Progress report to California LCC from California Invasive Plant Council

Name of Recipient:	California Invasive Plant Council (Cal-IPC)
Project Title:	Developing an Online Invasive Species Risk-Mapping Tool: Climate Change Adaptation through Strategic Management of a Top Ecological Stressor
FWS Agreement Number:	80250-B-J122
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Overall Results Expected

The results of this project will include: (1) a public online tool that natural resource managers can use to generate risk maps combining conservation layers with invasive plant distribution and suitability information and showing areas most vulnerable to spread; (2) a dataset accessible through the tool with statewide data for at least 100 invasive plant species; (3) invasive plant management recommendations based on the tool for a set of National Parks within the CA LCC region.

A modification to this agreement provided support for a meeting hosted by Cal-IPC in October 2011 to disseminate information on landscape scale conservation.

This report summarizes progress made toward accomplishing these results.

Progress on Products

Products for meeting: On October 4-7, 2011, the Cal-IPC Symposium in Tahoe City included 33 talks and 20 posters on topics related to invasive plant planning, design, research, inventory, and monitoring. Two hundred eighty-eight people attended from government agencies, conservation organizations, universities, and private firms. Cal-IPC staff presented our initial research findings, including a talk describing our mapping and modeling results and a poster describing our online tool. Presentations are available at www.cal-ipc.org/symposia/archive/2011_presentations.php. The conference proceedings will be completed in January.

Dec. 31, 2011: *Post test version of online tool for NPS ecologist advisory group to test, with statewide distribution data mapped for 100 invasive plant species and suitability mapped for 50. Convene modeling advisory group to guide improved modeling approach.*

[Updated April 2012]: We have mostly met these goals, using partner contributions to support expenses for salaries and consulting. We posted a beta version of the online tool, named CalWeedMapper, in

October at http://calweedmapper.calflora.org. CalWeedMapper includes distribution maps by USGS quad for 200 species from the Cal-IPC Invasive Plant Inventory (more than the 100 planned) as well as projected suitable range for 43 species under climate conditions for 2010 and 2050. We have developed range maps for an additional 45 species and are now refining them before posting on CalWeedMapper.

Quad maps were developed by meeting with land managers around the state to collect their knowledge of each species' distribution, whether it is spreading, and whether it is under management. CalWeedMapper also includes data from GIS datasets contributed to Cal-IPC by partner organizations and agencies. We are continuing to add functions and test the tool. Users can see maps and management opportunities for specific national parks.

We are demonstrating CalWeedMapper at Weed Management Area meetings and conferences in order to obtain feedback and encourage stakeholders to test it. NPS staff from Golden Gate National Recreation Area, Pinnacles National Monument, Sequoia-Kings Canyon National Park, and Yosemite National Park have also tested the tool. Sequoia-Kings Canyon and Yosemite are using it to help them determine priorities for their invasive plant management program.

Suitable range models were developed using Maxent software, incorporating occurrence data from contributed GIS datasets and climate data from Worldclim. Models on CalWeedMapper display results based on the CCCMA GCM and the IPCC's A2 climate scenario. We have also run models using the Hadley GCM and Australian CSIRO GCM. We are investigating ways to compare multiple climate scenarios.

We convened a modeling advisory group that includes representatives from the California Academy of Sciences, Climate Central, the Carnegie Institution at Stanford University, PRBO Conservation Science, and UC Berkeley. They have advised us on which climate models to use and how best to address modeling invasive species. Climate Central also provided us with additional climate change data based on PRISM.

Mar. 31, 2012: *Complete adding the first conservation layers to the tool with support from Cal DFG.*

We have met this goal. The Statewide Biological Richness Overview layer of ACE II (CDFG Areas of Conservation Emphasis) has been added to an internal development site and will be made public on CalWeedMapper by the end of April. To view (once it's public): Go to http://calweedmapper.calflora.org/maps/, click on Advanced (upper left), click on Manage Map Layers arrow to expand legend, scroll to bottom and click the box next to the conservation layer to make it visible.

Jun. 30, 2012: *Increase the number of suitability maps to cover 100 invasive plant species, and add data addressing the level of uncertainty.*

Models have been completed and reviewed by experts for 43 species. We have developed range maps for an additional 45 species and are now refining them before posting on CalWeedMapper. To improve the results, we have compared our acquired GIS data to expert knowledge data on CalWeedMapper and contacted experts in specific regions to fill in data gaps by encouraging them to add point locations to Calflora.

Models may be viewed on CalWeedMapper (http://calweedmapper.calflora.org/maps/) by selecting the Advanced tab in the upper left, then selecting a species in the drop-down list with a globe next to the name. To turn on model layers, click the arrow on Manage Map Layers and scroll down to the check boxes for suitable range.

We are moving to an ensemble method to compare multiple climate scenarios as a way of addressing the level of uncertainty. We have climate layers from Climate Central in Palo Alto as well as access to layers used in Healy Hamilton and PRBO's LCC project. We are coordinating with Healy Hamilton to incorporate these layers into our models.

~~Sep. 30, 2012~~ December 31, 2012: *Complete online tool and promote it to the state's community of natural resource managers. Complete invasive plant management recommendations using the tool for a set of National Park units in the CA LCC region.*

The ending date of this grant has been moved to December 31, 2012 so the deadline for this task has been adjusted accordingly.

We solicited feedback on the information available in CalWeedMapper's reports through a survey of land managers, including National Park personnel, in August. We have held two meetings with key stakeholder representatives from a five-county central Sierra region to develop a plan for coordinated projects and funding CalWeedMapper. We held a meeting a developed a draft strategic plan with the Cache Creek Watershed Forum (Yolo and Lake counties). The meetings focused on identifying regional eradication targets as well as species that are most critical to be on the watch for as surveillance targets. We have scheduled a regional meeting for Monterey-Santa Cruz-San Benito counties in April, which included a representative from Pinnacles National Monument. We are in the process of scheduling the Southern Sierra region with biologists from Yosemite and Sequoia-Kings Canyon National Parks. We have attended 16 local Weed Management Area meetings covering 22 counties to demonstrate CalWeedMapper. We held two webinars with a total 13 participants from around the state to expand our outreach.