



# Cal-IPC News

*Protecting California's Natural Areas from Wildland Weeds*

Newsletter of the California Invasive Plant Council

## Conserving Rangelands

Prof. James Bartolome's UC Berkeley rangeland ecology class measures residual dry matter on Mount Burdell in Marin County. See story on top rangeland weeds on page 8 *Photo by Dana Morawitz.*

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# Database of management trials to provide site-specific tools for more effective management

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Why does one restoration project succeed, while a similar one does not?

Which sites are most (or least) likely to achieve a management goal? What suites of goals are possible at my particular site? (Or will managing for one goal preclude me from managing for another?)

Which suites of invasive species can be managed in a similar way? Which invasive species are likely to become more prevalent when managing for a different invader?

Which management practices will be most effective in achieving my goals at my site? Given the weather this year, how do I alter my management practices to achieve my goals? How do I manage for long-term success of my projects?

These questions frustrate both managers and scientists. “It depends” often seems to be the one consistent generalization we can make. However, a new project seeks to answer these questions by compiling the results of thousands of on-the-ground management trials across California’s diverse climate, soil, and topographical conditions. This will provide a powerful platform to tease apart the complex interactions between site conditions, management practices, and annual fluctuations in weather; which, in turn, will improve our ability to make site-specific management recommendations.

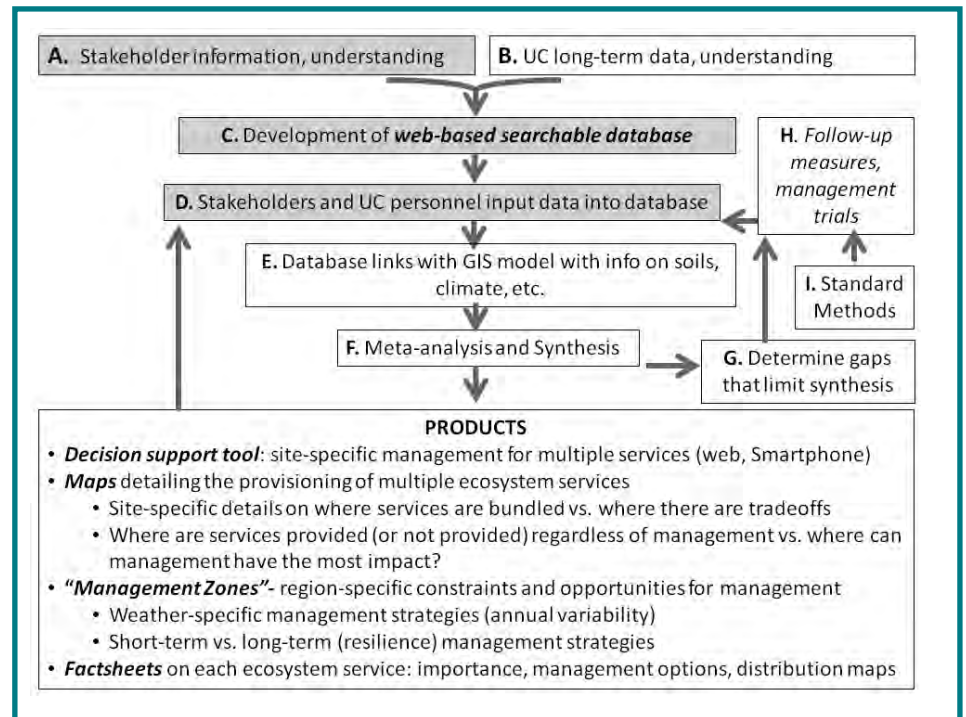
The project will initially focus on California’s grasslands and oak woodlands, as well as the riparian areas found within these systems. It will work with a diverse group of land managers in these systems (e.g., ranchers, conservation groups, agencies, consultants) in order to consider how environmental conditions and management practices impact multiple goals, such as: forage quantity and quality, invasive species control, native species abundance, plant diversity, wildlife habitat, soil erosion control, soil

fertility, soil water infiltration and storage, water quality, and soil carbon storage. In addition to assessing effectiveness and riskiness of given practices at specific sites, the project will also collect data on costs of implementing those projects.

The general project plan is presented in the figure below, and the shaded boxes are where you can help get this project started. Over the next year, the database will be designed, large datasets will be entered, and a GIS tool will be refined so that it can identify specific environmental

established, it will be available online, and at that point, we’ll welcome individual projects to share their results through the database. At that stage, the project team can take measures of multiple goals at your project sites, or you can take the measurements yourself, using a handbook of standardized measures, and a lending library of measurement tools (available from your local Natural Resources/Rangeland Farm Advisor).

Eventually, this study will result in a diversity of products that can facilitate



conditions associated with each project entered into the database. We’re looking for your guidance to prioritize management practices, goals, and measurements, and will seek these out through stakeholder workgroup meetings (but also feel free to directly contact the project with your opinions). We’re also looking for groups with records (formal or informal) of large numbers of management trials, and can work with you to facilitate including them in the database. Once this database is

management planning. For example, the searchable online database will allow you to find management projects based on environmental conditions, goals, and/or management practices. There will also be a decision-support tool, where you can enter your location and management goals, and it can synthesize information from the database for you—suggesting which goals are most feasible at your site and which management practices are most

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### ...Ecosystem services from page 4

services, important information gaps need to be addressed. Most importantly, we need better information on the impacts of invasive species, both ecological and economic. Assigning dollar figures to invasive species impacts has only been done for a relatively small number of species. Although some ecosystem processes, such as timber production or streamflow, can be measured directly, many others, such as carbon storage and flood control, are difficult to quantify (Eviner et al. 2012).

We need to know which stakeholders can be considered beneficiaries when particular invasive species are controlled and ecosystem services protected. Such beneficiaries are the most likely candidates for paying for that control work. However, it is more common than not that impacts cannot be isolated to a particular group of stakeholders. Often invasive species impact ecosystem services that affect a wider segment of society.

Invasive plant programs can look to the growing number of frameworks tying the users of ecosystem services to their protection. For instance, “forests to faucets” plans, such as that governing the Mokelumne River watershed in California, engage public water users in paying for upstream ecosystem preservation and restoration, and have included invasive plant management in their project goals.

California also has a market system for compensating landowners for carbon

sequestration through reforestation and improved forest management that could create incentives for restoring native vegetation and removing invaders that spread fire.

Likewise, California’s 2006 Safe Drinking Water Act, funded by bonds, provides for weed management as a means of ensuring water supplies.

Without steady funding, invasive species management can lose ground, increasing the ultimate restoration costs and damages to native biodiversity and ecosystems. Tying invasive plant management to the protection of ecosystem services may be the best way to secure consistent funding for invasive species management and ecosystem restoration.

### References

- Eagle A.J., M.E. Eiserich, W.S. Johnson, S. E. Schoenig, and G. C. van Kooten. 2007. Costs and losses imposed on California ranchers by yellow starthistle. *Rangeland Ecology and Management* 60: 369–377.
- Gerlach J.D., Jr. 2004. The impacts of serial land-use changes and biological invasions on soil water resources in California, USA. *Journal of Arid Environments* 57: 365–379.
- Eviner V.T., K. Garbach, J.H. Baty, S. A. Hoskinson. 2012. Measuring the effects of invasive plants on ecosystem services: Challenges and prospects. *Invasive Plant Science and Management* 5:125–136.
- Matzek V., J. Covino J., J.L. Funk, and M. Saunders. 2013. Closing the knowing–doing gap in invasive plant management: accessibility and interdisciplinarity of scientific research. *Conservation Letters* doi: 10.1111/cons.12042.

### ...Restoration database from page 10

promising, based on your goals.

Updated information on the project, as it develops, will be found at [www.plantsciences.ucdavis.edu/plantsciences\\_faculty/eviner/main/current\\_research.htm](http://www.plantsciences.ucdavis.edu/plantsciences_faculty/eviner/main/current_research.htm)

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### ...Eastern weed work from page 5

Japanese knotweed patches are not affected by differences in rainfall, or a hard, late spring frost. While they might wilt and look miserable for a while, by spray season in late summer they are fine. The same goes for annuals—a hard frost might slow their growth, but they get back on track and seem to produce as many seeds as they would in a more mild spring.

Another difference: rainfall. In the Northeast, it rains in the summer. People in PA are amazed when I tell them that it doesn’t rain in CA for 4–5 months of the

year (except during the current drought condition). Rain can really disrupt your spraying schedule, but it also means that you don’t have to set up irrigation systems for restoration projects. In fact, many of my treated sites restore themselves, filling in with perennials such as goldenrod, aster and tree seedlings.

California’s dramatic landscape creates a diversity of plant communities. A weed worker in Yosemite will have a completely different set of weeds to control than someone in San Diego. Back east, the topography is more subtle and gentle, and a weed worker in New York State may have

to control the same weeds as someone in West Virginia. I joined the Mid-Atlantic Invasive Plant Council and have attended some meetings, and noticed that there is less experimentation and more clarity about how to control the suite of invasive plants in the east. People have been doing weed work here for a long time and are very good at it. One important similarity: on both coasts the weed workers are committed, hard-working, knowledgeable people who love their native ecosystems and landscapes and are dedicated to protecting them from invasive plants. Thank you for all you do!