OFFICE OF
INSPECTOR GENERAL
U.S.DEPARTMENT OF THE INTERIOR

CLIMATE EFFECTS PROGRAM COORDINATION

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U.S. DEPARTMENT OF THE INTERIOR

Memorandum

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Subject: Final Evaluation Report – Climate Effects Program Coordination
Report No. 2015-ER-034

This memorandum transmits the results of our evaluation of coordination between the U.S. Department of the Interior's (DOI) climate science centers (CSCs) and landscape conservation cooperatives (LCCs). We examined whether the CSCs and LCCs coordinated their programs and used available tools to prevent duplication of science effort. We found issues with organizational policy and use of database systems at both the CSCs and LCCs.

We provide three recommendations to help the CSCs and LCCs promote coordination and share research data both inside and outside of DOI. Based on responses to our draft report from the U.S. Fish and Wildlife Service and the U.S. Geological Survey, we consider the recommendations resolved but not implemented. We will refer these recommendations to the Assistant Secretary for Policy, Management and Budget to track implementation.

If you have any questions regarding this report, please contact me at 202-208-5745.

The legislation creating the Office of Inspector General requires that we report to Congress semiannually on all audit, inspection, and evaluation reports issued; actions taken to implement our recommendations; and recommendations that have not been implemented.

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Results in Brief

The U.S. Department of the Interior (DOI) operates 8 climate science centers (CSCs) and 22 landscape conservation cooperatives (LCCs) as the cornerstone of its climate change response strategy. CSCs are chiefly managed and funded through the U.S. Geological Survey (USGS), and LCCs through the U.S. Fish and Wildlife Service (FWS), with several other bureaus in support.

We evaluated whether the CSCs and LCCs coordinated their programs and used available tools to prevent duplication of science effort. We reviewed coordination not only within DOI but throughout the greater scientific community via Climate.Data.gov.

We reviewed 2 of the 8 CSCs, as well as the managing entity, the National Climate Change and Wildlife Science Center. In addition, we looked at 4 of the 22 LCCs and interviewed the LCC Network Coordinator. We researched policy, analyzed databases, and interviewed staff. Our evaluation did not include a review of scientific research, but rather focused on a review of the processes that CSCs and LCCs use to coordinate research.

We found that CSCs and LCCs had no formal process to coordinate the prevention of duplication in research grants, which could limit accessibility of information by Federal, State, local, and private-sector decisionmakers and place DOI at increased risk of funding duplicative research. We found inadequate internal controls and poor project tracking. Overall, we found—

- inadequate policies for coordination of research;
- inadequate data sharing within DOI; and
- inadequate data sharing outside DOI.

We provide three recommendations that we believe will help DOI more effectively coordinate the research grant programs at the CSCs and LCCs and further share information with Federal, State, local, and private-sector colleagues.

Introduction

Objective

Our objective for this evaluation was to determine whether the climate science centers (CSCs) and landscape conservation cooperatives (LCCs) have internal policies and use available technology to prevent duplication of science effort.

See Appendix 1 for our scope and methodology. Appendix 2 contains a list of the sites and offices we visited or contacted during our evaluation.

Background

DOI Response to Climate Change Impacts

As the largest land manager in the United States, the U.S. Department of the Interior (DOI) has an obligation to work with its partners to address climate change and other environmental impacts on America's natural and cultural resources. Secretarial Order No. 3289 (signed on September 14, 2009, and amended on February 22, 2010), titled "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources," requires the coordinated application of scientific tools to increase understanding of climate change and determine an effective response to its impact.

In support of the secretarial order, DOI established 8 CSCs and 22 LCCs, focused at regional and landscape scales, respectively, which collaborate to address different aspects of climate change. The basic structure of each organization is as follows:

- The 8 U.S. Geological Survey (USGS)-led CSCs are university-based partnerships that provide scientific data and analyses to assist natural and cultural resource managers. The National Climate Change and Wildlife Science Center (NCCWSC) manages the CSCs. The NCCWSC and the CSCs work with partners inside and outside of government to build the tools needed to help fish and wildlife, and their habitats and ecosystems, adapt to the impacts of climate change. The NCCWSC and the CSCs prioritize the delivery of science, research data products, and decision-support tools that are usable and focused on key priorities identified by natural and cultural resource managers.

- The 22 LCCs, led mainly by the U.S. Fish and Wildlife Service (FWS) with assistance from several additional DOI bureaus,[1] support research specifically focused on the landscape level and interconnected ecological systems that cross Federal, State, local, private, and tribal boundaries. The LCC Network, a collective of the 22 LCCs and their active partners, seeks

[1] Bureaus that support LCCs include the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Ocean Energy Management, Bureau of Reclamation, National Park Service, Office of Insular Affairs, Office of Surface Mining Reclamation and Enforcement, and U.S. Geological Survey.

to amplify the conservation outcomes across its regions. Its purpose is to harness the capacities and abilities of the LCCs to support common conservation outcomes and to serve as a strategic forum for collaboration, coordination, and integration. The LCC Network Coordinator at FWS facilitates a community of practice for the 22 LCC coordinators and partners, brings partners together to develop a network strategic plan, helps LCCs achieve their goals, and coordinates with partners.

Both CSCs and LCCs fund scientific research through financial assistance awards, specifically grants and cooperative agreements. Many of the research products provided by the CSCs, including physical and biological research, ecological forecasting, and multiscale modeling, are in response to the landscape-level priority needs identified by the LCCs, as well as the cross-sector needs of other agencies and communities in the regions. Recent annual funding totals are provided in Figure 1.

	Annual Funding			
Organization	**FY 2013**	**FY 2014**	**FY 2015**	**Total**
Climate science centers	$23,085,921	$23,107,799	$25,993,102	$72,186,822
Landscape conservation cooperatives	$27,532,000	$25,183,000	$24,505,000	$77,220,000
Total	**$50,617,921**	**$48,290,799**	**$50,498,102**	**$149,406,822**

Figure 1. Annual funding totals for the CSCs and LCCs, fiscal years 2013 – 2015.

Evaluation Focus

In previous reviews, the Office of Inspector General (OIG) audited 4 of the 8 CSCs and 6 of the 22 LCCs. Across both audits, we identified internal control issues related to the selection and awarding of financial assistance agreements that could place public funds at risk and raise questions about the appropriateness and transparency of expenditures.

This evaluation examines how the CSCs and LCCs coordinate their research within DOI. We also tested CSC and LCC data sharing with partners outside of DOI, specifically on the Data.gov website. We evaluated 2 of the 8 CSCs, the Southwest CSC and the Southeast CSC, as well as the managing entity, the NCCWSC. In addition, we evaluated 4 of the 22 LCCs, namely the Appalachian LCC, South Atlantic LCC, Desert LCC, and Western Alaska LCC, along with interviewing the LCC Network Coordinator.

Findings

We found that the CSCs and LCCs had inadequate policies for coordination of research and inadequate data sharing within and outside of DOI. Both organizations failed to use available technology to share information and prevent duplication of scientific effort. As a result, the level of coordination varies across the CSC – LCC network, and the organizations face the risk of funding duplicative research.

Inadequate Policies for Coordination of Research

Overlap in grant awards and the associated risk of unnecessary duplication occur throughout the Federal Government, but internal controls and consistent coordination can mitigate them. The CSCs and LCCs have not implemented sufficient controls or policies for coordination of research. Controls are specifically needed in the grant award process and to formalize coordination between CSCs and LCCs and with other Federal agencies that conduct climate science research.

Award Process Requires Internal Controls

We found that the CSCs and LCCs did not have adequate internal controls to prevent duplication of research in the grant award process. Developing agency controls to avoid grant duplication is one of the promising practices that the Domestic Working Group Grant Accountability Project (a collection of Federal, State, and local audit organizations) suggests in its 2005 "Guide to Opportunities for Improving Grant Accountability." Further, several other organizations that award research grants, including the National Science Foundation, U.S. Department of Justice, National Institutes of Health, and National Aeronautics and Space Administration (NASA), have implemented controls to diminish the risk of awarding funds for duplicative work. Some of these controls include (1) peer reviewing applications, (2) requiring notification from applicants of the submission of an identical proposal to different agencies, and (3) including certification in the grant file that the proposal application had been examined for potential duplication of research. In addition to implementing these controls, the CSCs and LCCs could benefit from using text comparison software to check for similarities in the proposals they receive. Text similarity software calculates similarity scores by looking at shared words in passages and has been used to look for duplication in grants and plagiarism in research papers.

None of the six organizations (CSCs or LCCs) in our sample had adequate controls in the grant award process. Specifically—

- none of the organizations we evaluated asked applicants to identify duplicate submissions;
- none certified that grant applications had been reviewed for potential duplication;

- none used software to analyze text similarities among current and past grant applications; and
- peer reviews were informal and intermittent.

The CSCs and LCCs have not implemented controls in these areas because they believe that the prevention of duplication arises organically out of the collaborative process used to develop requests for proposals (RFPs). CSC and LCC personnel told us that they are aware of the current research and state of science within the community, and that their science initiatives are so specific that no danger exists of duplicating work. We found, however, that their process focuses on the development of strategic research areas rather than the grant award phase, which is when any potential for unnecessary duplication can best be avoided. In a 2015 review of the LCCs, the National Academy of Sciences (NAS) found at least two examples of potential duplication of effort in LCC research in the two geographic regions examined. In one case, NAS concluded that two projects, one LCC-funded and one CSC-funded, "appear to be nearly identical, giving the impression that the same work was funded twice."

Because of inadequate controls, the CSCs and LCCs are not well positioned to identify areas of potential duplication across their grant programs. Unless the organizations improve internal controls and consider information on current and past research as part of the award process, they cannot know whether they are awarding grant dollars in the most efficient way possible. Further, duplicative grants may keep other unique research proposals from being funded.

Program Coordination Policy Needs To Be Developed

Many Federal organizations are involved in climate science research, including the U.S. Department of Agriculture, the National Oceanic and Atmospheric Administration, NASA, and the U.S. Department of Energy. None of the six organizations (four LCCs and two CSCs) we evaluated had developed official written policies to ensure coordination between similar programs to prevent duplication. Further, staff at the CSCs and LCCs stated that coordination among the CSCs, LCCs, and other agencies that conduct or fund climate science research is often informal and ad hoc.

Coordination within and among granting agencies is needed to limit unnecessary duplication. To be effective, policies for coordination should be well documented. According to the U.S. Government Accountability Office's (GAO) "Green Book" ("Standards for Internal Control in the Federal Government"), § OV4.08: "Documentation is required for the effective design, implementation, and operating effectiveness of an entity's internal control system." Further, documentation provides a means to capture organizational knowledge, mitigate the risk of having that knowledge limited to a few employees, and communicate that knowledge as needed to external parties such as external auditors.

The CSCs and LCCs had not created written policy for coordination because they believed that their current methods are effective and adequate for oversight of their grant programs. Staff told us that the organizations, established in 2009, continue to evolve and mature over time. Further, the organizations often relied on cross-committee membership to address coordination; this practice, however, is informal and participation varies across the CSC – LCC network. For example, while LCC coordinators are often on the steering committee for CSCs, CSC directors are not usually on the LCC committees, since some CSC regions encompass as many as seven LCCs.

As a result, the frequency and uniformity of coordination varies across the CSC – LCC network. Successful communication and coordination depend on the behavior of the CSC/LCC coordinators rather than on established policy, which can provide inconsistent and unreliable results. Further, without written policy, the CSCs and LCCs are susceptible to attrition if any of the coordinators leave the organization. Policies and procedures must be written down and followed to create a legacy of operations.

Recommendation

We recommend that:

1. The CSCs and LCCs implement controls and develop written policies that formalize coordination between programs and reduce the risk of duplication of research through grant awards.

Inadequate Data Sharing Within DOI

The LCCs are not fully using available technology for project tracking and data sharing. CSCs use ScienceBase, a USGS-developed, real-time, collaborative scientific data management platform, for project tracking; LCCs use a variety of data programs for project tracking, but inconsistently and partially.

Since 2011, GAO has been required by law to annually identify Federal programs, offices, and initiatives, either within departments or Governmentwide, that have duplicative goals or activities. In a March 2011 report,[2] GAO identified the use of a centralized database as a best practice for agencies to mitigate the potential for overlap, duplication, or fragmentation of data.

Multiple Data Programs Used by the LCCs

In contrast to the CSCs, which have used one centralized database (namely ScienceBase) for project tracking since inception, we found that the LCCs did not have one designated, all-inclusive database for tracking their projects. We

[2] GAO Report No. GAO-11-318SP, "Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue," March 2011.

identified at least five different data programs used in some capacity for project tracking by the four LCCs sampled, and none of them were used consistently. The data programs we identified were—

- ScienceBase;
- Climate Registry for the Assessment of Vulnerability (CRAVe);
- GeoNode;
- Project Tracking System (PTS); and
- National LCC Project Catalog, or LCCprojects.org.

Even though the LCCs used multiple data programs for project tracking, we noted that the National LCC Project Catalog was the most widely used data program across the LCCs we sampled. Therefore, we focused our review on ScienceBase and the National LCC Project Catalog, as the primary programs used for project tracking by the CSCs and LCCs, respectively.

With myriad data programs in use by the LCCs, the public—and in particular the scientific community—cannot easily access or review LCC data. Unknown or unavailable project data may contribute to duplicative funding.

Inconsistent Project Tracking by the LCCs

Although LCC staff told us that they used both the National LCC Project Catalog and ScienceBase for data management and project tracking, we found inaccuracies and omissions in their content in each data system.

The LCC national office at FWS collects and maintains project metadata[3] for the LCC Project Catalog, which was used the most by the LCCs we sampled; it was not used at all by the CSCs. We found that the catalog contained projects for all four LCCs in our sample. The catalog, however, is a static listing of project information, updated annually, that does not require participation from the LCCs.

We found that the catalog was inaccurate and incomplete. We requested project lists for fiscal years 2013 through 2015 from the sampled LCCs and compared the data received to the data on the LCC Project Catalog. An example discrepancy we found was that the catalog listed 31 projects for the Desert LCC for those fiscal years, compared with 33 projects listed in the data we obtained from the LCC for the same timeframe.

In addition to discrepancies in total project count, we were unable to match some of the projects in the project lists submitted to us with those on the catalog. We found 11 projects for the Desert LCC that could not be located on the catalog site (meaning the information was not available to the public) and 9 projects on the catalog that were not listed in the data provided to us. In addition, we found that

[3] Metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. Metadata is often called "data that provides information about other data."

the South Atlantic LCC had 9 projects and the Appalachian LCC had 1 project included in the lists we received that were not included on the catalog site.

We also found that the LCCs had not entered complete data into ScienceBase. Three of the four sampled LCCs had some of their projects in ScienceBase, but none were using ScienceBase for all of their projects. For example, the Desert LCC had 31 projects listed in ScienceBase for fiscal years 2013 through 2015, out of 42 total projects (31 projects in the LCC Project Catalog and 11 projects in neither database). The South Atlantic LCC and Western Alaska LCC had a small footprint in ScienceBase: The South Atlantic LCC listed 1 of 16 total projects (7 projects in the LCC Project Catalog and 9 projects in neither database), and Western Alaska listed 1 of 16 projects. Further, the Appalachian LCC had no presence in ScienceBase at all. Figure 2 shows the variations in project counts for each LCC that we found reported in databases and in data submitted to us.

LCC	Projects in LCC Project Catalog	Projects in ScienceBase	Projects in Neither Database	Projects Identified by the LCCs
Appalachian LCC*	6	0	1	5
Desert LCC†	31	31	11	33
South Atlantic LCC‡	7	1	9	16
Western Alaska LCC	16	1	0	16§

* Two of the Appalachian LCC projects in the National LCC Project Catalog could not be located in the data submitted to us. One project in the data submitted could not be located in the catalog.
† Nine of the Desert LCC projects in the National LCC Project Catalog could not be located in the data submitted to us. Eleven projects in the data submitted could not be located in the catalog.
‡ Nine of the South Atlantic LCC projects submitted could not be located in the National LCC Project Catalog.
§ Taken from the Western Alaska LCC website.

Figure 2. Number of projects reported in databases and in data submitted to us, by LCC.

During interviews, LCC representatives said that project tracking is a control they use to prevent unnecessary duplication of research. Specifically, they cited the use of ScienceBase as a common platform across the CSCs and LCCs to help avoid potential duplication of research. What we found, however, was inaccurate data and limited use of ScienceBase by the LCCs, as described above.

LCC guidance documents clearly spell out the importance of tracking data. The 2011 "CSC/LCC Implementation Guide" (Implementation Guide) specifically

states that: “LCCs and CSCs have a mutual goal of developing integrated data management networks to facilitate easy sharing of information; these systems will maintain consistency with DOI-wide information standards (e.g., shared data standards, databases, and GIS protocols) to enable coordination and information sharing.” The 2015 “LCC Network Conservation Science Plan” (Science Plan) reiterates the Implementation Guide’s mutual goal for CSCs and LCCs to use shared databases and goes even further by calling for the LCCs to “focus on ScienceBase in accordance with Federal Open Data policies.” The Science Plan broadly describes science needs and approaches for the LCC Network and also provides the basis for developing annual work plans for the LCC Network Science Coordinators Team. The Science Plan establishes priorities for action for 5 years and is meant to be revisited periodically to ensure that the content is relevant and consistent with emerging conservation science needs and the practice of landscape-scale conservation.

Contrary to this guidance, we found that each of the LCCs in our sample used its own system for tracking projects. The LCCs are self-directed partnerships designed to make their own choices on policy and are not obligated to adhere to the Science Plan. The LCC Network Coordinators Team has the authority to set LCC-wide policy, but has not required that the LCCs use a common database. The LCC Network Coordinator maintained that the coordinator’s role is to facilitate and help enhance the LCC Network by coordinating monthly meetings, establishing funding allocations, and coordinating with other partners—but not to supervise any of the individual LCC coordinators. The LCC Network Coordinator acknowledged in interviews that requiring the LCCs to use one database would not be well received by the LCCs because of their self-directed nature.

The numerous systems used for project tracking and the inability to comply with guidance to post and share information in one database result in limited accessibility and usability of information and make it difficult to determine the LCCs’ research universe. If data are not effectively communicated and remain largely inaccessible, the potential exists for duplication both within the network and outside of it.

In contrast to the LCCs, we found that the CSCs were successfully using a single database for project tracking. Both of the CSCs in our sample also employed data stewards, who are staff dedicated to logging research into ScienceBase and providing assistance with the system. CSC projects are entered into RFP Manager, a tool to manage the collection and review of proposals. Project metadata are pushed from RFP Manager to ScienceBase via an automated process, which reduces human error and increases efficiency. The data stewards coordinate with NCCWSC and CSC staff to ensure and manage these updates to ScienceBase. On the other hand, only one of the LCCs in our sample used RFP Manager. Use of RFP Manager to automate the transfer of data into ScienceBase could be an effective internal control for the LCCs to ensure consistent and complete sharing of project data.

Based on our review, we concluded that ScienceBase represents the best option for a shared repository of scientific data. Failure of the LCCs to input research into one data repository, such as ScienceBase, increases the risk of duplicative work. Use of a centralized database would strengthen internal controls and provide the organizations and researchers with a comprehensive data source to help thwart duplication, overlap, or fragmentation of grant funding.

Recommendation

We recommend that:

2. FWS and partners require that the LCCs use ScienceBase, or a similar centralized database, for cataloging all funded projects and integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to the database.

Inadequate Data Sharing Outside of DOI

The 2013 Federal Open Data Policy directs Federal agencies to make newly generated Government data available in open, machine-readable formats, while continuing to ensure privacy and security. A Governmentwide data repository, Data.gov, was created to serve this purpose, and within that repository Climate.Data.gov is home to climate data and resources related to coastal flooding, food resilience, water, ecosystem vulnerability, human health, energy infrastructure, and transportation.

Executive Order Nos. 13653 and 13642 require that DOI have a presence on Climate.Data.gov. Executive Order No. 13653, issued November 1, 2013, specifically requires DOI to develop and provide authoritative, easily accessible, usable, and timely data, information, and decision-support tools on climate preparedness and resilience. Both the CSCs and LCCs fall under the umbrella of this requirement—yet almost 3 years later have not fulfilled it. Further, a recent GAO report on the extent to which Federal efforts meet the climate information needs of stakeholders found that "decision makers are vastly underserved by the current ad hoc collection of Federal climate information services."[4]

The ScienceBase database has the capability to push data to Climate.Data.gov; however, we found that this function was not being used and that the CSCs and LCCs did not share their climate science data with Climate.Data.gov. Further, CSC and LCC personnel indicated that they do not consistently post project information to the site.

[4] GAO Report No. GAO-16-37, "Climate Information: A National System Could Help Federal, State, Local, and Private Sector Decision Makers Use Climate Information," November 2015.

CSCs Did Not Share Data With Climate.Data.gov

USGS staff told us that there was an agencywide push to Climate.Data.gov about a year ago, but none since, leaving a wide gap in information on the site. Staff described complications in partnering with universities, new data systems, and the potential for human error in manual updates as factors in their failure to add to Climate.Data.gov. They indicated, however, that efforts are underway to streamline uploads of ScienceBase metadata into Climate.Data.gov, including—

- developing steps toward integrating CSC data with the USGS Science Data Catalog (an open-source catalog that allows access to USGS data and interfaces with Data.gov); and
- developing CSC Data.gov posting policy.

Despite these efforts, and despite the capability within ScienceBase, the CSCs do not currently interact with Climate.Data.gov. Our searches of the site did not find any datasets specific to any CSCs. CSC personnel did not start to formally push data to Climate.Data.gov because they wanted to first develop an automated process to reduce human error. As a result, updates to Climate.Data.gov have been sporadic and inconsistent. In addition, we could not locate any of the research performed by the CSCs and LCCs in our sample on the Climate.Data.gov website.

LCCs Did Not Share Data With Climate.Data.gov

The LCCs in our sample did not post to Climate.Data.gov. We were told by staff that LCCs plan to work with USGS to add metadata tags that properly attribute the host LCC and funding agencies to LCC project data. The timeframe for this process, however, was undefined, and despite having the power to do so, the LCC Network Coordinators Team has chosen not to require use of ScienceBase by the LCCs.

Any action taken must consider the self-directed nature of the LCCs as well as their history of neglecting to post on ScienceBase. If individual LCCs do not input complete project data into ScienceBase (as observed earlier in this report), they will have no pathway to share information on Climate.Data.gov. Our searches on Climate.Data.gov did find some reference to LCC programs on the site, and yielded several datasets from the Arctic LCC; however, none of the four LCCs in our sample had any obvious postings of datasets on the site.

CSC and LCC Data Are Absent From Governmentwide Initiatives

Failure to share all available data as required by Executive Order No. 13653 exposes the CSCs and LCCs to potential duplication of effort with organizations outside of their networks that are unfamiliar with their research. Gaps in CSC and LCC data on Climate.Data.gov have additional repercussions in the greater scientific community. For example, Climate.Data.gov feeds information to the U.S. Global Change Research Program (USGCRP) website, an initiative mandated by Congress in the Global Change Research Act of 1990 that

coordinates and integrates global change research across Federal agencies. The USGCRP website lists Climate.Data.gov as a primary source for relevant data on climate change.

The failure to post to Climate.Data.gov limits CSC and LCC participation in the USGCRP, potentially reducing both their visibility and their general contributions to the body of knowledge in the greater scientific community. Insufficient data sharing reduces the Government's ability to stretch limited climate science research dollars, increases the potential for duplicative research, and limits promotion of CSC and LCC work as well as informing and engaging stakeholders.

Recommendation

We recommend that:

3. The CSCs and LCCs share appropriate data between ScienceBase, or a similar database, and Climate.Data.gov as required by Executive Order No. 13653.

Conclusion and Recommendations

Conclusion

DOI received less than 3 percent of nearly $2.7 billion in the Federal budget for fiscal year 2014 for programs that integrate Federal research and solutions for climate and global change. With such a small portion of the research dollars available for grants, DOI bureaus must be good stewards of these funds.

In this evaluation, we reviewed policy and database use at two CSCs and four LCCs. We noted that the CSCs and LCCs did not take all steps available to them to prevent duplication of science effort in their coordination of research programs. Also, at the LCCs we found poor project tracking, including limited use of the ScienceBase database. Further, the CSCs and LCCs neglected their responsibilities to share data with Climate.Data.gov as required by executive order.

Failure to develop policy to prevent duplication within DOI's climate science programs and failure to fully share information means that, given the size of the endeavor, millions of Federal dollars might be wasted funding duplicative research at the CSCs and LCCs. These failures are also inefficient and reduce CSC and LCC contributions to the greater scientific community.

We offer three recommendations to help the CSCs and LCCs correct these issues to help promote visibility and reduce the potential for duplication of effort.

Recommendations Summary

We issued a draft version of this report for FWS and USGS to review and respond to our findings and recommendations. Their responses, along with our analysis, are summarized below. For the full text of the responses, see Appendix 3. Appendix 4 contains a table summarizing the current status of our recommendations.

We recommend that:

1. The CSCs and LCCs implement controls and develop written policies that formalize coordination between programs and reduce the risk of duplication of research through grant awards.

   FWS response: FWS concurred with our recommendation. FWS indicated that on all future RFPs initiated by the LCC Network, it will add a question asking applicants to identify whether a proposal has been submitted elsewhere. FWS also intends to help develop by December 31, 2017, a shared written policy across the CSC – LCC network that specifies that projects selected for funding by either organization must be reviewed

and certified for possible duplication of funding prior to execution of the agreement.

USGS response: USGS concurred with the need for more formal policy regarding coordination of research awards to avoid duplication. USGS does not believe, however, that all the options we identified would help avoid duplication of projects. With limited permanent Federal staff at each of the 8 CSCs (most have 2 to 4 FTEs), the CSCs' ability to participate in all 22 LCCs' proposal reviews would be difficult to achieve. Further, USGS believes that text similarity software would likely lead to more false positive identifications of possible duplications than accurate identifications of duplicative proposals. Finally, all CSC proposals are peer reviewed within RFP Manager and managed using USGS' RFP management system.

Regarding future RFPs in the CSC network, USGS agreed to add a question by summer 2017 asking applicants to identify whether a proposal has been submitted elsewhere. USGS will also help develop by December 2017 a shared written policy across the CSC – LCC network that specifies that projects selected for funding by either organization must be reviewed and certified for possible duplication of funding prior to execution of the agreement.

OIG analysis: Based on FWS' and USGS' responses, we consider this recommendation resolved but not implemented.

2. FWS and partners require that the LCCs use ScienceBase, or a similar centralized database, for cataloging all funded projects and integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to the database.

   FWS response: FWS concurs with our recommendation. The LCC Network has developed its own metadata system and tools that are about to be launched network-wide for publishing LCC project records to ScienceBase and producing robust metadata suitable for export to Data.gov.

   FWS will establish a written policy through the LCC Network Coordinators Team that all LCCs must use ScienceBase for cataloging all funded projects and integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to ScienceBase. FWS will also distribute a metadata editor as a tool for uploading consistent and complete information about funded LCC projects into ScienceBase. FWS' target date for completion is December 31, 2017.

OIG analysis: Based on FWS' response, we consider this recommendation resolved but not implemented.

3. The CSCs and LCCs share appropriate data between ScienceBase, or a similar database, and Climate.Data.gov as required by Executive Order No. 13653.

   FWS response: FWS concurs with our recommendation. The LCCs have already sent some data to Data.gov, and the LCC Network recently secured a Data.gov account for use by all LCCs.

   FWS will work with USGS ScienceBase staff to develop a mechanism to push appropriate LCC metadata to Data.gov from ScienceBase. Once the LCC metadata are in Data.gov, FWS will work with the Climate.Data.gov team to tag climate-related projects so they are included in Climate.Data.gov. FWS expects to complete these steps by June 30, 2018.

   USGS response: USGS concurs with our recommendation. The CSCs have already sent data to Data.gov. Their initial focus was on the large, mostly national-scale datasets they have, which are primarily output from downscaled climate models. USGS is now working on a harvest of appropriate CSC metadata to send to Data.gov from ScienceBase. Once the metadata are in Data.gov, USGS will work with the Climate.Data.gov team to tag climate-related projects so they are included in Climate.Data.gov. USGS expects to complete these steps by December 2017.

   OIG analysis: Based on FWS' and USGS' responses, we consider this recommendation resolved but not implemented.

Appendix 1: Scope and Methodology

Scope

The scope of our evaluation covered funded projects from fiscal years 2013 to 2015 from the judgmentally selected climate science center (CSC) and landscape conservation cooperative (LCC) sites. Our scope did not include review of the scientific research conducted by the CSCs and LCCs. We instead focused on providing recommendations to improve the coordination between the two organizations.

Methodology

To accomplish the evaluation's objective, we—

- gathered general, administrative, and background information to provide a working knowledge of the U.S. Department of the Interior's climate science program;
- communicated with U.S. Geological Survey, U.S. Fish and Wildlife Service, Bureau of Reclamation, and Bureau of Land Management program officials;
- reviewed prior internal and U.S. Government Accountability Office reports, as well as applicable laws, regulations, and policies;
- reviewed project lists provided by the CSCs and LCCs;
- reviewed interagency meeting minutes, which included representatives from CSCs and LCCs as well as other Federal agencies;
- identified and reviewed policies and procedures related to programmatic coordination;
- reviewed policies and procedures for project coordination as part of internal controls review as related to our objective;
- selected a judgmental sample of CSCs and LCCs for site visits; and
- conducted site visits to interview CSC directors, LCC coordinators and their staff, the LCC Network Coordinator, the chief of the National Climate Change and Wildlife Science Center, and other pertinent personnel.

We conducted this evaluation in accordance with the Quality Standards for Inspection and Evaluation as put forth by the Council of the Inspectors General on Integrity and Efficiency. We believe that the work performed provides a reasonable basis for our conclusions and recommendations.

Appendix 2: Sites and Offices Visited or Contacted

U.S. Geological Survey (USGS)

USGS Headquarters
12201 Sunrise Valley Drive
Reston, VA 20192

National Climate Change and Wildlife Science Center
12201 Sunrise Valley Drive
Reston, VA 20192

Climate Science Centers

Southeast Climate Science Center
NC State University
127 David Clark Labs
Campus Box 7617
Raleigh, NC 27695

Southwest Climate Science Center
University of Arizona
1064 East Lowell Street
Tucson, AZ 85719

U.S. Fish and Wildlife Service (FWS)

FWS Headquarters
5275 Leesburg Pike
Falls Church, VA 22041

Landscape Conservation Cooperatives

Appalachian Landscape Conservation Cooperative
National Conservation Training Center
698 Conservation Way
Shepherdstown, WV 25443

Desert Landscape Conservation Cooperative
The University of Arizona
1064 East Lowell Street
Tucson, AZ 85719

South Atlantic Landscape Conservation Cooperative
North Carolina State University
1751 Varsity Drive, 2nd Floor
Raleigh, NC 27606

Western Alaska Landscape Conservation Cooperative
1011 East Tudor Road, MS-281
Anchorage, AK 99503

Appendix 3: Responses to Draft Report

The responses to our draft report from the U.S. Fish and Wildlife Service and the U.S. Geological Survey follow, on pages 20 and 26, respectively.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

In Reply Refer To:
FWS/ABHC/PPM/064793

DEC 23 2016

Ms. Kimberly Elmore
Assistant Inspector General for Audits, Inspections, and Evaluations
U.S. Department of the Interior
Office of the Inspector General
1849 C Street, NW, MS 4428
Washington, DC 20240

Dear Ms. Elmore:

Thank you for providing the U.S. Fish and Wildlife Service the opportunity to respond and comment on the draft evaluation report: Climate Effects Program Coordination, Report Number 2015-ER-034.

During our meeting with the auditors, we discussed a number of recommended changes to the language in the report to ensure accuracy. You will find those recommended changes attached to this document in the Specific Comments section. You will also find our response to the findings and our plan to address those recommendations.

Sincerely,

James W. Kurth

Director
Deputy

Attachment

Attachment

Office of the Inspector General
Climate Effects Program Coordination (2015-ER-034).

Specific Comments

Cover page, title:
Please change report title to "Data management and science coordination between the Climate Science Centers and the Landscape Conservation Cooperatives."

- Reason: Existing title does not accurately reflect what LCCs are -- they address threats and challenges across the landscape. The existing title also doesn't accurately reflect what the study is.

P. 2 – 2nd bullet under "Background" section:
Please change sentence to "The 22 LCCs, led mainly by the U.S. Fish and Wildlife Service (FWS) with several additional bureaus in support, 1 support the development of science and information focused on the landscape level and interconnected ecological systems....."

- Reason: The LCCs do not perform research – one aspect of many LCCs is to provide funding for others to perform research.

P. 2 – footnote 1:
Comment: "support" is a relative term. The bureaus that actually co-host and provide support to the LCC organizations (staffing, infrastructure, and project funding) are Bureau of Land Management, Bureau of Reclamation, National Park Service, several state fish and wildlife agencies and USDA's US Forest Service. USGS and BIA have provided support for staff (USGS) and projects but are not "co-hosts" of LCCs.

P. 3 – 2nd bullet under "Background" section, Last sentence:
Please change sentence to "The LCC Network Coordinator at FWS facilitates the 22 LCC Coordinators and partners to form a network-wide community of practice, brings partners together to develop a network strategic plan, facilitates achievement of LCC goals, and coordinates with partners."

- Reason: The proposed revision better reflects the roles of the LCC Network Coordinator.

p. 3 – the funding table (figure 1):
Comment: This table and language makes it appear that this is the science budget whereas in actuality funding for science is less than half of the LCC budget. We can break out the science funding if you would like.

p. 5 -- 1st full paragraph, last sentence:
Suggested language: "In one case NAS concluded from websites that LCC and CSC funded projects appear to be nearly identical, giving the impression that the same work was funded twice, although in reality they were consecutive projects, one of which built off the other."

- Reason: The NAS actually stated it was LCC and CSC funded projects (p. 56 of NAS report). From the report, "The committee noticed in at least one case that the Pacific Islands LCC and CSC funded projects that appear to be nearly identical, giving the impression that the same work was funded twice and suggesting that coordination could still be improved." However, the NAS did not ask about these projects that were actually consecutive projects with one of the research projects building off the work of the first project and closely coordinated.

p. 5 – Program Coordination....section, 1st paragraph – last sentence –
Suggested language: "Further, staff at the CSCs and LCCs stated that coordination among the CSCs, LCCs, and other agencies *that conduct or fund research* is often informal."

- Reason: statement implies LCCs conduct climate science research – LCCs don't conduct research, some of them fund research related to climate to assist with adaptation efforts. Science supported by LCCs is targeted at specific priorities identified by the LCC steering committee. In addition, the LCCs and CSCs have implemented many procedures to ensure coordination, though we have not yet formalized these in written policies.

p. 7 – Multiple Data Programs Used by the LCCs 1st sentence
Suggested language: "In contrast to the CSCs, which have used one *real-time*, centralized database (namely ScienceBase) for project tracking since inception, we found that the LCCs did not have one designated, *real-time* database for tracking their projects."

- Reason: We created the LCC Project Catalog as an all-inclusive database for project tracking until we can shift all LCCs to ScienceBase.

p. 7 – 3rd bullet:
Comment: Data Basin is not a project tracking system. It provides a way to visualize, share, and develop geospatial data with partners who do not have access to expensive geospatial software, like ArcGIS. Suggest removing the reference to Data Basin as a project tracking system.

P. 8 1st full paragraph, 2nd sentence:
Suggested change: Please delete the parenthetical phrase.

- Reason: Projects for the Desert LCC are listed on their website, so this information is available to the public in this format (i.e. the LCC Catalog is not the only source of information for the public).

p. 10 1st full paragraph 1st sentence:

Suggested language: "Contrary to this guidance, we found that some of the LCCs in our sample used their own systems for tracking projects."

- Reason: For example, the Desert LCC and many others use Science Base, not their own systems.

p. 10 1st full paragraph 3rd sentence.
Suggested language: The *LCC Coordinators team* has the authority to set LCC-wide policy, but has not required that the LCCs use a common database.

- Reason: more accurate statement.

p. 10 1st full paragraph 4th sentence.
Suggested language: The LCC Network Coordinator maintained that the coordinator's role is to facilitate and help enhance the LCC Network by coordinating monthly meetings, establishing funding allocations, and coordinating with other partners—but not to supervise any of the individual LCC coordinators.

- Reason: More accurately describes the Network Coordinator's role.

p. 12 Section "LCCs did not share data with climate.data.gov" 1st paragraph, last sentence.
Suggested language: "The timeframe for this process, however, was undefined, and the LCC Coordinator's team and the LCC data management working group have encouraged, but not yet required, use of ScienceBase by the LCCs."

- Reason: LCCs are partnerships that span beyond federal agencies and for which partners contribute greatly. The partnerships have to agree to use ScienceBase.

p. 12 – "LCCs Did Not Share Data With Climate.Data.Gov" section, 2nd Paragraph, 2nd sentence
Suggested language: LCCs that do not input project data into ScienceBase may have to manually input or develop other applications that share information on Climate.Data.gov

- Reason: More accurate statement.

p. 16 LCCs
Suggested change: Appalachian LCC address is National Conservation Training Center, 698 Conservation Way, Shepherdstown WV 25443.

p. 17 LCCs
Comment: Address for Desert LCC is incorrect. In reference to FWS staff, the Desert LCC is co-located with the South West Climate Science Center. Address is 1064 E. Lowell St. Tucson AZ 85719

General:

- Bureau of Reclamation (BOR), which has the lead for the Desert LCC (coordinator works for BOR), has controls to prevent duplication that were not acknowledged in OIG's report. BOR always include several reviewers from non-Reclamation, agencies on application review committees for financial assistance selection processes. This includes representatives from FWS, from State agencies, the Forest Service and occasionally USGS. In addition, prioritization criteria include a criterion asking whether the proposed project would complement or duplicate ongoing work in the relevant area. BOR also requires that the applicant demonstrate they have done some investigation into this issue to demonstrate that there is no duplication.

Some concepts missing from the report:

- LCCs and CSCs have regular communication on conference calls and in-person meetings.
- Several LCCs are co-located with CSC staff, thereby further increasing communication and awareness of project funding and decreasing likelihood of duplicative research

Recommendation 1: *The CSCs and LCCs implement controls and develop written policies that formalize coordination between programs and reduce the risk of duplication of research through grant awards.*

Response: Concur.

1) On all future RFPs initiated by the LCC network, we will add a question asking applicants to identify whether this proposal has been submitted elsewhere.
2) We will develop a shared written policy between the CSC and LCC network that specifies that projects selected for funding by either network, be reviewed and certified for possible duplication of funding prior to execution of agreement.

Target Date: December 31, 2017
Responsible Official: Seth Mott, Acting Assistant Director, Science Applications

Recommendation 2: *FWS require that the LCCs use ScienceBase for tracking all funded projects and integrate the use of data stewards and RFP Manager to automate the data upload.*

Response: Partially Concur.

We agree that LCCs should use ScienceBase as a centralized database for cataloging all funded projects and should integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to ScienceBase. However, prescribing RFP Manager is limiting and would not be cost effective because RFP Manager is not necessarily the most efficient tool for managing the collection and review

of LCC proposals. In addition, the goal of ensuring the consistent and complete upload of information about funded LCC projects into ScienceBase can be met by other means. For example, the LCC Network has developed its own metadata system and tools that are about to be launched network-wide for publishing LCC project records to ScienceBase and producing robust metadata suitable for export to data.gov.

Proposed Alternative Recommendation 2 -- FWS and partners require that the LCCs use ScienceBase for cataloging all funded projects and integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to ScienceBase.

1) We will establish a written policy through the LCC Coordinators Team (LCT) that all LCCs use ScienceBase for cataloging all funded projects and integrate the use of data stewards and processes to ensure the consistent and complete upload of project metadata to ScienceBase

2) We will distribute a metadata editor as a tool for uploading consistent and complete information about funded LCC projects into ScienceBase

Target Date: December 31, 2017
Responsible Official: Seth Mott, Acting Assistant Director, Science Applications

Recommendation 3: *The CSCs and LCCs share appropriate data between ScienceBase and Climate.Data.gov as required by Executive Order No. 13653.*

Response: Concur.

The LCCs have already sent some data to data.gov (for example: http://catalog.data.gov/organization/alcc-fws-gov), and we recently secured a data.gov account for use by all LCCs in the network.

1) We will work with USGS ScienceBase staff to develop a mechanism to push appropriate LCC metadata to data.gov from ScienceBase. Once the LCC items are in data.gov, we will work with the climate.data.gov team to tag climate-related projects so they are included in climate.data.gov.

Target Date: June 30, 2018
Responsible Official: Seth Mott, Acting Assistant Director, Science Applications

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Office of the Director
Reston, Virginia 20192

DEC 28 2016

Memorandum

To: Mary L. Kendall
Deputy Inspector General

Through: Thomas M. Iseman
Principal Deputy Assistant Secretary for Water and Science

From: Suzette M. Kimball
Director

Subject: Office of the Inspector General (OIG) Draft Evaluation Report – Climate Effects Program Coordination (Report No. 2015-ER-034)

In the subject report, dated November 17, 2016, the Department of the Interior (DOI), OIG, made three recommendations to the DOI Climate Science Centers (CSCs) and Landscape Conservation Cooperatives (LCCs) to help them promote coordination and share research data both inside and outside of DOI. Of the three OIG recommendations, recommendations (1) and (3) applied to the U.S. Geological Survey (USGS). This memorandum provides the USGS response to those two recommendations.

Recommendation 1. The CSCs and LCCs implement controls and develop written policies that formalize coordination between programs and reduce the risk of duplication of research through grant awards.

USGS Comments:

Although USGS concurs with the need for more formal policy regarding coordination of research awards to avoid duplication, we do not believe all the options identified by the OIG would be overly useful in avoiding potential duplication of projects. With limited permanent Federal staff at each of the eight CSCs (most have 2-4 FTEs), the ability for the CSCs to participate in all 22 LCCs proposal reviews would be difficult to achieve. Further, we do believe that text similarity software will likely lead to more false positive identifications of possible duplications, then it will help in preventing possible funding of duplicative proposals. Finally, all of the CSC proposals are peer reviewed within Request for Proposals (RFP) Manager and managed using our RFP management system.

USGS Response:

The USGS concurs with the following suggestions:

1) On all future RFPs initiated by the CSC network, the USGS will add a question asking applicants to identify whether this proposal has been submitted elsewhere (Target Date: Summer 2017).

2) The USGS will develop a shared written policy between the CSC and LCC network that specifies that projects selected for funding by either network be reviewed and certified for possible duplication of funding prior to execution of agreement. (Target Date: December 2017).

Recommendation 2. FWS require that the LCCs use ScienceBase for tracking all funded projects and integrate the use of data stewards and RFP Manager to automate the data upload.

USGS Response: No response necessary from the USGS.

Recommendation 3: The CSCs and LCCs share appropriate data between ScienceBase and Climate.Data.gov as required by Executive Order No. 13653.

USGS Comments:

1. Page 1, and Page 3: Climate.data.gov and data.gov are used interchangeably. We suggest using data.gov only, for consistency.

2. Page 10, third paragraph: We recommend deleting the following sentences which do not accurately reflect the relationship of the system and the role of the data stewards:

> Further, the CSCs required that metadata be entered into ScienceBase before a project was closed out. The CSCs pushed metadata to ScienceBase via software called RFP Manager, which was overseen by the data stewards. RFP Manager automates the data upload, reducing the potential for human error in updates to ScienceBase.

And replace them with:

CSC projects are entered in RFP Manager, a tool to manage the collection and review of proposals. Project metadata for funded projects are pushed from RFP Manager to ScienceBase using the ScienceBase Rest API (application programming interface), creating project records in ScienceBase. This system integration reduced human errors and speeds up the process. The project records are managed by National Climate Change and Wildlife Science Center (NCCWSC) and CSC staff. Coordinating with NCCWSC and CSC staff, the data stewards work with the project leads on the delivery of data products and metadata associated with each data product.

USGS Response: The USGS concurs. The CSCs have already sent data to data.gov. For example: https://catalog.data.gov/dataset/eighth-degree-conus-daily-downscaled-climate-projections-by-katharine-hayhoe). Our initial focus was on the large, mostly national-scale datasets we have – which are primarily model output from downscaled climate models. The USGS is now working on a harvest of appropriate CSC metadata to send to data.gov from ScienceBase. Once the items are in data.gov, the USGS will work with the climate.data.gov team to tag them so that they are included in climate.data.gov. (Target Date: December 2017)

If you have any questions, please contact Doug Beard, Chief, National Climate Change and Wildlife Science Center, at (703) 648-4215 or dbeard@usgs.gov.

Appendix 4: Status of Recommendations

Recommendation	Status	Action Required
1, 2, and 3	Resolved but not Implemented	We will refer these recommendations to the Assistant Secretary for Policy, Management and Budget to track their implementation.

Report Fraud, Waste, and Mismanagement

Fraud, waste, and mismanagement in Government concern everyone: Office of Inspector General staff, departmental employees, and the general public. We actively solicit allegations of any inefficient and wasteful practices, fraud, and mismanagement related to departmental or Insular Area programs and operations. You can report allegations to us in several ways.

By Internet: www.doioig.gov

By Phone: 24-Hour Toll Free: 800-424-5081
Washington Metro Area: 202-208-5300

By Fax: 703-487-5402

By Mail: U.S. Department of the Interior
Office of Inspector General
Mail Stop 4428 MIB
1849 C Street, NW.
Washington, DC 20240