

# **Great Lakes-Northern Forest CESU Renewal Package**

Attached are:

1. Letter of Intent from the Host University
2. Great Lakes-Northern Forest CESU Self-Assessment
3. Completed list of projects

## **2. CESU Host University and Nonfederal Partner Self-Assessment Report**

### **INTRODUCTION**

The 2012-2017 Great Lakes-Northern Forest Cooperative Ecosystems Studies Unit (GLNF) was hosted by the University of Minnesota, Department of Forest Resources. The first GLNF cooperative agreement was signed in 2002, and has since been renewed in 2007 and 2012. In the 2012 agreement period, there were eight federal partners and 46 non-federal and university partners. During this time, GLNF partners participated in 170 projects, totaling \$18,209,917 in research funding.

There were several personnel transitions for the GLNF team during 2012-2017 agreement period. The GLNF director, Alan Ek, retired from his thirty-four-year post as head of the Department of Forest Resources in 2016, but he continued serving as director until the end of the 2012 agreement period. The host university coordinator, Kristell Miller, resigned in 2015. The current host university coordinator, Merril Flanary, joined that same year and lacks some knowledge about the beginning of the 2012 agreement period. The National Park Service research coordinator that served since the first agreement was signed in 2002, Jerrilyn Thompson, retired during in late 2014. After a year of interim coordinators, the position was filled by Erin Williams in November 2015.

### **HOST UNIVERSITY CHALLENGES**

Although there may be many benefits of being a CESU member, as our non-federal partners would agree, there are far fewer benefits to being a host university. Perhaps one of the only benefits to serving as host university was having direct access to the National Park Service research coordinator, Erin Williams. Since her arrival, Erin helped develop projects with National Park Service funds for researchers at the University of Minnesota totaling \$260,000. Erin also assisted with host university tasks, such as developing a strategic plan and answering inquiries from interested parties. Erin and NPS has plans to develop internship opportunities for students at the University of Minnesota and nearby parks.

There were far more challenges to serving as host university. The GLNF has more partners and covers a larger geographic region than most CESUs in the national network. During the current five-year period, funding and resources were exchanged between federal and non-federal partners under the GLNF umbrella. However, the host university did not receive compensation as a result of any of these individual collaborations despite being responsible for managing membership, tracking projects, answering inquiries, maintaining up-to-date online information, and communicating with partners to help facilitate ongoing collaborations. The initial \$10,000 joining fee paid by all federal partners for host university support had largely disappeared by the

time the 2012 agreement was signed, leaving the department responsible for providing this support internally.

Negotiations with federal partners to redesign the CESU framework for host support funding has been ongoing and remains unresolved. Funds trickled in toward the end of the 2012 agreement period, but these funds were limited and unreliable. The National Park Service Midwest Regional office provided critical funding in 2016 to allow UMN to complete this review (\$10,000 for 2016), but additional support from other federal partners was minimal (\$3,000 total in 2016; no support in 2015). Bureau of Indian Affairs joined in 2016, but the GLNF was not one of the CESUs to receive host support funding from BIA. It is unclear which federal partners will be participating in future host support funding structures.

The uncertainties surrounding future compensation for host universities makes it difficult to meet the administrative responsibilities of host university and has tempered enthusiasm about the potential for hosting the GLNF to benefit the department, school and university.

Other challenges included a lack of participation from federal managers and non-federal technical representatives. Due to the large size of the GLNF membership, it is important for partners to remain active. During the 2012 agreement period, 25% of federal and over half of non-federal partners were non-responsive to all or most host university requests sent via email. Due to this lack of participation, it was determined that hosting a meeting during 2014, 2015, or 2016 would not likely be worthwhile.

Another challenge is the host university's inability to track projects. Due to the size of the GLNF and the number of non-responsive partners, the host university spent much of the five-year agreement period without knowledge of the number of projects, the amount of funding, and the number of partners participating under the GLNF umbrella.

## **STEPS FORWARD**

The following are ideas for improving the GLNF for the next five-year agreement period:

- Improve partner participation by focusing on those twenty partners that are responsive to host university requests and are actively engaging in CESU activities;
- Limit the number of new partners admitted each year, and change administrative policies so that host university tasks can be more efficient;
- Solve the host support funding issues with federal partners; and
- Develop outreach materials that will help answer common questions and work with federal partners to develop materials that explain the specific CESU procedures for each agency.

## CESU RENEWAL AND CRITERIA QUESTIONS

For each question listed below, indicate “**YES**” or “**NO**” (as appropriate) AND provide additional details and/or examples in support of your answer (e.g., participation statistics, student involvement on projects, tangible and intangible benefits, challenges, best practices). Questions were derived from Article II of the CESU agreement.

### **Category A: Federal Responsibilities**

#### ***Did each federal agency in the CESU...***

**1.** Provide opportunities for coordinated, collaborative scientific and scholarly activities (i.e., research, technical assistance, and education) that inform stewardship of, and education about, public trust heritage resources in alignment with CESU, agency, and partner mission goals, programmatic objectives, and authorities?

*Provide details, including reference to agency-support (or lack thereof) and activities over the current five-year term (e.g., number of projects; types of projects; management issues, topics, or subject matter areas).*

#### **ANSWER:**

No, not all GLNF federal partners were active during the agreement cycle. Department of Defense and Natural Resources Conservation Service did not respond to requests for project lists at time of renewal; NRCS has not been responsive to host university inquiries since before 2015.

See Table 1 for a list of participating federal partners, including total amount of funding and number of projects in the 2012 agreement period. The National Park Service and US Geological Service were the two most active agencies, followed by US Fish and Wildlife Service, Forest Service, Army Corps of Engineers and Bureau of Land Management. The table is a summary of the five-year project list that was generated by cross-referencing project lists from both federal and non-federal partners. In many cases, project lists from non-federal partners were more detailed than those from federal agencies.

See Table 2 for the five projects that received the highest funding. US Fish and Wildlife awarded over \$1 million to University of Wisconsin to evaluate the effects of climate change on bird demographics. The remaining top 4 funded projects were all from US Geological Survey, ranging from \$700,000-\$400,000. These project award amounts were not indicative of most projects funded in the GLNF 2012 agreement period. The average project funding amount was around \$100,000.

The research areas represented in Table 2 were indicative of research areas funded by federal partners, and include 1) water quality in the Great Lakes, 2) natural resource conservation practices in the region, and 3) effects of climate change in the Great Lakes. Table 3 provides additional popular research areas for the most active federal partners. Monitoring water quality, wildlife, and restoration of ecosystems were among other top priority areas for research.

**Table 1.** Six out eight federal partners that were active during the 2012 agreement period, including project funding and number of projects

Federal Partner	Project Funding	Number of Projects
National Park Service (NPS)	\$3,262,961.87	62
US Geological Survey (USGS)	\$8,020,716.36	55
US Fish and Wildlife Service (USFWS)	\$2,791,213.01	18
US Forest Service (USFS)	\$2,397,476.00	22
US Army Corps of Engineers (USACE)	\$1,060,189.00	8
Bureau of Land Management (BLM)	\$637,361.00	4

**Table 2.** Top five funded projects in GLNF 2012 agreement period

Federal Partner	Non-Federal Partner	Project Title	Project Funding
USFWS	University of Wisconsin-Madison	The Role of Extreme Climate Events on Avian Demographics	\$1,115,990.00
USGS	Cornell University	NCCWSC-CSC Five-Year Reviews – Assessing the Science, Partner Engagement, and Utility for Natural Resources Conservation	\$718,411.00
USGS	Michigan State University	Improving and Providing Restoration Strategies for Nearshore Great Lakes Waters	\$499,999.00
USGS	Michigan State University	Assessing Impacts of Harmful Algal Blooms and Habitat Restoration on Fisheries in Lake Erie Huron	\$499,852.27
USGS	University of Toledo	Determining the Contribution of Maumee River Fisheries Production to Western Lake Erie Stock	\$435,470.00

**Table 3.** Most common research areas by federal agency

Federal Partner	Research Topic
NPS	<ol style="list-style-type: none"> <li>1. Monitoring of invasive species, ecological restoration, and wildlife populations</li> <li>2. Assessing management practices and policies at National Parks</li> </ol>
USGS	<ol style="list-style-type: none"> <li>1. Evaluating effects of climate change on water quality and fisheries production</li> <li>2. Monitoring water quality ecology, wildlife and insects</li> </ol>
USFWS	<ol style="list-style-type: none"> <li>1. Managing to improve endangered species</li> <li>2. Monitoring water quality</li> </ol>
USFS	<ol style="list-style-type: none"> <li>1. Fire ecology and management</li> <li>2. Forest ecology and management for indigenous forest types and species</li> <li>3. Monitoring water quality</li> </ol>

**2.** Provide funds for basic support and salary for CESU host university (or other nonfederal partner institution) faculty/personnel, as appropriate? How have federal partners provided support to the host university over the current five-year term (both financial and in-kind) specifically to support CESU operations?

*Provide details regarding support (e.g., support by agency, fiscal year, instrument/mechanism) and associated expenditures.*

**ANSWER:**

No, not all federal partners provided funds for basic support of the host university. The initial \$10,000 joining fee paid by all federal partners for host university support had largely disappeared by the time the 2012 agreement was signed, leaving the Department of Forestry at the UMN responsible for providing this support internally. Funds trickled in toward the end of the 2012 agreement period, but these funds were limited and unreliable. The National Park Service Midwest Regional office provided critical funding in 2016 to allow UMN to complete this review (\$10,000 for 2016), but additional support from other federal partners was minimal (\$3,000 total in 2016; no support in 2015). Bureau of Indian Affairs joined in 2016, but the GLNF was not one of the CESUs to receive host support funding from BIA, though we understand we'll receive funds from BIA in 2017. It is unclear which federal partners will be participating in future host support funding structures.

**3.** Make available federal personnel to serve on the CESU Federal Managers Committee? Did all federal technical representatives actively participate in CESU federal managers committee activities, CESU partner meetings, and other CESU activities (e.g., communication, planning, reporting)?

*Provide details, including reference to consistent agency participation (or lack thereof) over the current five-year term (identified by agency, as appropriate).*

**ANSWER:**

No, not all federal managers were available when contacted about general CESU questions. Due to lack of participation and limited resources to fund host university personnel time, a federal manager's committee was not organized during 2015 or 2016. We are unaware of a federal manager's committee prior to this time though know that the previous NPS research coordinator was highly active in communicating, planning and reporting.

**4.** Comply with CESU Network, host university, and nonfederal partner institution rules, regulations, and policies (e.g., professional conduct; health and safety; use of services and facilities; use of animals, recombinant DNA, infectious agents or radioactive substances) and ensure its employees follow the Code of Ethics for U.S. Government Employees?

*Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).*

**ANSWER:**

Yes, it was presumed throughout the 2012 agreement period that federal agencies complied with all rules and regulations. The GLNF has no documentation of any such violations.

5. Did federal agency employees actively participate in the activities of the host university and nonfederal partner institutions, including serving on graduate student committees or teaching courses?

*Provide details, including examples of courses or other service activities.*

**ANSWER:**

Yes, the National Park Service provided a research coordinator throughout the 2012-2017 agreement period. From 2012-2014, Jerrilyn Thompson served in that position and was an instructor each semester for a graduate seminar course where students were taught about how to present scientific research as well as the NPS CESU coordinator and adjunct faculty. During 2015, NPS provided interim coordinators who did not teach the graduate seminar. Since November 2015, Erin Williams has filled that position and been the co-instructor for the graduate seminar course.

6. Take responsibility for their respective agency's role in administering the CESU agreement, transferring funds, and supervision of agency employees? *Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).*

**ANSWER:**

Yes, federal agencies were responsible for administering CESU agreements, transferring funds and supervising employees. However, each agency had its own set of strengths and challenges. The National Park Service, with a dedicated regional research coordinator, was able to oversee all aspects of CESU agreements and answer questions about agreements from non-federal partners.

The US Forest Service, US Army Corps of Engineers and US Fish and Wildlife Service had regional contract specialists who were very knowledgeable about CESU contracts. This expertise was essential as online resources from the agencies regarding CESU contracts were either non-existent, or out-of-date, vague and not useful for answering questions.

Despite being one of the most active agencies, the US Geological Survey seemed to have a lack of internal communication about CESU agreements. The host university was contacted by a range of USGS field employees inquiring about CESU agreements.

The Bureau of Land Management receives very few inquiries and is relatively inactive with regard to host university inquiries, so the efficacy of contracts and communication at this agency is not known.

The US Army Corps of Engineers was the only federal agency to send annual updates on CESU projects, which would be helpful if more federal partners submitted project updates to the host university in future.

7. Provide administrative assistance, as appropriate, necessary to execute the CESU agreement and subsequent amendments or modifications (e.g., timely processing, signatures)?  
*Provide details, including reference to consistent and/or effective assistance (or lack thereof) over the current five-year term (identified by agency, as appropriate).*

**ANSWER:**

Not applicable. The national CESU coordinator, Cheri Yost, managed master agreements and amendments with federal agency partners.

8. **Federal Agency Response Only:** What percentage of projects were conducted successfully (e.g., project tasks completed, products/outputs accepted by the sponsoring agency)? What percentage of projects were unsuccessful (e.g., project tasks incomplete, products/outputs not accepted by the sponsoring agency)?  
*Provide details (e.g., what factors influenced/contributed to project success or failure)?*

**Category B: Host University Responsibilities**

***Did the host university...***

1. Allow and encourage its faculty to engage in participating federal agency sponsored research, technical assistance and education activities related to the CESU objectives?  
*Provide details, including description of faculty engagement and two highlighted/example projects.*

**ANSWER:**

Yes, the host university encouraged participation in GLNF research projects. The National Park Service research coordinator was also responsible for encouraging host university faculty to participate in the GLNF.

One project that was developed in 2016 was with the University of Minnesota, Department of Forest Resource faculty member Ingrid Schneider, to “Assess use and visitor behavior among water-based and waterfront visitors through observation along Miners Beach at Pictured Rocks National Lakeshore.” This project is contributing to public and NPS understanding of the current use patterns of the public access along Miners Beach where visitation has increased immensely. This project is part of the “Parks and Protected Area” Management program and supports a graduate student thesis work. This project was developed to inform possible limits on use of the area and visitor needs to be addressed that will maintain a more positive and safer public boating experience.

Another example project is the Monarch Joint Venture between several federal partners and faculty in the Department of Fisheries. The Monarch Joint Venture is a partnership of federal and state agencies, non-governmental organizations, and academic programs that are working together to support and coordinate efforts to protect the monarch migration across the lower 48 United States. The project has been in place since the previous five-year agreement, and is a well-supported project at the university, with funds totaling almost \$550,000 in the current five-year CESU agreement period.

2. Provide basic administrative and clerical support over the current five-year term (i.e., in support of CESU operations)? *Provide details (e.g., nature and level of support).*

**ANSWER:**

Yes, the GLNF host university staff provided the basic administrative support during the 2012 agreement period. Tasks included facilitating communications among and with existing and potential partners such as maintaining accurate lists of contact information for all partners; distributing regular emails about CESU events, new partners, projects, and funding opportunities; and relaying requests for statements of interest and requests for proposals. Host university staff also participated in CESU Directors meetings, coordinated by the CESU Network National Office, via phone; answered inquiries such as solicitations from interested potential partners, questions from stakeholders, project administrative assistance requests, inquiries about the CESU, requests from the CESU Network National Office. Host university staff facilitated new member applications; and communicating and assisting the CESU Network National Office with the execution and signature process. Lastly host support staff worked to update the strategic plan, create annual work plans and maintain a CESU website.

a. How much did it cost the host institution to support the CESU over the current five-year term?

*Provide details (e.g., CESU-specific costs, Director and/or staff time, % FTE, travel, facilities, administrative services, equipment, supplies, communications, printing, web hosting).*

**ANSWER:**

Table 4 provides annual costs for hosting the GLNF.

**Table 4.** Administration cost for host university support

Personnel/Resource	Annual cost
Director time—ask Alan the number of hours he spends on average in a month; ask Janelle	\$5000
Host university coordinator (8 hr/week x \$20/hr)	\$8320
Office space for CESU staff (NPS research coordinator)	\$7500
Other resources (eg website host domain, staff computers, etc)	\$1000
Total	\$21,820

b. Where is the CESU Director’s office officially stationed within the host institution (e.g., Office of the President, School of Natural Resources, Department of Forest Resources)?

*Provide details (e.g., location relative to other departments, schools, greater organization), as appropriate.*

**ANSWER:**



Yes, the Department Head of Forest Resources served as the GLNF director. Alan Ek's office was housed in the Department of Forest Resources, an academic unit in the College of Food, Agriculture and Natural Resources Sciences, located on the St Paul campus. The Department of Forest Resources provided office space and a computer for a host university coordinator.

**3.** Provide access for CESU federal agency personnel (e.g., CESU Research Coordinator) to campus facilities, including library, laboratories, and computer facilities? *Provide details and examples.*

**ANSWER:**

Yes, the Department of Forest Resources provided office space for a National Park Service research coordinator and host university coordinator. The NPS research coordinator also had access to all university facilities such as libraries and parking.

**4.** Provide suitable office space, furniture and laboratory space, utilities, computer network access and basic telephone service for CESU federal agency personnel (e.g., CESU Research Coordinator) to be located at the Host University? *Provide details (e.g., challenges, successful approaches, examples).*

**ANSWER:**

Yes, the NPS research coordinator had access to office space, furniture, computer network, and basic telephone and printer services.

**5.** Offer educational and training opportunities to participating federal agency employees, as appropriate? *Provide details (e.g., number of trainings, number of people, course dates, course descriptions).*

**ANSWER:**

No specific CESU trainings were conducted for federal agency employees, but director, host university coordinator and NPS research coordinator met with federal employees regularly to discuss the process for CESU projects and research.

**6.** Coordinate activities, as appropriate, with the CESU federal, tribal, and nonfederal partners and develop administrative policies for such coordination? *Provide details.*

**ANSWERS FOLLOWING EACH SUB-QUESTION:**

**a.** Was a CESU Managers Committee maintained and convened, at least annually? *Please provide details (e.g., meeting dates, meeting agendas, number/affiliation of participants, meeting minutes).*

Yes, a CESU committee was convened regularly, including three CESU Midwest meetings and a consortium meeting in June 2016 to develop new ideas for regional-scale CESU

projects. The latter was attended by the Great Lakes, Great Plains and Great Rivers CESU and federal partners. See Appendix A for a summary we provided at the meeting.

**b.** Were periodic meetings of the CESU partners convened, at least annually, for the purpose of collaboration and coordination of CESU activities?

*Provide details (e.g., meeting dates, meeting agendas, level of participation, affiliation of participants, meeting minutes).*

No, due to lack of participation from partners a meeting was not planned for this five-year agreement period.

**c.** What efforts were made to communicate each tribal and nonfederal partner institution's strengths and expertise to the federal partners (e.g., listing investigators on the CESU website, expertise database, meetings)?

*Provide details (e.g., challenges, successful approaches).*

An outreach campaign was begun in 2015, including meeting with researchers at nonfederal partner institutions to discuss their areas of research and strengths. Materials were also drafted explaining how the CESU could benefit these partners. Due to the number of challenges facing the host university with regard to resources, and the sheer number of nonfederal partners, the efforts did not move beyond the early stages.

**d.** How were federal funding announcements and/or other opportunities communicated to partners across the CESU?

*Provide details (e.g., challenges, successful approaches).*

Opportunities were communicated via email and posted on the webpage. As mentioned previously, member response was always difficult.

### **Category C: Participation of all Partners**

**1.** What efforts did the host university, tribal, nonfederal, and federal partners undertake to engage students in projects and other activities of the CESU?

*Provide details (e.g., challenges, best practices, statistics for graduate and undergraduate student involvement, example projects).*

#### **ANSWER:**

There were opportunities for undergraduate and graduate students to be involved in CESU activities, such as hiring a graduate student for the National Park Service and University of Minnesota project evaluating exotic plant management methods. However, there was difficulty realizing potential opportunities due to a lack of knowledge among partners about the potential for CESU projects to meet the needs of students seeking internships, fellowships and learning experiences.

**2.** Did all partners actively participate in CESU activities (e.g., meetings, phone calls, signing amendments, strategic planning, reporting)?

*Provide details (e.g., if not, why not? Participation statistics, challenges to participation, successful approaches, best practices).*

**ANSWER:**

No, not all partners participated in GLNF activities from 2012-2017. Typically, about 20-30 out of 46 non-federal partners did not respond to host university requests e.g. signatures on amendments or project reporting. To reach a quorum often required extra effort to contact non-responsive partners. It is not known specifically why some members were more responsive than others to requests regarding CESU administrative tasks.

All 46 non-federal partners were asked whether they planned to renew in 2017. Thirty-one responded yes to renewing, but only 20 provided project lists. Fifteen partners did not respond; 10 of those *did not* have active projects and five of those *did* have active projects in the last five years.

**3.** What percentage of partners received funding through the CESU over the current five-year term? *Provide details (e.g., partner funding statistics, notable barriers, successful approaches).*

**ANSWER:**

Fifty-seven percent of non-federal partners received funding in the 2012 agreement period. In other words, 23 out of 46 non-federal partners received funding, and 20 non-federal partners did not receive funding. Table 5 includes ranges of total funding, and the number and percentage of partners that received funding in those ranges. Seventeen percent of partners received total funding less than \$100,000. Twenty-nine percent received total funding between \$100,000-\$700,000. Eleven percent of non-federal partners received between \$1-\$5 million in funding from 2012-2017.

Table 6 includes ranges of number of projects, and the number and percentage of partners that received funding in those ranges. Forty-eight percent of non-federal partners had 10 or fewer projects in the five-year agreement period. Eight percent of partners had between 10-30 projects or more. Appendix B provides a list of each non-federal partner, including total number of projects and funding for the five-year period. The University of Minnesota had 32 projects, the most projects of any non-federal partner, totaling \$2,705,073. University of Wisconsin-Madison had 29 projects, totaling \$3,051,390. Michigan State University had 27 projects, totaling \$4,456,093 in research funds.

**Table 5.** Ranges of total funding for 2012-2017, and number and percentage of federal partners

Amount of Total Awards	No. Non-Federal Partners	Percentage of total 46
\$0	20	43%
\$1-\$50k	7	15%
\$51k-\$100k	1	2%
\$101k-\$300k	7	15%
\$301k-\$500k	3	7%
\$501k-\$700k	3	7%

\$701k-\$1m	0	0
\$1m-\$3m	3	7%
\$3m-\$5m	2	4%

**Table 6.** Ranges of total number of projects for 2012-1217, and number and percentage of federal partners

Number of Projects	No. Non-Federal Partners	Percentage of total 46
0	20	43%
1	7	15%
2-5	11	24%
6-10	4	9%
11-15	1	2%
16-20	0	0
21-25	0	0
26-30	2	4%
30+	1	2%

**4.** What efforts were made to encourage and broaden participation in the CESU by all partners (e.g., HBCUs, tribal colleges, small academic institutions, state and local government agencies)? Provide details (e.g., participation statistics, challenges to participation, successful and/or novel approaches).

**ANSWER:**

Some of the smaller institutions contacted the host university for information about how to become more active in CESU projects. The host university provided as much information as possible to assist smaller organizations with making contacts with federal partners. The host university met at annual meetings and events to try and generate new ideas and collaborations. For instance, host university representatives met at an annual meeting in Virginia in 2016, a regional Consortium meeting in June 2016 and a regional meeting in Lincoln, Nebraska in February 2017.

**5.** What is the date of the most current version of the CESU’s strategic plan? How well do the activities of the CESU reflect the priorities and objectives outlined in the plan? Provide details (e.g. challenges, best practices, example projects).

**ANSWER:**

The most current strategic plan was developed in June 2016. The mission of the plan was designed to reflect the areas of study most likely being pursued by partners, and aims to address these issues in a multi-disciplinary program of research and education. The GLNF activities reflect the mission of the strategic plan, as the projects taken on by the GLNF partners range in discipline from biological, physical, social and cultural sciences and deal directly with the most pressing issues facing a rapidly changing social, economic and environmental landscape in the Great Lakes region. In this way, the GLNF strategic plan has been an effective tool for summarizing the most important areas and topics of research issues and has provided a means for reviewing the five-year project list in a specific context. See Appendix B for a copy of the strategic plan.

6. Did the participating federal agencies, host university, tribal, and nonfederal partners develop and follow annual work plans to guide the activities of the CESU?  
*Provide details (e.g., challenges, successful approaches, example projects).*

**ANSWER:**

Yes, work plans were developed by the host university coordinator and National Park Service personnel.

7. Have partners successfully obtained the tribal, federal, state, or local government permits and/or permissions from private landowners necessary to execute projects under the CESU agreement over the current five-year term?  
*Provide details (e.g., challenges, successful approaches, examples).*

**ANSWER:**

Yes, it was assumed federal agencies and partners followed all state laws regarding research and permits.

8. What instances exist where projects, programs, or partners have derived benefit as a result of the established CESU relationship, independent of federal awards administered through the CESU (i.e., where simply being a partner in the CESU aided furtherance of other efforts; without/outside direct funding through a CESU project award)? *Provide a brief description of any such examples.*

**ANSWER:**

No such relationships are known.

**Appendix A.** Presentation of GLNF CESU updates at the Great Lakes, Rivers and Plains CESU consortium meeting in June 2016

**Great Lakes/Northern Forest Cooperative Ecosystem Study Unit 2016-2017**

**Overview:**

CESU since 2009; 50 non-federal members; about \$30million research dollars raised total; current Cooperative Agreement 2012-2017

**CESU Focus Habitats:**

Northern boreal forests, Northern hardwood forests, and oak savannah prairie land; Great Lakes aquatic and coastal systems

**Spotlight Projects:**

**1) Pollinators, Monarch Joint Venture and Karner Blue Butterfly:**

The Monarch Joint Venture is Partnering to conserve the monarch butterfly migration. Researchers, NGOs, academic institutions, and agencies have collaborated under the Monarch Conservation Science Partnership to identify targets for monarch conservation. By 2020, the primary objective is to increase eastern monarch population numbers to 6 hectares of area occupied in Mexico, or approximately 225 million individual butterflies. The central flyway of the U.S. has been identified as a high priority for habitat restoration efforts, including the addition of at least 1 to 1.5 billion milkweed stems and abundant nectar resources to support monarch reproduction and migration. Western habitat serves as an important conservation focus for the U.S. as well, since the entire annual cycle of breeding, migrating, and overwintering occurs entirely within the boundaries of the U.S. As a flagship species for pollinator and grassland conservation, efforts to create, restore, or enhance habitat for monarch butterflies will benefit a suite of other organisms throughout North America. The **2016 Monarch Conservation Implementation Plan** is designed to help facilitate cooperation and coordination in the United States to help accomplish our nation's goals for monarchs and other pollinators.

**2) Wolf/Moose Population monitoring at Isle Royale National Park:**

The wolves and moose of Isle Royale are the focus of the longest-running study of a predator-prey system in the wild (50 years+). Both species are relatively recent arrivals to Isle Royale - moose established a population in the early 1900s, and wolves followed decades later after traveling over the ice from Ontario, Canada in the late 1940s. Annual monitoring of wolves and moose began in 1958 when Durward Allen of Purdue University began an ambitious "10-year" study of the wolf-moose relationship. This study continues today, under the direction of John Vucetich and Rolf Peterson of Michigan Technological University.

*Research priority areas:*

**Cultural Resources and Heritage:** Desire to increase projects with Tribes and native cultural and natural resource priorities. Fond du Lac College recently revived their membership in the CESU.

**Community-based Ecosystem Management:**

- Ecotourism
- Community resilience in natural resource planning
- Conservation and sustainable development (in national parks or other federal lands)

**Forest Health:** Fuel loading, fire in oak savannah systems, pests

-*Climate change*: effects of increased CO<sub>2</sub> and nitrogen deposition, changes in water availability and temperatures on biodiversity, species migration, and forest health

**Aquatic:**

-*Invasive species*: Asian carp and zebra mussels

-Contaminants

-Water quality

**Appendix B. Non-federal partner participation**

No.	Organization	No. Projects 2012-2017	Funding Awarded	Will Renew in 2017?	Sent in 2012 Renewal Project List?
1	Antioch University New England	1	\$25,000	YES	YES
2	Ball State University	1	\$13,196	NO RESPONSE	NO
3	Central Michigan University	3	\$510,840	YES	YES
4	Cleveland State University	0	0	NO RESPONSE	NO
5	Cornell University	13	\$1,383,417	YES	YES
6	College at Brockport (SUNY)	0	0	YES	NO
7	Fond du Lac College	0	0	NO RESPONSE	NO
8	George Wright Society	0	0	YES	NO
9	Grand Valley State University	0	0	YES	YES
10	Hamline University	0	0	NO RESPONSE	NO
11	Indiana State University	0	0	NO RESPONSE	NO
12	Indiana University	6	\$636,155	YES	YES
13	Kent State University	1	\$25,000	YES	YES
14	Michigan State University	27	\$4,456,093	YES	YES
15	Michigan Technological University	4	\$446,012	YES	YES
16	Minnesota State University, Mankato	0	0	YES	NO
17	Northland College	5	\$184,500	YES	YES
18	Northern Illinois University	0	0	NO RESPONSE	NO
19	Northern Michigan University	1	\$23,778	YES	NO
20	Purdue University	8	\$535,160	YES	NO
21	Saint Mary's University	2	\$457,353	YES	YES
22	Southern University and A&M College	0	0	NO RESPONSE	NO
23	The State University of New York (SUNY)	2	\$130,000	NO RESPONSE	NO
24	Stephen F. Austin State University	2	\$131,000	NO RESPONSE	NO
25	The Ohio State University	1	\$15,097	NO RESPONSE	NO
26	The University of Iowa	0	0	NO RESPONSE	NO
27	University of Minnesota	32	\$2,705,073	YES	YES
28	University of Minnesota-Duluth	4	\$299,927	NO RESPONSE	NO
29	University of Notre Dame	1	\$30,000	YES	YES
30	The University of Toledo	6	\$1,306,633	YES	YES
31	The University of Vermont	2	\$204,296	YES	YES
32	University of Wisconsin-Green Bay	0	0	YES	NO
33	University of Wisconsin La Crosse	2	\$61,238	YES	YES
34	University of Wisconsin Madison	29	\$3,051,390	YES	YES
35	University of Wisconsin Stevens Point	3	\$188,692	YES	YES
36	Wayne State University	0	0	YES	NO



37	West Virginia University	6	\$416,498	YES	NO
38	Winona State University	0	0	NO RESPONSE	NO
39	Chicago Botanic Garden	0	0	YES	NO
40	Great Lakes Commission des Grands Lacs	0	0	NO RESPONSE	NO
41	Midwest Art Conservation Center	0	0	YES	YES
42	MN Department of Natural Resources	0	0	YES	NO
43	Nat Council Air Stream Improvement	1	\$40,000	YES	NO
44	Science Museum of MN	3	\$127,084	YES	YES
45	The Nature Conservancy	0	0	NO RESPONSE	NO
46	Wildlife Conservation Society	0	0	YES	YES

## Appendix C. GLNF CESU 2012-2017 Strategic Plan

### GLNF CESU Strategic Plan 2016

#### Objective

#### Mission

The central mission of the Great Lakes-Northern Forest CESU (GLNF-CESU) is to conduct a program of research/ technical assistance and education that involves the biological/ physical/ social and cultural sciences needed to address/ manage and preserve Great Lakes Northern Forest ecosystems in a rapidly changing social/ economic and environmental landscape. Our region includes all or parts of 12 states/ more than 30 percent of the nation's total population several of the nation's largest metropolitan areas/ and some of the nations most significant water resources and forest lands.

#### Practical Vision

- To increase research synergy
- To address systemic issues
- To apply good science to field needs
- To enrich the community of scientists

#### Key Issues:

**Climate change:** species migration, forest health, fuel loading

DF/Rebecca Montgomery:

DF/Peter Reich: climate change; on sabbatical

DF/Michael Falkowski: loss of biodiversity in forests

DF/Merril Flanary/Alan Ek: Historical perspectives to inform future forest system shifts in response to climate change

**Fire:** Effects of largescale fire and wind in northern forests

#### Contaminants

Watershed processes

Lead in bald eagles

#### Water resources

Great Lakes Coastal systems restoration: Great Lakes Restoration Initiative projects

Water Resources Center:

#### Invasive species

MAISRC: Asian carp, zebra mussels, etc.

Emerald ash borer

Earthworm invasion

White nose syndrome

#### Community based ecosystem management

Human dimensions of natural resource management

Land use planning

Urban and community forestry

## **Cultural Resources and Heritage**

American Indian Studies Program

## **Inventory & Monitoring**

Birds

Moose

Wildlife

Monarchs and pollinators

## **Themes?**

Biological invasions and their impact on existing ecosystem integrity

Habitat fragmentation for species-threatened and endangered

Health of aquatic ecosystems, including agrochemicals and nutrients

Preservation and/or restoration of native aquatic and terrestrial communities

Social and cultural values of natural areas under changing population and land use

Timely transfer and access of information for resource management and policy

Implications of global environmental change on managed and unmanaged ecosystems

Implications of land use change on ecosystem integrity

Understanding ecosystem and social change

Improving university and agency interaction and collaboration

Enhancing dialogue between and among scientists, scholars, and resource managers

Understanding, addressing and educating about the national importance of the legacy of the Great Lakes and Northern Forests

## CESU Focus Habitats:

Northern boreal forests, Northern hardwood forests, and oak savannah prairie land; Great Lakes aquatic and coastal systems

## Research priority areas:

**Cultural Resources and Heritage:** Desire to increase projects with Tribes and native cultural and natural resource priorities. Fond du Lac College recently revived their membership in the CESU.

## **Community-based Ecosystem Management:**

-Ecotourism

-Community resilience in natural resource planning

-Conservation and sustainable development (in national parks or other federal lands)

**Forest Health:** Fuel loading, fire in oak savannah systems, pests

-Climate change: effects of increased CO<sub>2</sub> and nitrogen deposition, changes in water availability and temperatures on biodiversity, species migration, and forest health

## **Aquatic:**

-Invasive species: Asian carp and zebra mussels

-Contaminants

-Water quality

## **Goals and Objectives (from Pacific Northwest)**

### **1 Establish effective ongoing communication among all partners**

- develop and maintain web site
- publish PNW CESU newsletter
- convene annual meeting of PNW CESU partners

### **2 Demonstrate success in research, technical assistance & education**

- develop research, technical assistance and education projects that: (a) provide well rounded participation across research, technical assistance and education arenas (b) have robust levels of involvement by partners and agencies (c) fulfill and enhance the collaborative ideal of the PNW CESU

### **3 Increase minority involvement**

- identify minority-institution partner strengths in the areas of research, technical assistance and education
- link minority institutions with PNW CESU agencies

### **4 Match agency needs with partner expertise**

- regularly post agency needs and partner expertise on the web site
- convene regular meetings of agency representatives to discuss training needs and ways of fulfilling these needs using the CESU structure
- on an ongoing basis, develop mechanisms and explore opportunities for multi-agency collaboration

### **5 Establish an effective and efficient organization**

- develop executive committee operating principles and guidelines for: (a) addition of new members to the PNW CESU (b) composition of the managers committee (c) expected level of agency/partner participation (d) responsibilities of member agencies and institutions
- meet yearly as an executive and managers committee
- post information to the web site regarding cooperative agreement financial and administrative procedures specific to each agency or

### **Spotlight Projects:**

#### **1) Pollinators, Monarch Joint Venture and Karner Blue Butterfly:**

University of Minnesota's Dr. Karen Oberhauser has been provided support by USFWS, USGS, BLM for various work.

*The Monarch Joint Venture is Partnering to conserve the monarch butterfly migration.* Researchers, NGOs, academic institutions, and agencies have collaborated under the Monarch Conservation Science Partnership to identify targets for monarch conservation. By 2020, the primary objective is to increase eastern monarch population numbers to 6 hectares of area occupied in Mexico, or approximately 225 million individual butterflies. The central flyway of the U.S. has been identified as a high priority for habitat restoration efforts, including the addition of at least 1 to 1.5 billion milkweed stems and abundant nectar resources to support monarch reproduction and migration. Western habitat serves as an important conservation focus for the U.S. as well, since the entire annual cycle of breeding, migrating, and overwintering occurs entirely within the boundaries of the U.S. As a flagship species for pollinator and grassland conservation, efforts to create, restore, or enhance habitat for monarch butterflies will benefit a suite of other organisms throughout North America.

The [2016 Monarch Conservation Implementation Plan](#) is designed to help facilitate cooperation and coordination in the United States to help accomplish our nation's goals for monarchs and other

pollinators. It identifies and prioritizes current important actions for monarch conservation in the U.S., and promotes cooperation between diverse organizations working together to achieve the goals outlined in the plan.

**2) Wolf/Moose Population monitoring at Isle Royale National Park:**

The wolves and moose of Isle Royale are the focus of the longest-running study of a predator-prey system in the wild (50 years+). Both species are relatively recent arrivals to Isle Royale - moose established a population in the early 1900s, and wolves followed decades later after traveling over the ice from Ontario, Canada in the late 1940s. Annual monitoring of wolves and moose began in 1958 when Durward Allen of Purdue University began an ambitious "10-year" study of the wolf-moose relationship. This study continues today, under the direction of John Vucetich and Rolf Peterson of Michigan Technological University.

## Appendix D. GLNF CESU 2016 Work Plan

### Great Lakes Northern Forest CESU 2016 Annual Work Plan

U of MN commitments:

1. Collaboratively *Provide Leadership and Administrative Oversight to the GLNF CESU Partners* as described throughout this document.
2. Employ a program assistant and other staff, as appropriate, and assign work to support the job responsibilities described in this scope of work.
3. Provide appropriate office space for the NPS research coordinator and the CESU host university staff.
4. Facilitate communications among and with existing and potential partners such as:
  - a. maintain and post an accurate list of technical and administrative contacts and sync the contact list with the CESU Network National Office;
  - b. write, edit, and distribute a regular email, e-newsletter and/or social media posts about CESU events, new partners, projects, and funding opportunities;
  - c. relay requests for statements of interest and requests for proposals, training opportunities and related events, and student employment opportunities to CESU partners and interested parties at the host institution;
  - d. host executive committee conference calls for all CESU partners;
  - e. serve as communication liaison between all partners and the CESU National Office and CESU Council;
  - f. participate in CESU Directors meetings, coordinated by the CESU Network National Office, via phone;
  - g. answer and act on inquiries such as solicitations from interested potential partners, questions from stakeholders, project administrative assistance requests, inquiries about the CESU, requests from the CESU Network National Office; and
  - h. seek opportunities for new members and students, as appropriate.
5. Facilitate new member application and vote by:
  - a. writing and posting a written policy for the CESU which follows the national policy and includes deadlines, address for delivery, and process for review and vote (ie, in person at meeting, via email);
  - b. following up with requests and applications;
  - c. facilitating review and vote; and
  - d. communicating and assisting the CESU Network National Office with the execution and signature process.
6. Update Strategic Plan and create annual work plans by:
  - a. facilitating strategic and annual plan discussion in person or via conference calls;
  - b. editing documents;
  - c. facilitating review and comments;
  - d. incorporating final edits; and
  - e. distributing the document to partners and posting it to the CESU website.
7. Maintain a CESU website by:
  - a. providing basic information about the CESU, including a current list of partner institutions and contacts;
  - b. posting guidance documents such as strategic and annual plans, the Cooperative and Joint Venture Agreements and subsequent amendments, new member guidance, and other

administrative guidance; and CESU work plan priorities Maintain CESU website. Post all Statements of Interest in timely manner

Other priorities:

- Facilitate identification of multi-agency, ecosystem based project(s)
- Increase communication/interaction with the GLNF-CESU minority partners
- Collaborate with NASA grant office on using cooperative agreements
- Work with USFS staff on improving ease of use for CESU agreements
- Look for a opportunities to engage the USFWS and work towards possible induction
- Continue work on congressional funding for CESUs
- Prepare cooperative agreement renewal materials!
- Possibly develop a workshop or conference to work with tech reps to market the CESU internally (the CD mentioned on the CESU annual work plan could be part of this).
- Future federal workforce development: Develop a subcommittee to look at ways federal partners might employ undergraduate and graduate students in internships or summer jobs.
- Request partner university technical representatives talk to researchers at their institution and request that these researchers acknowledge the CESU when they prepare papers and talks from research supported through the GLNF CESU.
- The CESU should have more visibility at conferences. The Midwest Natural Resources Group may be a group the CESU could partner with on future conferences. RaeLynn Jones-Loss will contact this group and begin conversations with them.
- For conference funding: build a team, have attainable goals, a pilot project with high impact and visibility to catch people's eye and enable lobbying for additional funds for further research. Jim Wiener has volunteered to head a subcommittee to look into this.