



# Managing Iowa Habitats:

## Linear Habitats in Rural Landscapes

### Introduction

Prior to settlement, Iowa's countryside was a colorful collage of tallgrass prairies, wetlands, and forests. This diverse landscape supported an abundance of wildlife. With the arrival of Euro-Americans came huge changes to Iowa's native plant and animal communities.

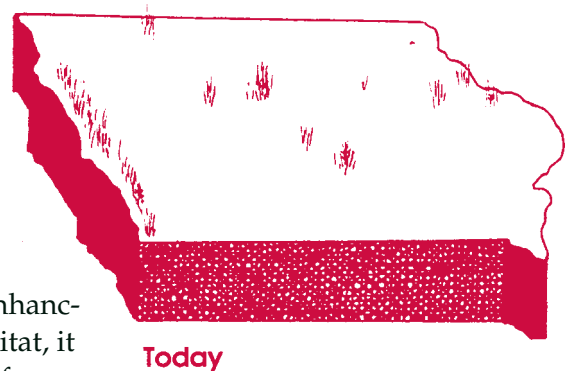
From over 32 million acres of wildflowers and tall grasses to about 32 million acres of row crops and pastures, towns and roads, alterations in Iowa's native landscape communities are unmatched by any other midwestern state. It took less than 150 years to transform wild, diverse prairies, wetlands, and forests into highly managed highway corridors, farms, and lawns. The result, of course, is a highly productive agricultural economy. As with any such development, there are substantial tradeoffs.

The conversion of Iowa's presettlement landscape to industries, roads, houses, and farm fields resulted in a reduction of wildlife habitat. As agricultural and other management practices have intensified, wildlife species throughout the Midwest have suffered population declines. Loss of habitat has caused the decline of many native upland species like the prairie chicken. In addition, research indicates

declines in ring-necked pheasants, cottontail rabbits, bobwhite quail, and a number of non-game species populations are highly correlated with the intensification of farm and roadside management.

Although this state's agricultural prosperity may have negatively influenced many wildlife populations, several species, such as white-tailed deer and wild turkeys, are thriving. Rural areas are important to wildlife under the increasing pressures of shrinking habitat.

Holding over 90 percent of Iowa land in their hands, rural landowners have the opportunity to improve wildlife habitat. The creative management of Iowa's farmland is not only important for enhancing wildlife habitat, it is also valuable for



*If properly managed, farm conservation techniques intended to protect soil and water quality may be beneficial to wildlife.*

improving environmental quality, recreational opportunities, and visual appeal. This publication is to assist landowners interested in improving non-crop lands for any reason.

## Addressing concerns

Some landowners may hesitate to commit to managing their rural lands for the benefit of wildlife fearing a loss in income or increasing wildlife damage.

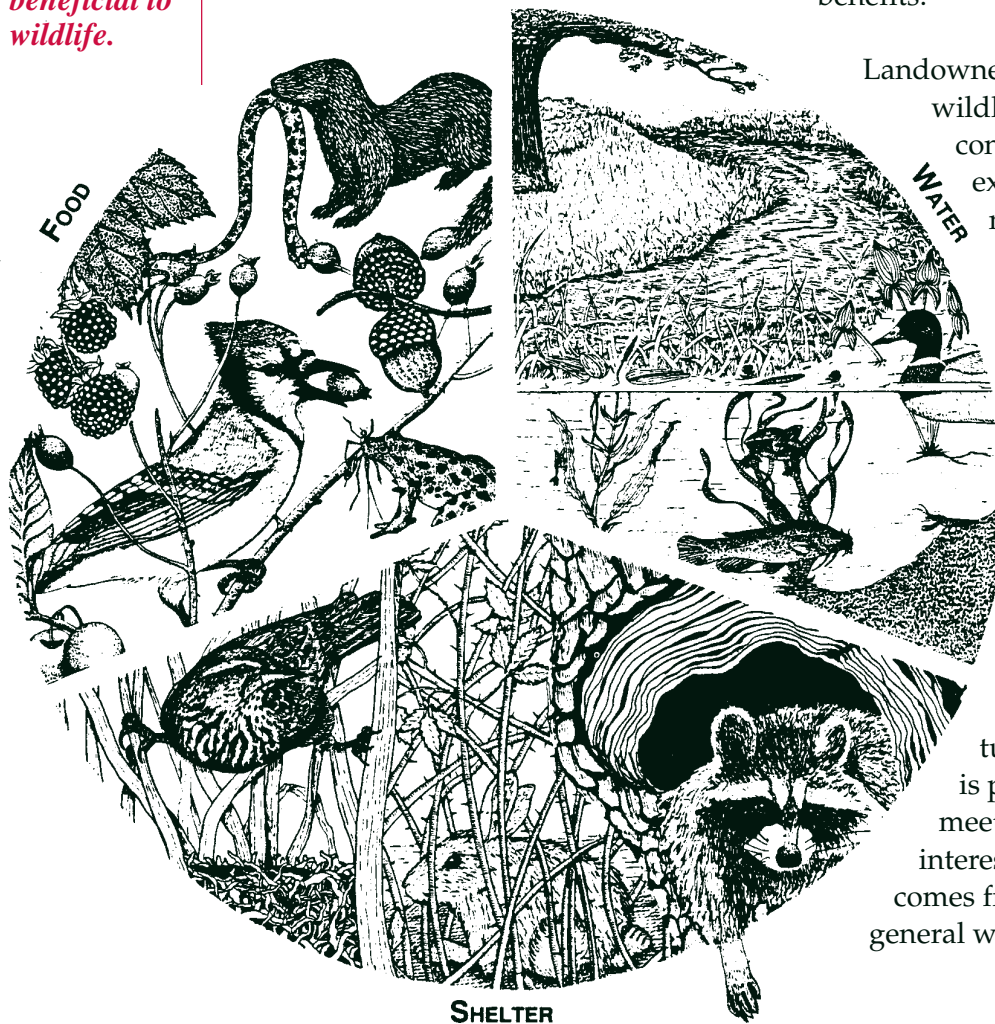
### Loss of revenue

Managing non-crop lands for wildlife is not at the expense of producing revenues. The cost of maintaining non-crop lands is minimized by taking advantage of conservation farm management techniques

already in practice. For example, improvements to areas where conservation farm management is already practiced (e.g., grassed waterways, or windbreaks) are relatively simple, are often cost-shared, and can be rather inexpensive.

### Wildlife damage

Wildlife damage to agricultural lands is a reality and a valid concern of many landowners. The types of improvements to non-crop lands this publication addresses benefit several less destructive wildlife species like songbirds or upland game birds. In addition, active management of potential problem species (for example, hunting white-tailed deer or trapping of beaver) can provide recreation and habitat benefits.



Landowners concerned with potential wildlife damage should also consider economic benefits. For example, improvements to non-crop lands focusing on attracting insect-eating birds like woodpeckers and bluebirds or predators like weasels, foxes or hawks, may reduce the need for costly pesticides, once a natural predator/prey balance is reestablished.

## Wildlife needs

The key to effectively managing non-crop agricultural lands as wildlife habitat is providing suitable habitat to meet the needs of the animal(s) of interest. Knowing what's suitable comes from understanding a few general wildlife biology concepts.

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The basic requirements of all wildlife include **food, water, shelter, and space**. These components, with the exception of space, can be manipulated to provide or enhance wildlife habitat. The space needs are determined by the species and are not subject to human manipulation.

Certain species of wildlife, sometimes referred to as **ecological specialists**, have very specific habitat requirements. Since linear areas are typically small and narrow by definition, it is difficult to attract specialists. It is more realistic for landowners to focus on attracting a different group of wildlife, **ecological generalists**. These animals are able to use a wide range of resources and adapt to a variety of habitat conditions.

Attracting targeted wildlife may mean tolerating the presence of what some people may perceive as less desirable species such as rodents or some insects. While sometimes viewed as a nuisance by people, they are an important food source for predators such as the American kestrel and red fox.

## **Linear areas**

One way to improve non-crop farmland for wildlife habitat is to manipulate those areas where conservation techniques, designed for other benefits (e.g., soil erosion control) are already in practice. There are numerous agricultural practices currently in use that are suitable for enhancing habitat for wildlife. In general, these areas tend to be long, narrow areas of habitat, areas that are linear in shape. While research shows that such areas are not suitable for specialist species, many generalist species can benefit from such areas if managed carefully.

## ***Conservation tillage techniques***

Rural landowners practice a variety of conservation tillage techniques which are designed to leave all or some crop residue on the soil surface. In addition to improving environmental quality by minimizing soil erosion, conservation tillage techniques improve nesting habitat for some birds. Lack of disturbance by machinery during the nesting season allows some birds to nest in the low-till or no-till fields.

## ***Terraces***

Another technique used to control soil erosion and improve water quality is terracing. These earthen structures are designed to minimize erosion by slowing runoff to a non-erosive speed on moderate to steep slopes. Properly managed, terraces can provide valuable nesting cover and forage for some birds. Researchers are currently evaluating the value of grassed terraces in providing suitable bird habitat.

## ***Windbreaks and shelterbelts***

Windbreaks are permanent plantings of shrubs and trees, located most often on the north and west sides of farmsteads, designed to lessen the impact of prevailing winds, protect livestock or young crops, and control blowing snow. In addition to direct economic benefit, properly designed windbreaks are also valuable as wildlife habitat. Several species of breeding birds use windbreaks as nesting sites. Small mammals also use them for food and nesting habitat.

## ***Grassed waterways***

By intercepting and redirecting runoff, grassed waterways significantly reduce erosion. While used primarily to prevent gully formation, studies show that, properly managed, they are valuable as nesting habitat to several species of birds, including goldfinches and dickcissels.

### Fencerows

Ever since Euro-American settlement, fencerows have provided valuable habitat for many birds and mammals. Properly managed, they serve as sources of food, nesting habitat, and cover. As farms and fields have grown larger and mixed livestock farming has become rare, fencerows have been narrowed and often eliminated. The loss of the valuable corridors is a significant loss for wildlife. Maintaining them in the rural landscape is difficult but can provide important linear habitat for many species.

### Buffer strips

The latest federal Farm Bill provides incentives for landowners to install riparian buffer strips along streams running through their property. These areas, often mixtures of grasses, shrubs, and trees, can provide excellent linear spaces that provide all the needs of wildlife. They also benefit aquatic wildlife by helping keep sediment and attached chemicals out of the streams. In addition, the financial benefits to the landowner make this a program that is a winner for all.

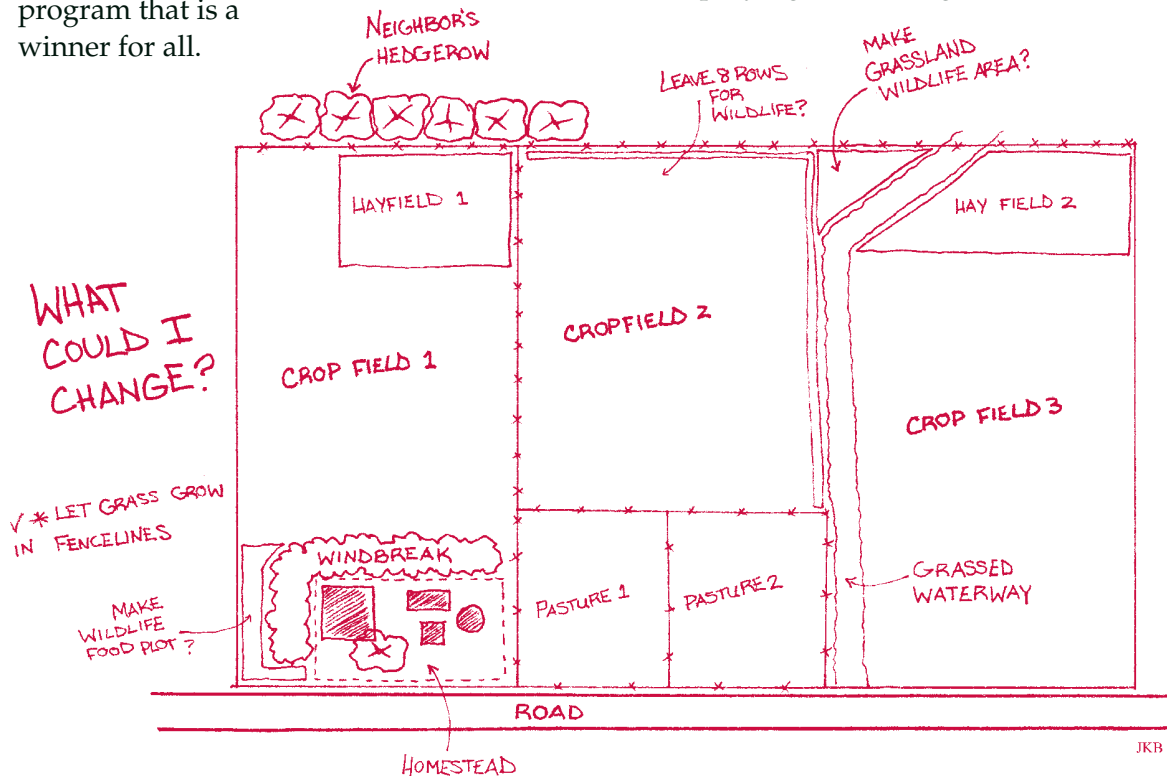
## General guidelines for managing linear areas

The objective of non-crop land management should include providing suitable habitat for a diversity of wildlife. Defining management goals/objectives and planning is important.

Determining what you have to work with is the first step. Start by sketching a topographical view of your land. Then answer these questions:

- What wildlife could use what you have?
- For what wildlife species would you like to manage?
- What are the habitat requirements for the preferred species?
- What do you know about the wildlife that use your land already?

Having answered these questions, you will be better able to define realistic goals. It is important not to overlook the simple cultural changes (e.g., delaying or eliminating mowing, reducing or eliminating weed spraying, or limiting insecticide use)



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that can be made with little or no cost and that may actually lower your cost of producing a crop.

## Management options

### *Managing for species diversity*

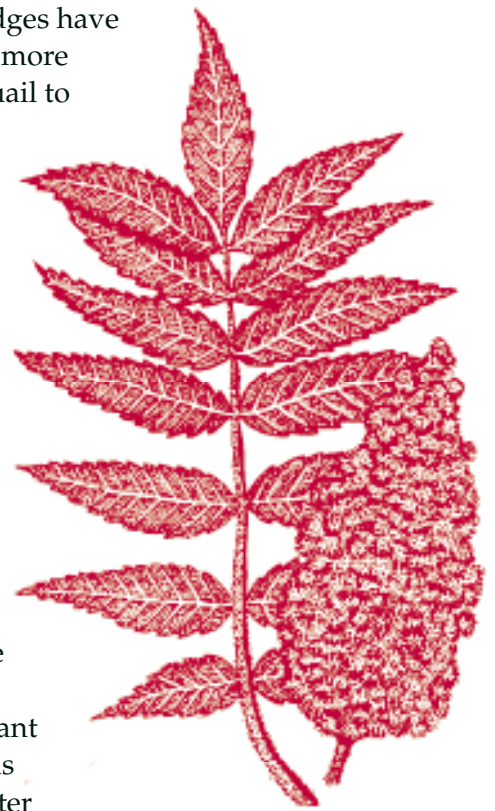
If your goal is to attract a diversity of wildlife, plant many different plant species and include variety in plant structure in your windbreaks, fencerows, and shelterbelts. A continuous collection of leafy plants, vines, shrubs, and trees offers food and shelter at several levels and over several seasons. This type of habitat brings more wildlife species than single level or sparsely planted areas. Variety in plant species also means variety in insect species. Insects, a form of wildlife themselves, are critical parts of wildlife food chains.

In addition to providing variation in structure and form, make the edges of these areas crooked whenever possible. Although often preferred by people, the straight edges of a manicured lawn or field are less desirable to animals. Bobwhite quail, for example, prefer shrubby,

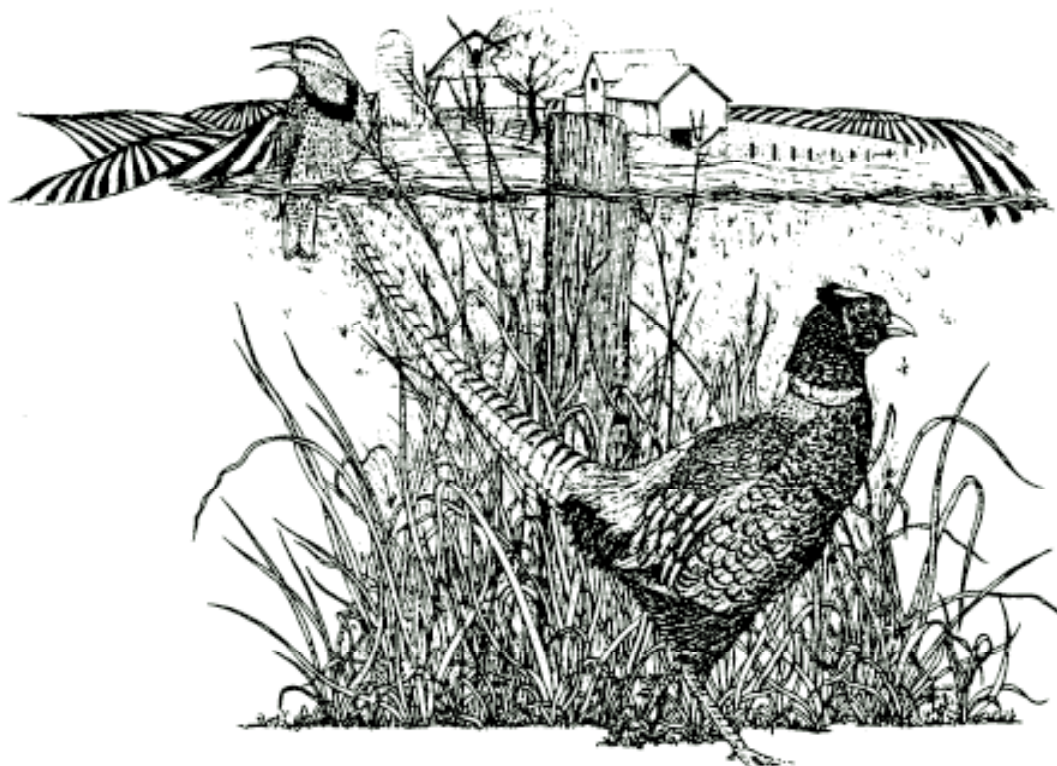
“messy” edges. Such edges have more cover and harbor more insects and seeds for quail to eat.

Finally, think year-round. Besides providing preferred foods such as serviceberry (*Amelanchier spp.*) or cherries (*Prunus spp.*), include persistent foods, like sumac (*Rhus spp.*) or dogwood (*Cornus spp.*). While preferred foods vanish rapidly during the growing season, the persistent varieties remain and are important food sources for animals during the fall and winter months.

Thinking year-round is important when providing shelter as well. Red cedar, an easily-grown native conifer, and other



*Variety in plants brings variety in wildlife. Both preferred and persistent fruits, like this sumac, are important to wildlife.*



evergreens provide excellent protection from extreme winter cold and wind, long after deciduous trees have lost their leaves.

In summary, don't settle for just one of these general guidelines. Make your windbreaks, shelterbelts, and fencerows appealing to a variety of wildlife by combining several of these suggestions. The benefits to landowners and wildlife are numerous.

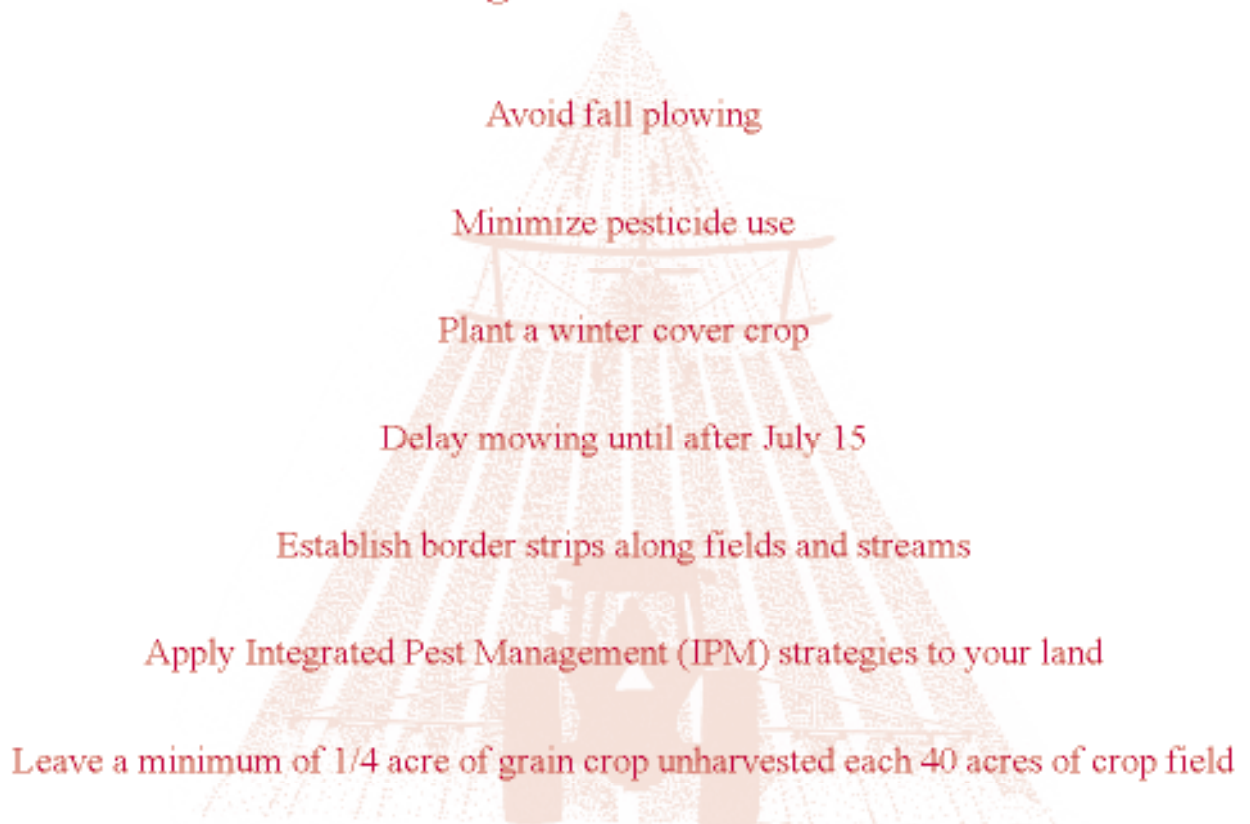
### *Managing for Upland Game Species*

Upland game birds, such as the ring-necked pheasant, need sufficient winter cover, food sources, and nesting sites. Agricultural habitats often provide the only reliable sources of food and shelter. Pheasants, quail, and partridge often do

well in areas of mixed agriculture. Simple changes to traditional agricultural practices make a big difference to these animals.

Planting shelterbelts is one way to increase winter cover for upland game birds such as pheasant or quail. The most efficient shelterbelts are six to ten rows in width. By including a variety of shrubs and evergreens, a shelterbelt slows the wind, collects snow, and provides critical winter cover for birds. Shelterbelts are most beneficial if a grass strip at least 20 feet wide is placed adjacent to the shelterbelt. Wider shelterbelts not only provide better protection from wind and snow, but also from predators. Birds in very narrow corridors of habitat are often taken by

## Small Changes Make A Difference



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predators like foxes, coyotes, raccoons, skunks, and hawks.

Additional winter cover and food can be provided for upland birds by leaving eight or more rows of corn standing during harvest or leaving grassed waterways and terraces unmowed. In addition to providing winter cover and food, these non-crop areas can be important travel corridors. When planting non-crop areas, consider planting a prairie mix of warm-season grasses and forbs. These species, being native, are well-suited to Iowa's climate and soils. In addition, they provide important nesting and brood-rearing habitat in the summer and stand up well against winter winds and snow.

Research shows that fall tillage of crop ground reduces the availability of waste grain for wildlife by 90–100 percent. Fall tillage also leaves fields vulnerable to wind and rain erosion which, in turn, damages aquatic habitats when the eroded soil clogs waterways. Avoiding fall tillage of crop fields saves soil, saves food for wildlife, and saves excess trips over the field. Soil scientists have found that, where soils dictate, fall tillage of some corn ground is beneficial but fall tillage of soybean stubble is never necessary in Iowa.

Adult pheasants eat a variety of grains, seeds, and plant material depending on seasonal availability. Combine spillage and residual crops are generally readily available and sufficient food sources. Unlike adult pheasants, however, the diet of young pheasant chicks is predominantly insects. If adequate insects are not available during the critical first few weeks of a pheasant's life, the young chicks are not likely to survive. Research shows insect biomass available to foraging chicks in areas subjected to aerial chemical application is considerably less than in untreated areas. Minimize chemical application to increase insect availability and chick survival.

In addition to providing winter cover and a reliable food source, it is important to protect nesting areas. Grassed waterways have been shown to attract nesting pheasants and other birds. To protect nests, chicks, and incubating adults, refrain from mowing grassed areas until after July 15 or later. Not mowing at all provides cover year-round.

## Sources for additional information and technical support

Iowa Department of Natural Resources, Wallace Building, Des Moines, IA 50319  
515/281-5145

County Conservation Boards – Listed under the “Government-County” section of your local phone book.

Natural Resource Conservation Service—County offices listed under “Government—Federal, USDA” section of your local phone book.

Soil Conservation District—Listed under the “Government-County” section of your local phone book.

Iowa State University Extension Service—County offices listed under the “Government-County” section of your local phone book.

## Other Iowa State University Extension publications useful in restoring linear habitats

IAN-104	Iowa Agricultural Practices and the Environment
IAN-201	Iowa’s Biological Communities
IAN-307	Iowa’s Shrubs and Vines
IAN-401	Iowa Wildlife Management
IAN-408	Adapting to Iowa
IAN-501	Changing Land Use and Values
Pm-1302a	Managing Iowa Wildlife: Pocket Gophers
Pm-1302g	Managing Iowa Wildlife: White-tailed Deer
Pm-1351b	Managing Iowa Habitats: Wildlife Needs That Dead Tree
Pm-1351c	Managing Iowa Habitats: Grassed Waterways
Pm-1351d	Managing Iowa Habitats: Attracting Birds to Your Yard
NCR 338	Shelves, houses and feeders for birds and mammals



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**Prepared by** Kelly Arbuckle, ISU graduate student, and James L. Pease, Extension Wildlife Specialist, Department of Animal Ecology, Iowa State University, Ames, IA. Illustrations by Julia Burzon and Mark Müller. Reviewed by Dave DeGues, Natural Resource Conservation Service. Layout design by Jonathan Melchert, Ames Best Communications. Layout editor, Beth Kroeschell, The Kroeschell Desktop.

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