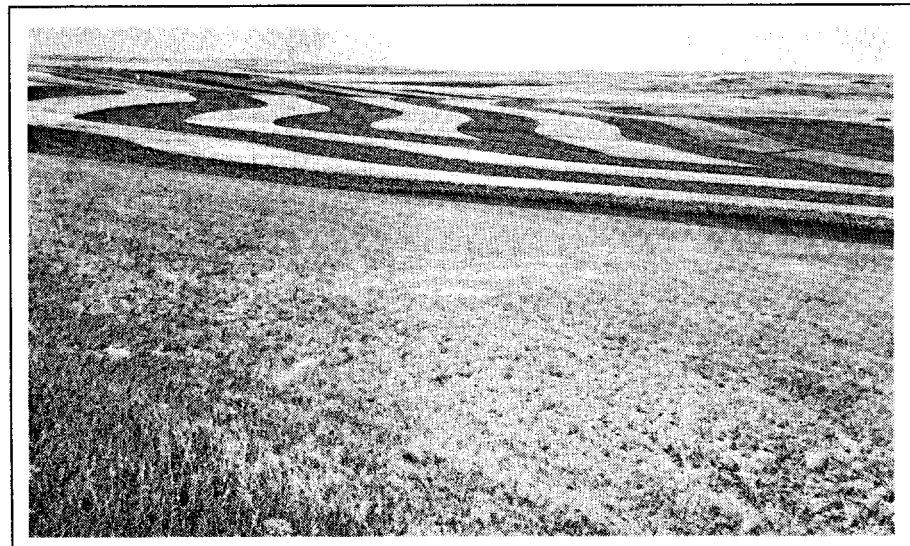
Strips of row crops alternated with soil conserving strips of small grains or cover crops planted on contours attract more ground-nesting birds than undivided fields. Contoured and stripcropped fields create more "edge" where more food and cover are available.

A large field has a smaller percentage of borders and edge than that of

several smaller fields. For example, a single quarter section field will have only two miles of edge. If the same field was divided into four smaller 40-acre-square fields, it would have three miles of borders or edges. But, by dividing it into four forty-acre strips, it will yield 3.5 miles of edge. By increasing the edge and using a different crop in each small field, an operator could dramatically increase wildlife numbers on the land.



Contoured field with crop residue use and odd areas increase the attractiveness of croplands for wildlife.



Contour strip cropping from foreground: crested wheatgrass and native grass, strips of alfalfa alternating with corn and wheat. Odd areas are seeded to tame grasses and alfalfa. In background, field stripcropping and stockwater pond on range. Several federal and state programs can provide the financial and technical incentives to implement conservation practices that benefit both landowner and wildlife.

Crop rotations

Almost every crop in North Dakota has some value to wildlife, depending on the season and availability of other suitable habitats. Unharvested blocks of small grains and row crops such as corn, sunflowers, grain sorghums, and soybeans adequately spaced across the field, adjacent to fence rows, shrubby cover, or wetlands reduce drifting and provide supplemental food during periods of heavy snow. Blocks of unharvested crops are better than a few rows or narrow strips because they are less likely to be flattened by wind or choked with snow.

Wildlife food plots can also be incorporated into crop rotations. Food plots should be block plantings of at least two acres per quarter section (160 acres). The plots should be planted on the east or south side of native woodlands, multiple-row tree belts, wetlands or other wildlife cover. Square plots are best in most cases since they are not as easily filled with snow as are long narrow plots.

Crops which are readily used by wildlife are corn, sunflowers, grain sorghums, wheat, barley, millets, buckwheat, oats, rye, flax and clovers. It is best to seed food plots with a combination of crops ensuring that food will be available at different heights for a variety of wildlife species.

Rotating crops can reduce or prevent a long-term buildup of certain pests, reducing costs for chemical pesticide applications.

Grass Waterways and Terraces

Grass waterways and terraces reduce water erosion on sloping cropland by intercepting runoff and carrying it slowly off the field. The value of waterways to wildlife depends on the grasses and legumes selected. Similarly, the value of terraces depends on whether

the terrace slopes are cropped. Narrow base terraces planted to permanent cover can provide nesting and feeding areas for wildlife if the proper plants are selected. For a guide to woody, grass and legume plantings that benefit wildlife, refer to the tips included in the supplement sections on woodlands and grasslands.



Terraces constructed as part of a RC&D roadside erosion control project reduce runoff, conserve moisture and provide water areas for wildlife.



Terraces.

Field Windbreaks

Windbreaks of trees and shrubs reduce wind erosion, trap blowing snow, conserve moisture, protect crops and livestock, and may provide food and cover for many kinds of wildlife. Select plants adapted to the site that also provide wildlife foods or cover. A list of suitable trees and shrubs for windbreak plantings can be found in the woodland section of this supplement.

Field Borders

Probably the most beneficial areas to wildlife on grain-producing farms are field borders. Such borders are often found on the sloping ends of contoured or stripcropped fields. When seeded with grass and legume mixtures, these areas control erosion, reduce competition from adjacent woodland and provide travel lanes for not only farm machinery, but wildlife. Wildlife will also use these borders for nesting, brood rearing and protection from predators and the weather.

A field border made up only of a fence line will attract few wild animals, whereas if that same land has a few weeds giving it a 1 or 2-foot width, wildlife use will increase dramatically. In general, the wider the border, the greater the benefit to wildlife.

Borders from 20 to 100 feet, depending on the plants found there, are useful as travel lanes, but also provide nesting, brood rearing, roosting and escape areas.

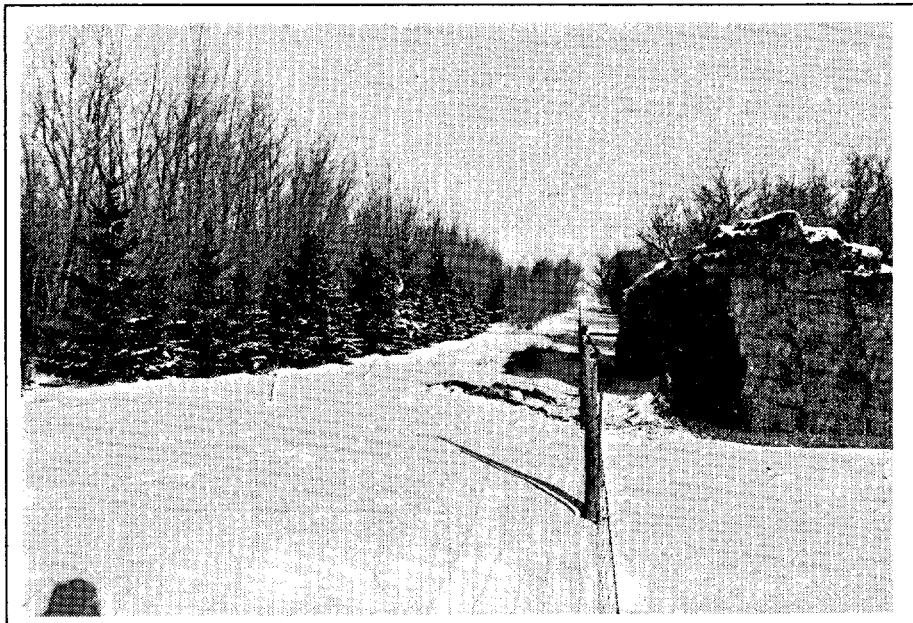
Field borders that contain mixtures of native and introduced grass, legumes, annual and perennial weeds, shrubs and trees will be used more by wildlife than areas seeded only with, for example, brome grass.

Odd Areas

Odd areas on farms and ranches are places that are not cropped. They include fence corners, abandoned roads and road ditches, rocky spots, abandoned farmsteads, highly erodible areas and other parcels that may be isolated by roads, ditches or streams. Due to site limitations, many of these areas are unsuitable for cultivation, but they can still be valuable to wildlife. By pre-



Wind strip crop of corn - small grains. Farmstead and field windbreak shown in the back of the photo. Such areas increase wildlife habitat edges.



Farmstead windbreak showing excellent protection. These windbreaks also provide excellent winter habitat for wildlife.

servicing the natural vegetation of these areas and establishing additional food and cover, odd areas can supply wildlife with those basic needs that may be lacking in adjacent cropland. These areas also make excellent sites for erecting nest boxes.

In managing odd areas to obtain the greatest wildlife benefits, delay grazing

or mowing of such areas until late July, and if some noxious weeds are present, use spot applications of herbicides when necessary. Cropland acres are too valuable to be overlooked as wildlife habitat. The techniques identified in this section can be implemented with little or no impact on agricultural profits.

B: Managing Water For Wildlife

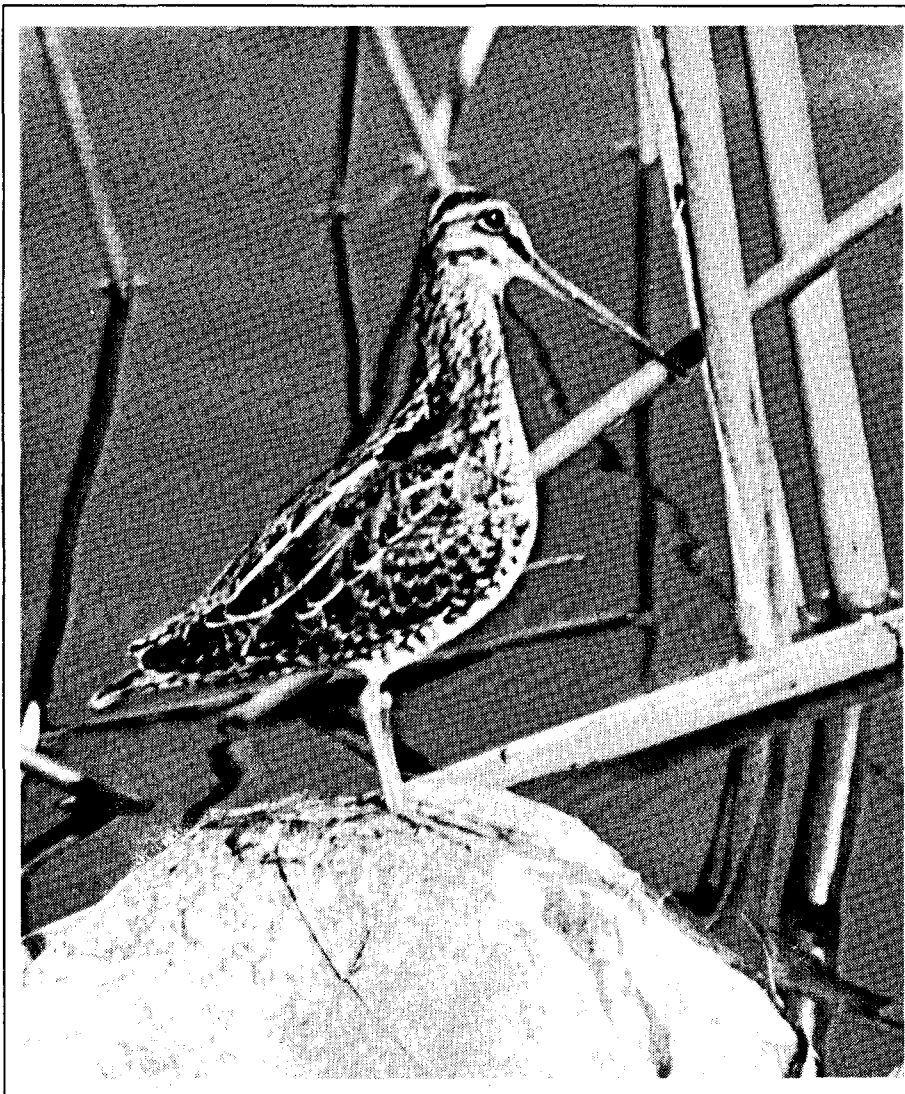
The intent of this section is to offer some water management ideas that may be beneficial to both landowner and wildlife. This section will deal specifically with the development and management of farm ponds and streams on private lands.

Farm Ponds and Streams

Although many farm ponds are established primarily for watering livestock, they can also function as valuable wildlife habitat if certain guidelines are followed in construction and management.

Farm ponds developed with a gradual slope provide habitat for emergent plants like cattails. This vegetation in turn provides cover and food for a number of wildlife species. If cattle are fenced to only allow access to a portion of the shoreline, the vegetative response will attract wildlife. Seeding grass around the pond, in addition to creating habitat, will control runoff water entering the pond, reducing silting and turbidity, making the pond more suitable for aquatic life.

To preserve water quality in farm ponds, lakes, streams and rivers, it is a good idea to plant crops at least 30 feet from the edge of the vegetation along the water area. This distance minimizes the impact of agricultural runoff on the water quality. Leaving a vegetational edge around wetlands can also reduce the risk of saline soils developing, which occurs frequently when wetlands are cultivated too close to the edge.



Farm ponds also benefit nongame wildlife such as this Wilson's snipe.

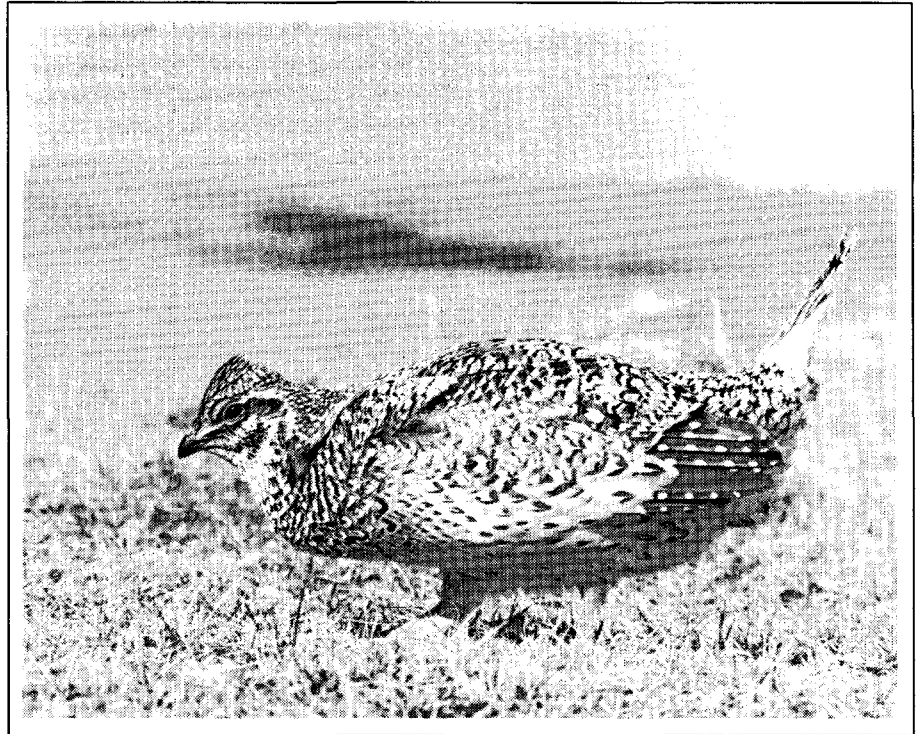
C: Managing Grasslands For Wildlife

Rangelands by definition include grasslands, shrublands and open forests. Aside from the obvious uses of rangeland for grazing livestock, these areas also function as haylands and valuable wildlife habitat while cleaning our water and enriching our soil. No matter what the grass management objective, there are a number of tools currently available, designed with a knowledge of plant responses in mind, that can help a producer achieve desired results. Properly managed rangelands sustain productivity, provide economic returns and supply a host of wildlife benefits.

With the advent of the Conservation Reserve Program, millions of acres of marginal cropland have been returned to grasslands. This massive conversion creates a need for increased awareness of the management tools available to use this new resource to obtain benefits for the producer and wildlife alike.

Fire

Landowners maintain the cover they have established as part of their CRP contract. For more specific information on the use of fire and assistance in developing a plan, contact one of the public management agencies listed at the end of this supplement.



Proper grassland management can yield significant benefits to grassland birds such as this sharptailed grouse.

Haying

Haying native or prairie grasslands can be either detrimental or beneficial to wildlife depending on the practices followed. Haying removes above-ground plant materials and reduces soil fertility when compared with grazing, where most materials are returned as manure.

When haying is used as a management option on native rangeland, it should occur after July 1 and be completed before July 15. Mowing that occurs later in the growing season over a period of years alters the vigor and

composition of native grass. Plant food resources are lowered by late summer mowing since any plant regrowth that occurs must draw on the plant's energy reserves.

The reduction of plant energy reserves affects the plant's production potential for next year's growth. In most cases there is not enough time to manufacture and store additional food reserves before frost kills the above-ground food-producing green leaves. Prairies with lowered growth potentials are easy targets for weed invasion.

Mid-summer haying allows ground-nesting birds such as pheasant, grouse, etc., to complete nesting undisturbed. The regrowth that may follow mid-summer haying also provides important food and cover for many forms of wildlife which depend on grassland habitats.

Grazing

Grazing management on rangelands is a tool for maintaining or achieving the kind of vegetation necessary to obtain the desired livestock and wildlife production. Grazing management requires controlling the number of animals, selecting the right animal mix, ensuring proper distribution, and managing seasonal timing use.

When considering animal numbers or grazing pressure, the concept of "taking half and leaving half" is an index to follow. Generally a grass plant will produce about twice the quantity of leaves it needs to complete its growth. If more than half a plant is taken, it may affect plant root development. Studies have revealed when 60 percent of a plants' leaves are removed, approximately 50 percent of the roots cease to grow. Achieving proper utilization of grass species will ensure that sufficient cover will also be available for wildlife such as deer, which have different food habits than cattle.

Proper utilization of forage will also leave greater amounts of cover available to ground nesting birds. Proper utilization of rangeland plant species requires a producer or land manager to identify current condition of the area,

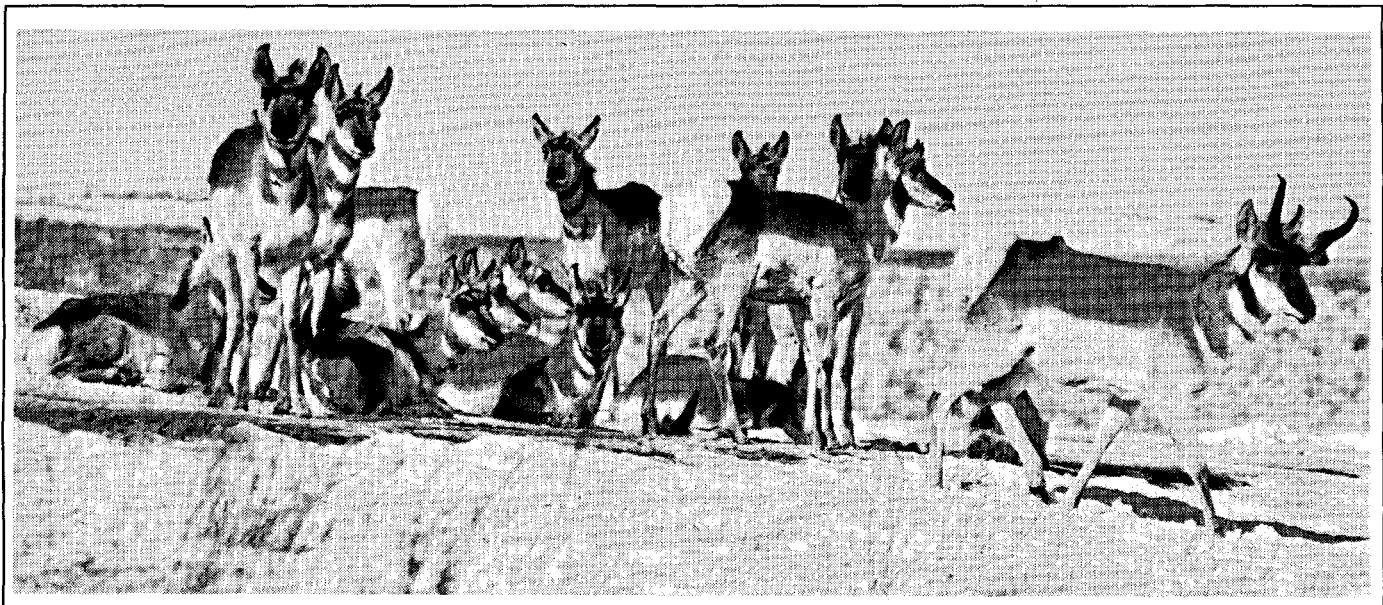
and the rangeland management objectives. This information will allow for the development of a grazing plan or selection of a grazing system to achieve the desired results.

Examples of such plans or systems are rest-rotation grazing, deferred grazing, short duration grazing and twice-over deferred rotation grazing. Grazing systems greatest benefit to wildlife are those that leave adequate cover for nesting and brood rearing during the critical nesting season (April 1 - June 30).

A system that shows tremendous promise for wildlife and the producer in the prairie pothole region is the twice-over deferred rotation system. Under this system, a larger pasture is divided into three or four smaller pastures. Cattle are allowed to graze each pasture for 20-28 days, beginning about June 1,



Rangelands are important habitat for mule deer.



Winter survival of antelope depends on having rangelands in good condition.

and are rotated through each pasture twice during the grazing season, giving the producer 156-160 days of on-grass time.

Initial studies conducted on this system indicate that it is producing significantly more beef and wildlife than adjacent areas where cattle are allowed to graze freely.

Planting Grasslands for Wildlife Habitat

Lands qualified for the Conservation Reserve Program (CRP) may be developed for wildlife, with the cost of development shared by the administering agency (ASCS). A big part of creating new wildlife habitat is establishment and maintenance of healthy stands of seeded grasslands.

The best grass stands result when certain guidelines are followed. These include: selecting the best type of seed mix, use of only good quality adapted seeds, a firm seed bed, proper seed depth, time of seeding, and adequate weed control. If you use a nurse crop, clip and remove it during early growth stages.

Determining the Right Seed Mixture

Seed mixtures are available for establishing several kinds of grassland. The general categories of grasses are native and introduced.

Native grass, although more difficult to establish and usually more expensive, can be maintained in a vigorous condition longer without the need for constant rejuvenation. Some varieties of tall native grass (3-6 feet) are big bluestem, Indiangrass and switchgrass. Seeding a mixture of these grasses will produce a tall, dense stand attractive to deer, nesting waterfowl and other game birds. These grasses do well on lowland areas with good moisture.

Some examples of mid-height native grasses (2-3 feet) that provide wildlife habitat are western wheatgrass, green needle-grass, sideoats grama and little bluestem. These hardy, drought resistant grasses are well adapted to many areas.

Planting a mixture of introduced grasses and legumes can also produce stands of tall, dense cover. Grasses and legumes that can be included in such a mixture are tall wheatgrass, intermediate wheatgrass, alfalfa, and/or sweet clover. All of these do well on previously cultivated soils, and this cover supplies excellent soil building proper-

ties by including alfalfa and sweet clover in the mixture.

No matter what seed mixtures you select, the success of your planting ultimately depends on soil type, slope, moisture, site preparation, planting techniques, rates and dates of seeding and stand maintenance. Here are some points to remember:

- 1) Wait for adequate moisture before planting grass and legumes. A simple way to determine if the moisture content is adequate is to form topsoil into a ball with your hands. If the ball holds its shape, start your engines.
- 2) Make sure the seedbed is free of weeds. Weed presence is the number-one reason why plantings fail.
- 3) Soils should be packed firmly enough so that when a person walks across the seed bed his foot does not sink into the soil.
- 4) Controlling weeds after the seeded grasses have emerged is just as important as insuring that the seed bed is free of weeds prior to planting. Weeds can be controlled by applying appropriate herbicides once the grass seedlings have reached 10 inches in height, or by clipping to a height of 6-8 inches.

How to determine type of seed mix best suited for your needs

Seed Mix	Site	Soil	Species	Cost Estimate
grass/legume	all sites suitable to farming	most soils well-drained	tall wheatgrass inter. wheatgrass alfalfa	lowest
tall native grass	lowlands, bottomlands nearly level plains	deep, fine, well-drained to moderately drained	big bluestem Indiangrass switchgrass	highest
mid-height native grass	uplands, rolling plains with moderate to steep slopes	moderately deep, medium-textured, well-drained	greenneedle western wheatgrass side-oats grama	mid

(From "Planting Grasslands for Wildlife Habitat" by Mavis I. Meyer. Copies available through your county extension office or by writing Northern Prairie Wildlife Research Center, P.O. Box 2096, Jamestown, ND.)

Recommended Rates and Dates of Seeding

Grass	Pure stand lb/acre	Mixed stand lb/acre	Dates
Introduced Grasses and Legumes			
Tall wheatgrass	11	4.5	before May 15
Intermediate wheatgrass	10	4	or
Alfalfa	4	1	between Aug. 10
Sweetclover	3	0.5	and Sept. 20
Tall Native Grasses			
Big bluestem	11	5	between June 1
Indiangrass	10	3	and June 15
Switchgrass	5	1	
Mid-height Native Grasses			
Green needlegrass	10	4	before May 15
Western wheatgrass	12	4	
Sideoats grams	9	3	
Little bluestem	6.7	1	

(From "Planting Grasslands for Wildlife Habitat" by Mavis I. Meyer.)

D: Managing Woodlands for Wildlife

Almost any tree or shrub will benefit wildlife, but some trees and shrubs and certain types of tree plantings are more beneficial than others. Guidelines have been developed by specialists to assist landowners and land managers in planning and planting trees for the greatest benefit to the widest variety of wildlife. In addition, a number of public and private agencies provide financial assistance to establish, and rejuvenate tree plantings.

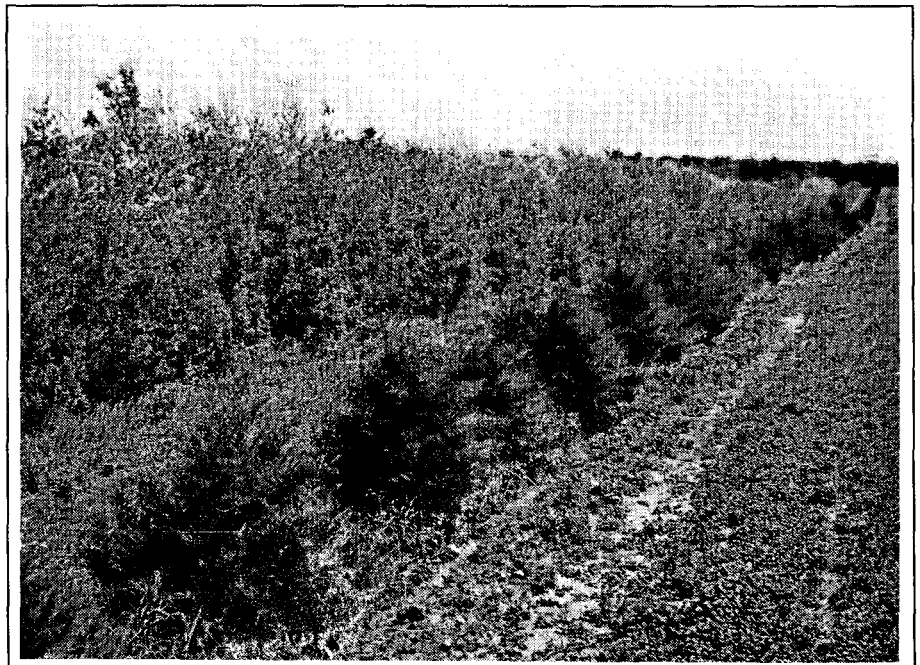
Increased wildlife benefit can be achieved in most tree plantings by simply adding more fruiting trees, shrubs, and evergreens, particularly junipers and cedars. The fruiting trees offer wildlife food while the evergreens offer secure roosting sites during severe winter storms. Plantings of at least one acre provide the greatest benefit to wildlife. There are several types of plantings to consider.

Shelterbelts or Windbreaks

Wide shelterbelts are better than narrow ones. Height is not as important as ground cover. A shelterbelt that is bare underneath usually does not attract much wildlife. The preferred understory is a heavy herbaceous or grassy layer. A well developed shrub row adjacent to the herbaceous understory tends to increase bird diversity.

An ideal planting for wildlife has several rows in a stair-step effect. Dense shrubs planted on the outside prevent snow from piling in the center of the belt where wildlife seek protection. Deciduous trees should occupy the center, then cedar and pine where birds and mammals can seek shelter during severe winter weather.

If a single row is planted, cedar is an excellent choice. The two to five rows more common in newer windbreak plantings usually contain at least two rows of cedar with additional rows of pine, deciduous trees and/or shrubs.



This eight year old wildlife tree planting (tall trees in center) provides food and shelter for birds and small animals. The area is also heavily used by deer.

Travel Lane

Wildlife need to move under cover to seek food, water, or a different cover type. Travel lanes can provide food and protection for grouse, pheasants, partridge, and many other species. Even a single conifer row provides some protection.

Block Planting

Center pivot irrigation leaves many field corners that could be planted to trees. Block plantings can be used there and in other odd areas and poor soil sites to check soil erosion and stabilize blow outs.

Plant larger trees in the center and then progressively shorter plants toward the sides. This supports the greatest number and variety of wildlife. Fruit-bearing shrubs make ideal winter food and cover for wildlife.

In summary, trees and shrubs planted in blocks and rows, or in combination with rangelands and croplands, work for man and wildlife year-round. Such plantings hold snow, reduce summer moisture loss, reduce wind erosion and provide food and cover for domestic and wild animals.



Trees planted in wind breaks and shelterbelt fashion can create new woodlands, benefitting all species who dwell there.

E: Managing the Backyard for Wildlife

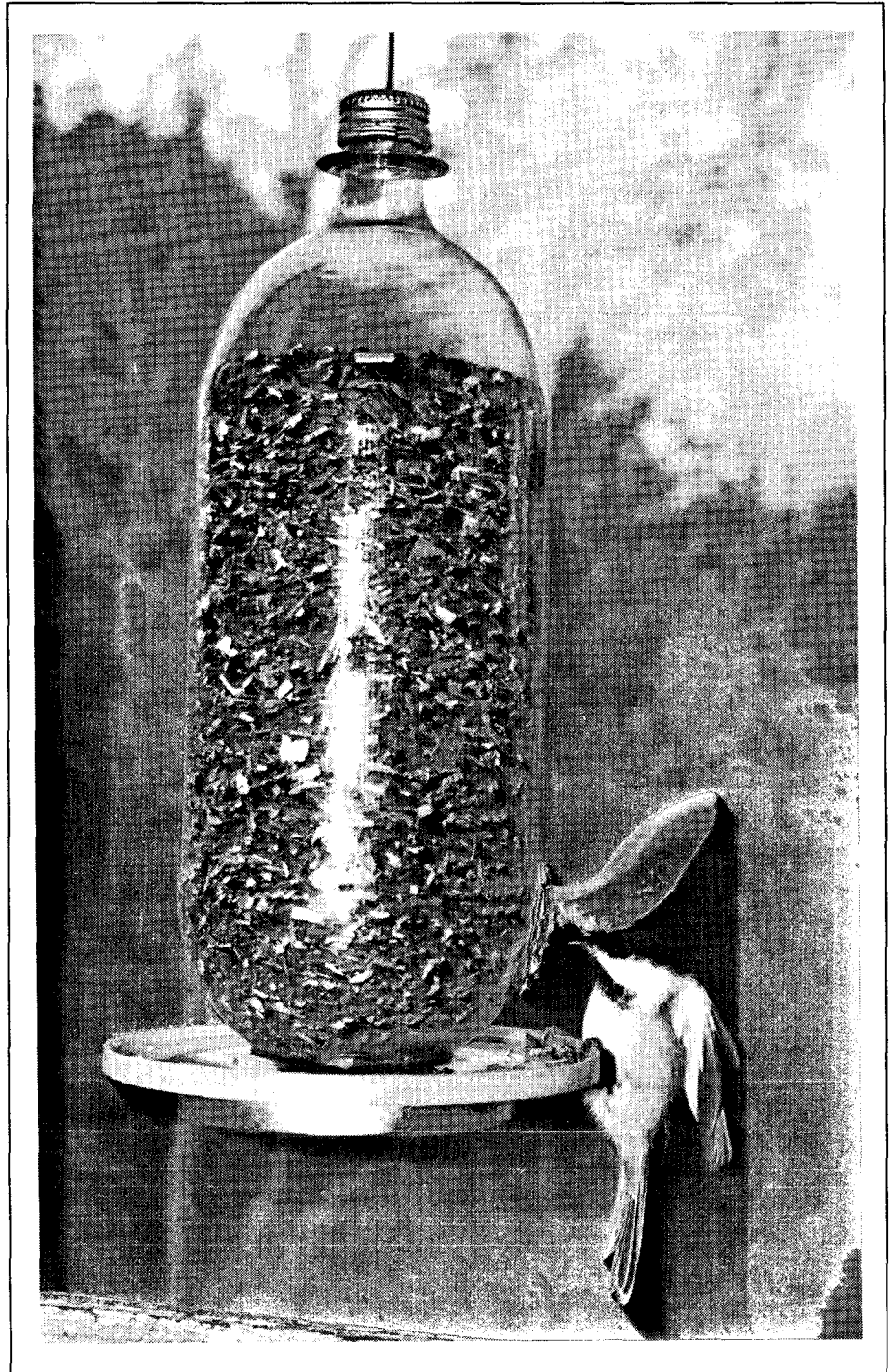
By providing food and cover in your backyard, you can bring wildlife close to you. Following are some simple suggestions on how to make your backyard attractive to wildlife.

Feeding

Feeding is probably the simplest way to attract wildlife. Generally most feeding is done in the winter months when natural foods are unavailable. The simplest type of feeders to dispense a mixture of oil-type sunflower seeds (50 percent), white proso millet (35 percent) and finely cracked corn (15 percent) will attract a wide range of backyard songbirds. More specific information on feeding birds is available through your county extension offices.

Nest Boxes

Building and placing nest boxes or shelves in your backyard can also greatly increase the numbers and kinds of wildlife you attract. Wood is the best material to use and galvanized nails should be used to fasten the pieces of a nest box or shelf together.



Black-capped chickadee feeding from a homemade feeder.

Guidelines for Building Nest Boxes

Species	Floor of Cavity (in.)	Depth of Cavity (in.)	Entrance Above Floor (in.)	Diameter of Entrance (in.)	Height Above Ground (feet)	Habitat Code	Likelihood of Attracting
House Wren	4 x 4	6-8	4-6	1 - 1 1/4	4-10	2,6	Excellent
Chickadees	4 x 4	9	7	1 - 1 1/8	4-15	2	Good
Downy Woodpecker	4 x 4	9	7	1 - 1 1/4	5-15	2	Good
Bluebirds	5 x 5	8-12	6-10	1 1/2	5-10	1	Fair
				be exact			
Red Headed Woodpecker	6 x 6	12	9	2	10-20	2	Fair
Flicker	7 x 7	16-18	14-16	2 1/2	6-30	1,2	Good
Screech Owl	8 x 8	12-15	9-12	3	10-30	2	Good
American Kestral	8 x 8	12-15	9-12	3	10-30	1,4	Good
Barn Owl	10x18	15-18	0-4	6	12-18	4	Good
Wood duck	12x12	22	17	4	10-20	3,5	Good
Purple Martin	6 x 6	6	1	2 1/2	10-20	1	Good
Barn Swallow	6 x 6	6	*	*	8-12	6,7	Excellent
Robin	6 x 6	8	*	*	6-15	6	Excellent

*One or more sides of house should be left open

Habitat Codes:

1. Open Areas not permanently shaded, such as pastures, fields, golf courses.
2. Woodland clearings or the edge of woods.
3. Above water, or if on land, entrance should face water.
4. On trunks of large trees or high in little-frequented parts of barns, silos, water towers or church steeples.
5. Moist forest bottom lands, flooded river valleys, swamps.
6. Backyards, near buildings.
7. Near water; under bridges

Water

A small pool can add to the attractiveness and enjoyment of some backyards, especially larger ones. Birds will make the pool a center of activity, and some pools can provide a home for turtles, damselflies (mosquito-eaters), or frogs - an extra sparkle for many outdoor observers. Small fiberglass or plastic pools can be purchased, or a pool can be dug and lined with concrete or plastic sheeting.

Plantings

Plants are perhaps the most important part of a backyard habitat because they become the environment for the family as well as for songbirds. Plants add beauty and comfort to the home and often increase property value. Trees and shrubs can help reduce heating and cooling bills by providing summer shade and protection from winter winds. A hedge can add privacy, and plants of various shapes or sizes can be used to screen an ugly view. For wildlife, plants provide shelter, nesting sites and a variety of food such as fruits that

would otherwise be unavailable. Proper selection of plants can fill family needs and at the same time provide a haven for wildlife.

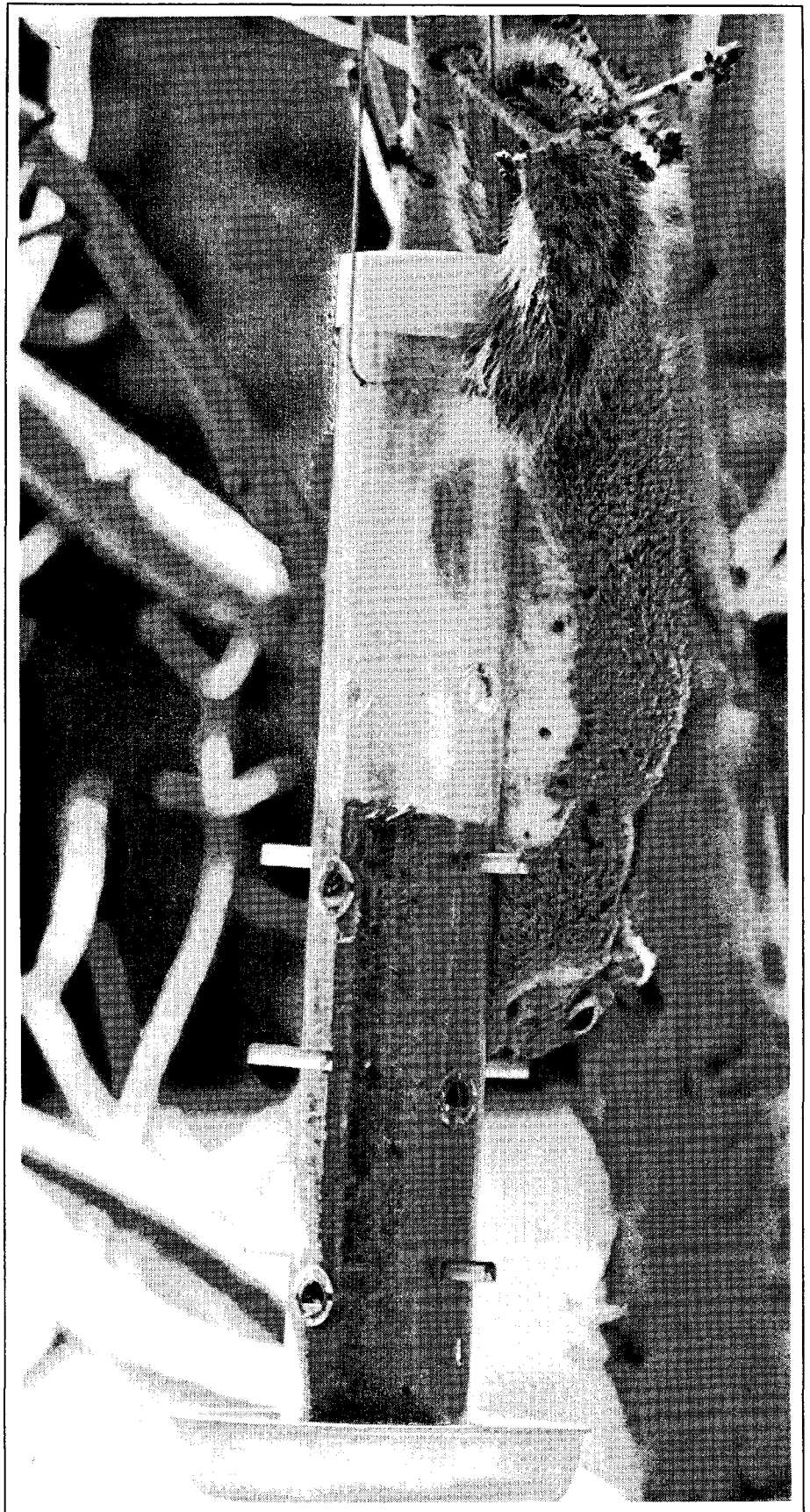
How to Start

First, a goal. Take into consideration the size of your backyard, what plants are already present and what wildlife you would like. Then, a plan. Plantings will continue to grow - consider the plant size, shape, spacing, etc. Outlining the yard on paper and then sketching in plans can help; drawing on graph paper helps with dimensions.

Next, select plants that area adapted to your area from the list found in the woodlands section of this supplement. It is best to select shrubs and trees that offer both food and cover. For this reason "seedless" tree varieties should be avoided since they offer no food.

What to expect

The kinds of wildlife that visit the backyard will vary depending on its location and size, stage of habitat development and other factors. But, the more diversity found in your backyard habitat plan, the greater variety of wildlife you will attract to your door.



There is no such thing as a squirrel-proof bird feeder.

Helping You Put Knowledge To Work

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