



Purdue University Forestry and Natural Resources

Assessing Your Land's Potential for Wildlife

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Many landowners are interested in attracting wildlife to their property for a variety of reasons that may include hunting, fishing, hiking, bird watching, or photography. However, the majority of landowners are unsure how to approach this problem. Any venture will likely fail without a proper plan that considers a variety of factors, many of which are not obvious at first glance. This paper outlines the basic decision-making process landowners must go through prior to initiating management practices to make their property more attractive to wildlife.

All properties provide habitat for some wildlife species, but in most cases, the quality of that habitat can be improved. In some cases, the habitat is not desirable to the species you want; and in other cases, the species you want to attract is not appropriate for the property. There are numerous options of where and how to create a particular wildlife feature, and which option(s) you choose depend upon other management objectives for your property. All wildlife species have the same four basic requirements – food, water, shelter, and space. However, each species requires different kinds and combinations of food or shelter, which often vary in time and space. In addition, many wildlife species (e.g., deer, songbirds, or wild turkeys) may only use your property to fulfill a portion of their life requirements.

For example, there are some basic wildlife management recommendations that can be followed on every forest property (see [Table 1](#)). However, a wildlife management plan for a specific species or group of species must be tailored to each property.

This plan must take into consideration the landowner's objectives, existing habitats and natural features on the property, property size, wildlife species present in your area, and habitats and natural features on surrounding properties.

A tailored plan requires the assistance of a professional wildlife biologist. In Indiana, there are 22 state wildlife management biologists available to assist private landowners. You can locate the wildlife management biologist nearest to you by contacting the Indiana Department of Natural Resources (IDNR), Division of Fish and Wildlife or county extension educator. Your state district forester, Natural Resources Conservation Service (NRCS) wildlife biologist or resource conservationist, or a private wildlife consultant certified by The Wildlife Society can also assist you (see FNR-87). However, your job doesn't end there. When the professional arrives, you will be asked several questions. If you are prepared to answer these questions and understand the basic principles outlined in this paper, your resulting management plan will best reflect your wishes.

The professional will come equipped with the knowledge of relative wildlife populations in your area. Popular game species such as ruffed grouse, wild turkey, bobwhite quail, or ring-necked pheasants occur in portions of Indiana. If a resident population does not occur in your area or if there are no natural corridors for the animals to move from existing populations to your property, then the best management in the world won't do you any good.

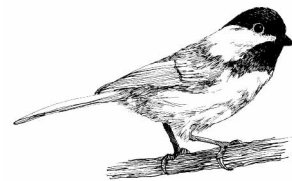
Conversely, if a population of your desired species occurs in the area, they will utilize your property if the proper habitat exists.

Question #1

The first question you will be asked is “What are your management objectives for your property?” Potential answers may include timber production, recreation (such as hunting, fishing, camping, bird watching, hiking, mountain biking, mushroom hunting, etc.), wildlife habitat, long-term investment, source of steady income production, or any combination of these. Your answer and the priority you place on each objective will determine what, where, and how much wildlife habitat management can occur on your property. For example, if timber management is your primary objective, any wildlife management practices initiated (i.e., improving fruit or nut [mast] production, creating early successional vegetation, creating brush piles) will be incidental to timber harvest and Timber Stand Improvement (TSI). An example of a tradeoff would be removing valuable den trees or mast-producing trees to create growing space for valuable crop trees. However, if providing wildlife habitat and timber management are both objectives, timber harvesting and TSI procedures can be used to create and enhance wildlife habitat while producing some income (see [Tables 2 and 3](#)). For example, log landings and skid trails can be seeded to desirable cover to create areas for species that utilize forest openings for nesting and feeding. Logging roads can be widened to create more dispersion and early successional habitat. Valuable den or mast-producing trees may be left specifically for wildlife. Specific cutting techniques (single tree selection, group selection, regeneration cut, or seed tree cuts) may be used to create a desired habitat condition (see FNR-102). If wildlife habitat is the primary objective for hunting or bird-watching purposes, then additional practices such as erecting nest boxes, planting food plots, planting specific trees or shrubs, and wetland restoration, enhancement, or creation may be considered ([Table 4](#)).

One thing to remember is that wildlife habitat often looks “wild”. Good wildlife habitat can look rough and may be considered poor management by

neighbors who are used to mowing fallow fields and odd areas. However, these “rough” areas provide the undisturbed cover essential to many species of wildlife to survive or reproduce. Therefore, it may be a good idea to discuss your plan with your neighbors prior to carrying it out.



Finally, give the biologist some indication of your long-term ownership objectives. Do you plan to own the land for a very long time, or are you planning to sell in the near future? Will the land be passed on to children or sold? If the property changes ownership, what will they most likely do with the property? While these questions may seem too personal or too long range to be practical, it is important that you at least give them some consideration. Wildlife management is often a very long-range endeavor. Tree and shrub plantings or regeneration from a timber harvest may take 15 to 50 years or longer to reach its desired condition. This is difficult for many people to grasp since we usually plan our activities by the day, week or month. Also, management that is implemented may positively or negatively affect future property values. For example, a windbreak or pond might increase property values. In some rural agricultural areas, conversion of cropland to trees or wetlands may decrease property values, while these practices may increase property values in suburban areas by creating more aesthetically pleasing sites for development. Therefore, it is important to consider these long-term issues to ensure that management decisions made today will be compatible with your plans for tomorrow.

Question #2

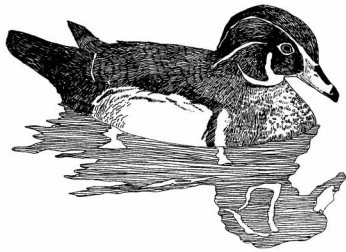
If managing for wildlife is determined to be one of your objectives, the next question is “Which species or group of species do you want to encourage?” You may wish to manage:

- for the greatest diversity of wildlife species

- for one or more specific game species for hunting
- for one or more nongame species for bird watching, photography, etc., or
- for wildlife populations from which you can derive income from allowing others to hunt, fish, bird watch, or trap on your property.

In addition, you may wish to manage your land to minimize damage from a specific species, or to maximize the harvestable surplus of deer or turkeys.

The answer will give the biologist a specific goal to achieve. You should note that there will often be tradeoffs when managing for a particular species. By changing the habitat to benefit a single or group of species, you will most likely reduce the habitat suitability for another or group of species.



At this point, the biologist will determine if the desired species exists on the property and at what level. This can be done by an assessment of tracks, observations, nests, and evidence of browsing or feeding. A more detailed census can also be conducted employing scientific survey techniques, although this is generally outside the bounds of services provided by state or federal biologists. If the target species has a home range larger than your property and your property only fulfills part of their life requirements (as would be the case for deer, turkeys, ducks, or migratory songbirds), then the biologist will determine which habitat components are amply provided on neighboring properties, which components are most limiting to the target species, and which of these limiting components can be most easily provided on your property given its natural features (soil type, topography, land use, hydrology) and your management objectives. These are the components that would then be featured in a management plan.

If the target species has a home range that is small and the animal spends most or all of its life on your property (e.g., quail, rabbits, squirrels, pheasants, or grouse), then the biologist will assess which required habitat features currently exist and what improvements can be made to these features. In addition, the biologist will try to create all of the animal's requirements (food, water, and shelter) in as small a space as possible. The more of these conditions that can be created, the greater the likelihood that you will see the population increase (Figure 1).

The biologist will probably come armed with an array of aerial photos, topographic maps, and soil maps for your property. If you already have some of these materials, tell the biologist beforehand and bring them to your meeting. These tools illustrate the natural features and key wildlife habitat components on your property in relation to surrounding properties. The biologist can then determine which components are in short supply and assist in determining the most advantageous placement for additional features. The soil maps give a biologist a good indication of what plants, management practices, and wildlife species the land will support. For example, a wetland could be restored on hydric (wetland) soils, a water impoundment could be constructed on clay soils (but might not be possible on sands), or substitutions might have to be made in species selected for nesting or food plots to be compatible with the soils present.

You can assist the biologist at this point by being prepared to provide the management history of your property if you know it. Information on past logging, grazing, or cropping practices (including pesticide applications) as well as future plans for these and other practices can affect management decisions. Tiling history, tile line location, location of underground utilities, and plans to maintain or improve tile drainage will influence what plant species may grow there and will limit management options to those conducive with your future plans. If you plan to work with any other natural resource professional, such as a NRCS conservationist or a forester, invite that person to meet with you and the biologist. If you already have plans prepared by these other professionals, bring them with you. This will ensure that

any wildlife recommendation will be compatible with the overall management of your property. Be prepared to point out marginal cropland acreage, areas providing management problems (e.g., areas that are hard to access, those that are often too wet to farm, or lands that are highly erodible) or areas that are hard to maintain (ditch and stream banks, steep slopes, or irregular field edges). Often, these are places where wildlife management practices can be concentrated.

Question #3

The final question will be “How much money and time do you wish to spend in managing for your target wildlife species?” Be prepared to give the biologist an indication of what equipment you own or have access to use (bulldozer, backhoe, grass drill, sprayer, etc.). It is also helpful to know if a neighbor might be hired to provide this service. Decide how much money you are willing to spend for management on your property and how much time you have for management and maintenance. The answer to these questions will determine how much actual management will be accomplished.

There are several points to consider that might help your time and dollars go a little further. First, a number of state and federal programs provide cost-share payments, leases or easements, or incentive payments for certain wildlife management practices. These programs vary by county and will change over time. Consult your wildlife professional, NRCS office, Farm Service Agency (FSA) office, district forester, or county Extension office to determine what programs or assistance may be available in your area to accomplish the desired management goals. Second, several private organizations, such as Quail Unlimited, the Ruffed Grouse Society, Pheasants Forever, the National Wild Turkey Federation, Ducks Unlimited, and Waterfowl USA, offer equipment rentals, labor assistance, free seed, or possibly cost-share assistance for various management practices. Finally, some landowners even develop agreements with hunters where seed and/or labor towards wildlife

management practices is provided in return for hunting rights. Often, these hunters who have permission to be on your land can help you monitor your land and reduce problems with trespassers.

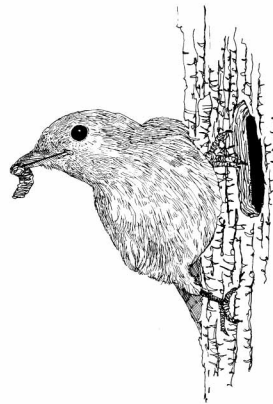
It is important to remember that most land-management practices take time to develop. You can't have an instant forest or prairie. The practices you establish will continue to mature and change over time. This is a dynamic process, and each stage provides a unique niche for some wildlife species. With proper management, you can maximize the benefit of these niches for wildlife. If a biologist's recommendations seem too ambitious, remember that you can accomplish some of these things in stages; and in some cases it may be desirable to do so. Also, you have to take the good with the bad. For example,

when you create wetlands and habitat for fish, you will also get fish predators such as great blue herons. Management that favors upland game will also favor their associated predators such as foxes and hawks. Most management practices will usually favor deer. While deer are desirable to many landowners, too many deer can create damage problems and can be inconsistent with certain management objectives such as orchards, new tree plantings, nursery operations, vegetable crops, or, in some situations, row crop production. All of these species are an

integral part of the natural environment and are essential for a healthy ecosystem. A biologist can minimize some damage potential by the design and placement of certain habitat features. In addition, fences, repellants, and exclusion devices can be used when the need arises. Contact the USDA-Wildlife Services at 1-800-893-4116 for information on damage control techniques available to you. This once again illustrates the need for you to carefully consider your objectives and communicate those objectives to the biologist.

Summary

Managing for wildlife on your property can be a fun and rewarding experience, but it will also require some work from you. If wildlife management is not



your primary objective, some level of management is usually consistent with many other potential objectives. Due to the complexity of natural systems, the advice of a professional wildlife biologist is instrumental in assessing your land's potential for wildlife and determining the proper course of action to realize this potential. There are a lot of options and tradeoffs in developing any plan. If you carefully consider the three questions discussed above *prior* to contacting a wildlife biologist, then you will be prepared to be an active participant in this process. If you work as an active partner with your wildlife biologist, you will be assured of developing a plan that meets all of your expectations now and in the future.

Additional Information

A large amount of species-specific wildlife management information is available for your use. For additional information on assistance with conservation planning, cost-share opportunities, and wildlife incentive programs, contact your county Extension office; IDNR, Division of Fish & Wildlife (317) 232-4080; U.S. Fish & Wildlife Service (812) 334-4261; local USDA Service center; or visit www.agriculture.purdue.edu/fnr/.

Acknowledgments

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Related Publications and Technical References

Visit www.agcom.purdue.edu/agcom/Pubs/ to view and download the Purdue Cooperative Extension Service publications found below and more, or call 1-888-EXT-INFO (398-4636) for ordering information.

FNR 36, Planting Forest Trees and Shrubs
FNR 38, Tree Windbreaks for Farms and Homes
FNR 87, Forestry and Wildlife Management
Assistance Available to Indiana Landowners
FNR 102, Woodland Wildlife Management
FNR 134, Planting Hardwood Seedlings
FNR 135, Weed Control for Tree and Shrub
Seedlings
FNR 172, Conserving Endangered Species on Private
Lands

FNR 173, Snakes of Indiana
FNR 188W, Warm Season Grasses, What's All the
Fuss?
FNR 189W, Windbreaks for Farms and Wildlife
FNR 192W, Enhancing Your Farm for Northern
Bobwhite Quail

Web Sites of Interest

IDNR, Division of Fish and Wildlife
www.state.in.us/dnr/fishwild/index2.htm

Purdue University, Department of Forestry & Natural Resources
www.agriculture.purdue.edu/fnr/

Purdue University Cooperative Extension Service
www.ces.purdue.edu

USDA, Natural Resources Conservation Service
www.nrcs.usda.gov

USDA-NRCS. Wildlife Habitat Management Institute Leaflets.
www.ms.nrcs.usda.gov/whmi/technotes.htm

USDA-NRCS. *Indiana NRCS Technical Guides*
www.in.nrcs.usda.gov/planningandtechnology/FOTG/section4/section4.htm

USDA, Farm Service Agency
www.fsa.usda.gov

U.S. Fish and Wildlife Service
www.fws.gov

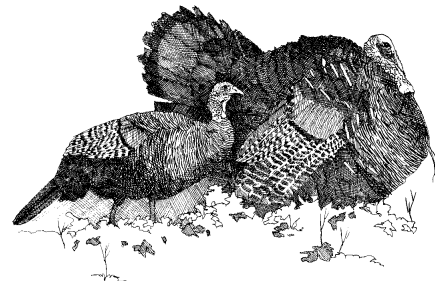


Table 1. General management practices that can benefit wildlife.

General practice	Wildlife benefits	Timber management considerations
Protect woodlot from livestock grazing.	Provides increased mast availability, thicker stem density for cover, and a more diverse understory.	Prevents soil compaction, improves vigor and growth rates of trees; provides greater regeneration and species diversity; reduces decay and defects in timber.
Allow shrubs, vines, blackberries, etc. to develop along woods edges (or plant them).	Provides food and cover for wildlife; provides early successional habitat required by many species; provides highly productive habitat (many species live at woodland edge since they require more than one habitat).	Gradual edge reduces wind and drying effects in woods; timber quality is poor along forest edge; therefore, vines and undesirable species have less economic effect.
Allow felled trees to remain along the edge of woodlot.	Provides cover; produces insect sources for wildlife.	Saves time and labor cost to remove; returns nutrients to the soil.
Plant conifers in small blocks (less than 2 acres) of up to 10% of the area – most efficient when established on nonforested, erodible areas; one to two rows of shrubs which provide wildlife foods (dogwood, highbush cranberry, crabapple, hawthorn, redbud, etc.) can be planted adjacent to conifer stand.	Provides cover during harsh weather; provides nesting and roosting habitat for songbirds, owls and hawks; provides food for wildlife.	Provides tree species diversity; prevents soil erosion.

Table 2. Timber Stand Improvement (TSI) practices that can benefit wildlife.

TSI practice	Wildlife benefits	Timber management considerations
Retention of cavity trees can be concentrated within 50' of woods' edge (where timber value is lowest), or in wetland areas, or adjacent to streams (where timber harvest is difficult or not recommended for water quality concerns).	Provides den and nest sites for wildlife.	Some cavity trees also may be timber trees; provides a diverse bird and mammal population important to the ecology of the forest (i.e., squirrels distribute seeds; woodpeckers eat harmful insects, etc.).
Girdle nonmarketable trees that must be culled from the stand. Inject with herbicide instead of removing and leave existing dead trees or snags.	Create snags that provide food sources for insect-eating birds such as woodpeckers, nuthatches, etc.; creates perches for hawks; creates small openings when done in groups for early successional species.	Saves time and labor cost over removal; reduces damage caused by felling cull trees.
Encourage mix of mast producing trees (red oak species, white oak species, beech, hickory, walnut, cherry, blackgum, ash, maple, and tulip poplar).	Provides food for wildlife.	Provides seed source for future tree regeneration; many mast-producing trees are valuable timber species – oak, cherry, walnut, hickory, maple, and ash; diversity protects against insect and disease infestations that can destroy single tree species (i.e., Chestnut blight, Dutch elm disease).
Perform no TSI or management on inoperable sites (areas where logging equipment cannot reach).	Provides mature trees for species requiring this cover type.	Saves time and labor cost in areas providing no economic return.

Table 3. Harvest practices that can benefit wildlife.

Harvest practice	Wildlife benefits	Timber management considerations
Design regeneration and group selection openings with irregular boundaries when possible.	Provides browse, nesting, food, and escape cover; increases habitat interspersion.	Regenerates shade-intolerant species (oak ¹ , tulip poplar, ash, cherry, walnut); these harvest strategies are cost-effective. ¹ Advanced regeneration required for oak species
For strip cuts, clear-cut timber in strips 60'-300' wide, spaced 600'-900' apart; position cuts to run perpendicular to the slope.	Provides continuous supply of ample browse, food, nesting, and escape cover; ensures availability of plants and earthworms with varying moisture conditions.	Regenerates shade-intolerant species; may provide economic return through pulpwood sales.
Remove 60% of overstory around spring seeps - optimum when most remaining trees are mast producers; insure that all slash is removed from seep area.	Provides food around spring seep areas that do not freeze and provide water and accessible mast all winter.	Provides areas for seed production; growth can be concentrated on valuable timber trees.

Table 3. Continued.

Harvest practice	Wildlife benefits	Timber management considerations
Perform TSI and harvest operations in late fall or winter when possible.	Causes least disturbance to wildlife; provides browse during most critical period of the year; increases sprouting, resulting in excellent cover.	Increases stump sprouting of many species, causes less soil compaction and erosion.
Make brush piles near edge of woodlot or logging road.	Provides cover for mammals and ground-dwelling birds near areas of greatest activity.	Concentrates brush in areas producing the poorest timber, thus allowing greater freedom of movement for maintenance and seedling regeneration in high quality areas.
Seed permanent logging deck and/or logging road with grass-legume mixture or encourage native herbaceous species on nonerodible sites; openings can also be created on utility rights-of-way, poorly stocked stands or regeneration failures (maintain 5-10% of unit in openings).	Provides insects for wildlife food, nesting cover, and forage for consumption (esp. for turkeys and grouse); provides travel lanes and connects wildlife openings.	Prevents soil erosion; maintained roads can be used for hiking, cross-country skiing, and woods access for maintenance; maintains logging deck in permanent condition for future harvest operations.

Table 4. Wildlife habitat improvement techniques in addition to timber management.

Management practice	Comments
Plant small food plots containing a variety of foods, or leave a small portion of adjacent field crops unharvested.	Provides food where natural supplies are limited or during deep snow and late winter when natural supplies are inaccessible.
Encourage fruit trees – release old existing ones. Plant new trees around edge, in odd areas, etc. where enough light exists.	Provides food where natural supplies are limited or during deep snow and late winter when natural supplies are unsuccessful.
Plant or encourage shrubs on woodlot edge. Favor trees or shrubs with high wildlife value, especially heavy fruit producers like dogwood, hawthorn, crabapple, and high-bush cranberry.	Provides food, cover, and nesting habitat.
Erect nest boxes for cavity nesting species (e.g., wood duck, squirrels, woodpeckers, owls, and raccoon) where natural cavities are deficient.	This is a good option if retention of a sufficient number of cavities is inconsistent with timber management objectives. Nest boxes usually need annual maintenance to remain productive.
Save and encourage beech trees for nut production and den trees.	Beechnuts are a preferred food. Mature beech trees readily form natural cavities.
Plant adjacent areas not suited for farming to trees, shrubs, and permanent cover crops.	Prevents soil erosion and provides needed wildlife habitat (may also be most efficient use of site).
Establish and maintain openings in or adjacent to woods.	Provides required habitat component for many forest wildlife species.

Table 4. Continued.

Management practice	Comments
Plant grass-legume strips along woods' edge.	Provides nesting area for ground-nesting species close to "escape cover."
Cut low wildlife value or cull trees along woods edge and let lie.	Provides cover and optimizes area of low timber value for wildlife.
Leave den and potential den trees.	Important to many cavity users – bird and mammal.
Leave strip (≥100-ft wide) of undisturbed vegetation adjacent to streams, wetlands, ponds, rivers, and lakes.	Water, especially if moving, is an activity center for many species. Adjacent uplands often provide nesting and feeding areas for many species of wetland wildlife.
Protect all wetlands in or near woodlands.	Wetlands are the most productive of all habitat types. Forested wetlands provide important amphibian breeding habitat.
Encourage moderate to dense understory throughout portions of the woods.	Especially important in attracting songbirds.
Strip disk dense perennial vegetation.	Creates early successional herbaceous cover critical to quail and several other species of ground-nesting wildlife.
Replace fescue or other grass monocultures with diverse cool-season or native warm-season grass/forb plantings.	Creates structural diversity in grassland habitats that support a wide array of bird and mammal species.



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