



### **2020 Targeted Grant Priorities**

WRCP is soliciting grant applications for priorities in the following categories – surveys, research, conservation and management. Detailed priorities within each of these categories are outlined below.

It is recommended that projects/grant applications address one of the priorities listed below. However, applications may be accepted that address priorities outlined in the Pennsylvania State Wildlife Action Plan and/or address the needs of plant species or plant communities of concern within the Commonwealth. The applicant should contact the WRCP Agency Coordinator to discuss the project, how it may fit into flora or fauna priorities and potential for funding. Please refer to the “Application Submission Information” section below for further information.

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### **Surveys**

#### **Devil Crayfish Assessment:**

The Devil Crayfish was collected from Pennsylvania for the first time in over 100 years in the fall of 2017. Surveys within its former range resulted in the discovery of a single population in southeastern Pennsylvania. The Devil Crayfish is potentially one of the state's rarest species and may warrant state listing. However, additional surveys are needed to determine with certainty its rarity in Pennsylvania. This project would provide the data necessary to definitively determine if the Devil Crayfish is threatened or endangered in Pennsylvania.

#### **Rare Cave Aquatic Invertebrates in Need of Assessment**

Numerous rare cave invertebrates are in dire need of assessment attention. Pennsylvania is home to a diversity of rare invertebrate cave fauna that due to their potential global and state rarity, are in dire need of assessment. Species like Franz's Cave Isopod, (*Caecidotea franzi*), Price's Cave Isopod (*Caecidotea pricei*) and cave amphipods such as the Pennsylvania Cave Amphipod (*Crangonyx dearolfi*), Allegheny Cave Amphipod (*Stygobromus allegheniensis*), Stellmack's Cave Amphipod (*Stygobromus stellmacki*), and others are globally rare, some potentially endemic to the Commonwealth. This is a highly understudied group that is in need of status assessment. This work requires demonstrated expertise in spelunking and an affinity to aquatic invertebrate taxonomic identification. Outcomes of this project would include inventorying and assessing one or more of these unique creatures, which would be a good start to informing the future conservation and management of these species.

#### **Assessing Fire Management Impacts of Rare Herpetological Species in Pennsylvania Barren Communities**

Several barren plant communities in southern Pennsylvania are currently being managed with controlled/prescribed fire. These communities are also occupied by rare herpetofauna, Species of Greatest Conservation Need (SGCN), such as the critically imperiled (S1) Northern Rough Greensnake and Eastern Smooth Earthsnake, and other SGCN reptile species occurring in Barren habitats: Woodland Box Turtle,

Spotted Turtle, Northern Copperhead, Eastern Ribbonsnake, Queensnake, and Eastern Wormsnake, etc. yet, little is known how fire management activities will affect the SGCN reptiles at these sites. This project would focus on determining population densities of SGCN reptile species, as well as use radio telemetry to track select species to help locate sensitive habitats (overwintering, gestation/birthing areas) and habitat use before, during and after fire management. Outcomes of this study could greatly inform timing and future management at these important barren herpetological communities.

### **Plant Conservation Genetic Studies**

Conservation genetic studies is a tool for use in plant conservation which can show how a plant population is structured. In turn we can get a picture of how genetically diverse a plant species is portioned in the state, providing guidance for conservation and restoration efforts of existing plant populations. Priority species for conservation are species that have a completed PA recovery plan (*Paxistima canbyi*, *Aconitum reclinatum*, *Malaxis bayardii*, *Polemonium vanbruntiae*, *Carex bicknelii*, *Euphorbia purpurea*, *Pycnanthemum torreyi*, and *Trollius laxus*), and additionally *Lupinus perennis* and *Panax quinquefolius* (American ginseng). For some species, genetic markers may already have been identified by previous studies. Researchers should review published literature to identify any species listed above (or other highly G-ranked species) with genetic markers identified. This project would analyze populations in PA to see how genetically diverse the populations are and to provide recommendations for conservation actions to DCNR.

### **Plant Community Studies: Barrens**

This project will evaluate ecological threats to native plant species and habitat quality of "barrens" communities and identification of conservation recommendations to address these threats. These may include barrens associated with shale barrens, acidic barrens associated with sandstone ridge tops, and grasslands and woodlands on thin soils over limestone. Many previous studies and surveys have focused on serpentine barrens, therefore the focus of this study would be non-serpentine barrens.

Currently there are over 100 types of plant communities identified by PNHP in Pennsylvania. This project will enhance the knowledge of these non-serpentine barrens communities by assessing and inventorying the rare plants found in them. Location, species information and management recommendations will be submitted to be recorded in the PNHP database.

### **Conservation & Management**

#### **Effects of Wildlife Diseases or Contaminants on PA's Birds and Mammals:**

This year, bird and mammal projects will focus on critical conservation issues that have recently elevated in importance: the effects of wildlife diseases and contaminants on Pennsylvania wildlife. Proposed studies can range from evaluating and monitoring the distribution of disease/contaminant exposure to testing or evaluating treatment responses. These may include widespread diseases like Trichomoniasis or West Nile Virus or those with a narrower scope, like viruses of bats. Environmental contaminants such as lead, neonicotinoids, or rodenticides could also be the focus. Proposals should address a better understanding of real-world exposure rates and potential risk to native populations of Pennsylvania's birds and mammals, particularly Species of Greatest Conservation Need. The projects should define the conservation benefits or management implications of anticipated outcomes.

#### **Odonates of Pennsylvania – Digitizing a Legacy Slide Collection:**

Clark Shiffer, former aquatic biologist and endangered species coordinator for the Pennsylvania Fish and Boat Commission was a renowned collector and skilled photographer of dragonflies (Odonates-dragonflies and damselflies). He maintained statewide odonata data from museums and other researchers. In a previous WRCP grant (#04021), the Pennsylvania Natural Heritage Program digitized over 13,000 records from these paper logbooks into an Access database called the Pennsylvania Odonate Database. Mr. Shiffer's high quality 35 mm dragonfly photographs were recently donated to the Pennsylvania Natural Heritage Program. This project would digitize an estimated 3,000 slides that were selected by Mr. Shiffer as the most important out of his collection because of the quality of the photographs, the documentation for

a particular locale, or because of a unique species behavior or characteristic that was captured. This project would also digitize many voucher photographs that are recorded and georeferenced in the Pennsylvania Odonate Database. Once digitized, the images can be posted online where they can be shared widely for research and educational purposes.

### **Assessment of Chesapeake Logperch Movements**

The Chesapeake Logperch is suspected to be a highly mobile fish species, but their movements are poorly documented. It is suspected that this is a “big river” species; however, we do not know if they move to the Susquehanna River to forage and live and then migrate up smaller streams to spawn. In 2019, approximately 1,200 tagged fish were reintroduced to stream habitats within its’ native range in Pennsylvania. Within two weeks, only a few specimens were recaptured at the release sites. In order to successfully manage and protect this species, it is important to understand movements within streams and between streams and the Susquehanna River, in addition to the timing of those movements. Technological advances in Passive Implant Transponder (PIT) tag technology have allowed for tags that are approximately about the size of a grain of rice (8 x 1 mm) that can be used in small fishes. These tags are serialized with specific identifiers that can distinguish individual fish. Tag-reader arrays can be installed in a stream channel to capture movement information associated with that location and information associated with individual fish. If a fish is sensed, information such as sex, size, location of capture, date of capture, etc. can be assessed. This research would build on previous studies and these data would help guide ongoing recovery efforts associated with reintroduction operations.

### **Bryophyte Checklist**

The PA Biological Survey’s Bryophyte Technical Committee has developed an unofficial bryophyte checklist. Many Pennsylvania botanists and those interested in bryophytes have collected samples over the years; much information has been obtained from field inventory, literature searches and herbarium specimens. This project would formalize the state checklist of bryophytes. Through surveys and existing herbarium work, it would begin to identify bryophyte species of concern, and assign state ranks with the NatureServe rank calculator assessments for those species. This formalized checklist would be housed on the PNHP website, and data would be incorporated into the PNHP database. This project is also important in considering listing bryophytes in the plant regulations.

### **Plant Conservation: Development of Recovery and Implementation Plans**

Development of Recovery Plans are an important step in planning and implementing plant conservation strategies. We are interested in two projects, developing recovery plans and implementing recovery plans.

Many G1-G3 species are in need of a recovery plan. These species include:

*Isotria medioloides*, *Carex roanensis*, *Chenopodium foggii*, *Heuchera alba*, *Arabis patens*, *Carex polymorpha*, *Cystopteris laurentiana*, *Gaylussacia brachycera*, *Gymnocarpium appalachianum*, *Sida hermaphrodita*, *Trifolium virginicum*, *Vitis rupestris*

This project entails developing a recovery plan for 1 or more of the above species.

Existing recovery plans provide recommendations covering many various actions that may include the response of T&E species to habitat restoration, conservation genetic studies, or plant propagation. We are interested in following through with these recommendations. This project would pick a species with a completed recovery plan and work to implement recommendations.

Recovery plans written to date include *Paxistima canbyi*, *Aconitum reclinatum*, *Malaxis bayardii*, *Polemonium vanbruntiae*, *Carex bicknelii*, *Pycnanthemum torreyi*, and *Trollius laxus*.