

Indiana - August 2007 (ver. 1.1)

## Copperbelly Water Snake: Habitat Restoration Guidelines

### PLANNING CONSIDERATIONS

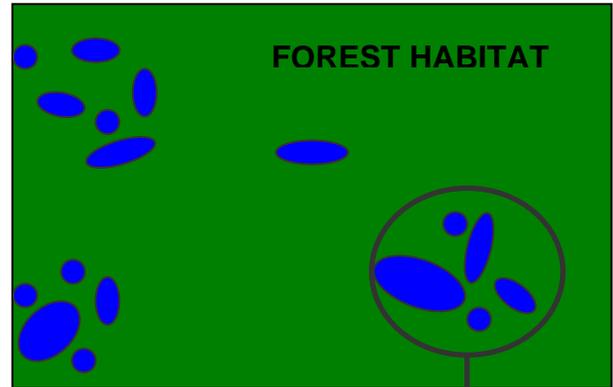
The goal of restoring Copperbelly Water Snakes (CWS) habitat is to create large, contiguous blocks of upland forest cover. Interspersed throughout this wooded habitat are numerous clusters (complexes) of small to medium-sized wetlands, and minor amounts of grassland and wetland forest. Working with individual land owners on an incremental basis will be necessary to eventually reach the goal of square miles of desired habitat.

The wetland complexes consist of multiple wetlands of varying size and hydrology that are in close proximity to one another (6-700 feet). The goal is to create a food source of easily-accessible frog-producing wetlands of 0.1 to 2.5 acres in size.

Wetlands located on clay soils, as opposed to muck, are preferred.

Avoid sites with roads, residential areas, and large blocks of agricultural land which act as serious barriers and hazards to CWS movement.

Corridors between wetlands, and between wetland complexes, should be at least 100 feet wide, and composed of native trees, shrubs or grasses. Corridors should be as short, and as wide as possible, with a minimum width:length ratio of 1:5.



Complex of wetlands within 6-700 feet of one another

### HYDROLOGY RESTORATION

Restore all possible wetland areas on the site. This includes small, “marginal” areas that occur on the project, especially those that can be restored by filling ditches and removing drain tiles.



Photo by B. Kingsbury

Hydrology restoration should ideally result in a complex of wetlands that have:

- 1/3 permanent water
- 1/3 semi-permanent water (water in 3 out of 4 years)
- 1/3 almost always dry down by mid-summer each year

Maximize areas of less than one foot in depth.

Existing shallow, temporary wetlands should generally not be deepened or made permanent.

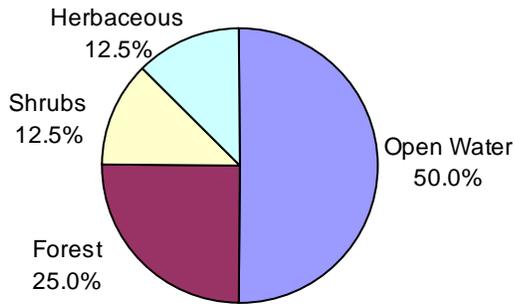
Outside of pooled areas, restore hydrology to within 6 to 18 inches of the soil surface to create saturated (not flooded) soil conditions that promote crayfish. Copperbelly Water Snakes use crayfish burrows to hibernate.

Shorelines should be irregular, with side slopes as flat as possible (20:1 is preferred, 8:1 is the minimum).

In floodplain locations, avoid construction of macrotopography or other depressions that could support fish. Fish are a primary predator of amphibian eggs, tadpoles and adults.

## VEGETATION RESTORATION

The canopy cover for individual wetlands should result in:



Place logs along the wetland edge that extend into the water to provide structures for basking. Woody debris should be left within the wetland to provide a substrate for invertebrates.

Plant two rows (10 ft. x 10 ft. spacing) of Buttonbush (*Cephalanthus occidentalis*) in the saturated zone around restored wetlands.

Forested buffers should be planted around the wetlands. The larger the better. Include as much forest edge as possible.

Reforested areas should be planted at 544 trees/acre to achieve a complete canopy as soon as possible.

## MANAGEMENT CONSIDERATIONS

Where possible, encourage adjacent or nearby landowners to restore wetlands and plant upland areas to trees. Remember that in the Fish Creek Watershed, WRP allows a ratio of up to 10 acres of upland to every acre of eligible wetland. In most cases, entire fields will be eligible.

Consider creating habitat buffers (such as CRP practice CP-33) around all adjacent agricultural fields.

Limit any management activities during the active CWS season of May-October.

To the extent possible, do not inhibit any beaver activity in the project area.

## REFERENCES

Forest Clark  
U.S. Fish and Wildlife Service  
620 South Walker Street, Bloomington, Indiana 47403

Copperbelly Water Snake  
Identification, Status, Ecology, & Conservation in the Midwest  
Center for Reptile & Amphibian Conservation & Management  
Science Building, Indiana University-Purdue University  
2101 East Coliseum Blvd, Fort Wayne, IN 46805-1499

Preventing Extinction of the Copperbelly Water Snake  
March 2007 Interim Report  
Bruce Kingsbury and Scott Gibson  
Center for Reptile & Amphibian Conservation & Management



Photo by M. Myers

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