CLIMATE CHANGE IMPACTS TO SPECIES AND ECOSYSTEMS OF SAN LUIS OBISPO COUNTY

INTRODUCTION

In November of 2009, we convened a workshop with experts on the species and ecosystems of San Luis Obispo County. We asked these experts to review the latest science on climate change specific to the County, to identify the greatest impacts to species and ecosystems, and to develop recommendations and strategies that can reduce those impacts. The participants in the workshop developed a list of actions that could be taken now to prepare species and ecosystems for climate change. Many of the recommendations that were made would also increase the resilience of human communities in the face of climate change, and many contribute towards mitigation efforts by reducing greenhouse gas emissions. Below is a review of the top 10 issues identified by workshop participants. As we move forward with climate change preparation planning across the socioeconomic sectors, we urge that these 10 issues be kept in mind so that new policies, strategies, and actions can be co-beneficial to natural ecosystems and human communities alike.

Top 10 Concerns for Species and Ecosystems under Climate Change:

1. Water withdrawals from groundwater basins and rivers are an urgent issue, regardless of climate change, but will become much more severe of a challenge under climate change. Workshop participants identified monitoring and regulation of water withdrawals as necessary. Changes in pricing, types of crops, and residual dry matter from land use practices were all recommended. Water conservation measures are urgently needed to reduce competition for water and retain supplies for protected species and important natural processes.

2. Connectivity of fish and wildlife habitat is vital under climate change, yet development is quickly reducing opportunities for connectivity. Long-term region-wide planning is non-existent. Planning for connectivity will require communication and collaboration across land ownership boundaries, incentives for climate change easements on private property, regional analysis of potential buffers and corridors, regional scale climate change consideration in all development decisions, and a better understanding of how and where species will move.

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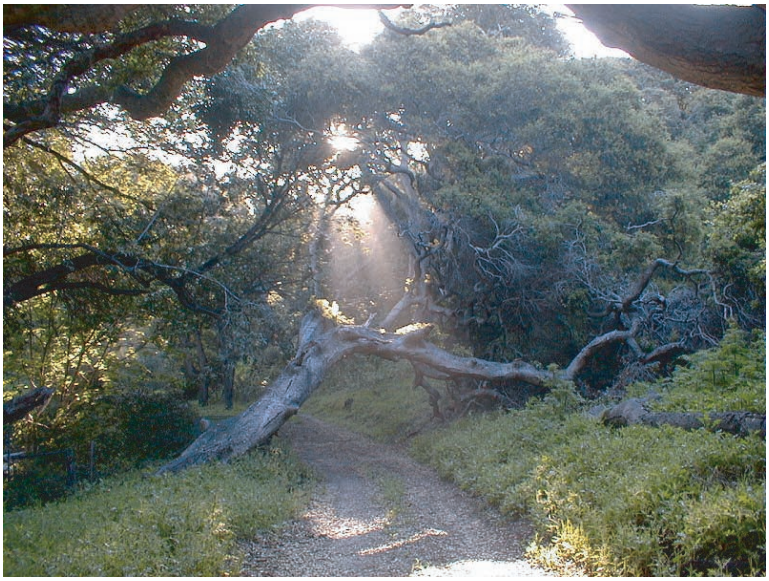
3. **Sedimentation** in rivers, streams, and estuaries is problematic and likely to get worse with more fires, increased storm intensity, and continued land use practices that lead to erosion. Sedimentation will have negative impacts on riparian and water delivery systems, both of which are already stressed by general drought and overdraft. Land use controls, incentives, newly developed best practices, and prescribed fire were all recommended to reduce sedimentation. Monitoring and adaptive management should be implemented to keep sedimentation rates within historical bounds, if possible.

4. Loss of **riparian**, **wetland**, and **marsh** ecosystems greatly reduces the resilience of the landscape to climate change. These ecosystems are disproportionately important as breeding grounds for fish and wildlife, habitat for rare species, flood abatement that protects nearby infrastructure, water filtration, water infiltration to groundwater storage, and oases during drought. These ecosystems should be protected, restored, and created across the County ASAP.

5. **Sea level rise** is a huge concern due to its potential to impact marine and terrestrial ecosystems, coastal development, tourism, recreation, and agriculture. Rather than armoring the coast, the coastline should be allowed to be dynamic in state. One suggested approach was rolling easements. Relocating some developments would be necessary, thereby allowing the sandy beaches, dunes, rocky intertidal zone, estuaries, and bluffs to shift over time but still persist. Persistence of these features is vital to tourism, fish and wildlife populations, local fisheries, recreational opportunities, public safety, and quality-of-life for residents. A statewide or regional policy will need to be developed specific to sea level rise and coastal armoring.

6. Loss of **oak woodlands** from increased fire, drought, and invasive species is of great concern. Reducing current stressors to oak woodlands, such as overgrazing and frequent fire, may allow this important vegetation type to be more resilient to climate change. Educating private landowners about climate change projections and best management practices in oak woodlands, as well as providing them with incentives to retain healthy oak woodlands on their property, would help. Propagating more drought tolerant varieties of oak may also be an option.



7. Many important strongholds for **threatened and endangered species** are not protected and are not included in critical habitat designations. Critical habitat needs to be revisited and revised to include these areas as well as buffers for climate change range shifts. Some species are already in perilous condition and climate change is likely to cause extinction. It will be important to identify which species can be managed for persistence and which ones are too costly to maintain. Revisiting critical habitat will assist in this determination.

8. Planning is currently done in a piecemeal fashion, and regulation is insufficient and unenforced. Planning should be carried out on a watershed scale, with all major land use players brought to the table, including ranchers, agricultural producers, county planners, the Forest Service, BLM, USFWS, conservation organizations, and others. Planning for development, agriculture, natural ecosystems, and other interests needs to be done collaboratively and through a long-term, climate change lense. Enforcing current laws and regulations (CWA, ESA, local regulations) that affect land and water management is an important first step towards increasing the resilience of species and ecosystems to climate change.

9. Monitoring of species and ecosystems needs to be increased to detect trends early on and adjust management quickly in an adaptive management approach. Careful planning and thought will need to go into designing monitoring strategies. A central clearinghouse that makes data available from all monitoring and surveying efforts, would be especially useful and could lead to more informed, timely, and sophisticated management efforts.

10. Keeping **options** open and taking advantage of **opportunities**. San Luis Obispo County has more options than other areas. Much of the coastline is undeveloped, thereby making marsh and wetland migration possible. Climate change may make marginal farmland available for conversion to coastal wetlands or native grasslands. Topographic complexity provides climate change refuges for species across the County as they shift to new areas. Many areas are currently available for providing buffers and connectivity for natural ecosystems (primarily on private land), but these areas could be lost to development if new policies and approaches are not quickly instituted with climate change in mind.

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