Midwest Climate Adaptation and Science Center (CASC)
University of Illinois Urbana-Champaign

Internal Call for Proposals

Funding for a Graduate Research Assistantship
Deadline: 5 PM, Friday, June 3, 2022

About the Midwest CASC. Established in 2021, the Midwest Climate Adaptation and Science Center (CASC) provides regionally relevant scientific information, tools, and techniques to resource managers and communities in Minnesota, Iowa, Wisconsin, Illinois, Indiana, Michigan, and Ohio. The Midwest CASC's vision is to advance climate adaptation science and practice across all components of the climate adaptation cycle by pursuing region-specific, collaborative synthesis projects that build on past work, provide new resources and tools, and catalyze adaptation capacity across the Midwest (see:https://www.usgs.gov/programs/climate-adaptation-science-centers/midwest-casc). The Midwest CASC pays special attention to Tribal concerns and builds off the unique and robust experience of Midwest Tribes with adaptation science and practice. The Midwest CASC is funded by the USGS, hosted by the University of Minnesota, and administered at UIUC through the Institute for Sustainability, Energy, and Environment (iSEE).

Funding Opportunity. The Midwest CASC invites proposals from faculty and researchers at the University of Illinois Urbana-Champaign to support a 50% Graduate RA (11 month appointment). Proposed projects should be related to the *Interim Science Priorities* of the Midwest CASC (appended to this document) and have the potential to build into a larger initiative (e.g., ~3 years with multiple graduate students and/or postdoctoral researchers). Additionally, as appropriate, the funded graduate student will be expected to participate and interact with the CASC members and related activities.

Guidelines for preparing the proposal. Proposals are invited from tenured/tenure track faculty and research scientists. The proposal should include a cover page with project title, principal and co-investigator information (names, affiliations, and email addresses), and a 100-word abstract. The narrative of the proposal should be a maximum of two single-spaced pages (minimum 11 pt. font; 1-inch margins) not including references, figures, and tables.
The narrative should describe the problem the team or lab is trying to solve, the potential impact of solving it, and – specifically – the activities of the RA and expected outcomes, and how the project aligns with current funding priorities of the Midwest CASC.

Additional required documents include (i) two-page CV from the PI that includes five most relevant recent publications and, if known, a CV of the graduate student who will hold the RA appointment. NSF or other federal funding agency biodata/CV templates can be used.

The deadline for proposal submissions is 5 p.m. on June 3, 2022 by email to Amy Rosenbery (husted@illinois.edu), with "Midwest CASC - iSEE Proposal" in the subject line. Applicants will be informed about final funding decisions by May 30, 2022, with a start date for funding of August 16, 2022.

Questions about this RFP may be addressed to the UIUC representatives of the Midwest CASC, Jeff Brawn (jbrawn@illinois.edu) and Jeremy Guest (jsguest@illinois.edu).

U.S. Geological Survey
Midwest Climate Adaptation Science Center *Interim Science Priorities*

The mission of the Midwest Climate Adaptation Science Center is to deliver science to help fish, wildlife, water, land, and people adapt to a changing climate. In 2020, in partnership with the Northeast Climate Adaptation Science Center, we completed a four-part process to identify science priorities for both the Northeast and Midwest regions. The process, with input delineated by region, included: structured feedback from an advisory committee, the completion of six listening sessions, feedback from project partners, and a review of regional climate initiatives. In 2021, we plan to establish an advisory committee, gather final input, and develop a final, five-year strategic plan for the Midwest Climate Adaptation Science Center. In the interim, from these efforts, we have identified the following science priorities for the Midwest region.

Management Challenge	Science Priority
1. Heavy precipitation events and drought Heavy precipitation events, flooding, and drought alter the condition, structure, services, and management of natural resources	1.1. Assess the population-level effects of extreme rainfall on at-risk aquatic and terrestrial species
	1.2. Identify aquatic habitats vulnerable to sedimentation, contaminants and debris influx, or infrastructure failure
	1.3. Assess potential impacts of extreme rainfall on fish and wildlife management infrastructure
	1.4. Determine optimal culvert design to protect aquatic habitat under future precipitation patterns
	1.5. Evaluate the efficacy of management strategies to limit negative effects of sedimentation, contaminants and debris influx on aquatic species and habitats
	1.6. Evaluate the potential of natural lands to moderate extreme rainfall and flooding
	1.7. Identify and evaluate management strategies to prepare refuges and parks for extreme rainfall and flooding
	1.8. Conduct cost-benefit analysis of management interventions to maintain ecological integrity under future precipitation patterns
	1.9. Identify ecosystems and species vulnerable to novel drought conditions
	1.10. Identify and evaluate methods to reduce the effects of drought on fish and wildlife
	1.11. Assess the effects of human adaptation on water availability for fish and wildlife
2. Loss of winter Warming winters, altered snow patterns, and increased variability affect fish and wildlife populations, habitat management, and nature-based recreation	2.1. Assess the population-level effects of warming winters on cool and coldwater fish in streams and lakes
	2.2. Assess the vulnerability and adaptive capacity of boreal wildlife
	2.3. Assess the effects of decreased snow cover and rain-on-snow conditions on wildlife species and communities
	2.4. Determine the effects of variable winter conditions on fish and wildlife populations
	2.5. Assess the effects of phenological mismatch and false springs on at-risk terrestrial species
	2.6. Assess the effects of lake ice loss on fish species and communities
	2.7. Identify and evaluate management strategies to facilitate short-term (e.g., microclimate) or long-term refugia

	2.8. Evaluate the effects of warming winters on hunting, fishing, and wildlife viewing opportunities
3. Altered hydrological regimes Changes in temperature, flows, and connectivity alter high-value fish populations, at-risk aquatic organisms, and culturally important resources	3.1. Evaluate fluctuations of water levels in stream, lake, and wetland systems
	3.2. Determine the future geophysical conditions of inland lakes
	3.3. Determine groundwater contributions to stream refugia
	3.4. Determine the future condition and ecological function of prairie pothole wetlands
	3.5. Assess the effects changes in connectivity on wetland/aquatic ecosystems
	3.6. Predict the climate-driven establishment and spread of aquatic invasive species
	3.7. Assess changes in the abundance and distribution of high-value fish species and at-risk aquatic organisms
	3.8. Evaluate the efficacy of in-lake, landscape, and watershed management to protect fish communities
	3.9. Assess the effects of climate change on recreational angling and subsistence fisheries
	3.10. Identify and evaluate management strategies to reduce climate risk to manoomin
	3.11. Assess the effects of climate change on current and novel aquatic pathogens
4. Novel terrestrial landscapes Shifts in vegetation and human responses to climate change alter the suitability of the landscape for priority and at-risk wildlife populations	4.1. Determine the future composition, ecological function, and distribution of forests
	4.2. Determine the effects of mesophication on grassland habitats
	4.3. Predict the climate-driven establishment and spread of terrestrial invasive species
	4.4. Advance climate knowledge for under-studied terrestrial species
	4.5. Assess climate-driven changes in the abundance and distribution of priority wildlife species
	4.6. Identify optimal future habitat for at-risk or priority species
	4.7. Assess the potential for range shifts or local extirpation of focal species from Tribal lands
	4.8. Determine the potential for microclimate to buffer or exacerbate regional climate conditions
	4.9. Evaluate the effects of climate-adapted agriculture on wildlife habitat
	4.10. Assess the effects of climate change on hunting and gathering
	4.11. Determine the effects of non-breeding climate vulnerability for priority species
	4.12. Assess the effects of climate change on current and novel wildlife pathogens
5. Barriers to and opportunities for adaptation Climate change alters the feasibility of management goals and suitability of management tools	5.1. Assess the feasibility of current and potential ecological restoration goals under future conditions
	5.2. Advance climate-informed optimization of protected lands for fish, wildlife, and ecosystems
	5.3. Conduct assessments to reduce the risks of assisted migration activities
	5.4. Provide climate-informed decision support in the selection and application of restoration tools (e.g., prescribed burning, water control)
	5.5. Determine social values and acceptance for climate adaptation for fish, wildlife, and ecosystems
	5.6. Identify regulatory tools for fish and wildlife that may be inadequate under climate change
	5.7. Identify management practices that exacerbate the effects of climate change on fish, wildlife, and ecosystems
	5.8. Identify climate adaptation practices that yield co-benefits (e.g., mitigation, economic gain, social resilience)
	5.9. Inform the design of monitoring programs to detect and respond to climate change