LCC Information Bulletin #1

Form and Function

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> "Success at individual project sites will not be sufficient in an era of climate change. Therefore, the overarching aim of the Service will be success at the landscape scale, achieved by leveraging our conservation capacity with that of states and the conservation community at large and attaining biological outcomes larger than those we could attain ourselves."
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> *Conservation in Transition* (USFWS, 2008)

Landscape Conservation Cooperatives (LCCs) are applied conservation science partnerships focused on a defined geographic area that inform on-the-ground strategic conservation efforts at landscape scales. LCC partners include DOI agencies, other federal agencies, states, tribes, non-governmental organizations, universities and others.

LCCs will enable resource management agencies and organizations to collaborate in an integrated fashion within and across landscapes. LCCs will provide scientific and technical support to inform landscape-scale conservation using adaptive management principles. LCCs will engage in biological planning, conservation design, inventory and monitoring program design, and other types of conservation-based scientific research, planning and coordination. LCCs will play an important role in helping partners establish common goals and priorities, so they can be more efficient and effective in targeting the right science in the right places. Products developed by LCCs will inform the actions of partners and other interested parties in their delivery of on-the-ground conservation.

LCCs will comprise a seamless national network focused on helping conservation agencies and organizations maintain landscapes capable of sustaining abundant, diverse and healthy populations of fish, wildlife and plants. Without duplicating existing partnerships, the LCCs in the network will accomplish conservation objectives that no single LCC, nor any agency or organization, could accomplish alone. All LCCs will perform basic core functions and provide the same general kinds of products and services that will help partners meet shared landscape-scale objectives. Although the roles of LCC members will vary from one LCC to another, depending on their responsibilities, interests, and organizational capabilities, each LCC will be an integral component of the national network, with consistent structure, governance and operations.

LCCs will reflect the principles and practices of adaptive management in all of their activities, especially in developing conservation strategies, evaluating their effectiveness, and revising them. This iterative process of information sharing will help scientists and resource managers deal with uncertainties on the landscape and provide tools to compare and contrast the implications of management alternatives. LCCs will use decision-support systems and products to determine the most effective conservation actions to achieve shared conservation objectives. To facilitate these activities, LCCs will use shared data platforms that will serve multiple purposes, including the collaborative development of population and habitat models under alternative climate scenarios to inform spatially explicit decision support for partners.

Guiding Principles

Landscape Conservation Cooperatives (LCCs) will be fundamental units of planning and science capacity that will facilitate strategic on-the-ground conservation at landscape scales through a partnership approach.

The principal function of LCCs will be to provide scientific and technical expertise to produce landscape-scale conservation designs.

A secondary function of LCCs will be building interdependent partnerships to develop shared conservation goals and satisfy shared science needs.

States will be essential partners, along with other federal agencies, especially the U.S. Geological Survey (USGS) and other DOI bureaus, tribes, and private organizations.

LCCs will provide the principal scientific and technical support for implementation of landscape conservation; in the FWS, this framework is called Strategic Habitat Conservation.

Each LCC will be part of a seamless national network of LCCs supporting geographically defined landscapes capable of sustaining abundant, diverse and healthy populations of fish, wildlife and plants.

Consistency in governance, structure and function will be essential. For LCCs to function as a national framework, and ultimately, as a model for collaborative landscape conservation internationally, each LCC will have:

- A Steering Committee of executive and management level representatives from partner organizations, which will provide management direction and set priorities;
- An LCC coordinator;
- A science and technology coordinator;
- GIS capacity;
- Population modeling capacity;
- Monitoring and evaluation capacity; and
- Decision analysis expertise.

Initially, each LCC will have a basic capacity for communications, sufficient to ensure effective communications among partners, other LCCs and interested parties.

LCC capacities will be designed to be compatible with those of other LCCs; this will ensure that products for wide-ranging species can be used effectively across geographic area boundaries.

LCCs will be integral to climate change adaptation efforts, but they will not be climate-centric. They will provide science support for conservation activities that will address a variety of broad-scale challenges that affect species and habitats, such as water scarcity, species invasion, wildlife disease and a changing climate.

LCCs will draw upon, and augment, the existing science capacities of partners and partnerships.

LCCs will link science with conservation planning and design; their products will be relevant, timely, and effective in informing conservation delivery.

LCCs will *not* be expected to support all of the science or conservation planning needs of the Service or its partners.

Existing Service personnel will play key roles in identifying science priorities and priority species, evaluating LCC products, providing scientific and technical support, designing and implementing research programs, performing management evaluations and in delivering conservation through resources available at their current facilities.

LCCs will provide a diversity of decision support tools for managers to use in establishing explicit biological objectives (e.g., population objectives).

Core Capacities

All LCCs will use a robust adaptive management framework and function as units of an integrated national LCC network. Consequently, they will require the same general core capacities in conservation planning and science, including expertise in:

- Biological, ecological and physical sciences;
- Spatial data acquisition and analysis;
- Population, climate and landscape modeling;
- Conservation genetics;
- Statistical design and analysis;
- Development of resource inventories, monitoring protocols, and management evaluation protocols;
- Web-hosting, database design and management;
- Resource planning and conservation design; and
- Communications.

Substantial resources from multiple partners will be required to establish and maintain LCCs. Initial staffing efforts will focus on the most critical core capacities to ensure performance of primary planning and science functions. Capacity will be added strategically over time to enhance each LCC's functions to meet demands of members for additional products and services. Staffing will likely involve a combination of hiring new positions as well as assigning

existing staff to LCC positions. To fill new roles in the future, LCC employees will be provided opportunities for training, orientation and mentoring, many of which will be provided by the National Conservation Training Center.

Organization

There will be one LCC for each unit in a national geographic framework. The Service has developed and adopted an interim geographic framework to begin the process of discussing the national geographic framework and organizing LCCs (http://www.fws.gov/science/shc/lcc.html). Over time, that network will likely expand to include other nations, especially those that border the U.S.

Each LCC will provide a forum for information exchange and feedback among partners and, secondarily, among other interested parties (e.g., organizations, scientists, and managers). In addition, LCC partners will jointly decide on the highest priority needs and interests of the LCC. When species' ranges cross geographic areas, LCCs will collaborate to ensure consistent and seamless application of methodology (e.g., biological planning, data collection, modeling, and experimental design).

The network of LCCs will be comprised of individual LCCs organized, governed, and operated in a consistent manner that promotes landscape conservation nationally and internationally.

LCCs will be self-directed partnerships. However, their governance, structure, and operation will be consistent so that they function as units of an integrated network. Each LCC will have a Steering Committee, comprised of executive-level and management-level partner representatives. States within the geographic area served by an LCC will be invited to sit on that LCC's Steering Committee.

LCC core staff will include the same general types of science expertise and skills, as described in the "Core Capacities" section of this document. This similarity will promote cooperation, communication and collaboration among LCCs and among staff involved with GIS, spatial data application, population modeling, statistics, conservation genetics, landscape ecology, etc.

Ideally, the core staff of an LCC will be co-located at a Service facility, partner's facility, or other location selected by that LCC's Steering Committee. Some complementary staff will interact "virtually" in order to leverage additional expertise while reducing expenditures for space and administrative support.

Each LCC will have a dedicated coordinator who will serve as the leader, manager and supervisor. The coordinator will facilitate the link between science and planning, and facilitate the link between operations, the Steering Committee and partners. The coordinator's responsibilities, duties, and authorities will be described clearly in a position description and reflected in the LCC's charter.

Funding for staff will come from the Service and other partners. Reflecting the cooperative nature of LCCs, all staff positions, including the LCC coordinator, may be supported by, or

through, any LCC partner, or shared among partners. Provision of funding or in-kind services will *not* be a requisite for participation in an LCC.

LCCs will strive to be self-sustaining. LCC partners and staff will attempt to sustain or expand the resources needed to build and maintain its conservation science and planning activities. LCC staff will share their expertise within and across LCCs by participating in local and national training and mentoring programs.

LCC partners will jointly determine the priority species of focus and the associated management challenges to be addressed in biological plans and conservation designs. LCC partners will accomplish this in collaboration with other LCCs when species' ranges or life histories involve multiple LCCs. Each LCC's Steering Committee will determine the priority species, planning activities and science activities for which the LCC is responsible. Staff may be added in phases as an LCC matures and demand for products and services changes and grows. The priorities and activities of an LCC will evolve as understanding of conservation challenges advances, capabilities grow, new needs are identified, and additional partners join.

The Service and other DOI bureaus will play key leadership and catalyst roles in developing and operating LCCs. The U.S. Fish and Wildlife Service (FWS) will provide funding and other resources to assist new LCCs with initial planning, partner coordination, assembling core staff, and meeting associated needs for operational support. The USGS has also requested funding to support development and coordination of key science needs for decision support. Responsibility for funding core science, administrative and management functions will be determined by LCC partners. Initially, the FWS and the USGS will jointly fund complementary science projects that will provide essential information to inform conservation planning and design activities at LCCs. For each LCC, partners will jointly determine how best to assemble or acquire the resources and assets needed for successful establishment and operation. The Service anticipates that LCCs will be supported by funding, staffing, or in-kind services from entities involved in conserving fish, wildlife, plants and their habitats within the geographic area, including other DOI bureaus, other federal and state agencies, private organizations, universities, and others.

Products and Services

With a clear focus on modeling, conservation design, decision-support tools and evaluation of monitoring data, LCCs will provide unique support for effective adaptive management by their partners. LCC products and services will be shared openly among partners and other interested parties.

LCCs will develop biological plans, conservation designs, research priorities, and monitoring and inventory designs, and will evaluate conservation delivery strategies and activities and the overall success of landscape-scale conservation. These activities will be critical elements of robust adaptive management.

LCCs will focus on priority species and habitats identified by LCC partnerships. LCCs will consider many limiting factors that interact to affect populations of fish and wildlife within a landscape. LCC partners will share responsibility for their functions and activities and will establish an equitable distribution of opportunity and responsibility.

The Service and other LCC partners will be accountable for establishing and operating LCCs. LCC partners will jointly determine, evaluate and report on, the success of their conservation delivery actions in achieving the conservation objectives they established. Steering Committees will determine the frequency and form of these evaluations and reports. At a minimum, the Service will evaluate each LCCs effectiveness and efficiency in achieving population and species objectives.

Scientific credibility of LCC products will be subject to peer review through publication in peer-review outlets, such as the *Journal of Fish and Wildlife Management* and *North American Fauna*.

LCC products and services will include**:**

- Integrated data for seamless spatial modeling of species and habitats, within and across geographic area boundaries;
- Collaborative development of explicit and measurable biological objectives, focusing on population objective variables (e.g. abundance, vital rates, etc);
- Population models linking fish, wildlife, and plant populations to habitat, other limiting factors, and various ecological processes;
- Identification of areas of converging and overlapping climate and non-climate stressors;
- Application of climate model outputs at scales sufficient to predict effects on fish, wildlife, plants, their habitats, and ecological processes;
- Predicted ranges of native species and invasive species under temperature and precipitation projections;
- Vulnerability assessments for fish, wildlife, plants, their habitats, and ecological processes most susceptible to the impacts of climate change;
- Conservation strategies that spatially integrate biological objectives for populations, species, management practices, and ecological processes;
- Assessing, modeling and predicting the ability of landscapes to support and sustain priority fish, wildlife and plant populations;
- Decision support systems and tools to develop conservation designs that define actions at precise locations on the landscape;
- Quantification of biological consequences (outcomes) of conservation actions and development actions (e.g. housing, civil works, mining, renewable energy);
- Short-term and long-term adaptation approaches at meaningful spatial scales;
- Maps that display potential corridors linking present and future habitats, incorporating considerations of conservation genetics;

- Conservation genetics analyses, including evaluation of population structure for focal species and the genetic consequences of climate change, habitat fragmentation, population bottlenecks, and small or isolated populations;
- Identification of high-priority research and technology needs;
- Protocols and methodologies for coordinated data acquisition to test assumptions of predictive models (i.e., climate effects projections, population/habitat models);
- Protocols and methodologies to evaluate the success of conservation strategies, objectives and actions;
- Shared data platforms facilitating information exchange; and
- Decision analysis tools for complex conservation problems.

Relationship of LCCs to Regional Climate Science Centers

LCCs and DOI Climate Science Centers (CSCs) will work together closely. Each LCC Steering Committee will include an executive or management level representative from its respective CSC, and *vice versa.* CSCs will provide the latest climate science information and data, and help LCCs develop modeling tools and conduct site-specific studies of climate impacts and species and habitat responses. LCCs will use this information to develop landscape-scale conservation plans that will inform conservation delivery activities and assist partners in focusing their management decisions and conservation actions. In turn, LCCs will provide CSCs information on species and ecosystem responses to climate change and the effectiveness of their conservation actions.