



California Landscape Conservation Cooperative

Five Year Strategic Plan



May 2013



Acknowledgements



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A special thanks goes to the California Department of Water Resources who donated their support by printing and reproducing this document.

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Vision and Mission

Vision

California supports diverse and thriving ecosystems through lasting cooperative conservation partnerships.

Mission

The California Landscape Conservation Cooperative (CA LCC) is a management-science partnership created to inform and promote integrated science, natural resource management, and conservation to address impacts of climate change and other stressors within and across ecosystems.

Guiding Principles

Within the CA LCC geographic scope and community, many individual organizations and partnerships already are engaged in natural resource conservation. In this context the CA LCC:

- Strengthens existing partnerships by providing science to help them address their priority conservation needs.
- Provides enhanced scientific capabilities to help conservation delivery in consideration of climate change and other environmental stressors.
- Provides agencies with additional science information and tools to help them address issues impacting management of fish and wildlife as well as associated ecosystems.
- Provides a forum for partners to develop shared conservation goals, objectives and strategies at regional and broad landscape scales.

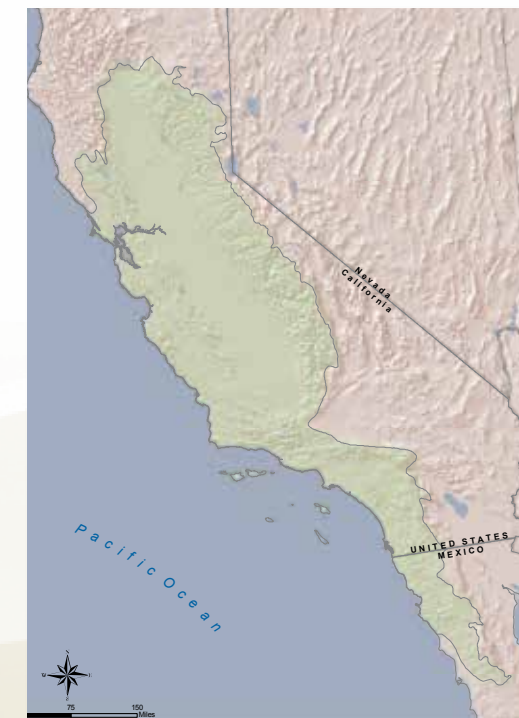
About CA LCC

Five-year Goal

A growing community of resource managers, scientists, conservation practitioners, and others that are successfully collaborating to advance and implement actions that promote resilient and adaptable ecosystems across the landscape in the face of environmental change.

Introduction

Landscape Conservation Cooperatives (LCCs) are applied conservation management and science partnerships that provide science-based technical support for coordinated conservation at landscape scales. The CA LCC is a network of partners working to address common landscape conservation goals through the application of relevant science for natural resource decisions. Members work together to identify common conservation efforts and the scientific information and tools to support those efforts, to build consensus for collaborative conservation, and to implement landscape conservation regionally across jurisdictions, interests, and ownerships. The CA LCC enhances the effectiveness of these varied efforts by applying science to key management questions, providing decision-support tools, sharing information, and building capacity for integrating science into decision-making.



The geographic extent of the CA LCC covers a large portion of California and extends into Mexico.

“California’s natural beauty – on lands, waters and wildlife – is being threatened by widescale phenomena such as climate change, drought and wildfire. The California LCC delivers the tools and information that conservation groups need to ensure the best of California is preserved for future generations.”

*Rick Kearney,
Assistant Regional Director,
US Fish and Wildlife Service*

Strategic Plan Development

The Five Year Plan

This plan was developed by the Strategic Planning Team and approved by the CA LCC Steering Committee. The plan is based on extensive input by more than 300 resource managers, conservation practitioners, and researchers. The information was collected through interviews, focus groups, and in-person workshops between March 2010 and May 2012. Three in-person workshops were convened with 250 participants in San Diego, Los Angeles, and Sacramento.



Forty-four in-person and phone interviews also were conducted to assess how resource managers make decisions and to identify science and communication needs. The results identified challenges, decision processes, opportunities, needs, and potential priorities associated with managing ecosystems, habitats, and species in the CA LCC region in light of climate-related change and other stressors. They also revealed that resource



management decisions made within the CA LCC are very diverse and depend on management mandates and goals, geographic location, and stressors affecting the targeted resources.

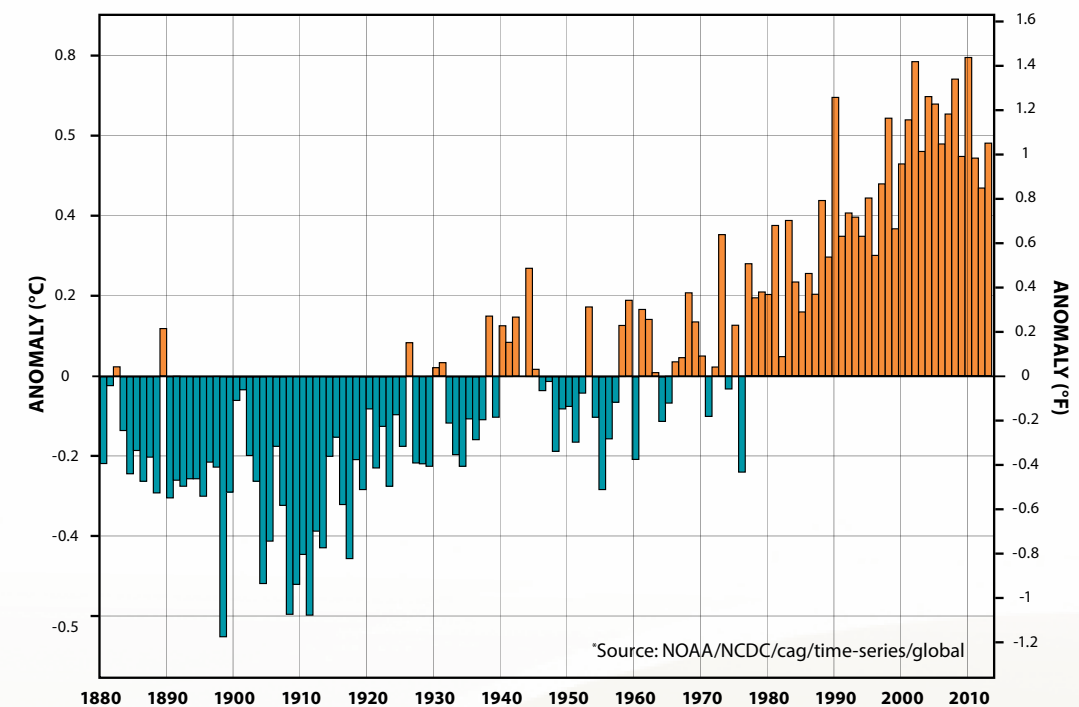
Based on these assessments the CA LCC staff learned that many resource managers are working on near-term issues and priorities and have not yet integrated climate change and other long term environmental stressors into present day decisions.

These outreach efforts identified two overriding changes that would improve the ability of resource managers to address climate change and other long-term environmental stressors.

- **Improved access to relevant science, including synthesis and translation of data into usable information, and**
- **Enhanced collaboration and other capacity-building activities to facilitate information sharing among research and management partners.**

Climate Change

March Global Land and Ocean Temperature Anomalies*



“Adaptation strategies could improve conservation success in the face of climate change and other stressors by improving resilience and adaptability of vulnerable species and ecosystems.”

**NFWPCAS 2012*

The Challenge

As climate change accelerates over the coming decades, the effects on species, ecosystems, and their functions will become more evident. Climate change will exacerbate the impacts of other stressors like human population growth, invasive species, habitat loss and fragmentation, and altered water regimes. Adaptation strategies could improve conservation success in the face of climate change and other stressors by improving resilience and adaptability of vulnerable species and ecosystems (see NFWPCAS 2012). Amid these challenges and changes, improved understanding



A. Viola, Northeastern University, Bugwood.org

about ecosystem vulnerabilities and climate adaptation strategies will be critical for successfully sustaining biodiversity and well-functioning ecosystems within the CA LCC.

California Land and Sea



California Land and Sea

The CA LCC region includes high levels of biological diversity and varied landscapes in a Mediterranean climate where most precipitation falls during the winter and spring. Along with diverse habitats, California supports more species than any other state and has the greatest number of endemic species, that is, species that occur nowhere else. Its 5,047 native plant species represent 32 percent of all vascular plants in the United States. Much of the CA LCC region contains intensive agriculture and a highly urbanized landscape that includes the urban centers of the San Francisco Bay Area, Sacramento, Los Angeles, and San Diego area. Many of California's native species have very narrow distributions and are highly vulnerable to land use and environmental change.

The California Central Valley is a central feature of the CA LCC, flanked by the Sierra Nevada to the east and the California Coast Ranges to the west. The Central Valley and adjacent foothills extend over 400 miles and cover more than 28 million acres. Around this feature, the CA LCC region stretches west to encompass much of the California coastline, from the San Francisco Bay-Delta region south into Baja California. The length of CA LCC Pacific coastline extends nearly 800 miles and includes numerous biologically diverse islands, that include the Farallon Islands and the Southern California Bight.

Oak woodlands, one of the richest wildlife species habitats in California, occur along the north coast and surrounding foothills of the Central Valley making up approximately 12%

of the CA LCC area. The north coast also contains coastal redwoods, vineyards and rangelands. The Central Valley historically supported Tulare Lake, the largest freshwater lake west of the Mississippi. It also supported extensive wetlands, grasslands, vernal pools, and major river systems with associated riparian forests. Only 2-10 % of these historic habitats remain, and their remnants are critically important to wildlife. Two-thirds of all Californians (approximately 38 million people), and over 7 million acres of farmland that produce 45% of the nation's fruits and vegetables rely upon water from the Sacramento and San Joaquin Rivers.

The San Francisco Bay and Sacramento/ San Joaquin River Delta, the nation's second largest estuary, support economically important commercial fisheries and provide essential habitat for a great diversity and number of migratory waterbirds and



"Along with diverse habitats, California supports more species than any other state and has the greatest number of endemic species, that is, species that occur nowhere else."

several endangered species. Monterey Bay, occurring along the central coast of California supports one of the world's most diverse marine ecosystems and is home to numerous mammals, seabirds, fishes, invertebrates, and plants in a productive coastal environment.

To the east the Sierra Nevada mountain range dominates the landscape running 400 miles north to south. It supports a multitude of ecosystems including the notable giant sequoia groves, old growth mixed conifer forests, aspen groves, montane meadows, and riparian areas.

The southern portions of the CA LCC include diverse resources from Point Conception southward into Baja California. Chaparral is the most wide spread interior vegetative type in southern California. Other main habitats include coastal dunes, intertidal communities, tidal wetlands, sage scrub, isolated native grasslands and vernal pools. The southern California Bight also includes coastal islands that are home to numerous pelagic birds, marine mammals, and endemic plant and animal species.

Environmental Stressors

Environmental Stressors

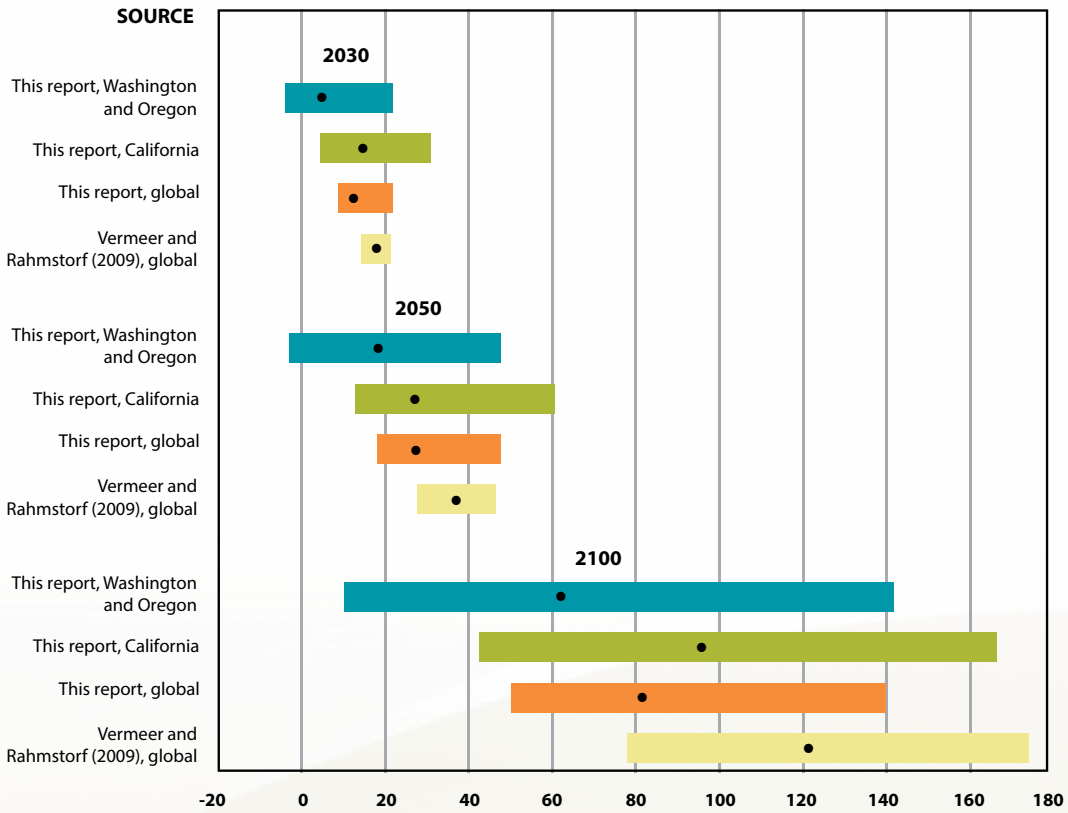
The biodiversity and ecosystems within the CA LCC have been significantly altered as California’s population has increased. Today, rapid urban growth and development threaten native wildlife and ecosystems across the California landscape. Examples of plant communities in the path of urban expansion include oak woodland, native perennial grasslands, coastal prairie and intertidal communities and coastal sage scrub. Chaparral is being fragmented by development and also by vegetative conversion as a result of human induced wildfires. Additionally, rural residential development is increasingly fragmenting forest communities, including mixed evergreen and conifer forests. Water diversions and intensive water management have had a significant impact on the State’s salmonid populations. Highly water-dependent plant communities not only suffer from the pressure of land conversion but are also experiencing water diversions and degraded water quality. Such changes pose especially significant risks to highly water-dependent plant communities, such as riparian areas, wetlands, and vernal pools.

Climate change stressors are escalating the threats to the CA LCC’s biological diversity and ecosystems. Fundamental

aspects of environmental regimes are shifting. Winter and spring ambient temperatures are rising, as are night minimum temperatures (Lenihan et al. 2008; Loarie et al. 2008). Current projections show ambient temperatures rising up to 4.9°C above present averages by 2050 and 7.4 – 15.5°C by 2100 (OCFVA 2012). Projected warmer conditions by the mid-to-late 21st century for the Central and Southern California region will alter precipitation patterns and increase summer temperatures, resulting in heat waves and extended drought (Knowles et al. 2006; Cayan et al. 2008). In addition, warmer temperatures will reduce Sierra Nevada snowpack levels and alter the timing of snowmelt (Stewart et al. 2005). Decreased snowpack will further reduce freshwater availability for ecosystems and water delivery throughout the CA LCC region. The reduced snowpack, higher temperatures, and longer dry periods, will elevate wildfire risks and result in cascading effects to water availability (Hayhoe et al. 2004; Westerling et al. 2006).

Coastal ecosystems in the CA LCC will be subject to rising sea levels, changing ocean chemistry, storms, and other climate-related environmental shifts. Surface water temperatures and thermal stratification are expected to increase offshore, while, closer to the shore, enhanced upwelling due to strengthening of alongshore winds may sustain colder temperatures (Doney et al., 2011). Ocean

Projections of Sea Level Rise Along the Pacific Coast*



Projected sea-level rise for California, Oregon, and Washington compared with global projections. The dots are the projected values and the colored bars are the ranges.

*Source: NRC 2012 Report

waters generally will become more acidic due to greater absorption of atmospheric carbon dioxide, potentially impairing calcification of many marine organisms that form the base of food webs (Feely et al. 2004; Denman et al. 2011). Projected sea-level rise from thermal expansion and glacier runoff will flood the coastline (Vermeer and Rahmstorf 2009). Sea-level rise for the CA LCC coastline south of Cape Mendocino is projected to rise 4–30 cm by 2030 relative to 2000, 12–61 cm by 2050, and 42–167 cm by 2100 (National Research Council 2012). Shifts are also

expected in coastal fog along California’s coastline (Johnstone and Dawson 2010). Yet, over the near term the greatest threat from climate change may be the extreme events that are impacting our wild and urban areas at a level that may not lead to recovery. Floods, droughts, and storms are all more severe and frequent are predicted to increase in frequency and intensity (Cayan, et. al., 2008).

“For 2100, marshes will need room to migrate, a high sediment supply, and uplift or low subsidence to survive the projected sea-level rise.”

NRC 2012 Report

Objective 1

Objectives, Strategies, and Actions

The following objectives, strategies, and actions were developed by a strategic planning team and reviewed by the Steering Committee to address the science needs expressed by resource managers throughout the California LCC.

Objective 1

Conduct and coordinate information exchange between scientists and managers to advance decision-making and conservation at a landscape scale.

CA LCC ROLE & APPROACH

The LCC promotes partners working together to build a shared conservation vision, combine and leverage their individual efforts, and improve the delivery of relevant science. It achieves this by engaging key audiences and facilitating communication, collaboration, information sharing, and science synthesis and translation. The development and implementation of science communication will guide its efforts.

THE CA LCC SCIENCE STRATEGY

The Science Strategy will detail an approach to meet the objectives of this Strategic Plan over the next 5 years. This will include a description of the key management decisions being made, the top stressors or threats to conservation and common priorities across the LCC geographic area to be addressed.



STRATEGY 1:

Identify key science needs and improve delivery of usable scientific information to enable effective implementation of conservation strategies

ACTIONS

1. Convene a Science-Management Team composed of a diverse set of natural resource managers and scientists to complete a Science Strategy within the first year and annually refine and revise the LCC science priorities based on experience and learning.
2. Collaborate and coordinate with the USGS Climate Science Centers and partner Universities to encourage scientific research and development that addresses the CA LCC science priorities.
3. Ensure CA LCC science partners successfully translate scientific information into a form that can be used by resource managers, using online content, reports, workshops, and in-person training.
4. Sponsor relevant web-based presentations and archive them online for long-term accessibility.
5. Support increased participation in relevant scientific events by LCC partners that can improve adaption strategies.



“The National Park Service needs CA LCC’s help to learn about other partners’ effort to conserve habitats and landscapes.”

Dave Graber, Chief Scientist, Pacific West Region, NPS”

STRATEGY 2:

Expand and enhance engagement of key audiences within the CA LCC region

ACTIONS

1. Convene a Communication Team to help develop and implement a Communication Strategy within the first year, in coordination with adjacent LCCs and the headquarters Communication Team.
2. Identify representatives from relevant entities that use and develop scientific information and tools in landscape level conservation, including: federal, state, tribal and local agencies, NGOs, Joint Ventures, Fish Habitat Partnerships, and scientific institutions.
3. Develop and schedule a periodic process for assessing information sharing needs and common management issues at multiple ecological, geographic, and temporal scales.

Objective 1

STRATEGY 3:

Identify and facilitate efficient ways to engage partner collaboration to achieve shared vision and goals

ACTIONS

1. Assess collaboration opportunities across stakeholder groups and partnership that can improve natural resource conservation.
2. Identify and apply criteria to transparently prioritize the needs for collaboration identified by partners.
3. Facilitate effective collaboration among partners that address high-priority needs for aquatic and landscape conservation.
4. Facilitate shared conservation visions, plans and actions among partners.
5. Take advantage of professional and public venues (e.g., conferences, workshops and meetings) to improve and increase the frequency of communication within and among collaborating groups.
6. Collaborate with other LCCs and the national LCC office to share and improve methods for collaboration and foster a shared vision across a larger landscape.

STRATEGY 4:

Develop and deliver relevant training and information products for key audiences using climate smart principles

ACTIONS

1. Develop and/or promote trainings and curricula that meet key management needs related to successfully achieving landscape scale conservation and emphasizing climate smart conservation processes.
2. Deliver a curriculum to a wide audience for establishing a general understanding of climate change science, ecosystem impacts, and the implications for resource management and conservation.
3. Maintain a well-curated and content-rich web-based portal that assembles, synthesizes, and delivers relevant information for users, including scientific literature, technical reports and other products directly useable by natural resource managers.
4. Work with science partners to promote useful products for resource managers that emphasize climate smart conservation.



The CA LCC has an interactive website with webinar recordings, upcoming events, trainings and workshops. It also provides useful information on funded projects and hosts the Climate Commons.



The Climate Commons provides a one-stop-shop access to information that can assist in resource management decisions. The Climate Commons contains climate science datasets, a library on climate documents, web resources, articles on key topics, and CA LCC project catalog.

Objective 2

Objective 2

Enhance climate-smart conservation* (nature-based adaptation and mitigation) on a landscape scale.

CA LCC ROLE & APPROACH

The CA LCC encompasses a diverse landscape with many types of ecosystems. The CA LCC will support projects that are specific to these geographies and ecoregions, as well as projects that address issues related to ecosystem processes and services that are common to many places and conservation efforts. In order to address the uniqueness of California's landscape and ensure that all parts of the region are reached we used the R.G. Bailey's ecoregions as a guideline, which have been adapted by the USDA Forest Service, California Department of Fish and Wildlife, and others (Bunn et al. 2007).

*CLIMATE SMART CONSERVATION

Climate smart conservation strategies and actions specifically address impacts of climate change in concert with other threats and promote nature-based solutions to:

- Sustain vibrant, diverse ecosystems (Cohen 2012)
- Reduce climate change impacts on wildlife and people, and enhance the ability to adapt
- Reduce greenhouse gas (GHG) emissions and enhance carbon sinks

Climate Smart Principles

(Adopted from NWF Quick guide, 2013, Cohen 2012, and others)

- Focus goals on future conditions
- Prioritize actions using climate information and design them in ecosystem context.
- Employ adaptive and flexible approaches
- Collaborate and communicate across sectors



CA LCC ecoregions (modified from Bailey, 1994 and Bunn et al, 2007).

PLACE-BASED PROJECTS

The CA LCC aims to initiate two place-based projects in different ecoregions per year. (See map above).

These projects will:

- Include willing partners who are already engaged and can take action on the ground
- Demonstrate and/or advance climate smart conservation at a landscape scale
- Address an important issue and focus for that ecoregion
- Meets a regionally identified high priority need
- Leverage and coordinate with ongoing efforts and groups
- Highlight the LCC unique capacities and capabilities that add value towards climate smart conservation

“Climate change is happening now. To sustain nature’s health in California, we must engage in climate-smart conservation every day to prepare for and adapt to our rapidly changing world.”

Ellie Cohen, President and CEO, Point Blue Conservation Science

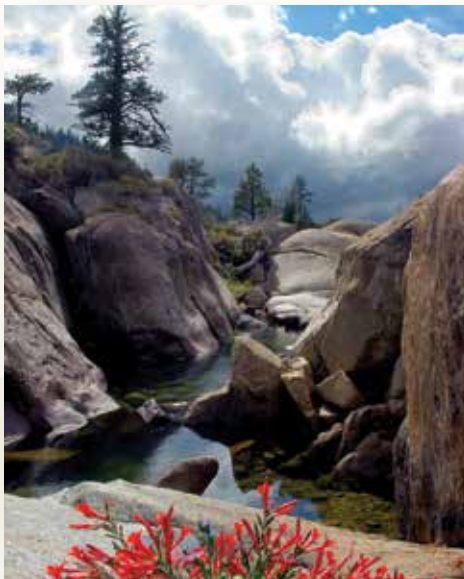
Objective 2

STRATEGY 1:

Support and promote place-based projects in ecoregions that demonstrate and advance conservation at a landscape scale

ACTIONS

1. Develop criteria for selection of projects within each ecoregion.
2. Engage and work with a Science-Management Team to help identify, prioritize, and scope the place-based projects.
3. Initiate 2 ecoregion projects per year over 5 years for a total of 10 projects.
4. Share project results with stakeholders and other LCCs.
5. Deliver projects that make the project findings useful and usable for applied conservation.



STRATEGY 2:

Promote, support, and coordinate cross-sectoral understanding of ecosystem processes and services to advance climate-smart conservation at a landscape scale.

ACTIONS

1. Work with a Science-Management Team to identify information gaps and define priority issues related to understanding or managing ecosystem processes and services of importance for the CA LCC region.
2. Work with a Science-Management Team to develop criteria for selection of projects that include identified high priority ecosystem processes and services.
3. Initiate at least one integrative project to implement within the first two years.
4. Share project results with stakeholders and other LCCs annually.
5. Deliver products that are useful and usable for applied conservation.



PRIORITY ECOSYSTEM PROCESSES & SERVICES PROJECTS

Generally, each integrative project will:

- Focus on high priority applied need for improved knowledge or applications about ecosystem processes &/or services
- Fill an identified need where the LCC can uniquely add value
- Be innovative, aspirational, and/or proactive
- Focus on places where information or application gaps impede collective progress
- Be crosscutting and integrative and take a system-based view
- Often involve interdisciplinary science and managers with diverse perspectives
- Be relevant at the regional or multi-regional level
- Facilitate improved understanding and decision making among resource management and science communities
- Have results that are transferrable to new geographies
- Be connected to ongoing work and engaged organizations

“Habitat fragmentation limits the ability of many species to move across the landscape. This will be an even more critical threat as many species are forced to move in response to climate change over time. The LCC can facilitate collaboration at the scale necessary to address this challenging combination of threats. If the LCC didn’t exist, we’d have to invent it - or something very much like it.”

Mark Kramer, Director of External Affairs, California TNC

Objective 3

Objective 3

Ensure CA LCC provides effective and lasting outcomes that support California's diverse and thriving ecosystems

CA LCC ROLE & APPROACH

The CA LCC will seek to continuously build capacity and collaboration in order to be more effective in conserving California's ecosystems and landscapes. Engagement of partners, internal progress assessments, and strategic leveraging of funding will provide the means to achieve this objective.

STRATEGY 1:

Seek broader engagement in the CA LCC collaborative functions

ACTIONS

1. Ensure inclusive participation by continuously assessing and adjusting participation in the Steering Committee, Working Groups, and other groups convened by the LCC.
2. Seek to broaden and foster partnerships beyond the conservation audience for furthering the CA LCC mission.
3. Identify and participate in local and national venues to expand audiences and leverage CA LCC results to reach the public.

4. Encourage members of the CA LCC Steering Committee and other working bodies to establish routine lines of communication to leaders within their home institutions to improve information sharing and opportunities for collaborative engagement.



STRATEGY 2:

Evaluate and continuously improve the CA LCC's processes and functions to expand the LCC's value and effectiveness

ACTIONS

1. Produce and widely disseminate an annual report that communicates CA LCC progress, successes and lessons learned.
2. Establish performance metrics to evaluate CA LCC success in providing information on relevant topics for ecosystem health.
3. Assess annual progress towards established goals of the strategy and revise science priorities in light of improved understanding.
4. Develop measurable criteria for evaluating progress and success of funded science activities developed under Objective 1.
5. Annually review outcomes and impacts of the place-based and ecosystem processes and services projects developed under Objective 2 and use this information to refine the LCC approach to undertaking future projects.



STRATEGY 3:

Develop the necessary capacities, resources, and assets to achieve the goals and objectives of this strategic plan

ACTIONS

1. Develop an estimated budget for this Strategic Plan.
2. Develop a strong community of funding partners to assist in implementing the Strategic Plan and Science Strategy.
3. Cultivate relationships with potential funders to partner on science and product delivery.
4. Seek in-kind contributions from partners to implement the plan.

"Our long-term success will be measured by the strength of our partnerships across disciplines, cultures, and landscapes. Working together through efforts like the CA LCC, we can ensure that California's natural resources adapt to our changing environment, endure, and thrive for future generations."

Diana Craig, Deputy Director Ecosystem Management, US Forest Service

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