



2023 Targeted Grant Priorities

WRCP is soliciting grant applications for priorities for birds, mammals, plants, fish, reptiles, amphibians and invertebrates. The priority topics include surveys and elucidation on the conservation, management, and stewardship techniques. 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.

Mammal Priorities:

Mammal Species Genetics Clarification: These projects fill information gaps of regulatory significance and will help guide agency investments in conservation. Priority species include:

Maryland/Smokey shrew – clarifying questions regarding genetic differentiation. Long-term conservation actions, if warranted, may include habitat management focused on sustaining vulnerable populations. This project would include: 1) Assess feasibility of using museum specimens to look at historic genetic/speciation differences between species; 2) Collect samples of smokey shrew in areas beyond the purported Maryland shrew range; 3) Trap shrews within range of purported Maryland shrew; 4) genetic analysis to determine differentiation; 5) retain bodies/skulls for morphometrics if there is any indication of species/sub-species differentiation.

Northern/Southern flying squirrel – clarifying hybridization zones. This project would include: 1) live trapping flying squirrels in areas of known northern flying squirrel occurrence to assess extent of hybridization; 2) preserving fecal pellets and hair follicle samples for future genetics

and dietary metabarcoding work; 3) conducting genetics work to confirm species vs hybrids; 4) metabarcoding of pellets to identify food consumed by volume and occurrence (*optional, if funding adequate*).

Bird Priorities:

MAPS Data Enhancement. This project supports the development of high-quality avian productivity and survival data for the national Monitoring Avian Productivity and Survivorship (MAPS) database and helps fill information gaps that can inform species and habitat management. The MAPS program is a function of the Institute of Bird Populations. Startup funds for an applicant to create an additional MAPS station(s) in PA. Funding would include an obligation to collect and submit data according to MAPS protocols. If establishing a new MAPS station is not feasible for an applicant, this priority could alternately fund the data entry for those PA MAPS stations that have collected high quality data in the past but have not digitized and submitted that data to the MAPS program.

Full Annual Cycle Study for Selected Bird Species: These projects fill information gaps of regulatory significance, will inform best management practices for species and critical sites, and can guide agency investments in conservation. These studies would involve tagging adults and fledglings to identify new and important nesting and migratory stopover sites and seasonal movement patterns.

Priority species include: Night-herons; Great Blue Heron colonies near aquaculture facilities; Chimney swift, Northern harrier.

Plant Priorities:

Plant Conservation Genetic Studies: *Lycopodiella margueritae* is in need of both phylogenetic treatment as well as potential population genetics, though phylogenetic treatment is the priority. We would recommend collaborating with existing research groups working on the genus (contact DCNR for more information).

Vitis rupestris is thought to hybridize with more common species of *Vitis* along the Youghioghney River. There is a need to determine if such hybridization is occurring. We encourage the use of genetic tools as well as morphology to examine if introgression has occurred between *Vitis rupestris* and congeners. Ideally, this work would result in guidance to where any non-introgressed *V. rupestris* occurs and morphologic characters to help determine the taxa.

We highly encourage the use of high throughput or next generation sequencing (eg. RADseq, ddRAD, GBS) for this work. Because this is publicly funded work, we ask that you deposit resulting data into a *National Center for Biotechnology Information* (NCBI) repository such as

the Sequence Read Archive (SRA) or GenBank. The deposit date may be after any resulting manuscripts are accepted for publication, if applicable.

Resulting data will inform our understanding of the genetic structure and general genetic health (eg. gene flow, inbreeding, and genetic diversity) of these species which will inform future conservation and safeguarding decisions.

Research on the Conservation of Threatened and Endangered Plants: DCNR is interested in research proposals related to the conservation of Pennsylvania Threatened and Endangered plants, including information on the distribution, ecology, life history, genetics, and stewardship. Considerations of climate change on species and habitats should be incorporated where appropriate. This is a broad request to guide researchers to focus on highly G- and S-ranked species and provide key information the Department is lacking in forming recovery plans for species. This priority is intentionally broad to capture allow researchers creativity and innovation in approaching the needs of rare flora in PA.

Plant Conservation Stewardship Studies: Species in need of propagation research include: *Agalinus auriculata* and *Taenidia montana*. These species have limited populations in Pennsylvania and long-term conservation action for them may include population augmentation and establishment of de novo populations. Propagation research will be essential in facilitating outplanting of these species for these purposes. We encourage utilizing seed from secure populations outside of PA if possible and in some cases congeners to hone propagation technique and complete initial germination trials. Work with DCNR PA Plant Conservation Alliance can facilitate PA seed procurement. These species would also benefit from habitat suitability research as their habitat in Pennsylvania is highly anthropogenic and not characteristic of the rest of the range.

Aquatic Invertebrate Priorities:

Determining the Distribution and Conservation Status of an Undescribed Freshwater Amphipod Species Recently Discovered in Pennsylvania. Recent studies have demonstrated significant cryptic species diversity in several freshwater amphipod crustacean species in the genus *Gammarus*. In 2022, a previously unknown *Gammarus* sp. was collected from three locations in Pennsylvania. Preliminary morphological and genetic analyses of these specimens strongly indicate that it is a new, undescribed species, which appears to be native to North America and could be a species of conservation concern in Pennsylvania. However, its conservation status and the status of other *Gammarus* species in Pennsylvania cannot be determined until additional distributional, taxonomic, and phylogenetic studies are completed. This project would provide the data necessary to determine the taxonomic, phylogenetic, and conservation status of the recently discovered species and any additional undescribed *Gammarus* species that are discovered, ultimately leading to a better understanding of the

freshwater diversity of amphipod crustaceans in the state of Pennsylvania and conservation of rare and threatened members of the group.

Determining the Distribution and Conservation Status of Two Rare Burrowing Crayfish

Species in Pennsylvania. Pennsylvania's crayfish fauna includes five primary burrowing species, all of which are highly sensitive to habitat destruction and water quality degradation and are extremely important components of the ecosystems in which they reside. Three of those species have been thoroughly surveyed and conservation assessments are complete. All three have limited distributions in the state and two are critically imperiled (S1) while the third is vulnerable (S3). Although some surveys have been conducted for the remaining burrowing species, the blue crayfish (*Cambarus monongalensis*) and the little brown mudbug (*Lacunicambarus thomai*), showing significant losses over the last century, rigorous conservation assessments await the completion of comprehensive targeted surveys across the entire suspected ranges of the two species. This project would provide the data necessary to rigorously determine the conservation status of the blue crayfish and the little brown mudbug in Pennsylvania and develop conservation plans to conserve remaining populations.

Fish, Reptile, and Amphibian Priorities:

Effects of Dissolved Oxygen on Chesapeake Logperch, *Percina bimaculata*. The influence of dissolved oxygen on the distribution and habits of the Chesapeake Logperch (*Percina bimaculata*) is largely unknown. Chesapeake Logperch occupy a wide array of waterbodies ranging from medium creeks to large rivers, including man-made impoundments. Multiple electric utility operations and hydroelectric dams influence these waters at several locations. Understanding the dissolved oxygen requirements and tendencies of this species is critical for effective management. Research defining dissolved oxygen needs, avoidance, tolerance, and projected lethality is needed. Studies should include larval, juvenile, and adult life stages of Chesapeake Logperch.

Green salamander (*Aneides aeneus*) habitat use and management. Conservation actions in the Wildlife Action Plan for Green Salamanders include many recommendations for planning and implementing habitat management of occupied sites. But a better understanding of the habitats used by the salamanders is necessary in order to design general guidelines for protection and management. Determine habitat use by salamanders of forest habitats that surround occupied rock outcrops in Pennsylvania, including aspects of forest structure and condition that should be maintained to provide habitat corridors among occupied rocks. This project would also include inventory and searching for new occupied habitats. Understanding the use of these habitats will help develop best management practices, and conservation recommendations for the species