

Endangered Species and the PFBC

by Linda Steiner



This red-bellied turtle is listed as threatened in Pennsylvania. Threatened and endangered species under the regulatory jurisdiction and protection of the Fish and Boat Commission include fish, reptiles, amphibians, aquatic invertebrates (crayfish and mayflies, for example), and freshwater mussels. Currently 29 species are classified by the Commission as endangered or threatened in the state: 18 fish, five reptiles, four amphibians and two mussels.

"Say the word 'endangered species' and people immediately think of 'bald eagle.' If we could get them also to think 'bog turtle,' then we'd be doing something."

So says Andrew Shiels, the Pennsylvania Fish and Boat Commission's Nongame and Endangered Species Unit Leader. High visibility, charismatic species like bald eagles, ospreys and peregrine falcons are what most Pennsylvanians identify when asked to name an endangered species. But there are other endangered species that, although certainly not forgotten, haven't gotten as high-profile press as the warm-blooded birds and mammals.

These "others" are the wildlife species that are under the regulatory jurisdiction and protection of the Pennsylvania Fish and Boat Commission. These are fish, reptiles, amphibians, aquatic invertebrates (like crayfish and mayflies) and freshwater mussels. They are varied, interesting and valuable, and they fall within the Fish and Boat Commission's mandate of overseeing natural resources. And they are the job of Andrew Shiels.

The law

What is the Fish and Boat Commission's role with endangered and threatened species? First, it has legal jurisdiction, authorized by Pennsylvania law. Under Section 2305 of the Fish and Boat Code, "the executive director shall establish a Pennsylvania Threatened Species List and a Pennsylvania Endangered Species list."

But having a list is no good if there isn't some clout for protecting the animals to go with it. So the law continues that the Commission "may promulgate rules and regulations governing the catching, taking, killing, importation, introduction, transportation, removal, possession, selling, offering for sale or purchasing of threatened and endangered species."

In general, the rule or regulation the Commission has set has been a prohibition of the mentioned activities, unless a special permit is obtained from the Executive Director. In cases like scientific study, permits may be issued for catching and possessing any of the endangered and threatened species.

Violations are serious: Even though many Fish and Boat Code infractions are summary offenses, on the same level as going through a stop sign, if you do something you shouldn't with an endangered or threatened species, it's a misdemeanor offense. Look for fines from \$250 to \$5,000

photo: Rob Crumwell



and/or 90 days in jail, fingerprinting, mug shots, the works. If you inadvertently capture an endangered species, say a rare darter in your minnow seine, release it immediately where you got it, and you're OK with the law.

Federal listing, state listing

Currently there are 29 species that are classified by the Commission as endangered or threatened in the state, listed in the 1997 fishing and boating regulations: 18 fish, five reptiles, four amphibians and two mussels. They vary from the big Atlantic sturgeon to the little Tippecanoe darter, and from the bog turtle of the southeast to the massasauga rattlesnake of the northwest (see sidebar on page 45). There are another 28 fish and three reptiles that are candidates for endangered or threatened species listing.

Endangered, threatened, candidate, what does all that mean? Being a species in trouble in Pennsylvania is different from being a federally endangered or threatened species. According to Shiels, the federal government, under the Endangered Species Act of 1973, due for consideration for reauthorization by Congress this year, takes a regional approach. "The U.S. Fish and Wildlife Service won't put a species on the list if it is common in several states, but may have disappeared from or be declining in another one," says Shiels. If a species is federally endangered, it's in deep trouble nationwide. And a species listed by the federal government is "ipso facto" on the state list, says Shiels. Federal protection, he adds, is a lot stronger for a species than state listing. State listing of a species concerns the animal's status within state borders. "They were here for a reason," says Shiels. Sometimes that is because Pennsylvania is on the edge of a species' range, or it is in a habitat that is uncommon in the state. In other cases,

what's left is a vestige of what was originally present throughout or over a large part of the state. Even the rare species are an integral part of our wildlife diversity. If we lose them, we usually lose habitats and ecosystems, with other plants and animals, as well.

The book *Endangered and Threatened Species of Pennsylvania*, published by the Wild Resource Conservation Fund, with Pennsylvania Fish and Boat Commission and other state agency and conservation organization input, defines the terms for state species so we all can understand:

"Endangered" means: "Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania."

"Threatened" means: "Species that may become endangered within the foreseeable future throughout their range in Pennsylvania."

"Extirpated" means: "Species that have

disappeared from Pennsylvania but still exist elsewhere."

"Extinction" means: "Species that occurred in Pennsylvania, but no longer exist across their entire range." And extinction (as in there are none left anywhere) is, as they say, forever.

Candidate species are those that may not be on the "sick list" yet, but have suspicious "symptoms" that require watchfulness and caution. There are bag and possession limits that restrict or prohibit their taking. For example, the timber rattlesnake is a candidate species that has about a month-and-a-half-long season and the annual possession limit is one (except for regulated hunts, which require special permits). The Commission urges anyone who catches a candidate species to release it "immediately and unharmed to the waters or other area from which it was taken."



The clubshell mussel (above) and the riffleshell mussel are the two mussel species endangered in Pennsylvania.

Massasauga rattlesnake, endangered



and that we'll soon have more hard facts about their status. He suspects that some aquatic insect species may be found only in one or two waters in the state. The Fish and Boat Commission works closely with the Wild Resource Conservation Fund, known to most Pennsylvanians as the state income tax check-off (donate your refund) and the "owl" vehicle license plate ("Conserve Natural Resources").

Frank Felbaum, Executive Director of the fund, says they work "hand in glove" with the Fish and Boat, and Game commissions, paying for information-gathering about species. Last year over \$700,000 was approved by the fund for 56 natural resource projects, but the need was greater: there were 84 applications requesting over \$1.3 million.

In the last several years, some of the projects approved, which will help the Fish and Boat Commission know more about species in trouble, included a study on the "Ephemeroptera of Pennsylvania" (mayflies—see page 48 of this issue), "Status Sur-

Endangered, threatened and candidate species, says Shields, were listed by a consensus of the informed and educated judgment of members of the Pennsylvania Fish and Boat Commission's Herpetology Advisory Committee and Fish Advisory Committee—ichthyologists, fisheries biologists, herpetologists and representatives of user groups.

Shields says that eventually, with better compilation of records and species location mapping, a more objective system of classifying animals will be used. This will be based on the number of places a spe-

cies is found, with cut-off points between the categories.

Wild Resource Conservation Fund

"We'll have this at least for fish in the very near future," says Shields.

Why are there no aquatic invertebrates (other than mussels) on the list? Are all of the mayfly species in good shape? Shields says that data is still being collected on aquatic invertebrates and insects, especially through studies funded by the Pennsylvania Wild Resource Conservation Fund,

Ohio lamprey, threatened



Green salamander, threatened

vey of Rare Fishes of Special Concern in the Delaware River Drainage of Pennsylvania," GIS (Geographic Information System) Mapping of Trichoptera (caddisfly) and Plecoptera (stonefly) Distribution in Pennsylvania," and the start-up of a comprehensive herpetological atlas



Longnose sucker, endangered

(reptiles and amphibians) for the state.

In the past, up to \$1 million a year has come out of the fund for conservation projects that ranged from the Pennsylvania Natural Diversity Inventory (determining locations of endangered, threatened and rare species and outstanding examples of the state's natural community and geologic features), to otter reintroduction, to studying the distribution of the state's freshwater jellyfish.

The fund is supported solely by voluntary contributions, but donations from the license plate and tax check-off have been declining. The Wild Resource Conservation Fund may be in existence only another year, unless a new source of money is found, cautions Felbaum. "Without our money available to collect information, the agencies would be hamstrung for making decisions on managing and protecting a particular species," says Felbaum.

Permit reviews

Just listing, prohibiting the capture of, and finding out where endangered and threatened species are isn't enough. Shiels says that a large part of his job is doing permit reviews for development, such as proposed highways, bridges, housing complexes and business expansions—about 1,200 reviews a year. By using the computer database of the Pennsylvania Natural Diversity Inventory, the currently known whereabouts of endangered, threatened and candidate species can be tracked. Those permit reviews are "the front line of endangered species protection," says Shiels.

Yet, despite what opponents of endangered species laws may say, not one proposed development or building project has been stopped in the state by Shiels's review on behalf of the Fish and Boat Commission. Instead, the review is a common-sense approach that uses knowledge to avoid making irreparable mistakes.

Shiels says he works with development

project designers to avoid or minimize effects on species in trouble and the places they live. That may mean suggesting the relocation of an access lane to miss the portion of project land that has endangered species habitat, or building a bridge over a wetlands instead of filling it in for a roadway.

It can also mean advising that the work be done during a certain time of year, when the animals won't be on the site. For example, ground could be cleared for a pipeline in the winter, when the animals are in underground dens elsewhere,

effects on the species in question."

Shiels is helped in his reviews by a contract employee, and they may go to a proposed project site to determine the best way around harming an endangered or threatened species that's there. Mostly the work can be done in the office, with the database, aerial maps and reports from the environmental consultant to the project. Species are endangered or threatened because they are found only in a few places, so most land alterations won't encounter them.

Although there are endangered and



Potomac sculpin, candidate

instead of in summer, when they're active on the surface.

"A lot can be done by applying knowledge of the biology of the animal," says Shiels. "People hear the words 'endangered species' and they think all kinds of money has to be spent and it's doing all kinds of terrible things to development, when many times the situation is resolved with just the cost of a stamp for the envelope—that is, submitting the necessary information about a particular project. This could help characterize the on-site habitat conditions to allow judgments to be made regarding the possible

threatened species that "just happen" to occur on Fish and Boat Commission properties, says Shiels, the Commission has not actively purchased land or water areas to protect specific animals.

"We would like to see that, but there are budget constraints," he adds. Most species in trouble occur on private property, and Shiels says the private landowners fear that "someone is going to come knocking on the door" doesn't really happen. Unless a permit is required for an activity, the Commission is not involved.

That doesn't mean that doing the "right" thing with your property, to not

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Electrofishing is one way the Commission finds where threatened, endangered and candidate species live.

cause an extinction or an extirpation, should be ignored. In southeastern Pennsylvania, says Shields, the public is more receptive to endangered species protection, with landowners who are proud to have bog turtles on their ground. In the northwest, the other endangered and threatened species hotspot, the reception to modifying land use to minimize effects on troubled species has not been warm. Some counties have even turned down money to have the Natural Diversity Inventory done within their borders because of (unfounded) complaints and fears expressed by some of the public and a private landowners' advocacy group. Protecting habitat remains the "weakest link" in the endangered species conservation chain, says Shields.

Education efforts

That's where education helps, says Shields. The Wild Resource Conservation Fund has a new video on the endangered bog turtle, and one on the timber rattlesnake, for example. Plus publications, presentations and articles highlighting these species are at work informing the public. However, says Shields, sometimes it takes generations for a new attitude to develop.

Rattlesnakes, for instance, are just coming out of the, "the only good one is a dead one" phase that haunted hawks and other birds of prey not long ago. Perhaps rattlers will also become socially accepted, even encouraged. Much remains to be known, but research is finding, says Shields, that rattlesnakes are very much homebodies. One study discovered that 60 percent of the timber rattlers released in an area

other than the one from which they were captured, died. Besides just being a natural part of the Pennsylvania outdoors, and deserving of respect as such, scientists are looking into using rattlesnake venom in fighting cancer tumors.

The little Massasauga rattlesnake of northwestern Pennsylvania is currently the most endangered of the wildlife under the Fish and Boat Commission's jurisdiction, says Shields. This is because its habitat has become fragmented and individual populations isolated, because not as much is known about it as some other endangered species, and because so many of the remaining snakes live on private property. In addition, the Massasauga is very fussy about its wetland type and the prairie-like uplands it uses at different times of the year. Being venomous has also been a strike against the Massasauga with the average person, says Shields, who may not realize how shy and rare the "black snapper" is.

Some of the education about endangered and threatened species is aimed at professionals, says Shields, such as a training seminar that included Department of Environmental Protection, Army Corps of Engineers and Pennsylvania Conservation District personnel, to help them recognize bog turtle habitat and protect it.

Reintroduction?

What about reintroducing endangered or threatened species into suitable habitat, as has been done with otters, fishers and ospreys? Although that's a possibility, Shields is hesitant in predicting it will work with reptiles and amphibians. "There are at least as many failures with reptiles as successes," he says.

Genetic differences between pockets of the animals could result in the bloodline of the new arrival being harmful to the population it's just joined. But genetic work is being done with bog turtles and timber rattlesnakes, says Shields, looking at how closely related populations are. If compatible, a move several counties over might be possible. However, says Shields, reptiles are slow to mature, long-lived, and give birth at long intervals. It may take a dozen or more years, "a [biologist's] career," he explains, to determine if the reintroduction investment was worthwhile.

Besides the threat of habitat fragmentation and destruction, there are also endangered species poachers. "Our officers in certain areas, where there are certain species, are extra vigilant," says Shields. Waterways Conservation Officers keep an eye on what's happening in sensitive locations, and look out for unusual activity that might mean poaching or trafficking in illegal species.

Shields says the bog turtle, found in 13 eastern Pennsylvania counties, has serious poaching problems, being bought and sold, even sent overseas. A pair of bog turtles can sell for \$2,000 in Japan and Europe. "It's the profit motive," laments Shields, adding turtles are currently the most collectible contraband pet. In the last 20 years, bog turtle populations have dropped 50 percent over their range.

Ed Manhart, Director of the Commission's Bureau of Law Enforcement, echoes that concern. Manhart says the Bureau works with the U.S. Fish and Wildlife Service, exchanging information about endangered species violators and problems headed this way.

"Once a species has been declared 'endangered' the price tag goes up," says Manhart, since unscrupulous collectors will pay "big bucks" for the animals, especially when they are first listed as endangered.

The Bureau of Law Enforcement "doesn't have much routine time to spend trying to find endangered species violations," says Manhart, explaining that they act mostly on complaints or information received.

In some states the problem is mussels, since "seed" for cultured pearls is made from the shells of freshwater mussels, and endangered and threatened species may be taken. But Pennsylvania, says Manhart, doesn't have as many good mussel rivers as states like Tennessee, Ohio and West Virginia, and mussel poaching isn't as much of a concern here.

But, says Shields, of all the in-the-water animals, freshwater mussels are the most in peril in Pennsylvania. As a group they have declined drastically, yet it's hard to fire up public concern about the plight of something called a "clubshell," for one species. Yet, that and other freshwater bivalves help determine and reflect the health of a stream ecosystem. Mussels are considered to be more of an indicator of good water quality, by their presence, or degraded, by their absence, than the sensitive mayfly.

French Creek, in northwestern Pennsylvania, is the champion waterway for diversity of aquatic species, with far more than other streams in the state. French Creek is also home to more than a few endangered and threatened species, like the bluebreast darter, northern madtom (a small catfish) and northern riffleshell (mussel). French Creek is of special concern for species in trouble, and the French Creek Project (see the July/August 1997 issue), based in Meadville, is spearheading local education and awareness of the stream's unusual riches, and working with landowners in the drainage to avoid pollution and minimize siltation.

In Pennsylvania, including exothermic (cold-blooded) and endothermic (warm-blooded) animals, and plants, more than 350 species are at risk of being lost. If you would like to find out more about them, the Wild Resource Conservation Fund has an 80-page booklet called *Endangered and Threatened Species of Pennsylvania* (\$6 donation), and videos on bog turtles and rattlesnakes (\$20 donation for one). Contact the Fund at P.O. Box 8764, Harrisburg, PA 17105-8764.



PA Fish and Boat Commission List of Endangered and Threatened Species

Endangered Fish:

Shortnose sturgeon
Lake sturgeon
Northern brook lamprey
Gravel chub
Eastern sand darter
Longnose sucker
Spotted darter
Tippecanoe darter
Longhead darter

Threatened Fish:

Ohio lamprey
Mountain brook lamprey
Atlantic sturgeon
Mountain madtom
Northern madtom
Burbot
Bluebreast darter
Channel darter
Gilt darter

Endangered Reptiles:

Bog turtle
Massasauga rattlesnake
Kirtland's snake

Threatened Reptiles:

Red-bellied turtle
Rough green snake

Endangered Amphibians:

New Jersey chorus frog
Coastal plain leopard frog
Eastern mud salamander

Threatened Amphibians:

Green salamander

Endangered Mussels:

Northern riffleshell
Clubshell

(No aquatic insects are currently listed)

Candidate Species

Candidate species are those that may not be on the "sick list" yet, but have suspicious "symptoms" that require watchfulness and caution. There are bag and possession limits that restrict or prohibit their taking.

Candidate Fish: Silver lamprey, spotted gar, longnose gar, bowfin, skipjack herring, hickory shad, goldeye, mooneye, silver chub, hornyhead chub, bridle shiner, ghost shiner, blackchin shiner, redbfin shiner, blue sucker, smallmouth buffalo, spotted sucker, river herring, black bullhead, tadpole madtom, bridled madtom, banded sunfish, warmouth, longear sunfish, Iowa darter, Potomac sculpin, spoonhead sculpin, deepwater sculpin.

Candidate Reptiles: Blanding's turtle, broad-headed skink, timber rattlesnake. No amphibians are currently listed as candidate species.—LS.



Timber rattlesnake,
candidate