



Eastern Spadefoot

photo-Tom Diez

State Wildlife Action Plan:

Identifying Conservation Actions to Protect Pennsylvania's At-Risk Species

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The State Wildlife Action Plan is the blueprint for the protection, recovery and management of some of Pennsylvania's most vulnerable species and their habitats. As part of the congressionally required State Wildlife Action Plan revision process, identifying conservation actions is one of the eight required elements to be addressed in the plan. Current and anticipated threats to Pennsylvania's imperiled species can be diverse and expansive. In light of such threats, it is crucial that conservation actions are effective and efficient, providing native, imperiled species with the opportunity to recover and thrive. In this article, we identify conservation actions to address some prominent threats facing species at-risk and the challenges for addressing these threats.

A threat can be characterized as any factor that impacts the survival of a species. For example, a threat may be a disease, competition for food or habitat, predation, changes in environmental conditions such as hydrology or temperature, reduced quantity or quality of habitat or physical or chemical features that interrupt the life-history of a species.

Broadly stated, a conservation action is any activity that directly or indirectly reduces or eliminates the effects of one or more threats to a species or its habitats. It is important to recognize that often threats are complex and similarly may require many conservation actions to improve their effectiveness. Let's look at some of the threats noted in the September/October 2013 article of the *Pennsylvania Angler & Boater* magazine (www.fishandboat.com/anglerboater/2013ab/vol82num5_sepoct/10wap.pdf) and identify some potential conservation actions.



photo-courtesy of American Rivers

Removal of a dam on Great Trough Creek, Trough Creek State Park, Huntingdon County

A common, prominent threat to species in Pennsylvania is a change in habitat (i.e., loss or modification) that can impede survival. Habitat modification is the number one threat to most species and is the primary culprit attributable to a species becoming listed as threatened or endangered. Most directly, a crucial conservation action would be to avoid or minimize changes to habitats. This could include a variety of land protection measures such as voluntary conservation easements, developing open-space ordinances or promoting land use practices that are beneficial to habitats. Conservation actions addressing habitat modification could also include implementation of a broad range of activities that are often termed Best Management Practices, such as establishing buffers to protect streambanks and shorelines, livestock exclusion fencing, re-establishing ecologically appropriate native habitats and similar practices.

Habitat modifications representing long-term threats may be historical (i.e., legacy) such as some dams and strip-mined lands. Dams pose a significant threat to the ecological function of streams by fragmenting habitats and impeding migrating fishes (e.g., American Shad and American Eel), thus impacting related species

EXAMPLES OF CONSERVATION ACTIONS TO ADDRESS CRITICAL THREATS TO PENNSYLVANIA'S SPECIES OF GREATEST CONSERVATION NEED

photo-Toni Diez

		CONSERVATION ACTION					
		Best Management Practices (BMPs)	Land Protection Measures	Legislation and Ordinances	Dam Removal and Fish Passage	Aquatic Invasive Species (AIS) Management	Communication and Outreach
THREATS	Urban sprawl		✓	✓			✓
	Eroding streambanks or shoreline	✓					✓
	Loss of corridors for movement of species	✓	✓				✓
	Habitat fragmentation	✓	✓		✓		✓
	Climate change	✓	✓	✓	✓	✓	✓
	Aquatic Invasive Species	✓		✓		✓	✓

such as mussels that are dependent upon fish as their hosts. An obvious conservation action to address the impacts of dams would be their removal. In recent years, Pennsylvania has been a national leader in dam removal and development of fish passage structures where dams are unable to be removed.

the hydrologic cycle (e.g., drought and flooding) and loss of important habitats. At-risk species, such as some reptiles and amphibians, may have specific habitat requirements or limited capability to move to more suitable conditions. Fishes with narrow thermal tolerances may be impeded from finding optimal conditions by dams and other factors. For such a complex and expansive threat, conservation actions may involve implementation of basic practices that improve habitat quality and maintain corridors, allowing species to adapt to changing conditions by moving to more suitable habitats.



Aquatic Invasive Species (AIS) are an increasing threat to the biodiversity of Pennsylvania's native species and habitats. Commercial transportation (e.g., cargo ships on the Great Lakes), release of unwanted pets and movement by anglers and boaters are among the many vectors by which AIS may be distributed across the state. In most cases, the primary conservation action is prevention, promoted through outreach

and education initiatives that inform the public, industry, governments and resource professionals about actions that can help minimize or avoid the inadvertent transport of AIS. Once AIS have become established, other conservation actions such as remediation or removal methods are expensive and may be ineffective in curtailing their expanding distribution. Further confounding implementation of conservation actions is the diversity of AIS that includes fishes, vascular plants, algae, pathogens and reptiles and amphibians (www.anstaskforce.gov/Documents/AIS_Field_Guide_Finalweb.pdf). Each species may have specific habitat needs or associations that complicate control or removal.

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Finally, a changing climate poses a serious threat to the aquatic and terrestrial resources of Pennsylvania. Many at-risk species are characterized as such, because they often have limited tolerance for changes in environmental conditions such as temperature regime, thermal extremes,

Many threats to Pennsylvania's imperiled species are complicated and expansive. However, through the implementation of a diverse array of conservation actions or adaptation measures, threats to species at-risk can be reduced or eliminated. In an upcoming issue of the *Pennsylvania Angler & Boater*, we will review how Pennsylvania is revising the State Wildlife Action Plan, so it remains a useful, relevant guide for addressing the needs of Pennsylvania's species of greatest conservation need and ensuring Pennsylvania's rich natural heritage for future generations.

Find out more about the current State Wildlife Action Plan and watch for opportunities to provide comments on the draft revision at www.fishandboat.com/swap.htm, click on "Grants" and "State Wildlife Grant (SWG) Program." ☐



A mud sill crib along Meadow Run, Fayette County

photo-PFBC archives