

# Restoring and Managing Habitat with Amphibians and Reptiles

*Restoring and managing habitat for amphibians and reptiles requires knowledge beyond plants. In bringing the health back to our lands we are regenerating habitat and reestablishing ecosystems. This is not a linear process and involves more than plants. It involves using a variety of management techniques in differing seasons and tailored to various species. It's certainly not a one-size-fits-all plan. When you read these guidelines by Rebecca Christoffel, it becomes clear the special needs of our herptiles.*

Author: Rebecca Christoffel, [Christoffel Conservation](#)

Restoring and managing land with amphibians and reptiles, i.e. herpetofauna, in mind is not the same as doing so for birds or mammals. Birds and mammals are warm-blooded and tend to be rather mobile. On the other hand, herpetofauna are generally not very mobile. In Wisconsin, amphibians and reptiles are either dormant or very sluggish during the colder months (~Nov – Feb). The same techniques to restore and manage habitat can be used for any of these animals, but timing and application of the techniques will differ.

Following are some general guidelines for using land management techniques when herpetofauna are present. It must be noted that any given technique can have effects that vary among species and can differ in how or when it is appropriate to use.

## Herbicide Applications

Avoid broadcast spraying [herbicides](#). Spot treat using a foliar

application or cut and apply herbicide to the stem, stump or bark. These techniques provide much greater control of herbicide application, reduce the amount of herbicide used, and decrease the potential for herbicides to enter nearby surface waters or groundwater.



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Pickerel frogs (*Rana palustris*) and other amphibians are very sensitive to broadcast spraying of herbicides

## Prescribed Burns

The following discussion of herpetofauna and prescribed fire is taken largely from the [Midwest Partners in Amphibian and Reptile Conservation \(PARC\)](#) website.

There is a common misconception among some land managers that if they stomp around a burn site prior to ignition, turtles and snakes will flee the area. This is untrue. Most turtles

and snakes “freeze” when heavy machinery or stomping happens in an area rather than fleeing. Especially when herpetofauna have newly emerged from hibernation in the spring, and just prior to starting hibernation in the fall, they are likely to be very sluggish and unable to escape fire, mowers, predation, etc.

Repeated burns will have cumulative effects on population viability. Populations of turtles and many snake species cannot persistently withstand even small increases in mortality. While only a few individuals may be lost during a single burn, repeated losses of a few individuals can quickly deplete populations of long-lived, slowly maturing animals such as turtles and many snakes. Alternate burn periods and burn units among years to provide relief to vulnerable herpetofauna.

### ***Plan for Refugia***

[Refugia](#) is important for all wildlife. Avoid burns that completely expose soil over extensive areas. Active season burns should be conducted when weather or site conditions (high humidity, green vegetation, low temperatures) will result in spotty burns, thus providing refugia for herpetofauna. Alternatively, fire breaks should be created around select snags, standing dead trees, and downed logs to provide places for animals to escape the heat and flames.

### ***Winter Burns***

Conduct prescribed burns during winter, when herpetofauna are inactive. This period is from November 1 to March 15 generally, but varies based on fluctuations in annual precipitation and temperature conditions. When soil surface temperatures exceed deeper soil temperatures, it indicates the onset of activity for many species. But because some salamander species and Blanding's turtles emerge from hibernation very early, February burns may impact them. Burns should only be used in habitat with ornate box turtle during their winter hibernation

period.



Blanding's turtle take 17 years to reach reproductive age. One wrongly timed burn can reduce populations substantially.

### ***Spring Burns***

When burning after March 15, you can minimize harm for many species if cool (overcast, and under 50°F) conditions have persisted for many days. Management plans should be flexible, allowing you to respond to each year's conditions. Spring burns in close proximity to snake hibernacula should be conducted well before the active season or NOT AT ALL. Fire breaks and buffers constructed around known hibernacula may protect animals during a burn, but this isn't a given.

### ***Fall Burns***

Fall burns should follow an approach that takes the above guidelines into consideration. October is analogous to late March or early April, therefore many species may still periodically be on the ground surface and active. Burning prior to November 1 is discouraged.



## ***Ignition Patterns***

Different kinds of fires and ignition patterns should be used when burning habitat with herpetofauna. It is important to know the species you are potentially impacting and their response to fire prior to using a particular burn method. In spring, sluggish herpetofauna are unlikely to be able to “outrun” a fire of any sort. Avoiding a ring or perimeter ignition pattern will allow snakes opportunities to escape a fire. Few herptiles can “outrun” fires in any season. A rate such as 10 ft. per minute may allow time to flee for those species which evade fire. However, faster fires will leave unharmed areas under logs and other cover objects, providing safety to species that tend to hide.

## ***Wetland Burns***

Wetland shorelines should only be burned when a management objective specifically requires it. Detritus provides cover for amphibians as they migrate to and from wetlands to breed. Create burn breaks around these areas of at least 50 ft when possible, using a leaf blower or rakes.

## **Burning Brush Piles**

Avoid constructing brush piles unless you plan to burn them immediately. Brush piles attract many amphibians and reptiles. Snakes and other wildlife will take advantage of new habitat like brush piles, creating traps during burns. If piles are left for more than a few weeks, disassemble them prior to the burn. Older brush piles with burn breaks around them provide refugia during a fire.



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We burn piles as we create them unless we plan to leave them as habitat.

## Mowing

Mow to restore or manage habitat when herpetofauna are least active. To reduce herpetofauna injuries and mortality, mow at high blade settings (8" or higher) and use mowing systems that do not create suction. If you must mow during the active season, do so once wildlife breeding season is over and turtle hatchling emergence has not begun (generally after July 10 but before August 15), mow during the warmest part of the day on sunny, hot days (>88°F), and mow only a portion of contiguous habitat at a time. Disking is discouraged as it causes direct mortalities and disrupts soil structure.

## Brush Clearing

If cutting down trees or clearing out shrubs, do not use heavy

machinery. Use hand-operated tools, such as chain saws and brush cutters. Large machinery should be restricted to the overwintering period (Nov 1 to Mar 15), ideally when there is frost in the ground to minimize vegetation damage.

It's important to leave cover for amphibians and reptiles, even those that are typically thought of as "prairie" specialists. For example, juvenile ornate box turtles that were radio-tracked for a season were found to heavily use patches of sumac and black locust rather than be exposed to the greater temperatures and lesser humidity in more open and sunny areas of the prairie.

## Other Considerations

Consider structural needs of the species present. Although some habitats are not botanically rich, many such places support populations of herpetofauna. These species often associate with structure or prey base rather than specific plant assemblages and can flourish in areas that are of low botanic quality. For example, population levels of some larger snakes, such as bullsnakes, are more dependent on availability of small mammals, their prey, than on the quality of the habitat. With a good prey base, they will frequent open areas with very little native vegetation. Consult local experts prior to initiating intensive restoration efforts in such areas as these actions may have greater negative effect on animal communities than no action at all.

For more information:

[Midwest PARC](#) Habitat Management Guidelines

[Midwest PARC](#) Prescribed Burning Guidelines –

[Wetland Restoration Handbook](#) for Wisconsin Landowners