

**Cooperative
Ecosystem
Studies Units**



An Introduction

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Background

This is an extraordinary time for federal land management, environmental and research agencies. There is growing demand for scientific research and expertise. Rigorous science and responsive technical assistance are increasingly necessary for sound management and policy decisions. Ecosystem-based management and the demands of long-term stewardship are extending the inventory of scientific information required to manage federal resources. Complex environmental issues that transcend boundaries make it essential for agencies to work together, and the responsibilities of federal agencies to share resources and expertise are expanding. New laws, such as the Government Performance and Results Act (GPRA), have emphasized the need for data collection, research, and technical assistance.

At the same time, there has been significant organizational change throughout the federal government. Bureaus such as the National Park Service (NPS) and Bureau of Land Management (BLM) have recently undergone reorganization. The evolution of the National Biological Service into the Biological Resources Division (BRD) of the U.S. Geological Survey (USGS) has altered how science is delivered to Department of the Interior (DOI) resource managers. Other agencies such as the U.S. Department of Agriculture Forest Service (USDA FS) and the Environmental Protection Agency (EPA) are also undergoing changes in how their research and technical assistance is conducted and delivered. Interagency and interdepartmental cooperation is essential to these new organizational approaches.

In addition, the basic relationship between the federal government and the scientific community is shifting. The fiscal limits imposed by the federal budget are long-term, and support of science throughout the government

will continue to be constrained. There is increased demand for usable knowledge and research applied to the national interest. Federal agencies must husband their science resources in creative ways that limit cost and magnify value to managers, scientists, Congress, and the public. Universities, private research institutions, and the broader scientific community face similar pressures and must respond and adapt to this new environment for science.



Objectives

For the reasons above and more, federal land management, environmental and research agencies, along with the nation's universities, share several science-based goals in the 21st century: high-quality science, usable knowledge for resource managers, responsive technical assistance, continuing education, and cost-effective research programs. This booklet describes one approach to achieving these goals—a network of cooperative units involving federal agencies, universities, and others.

The objectives of this network are to:

- provide resource managers with high-quality scientific research, technical assistance, and education;
- deliver research and technical assistance that is timely, relevant to resource managers, and needed to develop and implement sound adaptive management approaches;
- ensure the independence and objectivity of research;
- create and maintain effective partnerships among federal agencies and universities to share resources and expertise;
- take full advantage of university resources while benefiting faculty and students;
- encourage professional development of federal scientists; and
- manage federal science resources efficiently.

The concept builds upon several existing and successful models of federal government and university collaboration. Hence, it is an *evolution* of such partnerships, a *complement* to existing programs, and an *innovation* in the delivery of scientific services needed by federal land management, environmental and research agencies.



Basic Strategy

A network of cooperative units is being established to provide research, technical assistance, and education to resource and environmental managers. These units are named *Cooperative Ecosystem Studies Units (CESUs)*, to signify their broad role as providers of research, technical assistance, and education to federal land management, environmental, and research agencies and their potential partners. *Cooperative* emphasizes that multiple federal agencies and universities are among the partners in this program. *Ecosystem studies* involve the biological, physical, social, and cultural sciences needed to address resource issues and interdisciplinary problem solving at multiple scales and in an ecosystem context. Resources encompass natural and cultural resources.

Each CESU is structured as a working collaboration among federal agencies and universities. CESUs are based at universities and focused on a biogeographic region of the country. Universities provide space, basic administrative support (secretarial, accounting, equipment), and access to university faculty, students, staff, and resources.

Federal agencies contribute research scientists and/or other professionals. In many cases, these federal personnel are located and working at CESUs under formal agreements between their respective bureaus and universities. Federal personnel are supervised and supported by their respective agencies, through existing administrative systems. Participating agencies provide scientific staff, administrative support funds (for assistance beyond the basic support provided by the universities), and project funds for specific research projects and technical assistance. Federal agency participation in a CESU does not alter previous arrangements or cooperative agreements. CESUs will create additional opportunities for interdisciplinary and multi-agency research, technical assistance, and education.

CESUs function as “virtual” organizations, linking several institutions to increase access to expertise and facilities. Individual CESUs are administered and managed at the field/regional level. The overall CESU Network is coordinated and provided support by the CESU Coordinating Council. The Council includes representatives of participating federal agencies operating under a Memorandum of Understanding (MOU) for the CESU Network. The Council will:

- prepare guidelines for participating in the CESU Network,
- assist individual CESUs in developing agreements and subsequent modifications,
- maintain networks for communication and data sharing among CESUs,
- pursue additional funding sources for the CESU Network,
- develop a comprehensive strategic plan for the growth and development of the CESU Network, and
- produce annual reports summarizing CESU Network activities.

The CESU Network will undergo an independent peer review in 2004.

Key elements of each CESU include:

- 1) multiple federal agencies,
- 2) a host university,
- 3) partner institutions,
- 4) a role and mission statement,
- 5) a managers committee, and
- 6) strategic and annual work plans.

These elements are described below.



Key Elements of CESUs

1. Multiple federal agencies

Federal agencies participate in CESUs within the scope of their respective missions. Federal agencies are substantially involved in CESU activities, working closely with host universities and/or partner institutions on research, technical assistance, and education. With multiple federal agencies working together with university faculty, the potential for cost sharing, improved efficiency, and cooperative activities is significantly increased. Collaborative projects among agencies are encouraged and are facilitated through the CESU agreements.

The kind and background of agency employees located at a host university vary, depending on the agency's responsibilities and requirements. Some individuals may be research scientists, others may be science administrators or resource/environmental management professionals. Hence, the term "scientists" is used in a broad sense to describe these individuals. All must meet university requirements for a courtesy faculty appointment at the university, contribute to the role of the university as a research and teaching institution, and have a scientific background.

These federal scientists may conduct research; act as facilitators in delivering research, technical assistance, and education to federal resource/environmental managers and partners; engage the faculty and skills of the host universities in collaborative activities; teach advanced courses; and serve on graduate student committees.

Field-based scientists (such as those located in a national park or forest) may be affiliated with the CESU through the host university or a partner institution. Flexibility, local option (defined as opportunities to adapt the CESU concept to local needs), and regional-level agency decision making are encouraged.

2. Host university

A key element of each CESU is the host university. The host university provides space and basic administrative support as part of its responsibilities within the CESU agreement. At least one federal research scientist and/or other professional is located at the host university. Federal agencies can add personnel where appropriate to their mission, needs, and available resources.

The resident CESU staff is augmented by host university faculty, graduate students, and post-doctoral fellows. The host university will offer educational opportunities for federal resource/environmental managers to improve or renew their skills through continuing education, short courses, workshops, degree programs, distance learning, and other activities.

3. Partner institutions

CESUs include partnership arrangements with universities, state agencies, tribes, and other organizations to increase CESU research, technical assistance, and education capabilities. Additional universities with special expertise or facilities participate in CESUs as partners to the host university described above. Partner universities significantly expand the capabilities and skills of a CESU. A partner university may provide unique facilities, expertise, or access to research materials.

Partner institutions are linked to the CESU through the CESU agreements that address overhead, cost-sharing, and other initial elements of cooperative ventures. This allows projects with partner institutions to be efficiently conducted. These partnership arrangements make the faculty, graduate students, and facilities of more universities available to participating federal agencies; reduce administrative costs; and minimize overhead charges. The constituency for federal agency science is increased by the number of partners involved in research activities. The “virtual” organization and research teams created through these linkages increase the availability and quality of research, technical assistance, and education programs delivered to federal managers.

4. Role and mission statement

Each CESU will prepare a role and mission statement that identifies research, technical assistance, education, and other services that it is especially qualified to provide. A regional approach to ecosystem science and adaptive management is encouraged, with particular emphasis on the landscape scale. The role and mission statement includes the biogeographic area of concentration (such as the Colorado Plateau or the Southern Appalachian Mountains), a focus on particular ecosystem types (such as high deserts or urban areas), an emphasis on particular management regimes (such as wilderness and/or multiple use), or a combination of these themes. Hence, the role and mission statement reflects the mission and needs of the

participating agencies and input from the host university and partner institutions. Breadth, flexibility, and local option are encouraged. In addition, CESU role and mission statements include mention of special expertise useful to the broader CESU Network.

The role and mission statement will be used to guide research and service activities of the CESU, avoid unnecessary duplication of effort, provide accountability, evaluate performance of the CESU, and coordinate the CESUs into a comprehensive network. Each CESU's role and mission statement will evolve as additional agencies become partners, the CESU develops expertise and experience, and as new issues and research opportunities emerge.

5. Managers committee

The attention of a CESU toward particular research projects or technical assistance/education activities is driven by its role and mission statement and the participating federal agencies' needs for scientific information, technical assistance, and education. CESUs include a mechanism for managers of the participating agencies to provide advice and guidance on science priorities and CESU activities while maintaining the independence and objectivity of research projects. Each CESU will organize a managers committee composed of field managers and additional representatives from participating federal agencies. The committee will provide advice and guidance to the CESU, review strategic and annual work plans, and assist in evaluating CESU performance.

6. Strategic and annual work plans

Science planning leads to improved research, more usable knowledge for resource/environmental managers, and reduced costs. Working together, CESU partners at an individual CESU will develop multi-year strategic plans so that participating agencies can effectively allocate resources to meet both immediate and long-term needs. Sharing of resources, collaborative projects, and flexibility to meet emerging needs will be encouraged.

In addition, each CESU will prepare a brief annual work plan for its research and service activities. The plan will describe the CESU's ongoing research, anticipated projects, and products. The plans will be used to ensure the timely delivery of useful research to managers, coordinate research activities, meet GPRA requirements, and evaluate CESU performance. The process

for developing work plans will be created by the CESU partners. Relevant program activities will be approved by the corresponding agency and its appropriate field units.

While these key elements are central to each CESU, there is significant flexibility as to how they are to be implemented for each unit. CESUs can build upon existing organizations and arrangements, create new agreements and relationships, adapt key elements to local and regional conditions and needs, and innovate in the delivery of science.



Benefits of the CESU Network

1. A broadened scope of scientific services for federal agencies

The CESU Network will deliver a broad scope of scientific research, technical assistance, and education to participating federal agencies. In a real sense, a CESU expands the staff of a national park superintendent, forest supervisor, public lands manager, field scientist, or environmental administrator to include the entire complement of faculty, students, and others involved in a CESU and in the national CESU Network.

Research will be conducted at several scales appropriate to the participating agencies. CESUs can engage the full range of disciplines used by natural and cultural resource managers, from archeology to zoology. The biological, physical, social, and cultural sciences will be better integrated to provide interdisciplinary problem-solving skills.

Interagency cooperation is increased. Collaboration across federal departments and agencies is facilitated. With federal and university scientists working together within a university environment, the generation, synthesis, and use of scientific information is enhanced.

2. Increased technical assistance to resource managers

Resource managers of participating agencies will have a local CESU to draw on for basic technical assistance, education and training, planning support, and other needed services. They will have expanded, efficient, timely, and cost-effective access to universities (either a CESU host or partner institution). In addition, the CESU Network provides managers with

specialized skills and assistance available from other CESUs across the country. Sharing of CESU expertise to meet managers' needs is encouraged through the CESU agreements, an active electronic network of communication, and the CESU Coordinating Council.

3. Additional scientific resources and opportunities for universities

Universities that become hosts or partners in a CESU benefit in several specific ways. The faculty are augmented by federal scientists that can facilitate, direct, or cooperate on research projects; serve on graduate student committees and as faculty advisors; contribute to scholarly activities; and teach in their areas of expertise. University faculty benefit by close professional collaboration with federal employees and increased opportunities for interdisciplinary, multi-agency research projects related to federal resource management issues.

Graduate students benefit from increased research, fieldwork, and employment opportunities; exposure to contemporary federal resource management issues; and additional faculty, courses, and seminars.

University research programs benefit from consistent and comprehensive agreements that provide for overhead costs, maximize opportunities for research, create a broadened scope of contacts with federal agencies, and offer a voice in establishing research agendas. Universities benefit from the overall CESU Network as it makes their unique skills and expertise easily accessible by resource managers throughout the country.

4. Increased diversity of research scientists and institutions

The science capability of federal agencies must be improved, and the cadre of federal scientists needs to diversify. CESUs include Historically Black Colleges and Universities (HBCU), Predominantly Hispanic Serving Institutions (PHSI), and Native American Tribal Colleges (NATC) as partners. Students at these institutions will be exposed to federal resource management issues and have increased access to research, fieldwork, and employment opportunities.

Throughout the CESU Network, rotating assignments for federal scientists, post-doctoral positions at host or partner universities, and sabbatical assignments for university faculty will be encouraged. The diversity of scientists and institutions involved in the CESU Network will strengthen

the federal government's ability to conduct creative, innovative and significant science critical to federal resource management.



Conclusion

Currently, management of the nation's lands and waters requires skillful public service supported by sound science. The challenges of the 21st century, and the environmental choices they will shape for the American people, demand even more skill and science. Cooperative Ecosystem Studies Units are an important innovation in how federal agencies can work together and with the nation's universities. They promise to play a useful role in the delivery of scientific information to federal resource managers. CESUs, and the network of science partnerships that they will create, are critically important. Both will serve the federal government and its partners in responding to the new century's demands.



The CESU Web Site

The CESU Coordinating Council provides a web site for those interested in learning about CESUs, and as a resource for members of the CESU Network. The web site provides access to a wide range of information about CESUs, including this general introduction; maps of current and planned CESUs; agreements, strategic plans, reports, and activities for current CESUs; schedules for meetings and other activities of the Council; a directory; an administrative guide; and materials for current competitions. Please visit www.cesu.org/cesu.

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