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Copperbelly Water Snake Conservation Agreements Illinois, Southern Indiana and Kentucky

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Life History

The copperbelly water snake (*Nerodia erythrogaster neglecta*) is a subspecies of the more common plain-belly water snake. It is a non-venomous snake identified by its brightly colored orange underside. The copperbelly has a dark back with its orange underside visible from the side. These snakes can reach lengths of up to 5 feet.

Copperbellies are almost always found near bottomland forests and shrub swamps. Even though it is called a water snake, the copperbelly also spends considerable time away from water in the terrestrial, forested part of its habitat. Copperbellies emerge from their hibernation sites in early spring and migrate through wooded or vegetated corridors to wetland areas. They can sometimes be seen basking, breeding, and foraging near shallow wetland edges in woodlands. Copperbellies sometimes form small groups in the spring and fall. Groups of snakes have been observed swimming, feeding, courting, and resting together. They feed on other aquatic species, mostly frogs, tadpoles, and small fish. When woodland swamps begin to dry in late spring or early summer, snakes again disperse and move through wooded or vegetated corridors to their summer habitat areas, which are usually forest and forest edges. By late fall, copperbellies seek out hibernation sites, mostly in upland areas above flood and ponding levels.

Courtship and mating occur in April, May, and June. Young snakes are born in the fall in or near the hibernation site and may not become active until the following spring. The average copperbelly litter size of 18 is smaller than those of other water snakes.

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Range and Status

Copperbellies are thought to have been present at one time in one major population distributed over Indiana, Illinois, and Kentucky, with snakes also present in south central Michigan and northwestern Ohio. The northern snakes became isolated from the southern population as agricultural drainage and land conversion fragmented the copperbelly's habitat. Today, most copperbellies are found in the southern part of the species' range in southeastern Illinois, western Kentucky, and southern Indiana.

Remnants of the original copperbelly distribution can still be found, but coal mining, drainage and damming of wetlands, channelization, diversion of streams and rivers, and development of upland habitat have disrupted and fragmented the snake's distribution. Groups of snakes that once were connected are now isolated from each other, making them more vulnerable to threats.

In Illinois, five small, isolated populations remain in the extreme southeastern part of the state, although the copperbelly once was found throughout southern Illinois. Kentucky is considered to have the largest number of copperbellies. The snake was once abundant throughout western Kentucky but is now restricted to 18 isolated populations. Habitat has been eliminated by conversion of wetlands to croplands,



surface mining, channelization, and commercial development. Southern Indiana's copperbelly population has been splintered into 13 isolated groups, vulnerable to the same types of threats as the Kentucky snakes.

Northern populations of the copperbelly are even more isolated and their habitat more fragmented. Since 1986, the copperbelly has been found at only eight sites in four Michigan counties, one Ohio County and one Indiana County. Most of the sites are on private property, and are isolated from each other by unsuitable habitat. This fragmentation of habitat and isolation of local populations increases the likelihood of extinction, with snakes susceptible to threats such as drought and genetic problems caused by inbreeding. [Back to the top.](#)

Background

The U.S. Fish and Wildlife Service proposed to list the copperbelly water snake as a threatened species on August 18, 1993, citing habitat loss and fragmentation as the primary factors threatening the snake. The Service extended the one-year deadline to determine whether the snake should be listed, and public comment was solicited. In April 1995, before a final decision on the copperbelly was made, Congress imposed a moratorium that prohibited new listings under the Endangered Species Act. The moratorium was lifted in April 1996.

The public comment period on the proposed listing of the copperbelly water snake was reopened in July 1996 to receive any new information available on the snake, and to receive a report on the biological status of the northern copperbelly population (southern Michigan and adjacent portions of Indiana and Ohio). The comment period was extended until November 15, 1996.

In 1994, the U.S. Fish and Wildlife Service began discussions with State mining regulatory agencies and the Office of Surface Mining Reclamation and Enforcement in Indiana, Illinois, and Kentucky and with coal industry representatives to address the issue of incidental take of the snake from coal mining if the snake was listed. These discussions prompted the coal industry, with Service support, to develop a draft conservation agreement for the copperbelly in southern Indiana. When the listing moratorium ended in April 1996, discussions accelerated in Kentucky, leading to a similar conservation agreement. The agreements greatly reduce the existing threats to the southern copperbelly water snake population, especially those threats posed by mining operations, precluding the need to list the southern population of the snake under the Endangered Species Act.

Although they are separate documents, the two conservation agreements developed for the copperbelly water snake share the same objectives: eliminate or reduce threats to the copperbelly and provide for long-term conservation of the species, with a minimum of disruption to economic activities, primarily coal mining. The conservation agreements direct public agencies, including state resource agencies and mining regulatory agencies, to treat the copperbelly as a listed species when considering actions which could affect the snake and its habitat, such as granting permits or acquiring land. Mining companies that are signatories to the agreements will follow specific guidelines for mining and reclamation in copperbelly habitat.

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The Conservation Agreements

Goals: To expedite conservation measures needed for the continued existence and recovery of the copperbelly water snake and provide sustainable human activity.

Signatories to the agreements include:

Kentucky/Indiana/Illinois Agreement

Illinois Department of Natural Resources
Indiana Department of Natural Resources
Kentucky Department of Fish and Wildlife Resources
Kentucky Coal Association
Kentucky Coal Country Association
Kentucky Farm Bureau
Kentucky Natural Resources and Environmental Cabinet
Western Kentucky Coal Association
U.S. Department of Interior - U.S. Fish and Wildlife service; Office of Surface Mining reclamation and Enforcement

Indiana Coal Mining Agreement

Indiana Coal Council
Indiana Department of Natural Resources
U.S. Department of Interior - U.S. Fish and Wildlife Service

Terms of the Agreements

Public agencies agree to:

- Treat the copperbelly water snake as a protected species in considering applications for activities that may affect the snake, such as mining and reclamation.
- Put a high priority on copperbelly habitat when acquiring land or establishing leases and easements.
- Avoid converting or degrading bottomlands or wetlands identified as known or potential copperbelly habitat, unless mitigation is carried out.
- Restore and enhance known or potential copperbelly habitat on lands they own or manage.
- Strictly control scientific collection of copperbelly water snakes.

- Provide law enforcement officers with training in protection of the copperbelly water snake and make enforcement of applicable regulations a high priority.
- In Kentucky and Illinois, develop laws or regulations to protect the copperbelly water snake. The State of Indiana already protects the copperbelly as a state endangered species.
- In Indiana, limit conservation requirements for coal companies to terms already determined in the conservation agreement, in the event the snake is listed in the future,.

Coal/agriculture interests in Kentucky and Illinois agree to:

- Within 12 identified key habitat areas in Kentucky, minimize mining operations so that not more than 4 percent of the total acreage of these areas is mined, and not more than 10 percent of most individual habitat areas is affected by mining. These identified key habitat areas total about 112,400 acres.
- In copperbelly habitat outside identified key areas in Kentucky, and in copperbelly habitat in Illinois, modify mining to minimize impact on larger tracts of habitat, maintain travel corridors for the snake, and use reclamation techniques on mined areas that enhance copperbelly habitat. Efforts will be made to provide habitat diversity, including creation or restoration of seasonal and permanent wetlands and buffer areas.
- Encourage Kentucky Farm Bureau members to follow existing regulations for agricultural operations. Agricultural practices conducted under existing State and Federal statutes do not pose a threat to the copperbelly.

In Indiana, the Indiana Coal Council agrees to:

- Avoid all mining in six key "core" copperbelly habitat areas totaling about 10,400 acres.
- In habitat outside core areas, modify mining to minimize impact on larger tracts of habitat, maintain travel corridors for the snake, and use reclamation techniques on mined areas that enhance copperbelly habitat. Efforts will be made to provide habitat diversity, including creation or restoration of seasonal and permanent wetlands and buffer areas.

Other species to benefit from the agreements:

Although the agreements specifically address the needs of the copperbelly water snake, their implementation will also benefit other species. The Federally endangered Indiana bat and gray bat forage over rivers and streams in bottomland hardwoods, and Indiana bats use these areas as maternity sites. There are 13 species of Federally endangered mussels known to occur in rivers and streams addressed in the agreements, and a number of state-listed species in Illinois and Indiana occur in the copperbelly's range. Improved water quality and additional protection of wetlands and riparian areas will result from implementation of the agreements.

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Counties in which the agreements will be in effect:

Kentucky: Butler, Caldwell, Christian, Crittenden, Davies, Hancock, Henderson, Hopkins, Logan, McLean, Muhlenberg, Ohio, Union, Webster.

Illinois: Edwards, Gallatin, Hamilton, Hardin, Johnson, Lawrence, Massac, Pope, Pulaski, Richland, Saline, Wabash, Wayne, White

Indiana: Counties south of a line from Knox County to Dearborn County.

For more information, contact the U.S. Fish and Wildlife Service at 812-334-4261 x 203.

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Questions and Answers

How can the U.S. Fish and Wildlife Service be certain the copperbelly water snake will receive the protection needed to avoid declining toward extinction?

The conservation agreements were developed specifically to address the factors threatening the existence of the copperbelly water snake, primarily the effects on the snake's habitat of coal mining operations in southern Indiana, western Kentucky, and southern Illinois. The Fish and Wildlife Service evaluated the effectiveness and the scope of the conservation strategies outlined in the agreements and determined that if implemented as agreed upon, the strategies would eliminate or reduce significantly the threats to the copperbelly. The Service believes that mining practices can be compatible with the copperbelly if the extent, timing, and reclamation design are modified to incorporate snake conservation measures. In addition, both agreements include monitoring and compliance measures to ensure they are carried out effectively.

Why are there two agreements for the copperbelly?

The efforts by coal mining interests to develop conservation strategies for the copperbelly began first in Indiana, and were followed by similar efforts by agencies and organizations in Kentucky and Illinois. Although the two agreements are very similar, they differ slightly in the terms agreed to by the coal interests, with each agreement representing the best options for the signatories to meet the copperbelly's needs. The conservation benefit to the copperbelly, the certainty for coal mining industry, and the commitments by public agencies are similar in both agreements.

Wouldn't it be better for the snake to be listed under the Endangered Species Act?

The ultimate responsibility for the U.S. Fish and Wildlife Service in administering the Endangered Species Act is to ensure long-term survival and security for species in trouble. The Service considers listing a species a last resort, when other protections or conservation measures have failed. The conservation agreements provide the security, protection, and long-term conservation measures needed by the snake, so that listing under the Act in the southern part of the snake's range is not necessary.

What will private sector signatories have to do under the agreement that is different than current practices?

Agriculture operations may continue just as they did before the agreement. Normal farming practices that follow existing State and Federal regulations do not pose a threat to the copperbelly. Coal mining operations will be modified to avoid the most important areas of copperbelly

habitat, but in general, mining operations will also continue as before. Reclamation activities in mined copperbelly habitat will now be carried out specifically to enhance or restore copperbelly habitat.

How does the coal industry benefit from these agreements?

Coal mining operations may now carry on without the uncertainty that might occur if the copperbelly were listed under the Endangered Species Act. With the conservation agreements in place, coal interests can carry on activities, abiding by the agreements' guidelines, and not worry that their actions may be illegally harming the snake or violating provisions of the Act.

Why is it so important for the agreements to protect and restore copperbelly habitat?

The primary threat to the copperbelly is loss of its wetland habitat. It is estimated that Indiana has lost 87 percent of its wetlands, Illinois 85 percent, Michigan 50 percent, Ohio 90 percent, and Kentucky 81 percent. Safeguarding, enhancing, and restoring habitat are the keys to keeping copperbelly populations self-sustaining and out of danger of extinction.

Why don't the agreements address threats to the northern population?

The threats to the copperbelly addressed in the two agreements are primarily those posed by mining activities. Coal mining is a factor only in the southern part of the copperbelly's range. Copperbellies in the northern population are threatened by loss of habitat due to factors other than coal mining.

Have similar conservation agreements been developed for other species?

Conservation agreements among private and public partners have been developed to enhance recovery efforts for listed species, such as the endangered red-cockaded woodpecker in the southeast, and to conserve species that are candidates for listing, such as the Virgin spine dace, a fish found in the Virgin River Basin in Utah, Arizona, and Nevada.

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This Conservation Agreement was finalized February 13, 1997

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