



## Adapting to Change

### Background

The effects of climate change are already evident in the nation's parks. Examples include melting glaciers, shifted range distributions of birds, butterflies and other wildlife, and altered timing of life history events (phenology), such as spring blooming or bird migration. In many locations, climate change effects such as flooding, sea level rise, loss of permafrost, etc. increasingly threaten park buildings and roads, as well as historic structures, cultural landscapes, archeological sites, and ethnographic resources.

In the context of climate change, adaptation is an adjustment in natural or human systems that moderates harm, or exploits beneficial opportunities in response to change. Positioning national parks to adapt to rapid directional change and increased uncertainty is a central goal for the NPS Climate Change Response Program. The ability of NPS managers to support and implement effective adaptation will influence the long term structure, function and viability of resources and infrastructure within parks. Adaptation measures may include a variety of actions, some of which will evolve from existing management goals, and others that will require novel approaches. Additionally, coping with large scale effects associated with climate change will require collaborative responses across landscapes and multiple jurisdictions. Applying the best-available science and committing to adaptive management are critical components to an effective response.

### Approach

Adapting to climate change will be necessary across virtually all NPS operations. Consequently, the adaptation approach outlined in the NPS Climate Change Response Strategy encompasses four major components: (1) adaptation planning, (2) promoting ecosystem resilience, (3) preserving cultural heritage, and (4) protecting facilities and infrastructure.

Several objectives guide the NPS in achieving the adaptation goals. Initially, the NPS is conducting scenario planning and vulnerability assessments to support development of adaptation plans at park and multi-jurisdictional landscape scales. To determine and sustain priority adaptation responses, managers need access to robust scientific assessments, policy guidance, trained personnel, and strong partnerships.

### Status and Next Steps

The widespread nature of climate change effects amplifies ongoing resource impacts such as habitat fragmentation, water scarcity, pollution, invasive species, etc. Simultaneously, uncertainty confounds efforts to determine appropriate adaptation actions. Collaboration across landscapes, partnerships at local levels, development of new tools, and planning for change will help to address these challenges.



**Ai'opio fish trap at Kaloko-Honokohau National Historic Park is an example of a cultural resource under threat from climate change impacts of sea level rise.**

Activities underway in the NPS include:

- Participation in Department of the Interior Landscape Conservation Cooperatives (LCCs). NPS is supporting 4 full time positions associated with LCCs that include some of the parks' most vulnerable resources.
- Collaboration with federal and state agencies, tribes, NGOs, and academic partners to develop guidance for adaptation planning and implementation for natural and cultural resources.
- Consideration and development of new approaches to frame management goals and desired outcomes in the context of a rapidly changing environment.
- Advancing the tools of scenario planning to support adaptation, and initiating pilots to apply scenarios within the context of existing planning processes.
- Developing an approach to evaluate risks to park infrastructure associated with climate change (such as sea level rise) and determine appropriate responses.
- Conducting projects in several regions among partners at a landscape scale to develop strategies for adaptation.

### More Information

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