



**National Park Service
U.S. Department of the Interior**

NOTICE OF INTENT TO AWARD

This Funding Announcement is not a request for applications. This announcement is to provide public notice of the National Park Service's intention to fund the following project activities without full and open competition.

ABSTRACT	
Funding Announcement	P13AS00106
Project Title	Optical Sensing to Study the Effect of Anthropogenic Light and Noise on Flying Insects
Recipient	Montana State University
Principle Investigator / Program Manager	Joseph Shaw
Total Anticipated Award Amount	\$67,827.00
Cost Share	No
New Award or Continuation?	New Task Agreement against the Rocky Mountain Cooperative Ecosystem Studies Units (CESU) Cooperative Agreement
Anticipated Length of Agreement	1.5 years
Anticipated Period of Performance	July 2013 through December 2014
Award Instrument	Cooperative Agreement
Statutory Authority	16 U.S.C. §1a-2(j) and 16 U.S.C. §5933
CFDA # and Title	CFDA No. 15.945 Cooperative Research and Training Programs – Resources of the National Park System
Single Source Justification Criteria Cited	(4) Unique Qualifications
NPS Point of Contact	Alicia Broner Contract Specialist (Contractor) National Park Service WASO WCP Contracting and Procurement

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OVERVIEW

Views of nocturnal landscapes free from artificial light are important parts of visitor experience. Artificial light is known to affect the movements and behavior of flying insects, but this phenomenon has not been studied in remote locations that have historically been completely free from artificial light. Energy development in the Great Plains and Intermountain West is introducing bright lights into some of these remote areas. Many ongoing or planned developments are close enough to National Park units that they could affect the nocturnal insect fauna in the park, and all of the other species that are linked to those insects.

To remotely measure the number of flying insects in both natural and human-influenced environments, Montana State University (MSU) will use an advanced remote sensing instrument developed originally for counting foraging honey bees in flight. This instrument is a custom-built wing-beat modulation light detection and ranging (lidar) instrument that uses real-time Fourier transforms to convert the conventional measurement of scattered power as a function of range to a measurement of scattered power as a function of range and target oscillation frequency.

The research and development goals are:

- To assess the capability of a wing-beat modulation lidar to rapidly assess the spatial distribution of insects in the atmosphere;
- To assess the capacity of this system to offer clues to the identity of insect targets through measurements of reflected light intensity and wing-beat modulation;
- To utilize this tool to measure differences in flying insect abundance and species composition in relation to natural factors (habitat, time of night, weather conditions, ...) and anthropogenic factors (noise, light, regional development);
- To promote education and outreach concerning the ecological effects of light pollution,
- To provide opportunities for cross-disciplinary education of students; and
- To provide opportunities for project participants to produce peer-reviewed papers and outputs for scientific conferences reporting these research results.

RECIPIENT INVOLVEMENT

MSU agrees to:

- Collaboratively undertake the project;
- Work with the NPS Agreement Technical Representative (ATR) to identify tasks and develop a schedule for their execution;
- Organize quarterly teleconferences with the ATR to discuss ongoing research and development efforts, evaluate progress, and develop plans for the next phase of work;
- Present results at scientific conferences, when applicable; and

- Oversee translation of research results in peer-reviewed papers.

NATIONAL PARK SERVICE INVOLVEMENT

Substantial involvement on the part the National Park Service is anticipated for the successful completion of the objectives to be funded by this award. In particular, the National Park Service will be responsible for the following:

- Work with the Recipient to identify tasks and develop a schedule for their execution,
- Participate in regular teleconferences to discuss project results and plans,
- Participate in data analyses, as appropriate,
- Participate in drafting scientific manuscripts, as appropriate, and
- Provide scientific reviews of draft scientific papers that are produced.

SINGLE-SOURCE JUSTIFICATION

DEPARTMENT OF THE INTERIOR SINGLE SOURCE POLICY REQUIREMENTS

Department of the Interior Policy (505 DM 2) requires a written justification which explains why competition is not practicable for each single-source award. The justification must address one or more of the following criteria as well as discussion of the program legislative history, unique capabilities of the proposed recipient, and cost-sharing contribution offered by the proposed recipient, as applicable.

In order for an assistance award to be made without competition, the award must satisfy one or more of the following criteria:

- (1) Unsolicited Proposal – The proposed award is the result of an unsolicited assistance application which represents a unique or innovative idea, method, or approach which is not the subject of a current or planned contract or assistance award, but which is deemed advantageous to the program objectives;
- (2) Continuation – The activity to be funded is necessary to the satisfactory completion of, or is a continuation of an activity presently being funded, and for which competition would have a significant adverse effect on the continuity or completion of the activity;
- (3) Legislative intent – The language in the applicable authorizing legislation or legislative history clearly indicates Congress' intent to restrict the award to a particular recipient of purpose;
- (4) Unique Qualifications – The applicant is uniquely qualified to perform the activity based upon a variety of demonstrable factors such as location, property ownership, voluntary support capacity, cost-sharing ability if applicable, technical expertise, or other such unique qualifications;

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| <p>(5) Emergencies – Program/award where there is insufficient time available (due to a compelling and unusual urgency, or substantial danger to health or safety) for adequate competitive procedures to be followed.</p> |
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The National Park Service did not solicit full and open competition for this award based the following criteria:

(4) UNIQUE QUALIFICATIONS

Single Source Justification Description:

The Recipient has published the only scientific papers demonstrating the capacity to distinguish wingbeat frequencies in flying insects using lidar. The significance of the lidar method is its ability to spatially map the insect targets it detects.

Literature searches were conducted using Google Scholar and the Web of Science. The Recipient's Shaw lab has published five pertinent papers, and has an instrument that has successfully performed the needed measurements in comparable field settings. Two other papers found in the search involved instruments that worked in laboratories on captive animals, and these systems would not function in free ranging insects in the wild.

STATUTORY AUTHORITY

16 U.S.C. §1a-2(j) Cooperative research and training programs
Secretary of the Interior's authorization of activities - Enter into cooperative agreements with public or private educational institutions, States, and their political subdivisions, for the purpose of developing adequate, coordinated, cooperative research and training programs concerning the resources of the National Park System, and, pursuant to any such agreements, to accept from and make available to the cooperator such technical and support staff, financial assistance for mutually agreed upon research projects, supplies and equipment, facilities, and administrative services relating to cooperative research units as the Secretary deems appropriate; except that this paragraph shall not waive any requirements for research projects that are subject to the Federal procurement regulations.

16 U.S.C. §5933 Cooperative agreements

(a) Cooperative study units - The Secretary is authorized and directed to enter into cooperative agreements with colleges and universities, including but not limited to land grant schools, in partnership with other Federal and State agencies, to establish cooperative study units to conduct multi-disciplinary research and develop integrated information products on the resources of the National Park System, or the larger region of which parks are a part.

(b) Report - Within one year of November 13, 1998, the Secretary shall report to the Committee on Energy and Natural Resources of the United States Senate and the Committee on Resources of the House of Representatives on progress in the establishment of a comprehensive network of such college and university based cooperative study units as will provide full geographic and

topical coverage for research on the resources contained in units of the National Park System and their larger regions.