

# Agricultural Areas

## *Brief Description*

Agriculture has been central to human cultures for millennia. **The ability to grow large amounts of produce, livestock, and fiber within controlled, concentrated areas has increasingly fueled societies and technological development. However, as human populations have grown, the increasing demand for land and resources dramatically altered the landscape,** especially in the Midwest, where the rich, black soils were ideal for agriculture. What initially began as small plots of plowed field dotting the prairie landscape have become just the reverse—small plots of remnant prairie (and forest) dotting the agricultural landscape.

**As with other forms of wildlife, replacement of natural habitats with agricultural lands has caused declines of many amphibians and reptiles.** However, several species, such as Painted Turtles and American Toads are more tolerant of agriculture and have persevered.



C. Barlow

**Agricultural development has led to the isolation and reduction in size of many natural habitats.**

The majority of this document is devoted to outlining procedures for managing natural areas for amphibians and reptiles. **Because the majority of lands in the Midwest have been converted to agriculture, procedures for integrating agricultural lands into these conservation plans are necessary to increase the effectiveness of managing the few remaining natural areas.** In this module, we offer suggestions for managing agricultural lands that improve the conditions for amphibians and reptiles either to inhabit them or to move through them.

## *Managing Agricultural Lands to Benefit Amphibians and Reptiles*

**Less disturbed areas within extensive farmland are centrally important for the reproduction and survival of amphibians and reptiles that persist in agricultural areas,** because they contain wetlands and combinations of upland habitats required for successful population maintenance. However, the agricultural lands that surround these oases of natural habitat are often expansive and dominate the landscape. Amphibians and reptiles frequently disperse into agricultural lands to forage for food or to travel through them to reach other scattered natural areas. Growing evidence suggests the ability of these animals to travel among areas for reproduction is important for the maintenance of viable populations. Because of this, **we strongly encourage the preservation, maintenance, and creation of corridors connecting natural areas within agricultural environments.** “Corridors” are lands with habitats that provide movements of animals from one area to another, and landscapes that contain many such corridors have high “connectivity.”

### **CRITICAL CONSIDERATIONS FOR AGRICULTURAL AREAS**

- Protect and buffer any remaining natural areas. These are the areas where most herps will persist.
- Develop corridors between habitat fragments to provide habitat complexes rather than habitat islands.
- Avoid mowing shorelines and drainage ditches mid-spring through mid-fall.
- Avoid overgrazing and keep livestock out of wetlands.
- Whenever possible, avoid intensive techniques that unnecessarily reduce potential refuges for herps.
- Follow pesticide/fertilizer directions very carefully. More is not necessarily better and may be much more harmful.

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There are some general recommendations that we can highlight that are applicable in all agricultural settings. **Avoid mowing roadway ditches during the early spring/summer/early fall.** The vegetation in these ditches provides cover and thus safer travel corridors. The water that temporarily pools in these ditches is also used by a number of frog species, such as the Western Chorus Frog, for breeding. It is also important to **avoid applying pesticides in and around these ditches as well as in any areas that temporarily pool for periods greater than 60–70 days.** These sites are commonly used by a variety of frogs for breeding. If possible, leave vegetation around these sites to provide cover. Also, **by preserving, maintaining and creating corridors between natural areas, you will be ensuring “safe” movement passages for reptiles and amphibians as they migrate across the landscape.**



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**Painted Turtles can establish populations within man-made farm ponds in agricultural areas.**

**When using fertilizers to enrich plantation soils, opt for organic products.** These products are free of chemicals that may prove harmful to many wildlife species, particularly amphibians.



S. Gibson

**Row crops, such as this soybean field, often dominate the landscape providing little habitat for reptiles and amphibians.**

## Row Crops

Row crop fields dominate the landscape throughout much of the Midwest. These habitats often provide the least amount of cover, especially when modern agricultural technologies (e.g., *Round-Up Ready*® seed) remove even modest amounts of “weeds”. **In these areas any management practice that provides even patchy cover can benefit amphibians and reptiles.** For example, movement data of Leopard Frogs from northern Iowa indicate that frogs regularly used fencerows and grassy waterways (surface drainage areas) to forage or move across landscapes. Thus, **leaving vegetation along fences, ditches and other such areas may provide the cover animals need to safely move about.** In addition, no-till farming practices leave large amounts of residual crop debris that will also provide extra cover.

Row crop fields also receive substantial amounts of fertilizers and pesticides. In other habitats, these chemicals may be used in spot applications to control patches of weeds or pests, but in row crop fields they are broadcast over entire fields. **Landowners may find some ideas or recommendations in the Herbicides section of the Toolkit that can be used to lessen the impact of these chemicals on amphibians and reptiles.** Because of their moist skin, amphibians may be more affected by these chemicals than reptiles and time of application may be important.

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## Pastures and Hayfields

Lands that are maintained for years as pastures provide relatively stable, permanent habitat. If sown to native grasses and forbs, they can closely resemble restored prairies (see the Grasslands and Savanna module). In areas with livestock it is important to remember that **grazing will affect amphibians and reptiles if it is too extensive**. Unrestricted access to pond breeding habitats by livestock will also produce detrimental affects for amphibians and reptiles. For more information please refer to the Grazing section of the Toolkit.

Management of hayfields can have dramatic effects on amphibians and reptiles, depending on how frequently and extensively these fields are mowed. **Amphibians that are suddenly “stranded” near the center of a large, mown field may have difficulty finding sufficient cover to prevent dehydration**. We also recommend mowing in rows (for example, mowing in rows from left to right, or visa versa) as opposed to circular mowing (where you finish in the middle of a mowed field). This way there is ample opportunity for wildlife to seek refuge away from the area being mowed. Reptiles that depend in part on the amphibians inhabiting these fields for food may subsequently also find their prey base reduced. An example of practices that can lessen the effects of mowing on amphibians and reptiles include raising the mower deck height to at least 8 or even 12 inches. **Raising the deck height when mowing will reduce the number of animals killed by mowing and leave additional cover**. Please refer to the Manual and Mechanical Control Techniques section of the Toolkit for additional information and suggestions.



Wisconsin DNR

## Plantations

Plantations are generally characterized as being monotypic (only containing one species) stands of vegetation. The suitability of plantations as a habitat for reptiles and amphibians varies depending on the species of trees grown, the plantation owners' goals (e.g., Christmas tree production, pulp production) and site management (mowing between rows). **In most cases, young plantations are capable of being managed in a semi-natural state** (e.g., no or limited manicuring of ground vegetation) and thus can support a variety of amphibians and reptiles. **However, as plantations age, the understory often becomes shaded out and ground flora is reduced**. In the case of pine plantations, increased soil acidification and shading eliminates most ground vegetation and as a result these sites are seldom used by herps because they create a higher risk for dehydration and increased predation. By allowing wider strips of open canopy to crisscross through plantations, wildlife corridors can be maintained in a much healthier vegetated state. **Maintenance of plantation trees, for example, pruning and cutting, is best done during the winter months when soils are frozen to minimize disturbance and to reduce direct mortality to wildlife**.

Due to the absence of ground vegetation, pine plantations are seldom used as travel corridors due to the increased risks of dehydration and predation.

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## Orchards

One of the major concerns with orchards, when viewed from the amphibian and reptile perspective, is the unnecessary manicuring of understory vegetation. This practice seems to be especially unnecessary once the young trees grow up beyond the height of the ground vegetation (reduced competition). **Infrequent mowing, done just prior to harvest, will allow these habitats to support amphibians and reptiles for much of the growing season.** One of our more important concerns is the widespread use of chemicals to control pests in orchards. While we realize that this practice is necessary in many settings, **we recommend that herbicide use be considered carefully and that all label instructions be strictly followed to reduce overuse.** Please refer to the Herbicides section of the Toolkit. Even though this section is largely directed towards herbicide application, it contains some thoughtful tips that should be considered. For example, the use of all chemicals should be restricted around water areas.



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**American Toads have persevered in agricultural areas.**

**A last point to consider in orchard habitats is that amphibians and reptiles are actually beneficial species to have around**—most species of amphibians and reptiles eat insects and many snakes feed on rodents.

## Cranberry Operations

**A major concern with cranberry operations relative to amphibians and reptiles is the “warehousing” of water for this industry.** In many instances, constructed reservoirs have resulted in the flooding of high-quality sedge meadows, shallow marshes, and shrub wetlands—areas that are vitally important for a wide range of species, particularly amphibians and reptiles. The usual result of such activities is a simplified system that supports a narrower range of species. Water diversions, such as ditching or pumping from surface waters, often cause the dewatering of natural wetlands, especially in drought years. An alternative to diverting water from wetlands or flooding natural wetlands would be to use ground water. While this is a more expensive alternative, the ecological benefits would be highly beneficial. Holding areas may also be constructed rather than be based over natural wetlands.

**The use of chemicals in the cranberry industry is another concern for amphibians and some reptiles because of their sensitivity to these chemicals and their breakdown byproducts.** To minimize amphibian and reptile contact with such chemicals, vegetation within a 20-foot perimeter of all cranberry beds can be maintained by frequent mowing to maintain a short (under six inches), less attractive “shoreline” structure. Please refer to the Herbicides section of the Toolkit in this document for additional precautions.



This is the Forests module of the PARC publication, **“Habitat Management Guidelines for Amphibians and Reptiles of the Midwest,”** ISBN # 0-9667402-1-1. Please visit [www.parcplace.org](http://www.parcplace.org) for further information or copies of the complete document, or visit <http://herpcenter.ipfw.edu> for a Web-based version of these materials.