

Designing restoration projects to meet invasive plant and wildlife goals

Moderator: Tom Dudley, UCSB

Note taker: Chelsea Carey

Structure of the discussion: Each person introduced themselves and talked about any issues they are dealing with regarding restoration and wildlife goals and/or any suggestions that they have for meeting said goals.

What are the issues that people have in their restoration programs? Don't need to specifically focus on Arundo and Tamarix.

Arundo in Santa Clara system - 17 endangered species in that watershed. How do we manage timing of arundo control so that it doesn't interfere with wildlife concerns, particularly since timing of sensitive periods for different species are not the same and can be conflicting?

Removing arundo at a watershed scale – monitoring program for baseline measures of wildlife impact is essential to validate benefits of approach.

How do we deal with endangered species? Need to think about after removal, what do we revegetate with? How do we want to have the landscape organized such that the habitat is conducive for native animals?

Napa County Flood District – Arundo removal around Napa river. Replaced by poison hemlock when remove Arundo. In the hemlock, there is allelopathy – need to replant with seeds and acorns and the success of the establishment of the propagules is inhibited by allelopathy. Hoping to get any suggestions for this.

City of Pasadena Park and Resources – manage habitat restoration projects in active restoration areas. Invasive removal is “hit and miss”: funding is not consistent. Currently developing management plan – don't do wildlife monitoring because don't have a biologist on staff. Recent fire – totally changed the whole topography of the area because of sedimentation. Arundo now in places that it hasn't been in 10-15 years.

Los Padres National Forest – After fire, can only get money to treat weeds for up to one year after the fire. Used to be three years of funding for treating weeds.

Bureau of Land Management in NE California – Sage Steppe restoration.

UCCE – invasive plants and fire. Works in the desert – doesn't focus on wildlife as much.

Bioresource consultants – invasive plant removal. Monitor effects on wildlife during the removal. Santa Clara river project: arundo removal for their wastewater removal plant. Not a lot of conflict yet because only doing baseline vegetation surveys so far. Going to start Arundo removal soon – haven't had any nests in the restoration area so no direct effects to deal with thus far.

CCC – Steelhead restoration project. Runs into invasive plant issues: impacts that the nonnative plants have on the creeks.

Nature's Image – habitat restoration company. 80 active projects.

Biocontrol agent is doing pretty well to manage Toadflax

San Bernardino National Forest – several projects going. Want to put together a watershed level project with many options for treatment; will include wildlife considerations. Currently working with tamarisk and Arundo.

Watershed projects – site specific even though its watershed-sized.
But can do watershed as a “sight”.

How do you deal with situations that have different sensitive species with different reproductive timings? – Ice plant eradication was put on hold during some wildlife breeding species. No direct conflict with wildlife.

Landscape architecture – projects involve invasive removals and restoration. Construction also involved in projects. So far, no major interaction with wildlife.

UC Riverside – Research with Lynn and Kai. Worked with Arundo ecology and physiology for the past 15 years. Now looking at a community approach – how do restore a native community that resists Arundo establishment? Don't evaluate wildlife directly but any kind of experimental approach takes into account herbivory (rabbits and pigs), timing of reproduction and migration of wildlife.

Beavers also present at many Arundo sites. They favor willows and cottonwoods – promote invasion by Arundo because of selective feeding and dam construction using native woody species.

California State Parks – Stanislaus river has had a large removal project of invasive species. Do it in areas where rabbits and woodrat weren't using the habitat. Will go back afterwards to see the impact of their work on the wildlife – will do it in small blocks so that the rabbits have “refuge”.

Any wildlife issues with Ailanthus – only with having woodrat nests at the base of them. Overall not a lot of wildlife concerns with Ailanthus.

Station fire area – 150 miles worth of Tamarisk pulled.

USFWS – funds volunteer restoration on private property. Interested in how to minimize wildlife impacts.

Volunteer work in Sonoma county with state parks – a pond with red legged frogs and vernal pool habitat with rare plants that has been invaded by velvet grass which is impacting the rare species. Azolla growth covering the entire pond – something to do with increased nutrient capacity within the pond. Does anyone have any information about long-term, sustained Azolla

control? It is a N fixer, maybe something has depressed the N in the pond allowing for the N fixer to take advantage of the low nutrient system. Hand pulling velvet grass (so its not impacting the red legged frog).

Sarah Sweet, TNC – typically a wildlife component mixed in with restoration project. The riparian forest restoration; the yellow billed cuckoo is a bird of concern and in the wet zones, there is a problem with rats (nonnative). Waterfowl a concern in seasonal wetland. Open areas with yellow starthistle problems; tried goat control which worked really well. Natural wetlands have a population of garter snake that are genetically distinct from surrounding populations – have a water primrose problem. The garter snake does well with moderate levels of primrose, but once it gets higher then there is a negative impact on the garter snakes (exclusion, changing of habitats). Have you run into a problem with the primrose plant on the snakes? Not yet. Excavated 1 acre pond that removed the primrose and there was a very dramatic response – before, there were no garter snakes, after – there were more garter snakes present.

Need to think about soil disturbance and weeds that get tracked in; how can you get people who are focused on animals to include and think about other parts of restoration (i.e. soil erosion) as well?

What is the level of permitting that you deal with? We have to do it project-by-project because a large consortium of project partners are involved. Have to do NEPA evaluation for every project no matter what type of land it is on (private, public, etc).

Camp Pendleton - Pacific pocket mouse. Biggest issue: invasive species expanded into the site – some people from USGS said that the seed source may be important for the pocket mouse so had to wait for the results before they could eradicate.

Thatch removal and iceplant removal helps restore the pocket mouse recovery – needs open space.

Sonoma Ecology Center – Target species: steel head trout and freshwater shrimp. It is hard to do invasive removal in habitats that house the wildlife, particularly because some non-native plants do provide in-stream cover for aquatic sensitive species.

Ventura Hillside Conservancy – need to restore upper watershed in order to restore lower watershed. Need to design a restoration project that convinces funders that its not useless to eradicate watershed downstream. Target the locations that have the most at stake; places that have the potential for wildfire.

Hobo Jungle: homeless camp. How do you restore ecological and social function back to a socio-ecological system?

Sequoia and Kings Canyon NP– reed canary grass removal. Replanting with bull rush. No wildlife monitoring component. Want to know how to do this in the future? No listed species in that area, but just wanted suggestions on good practice.

Bugs, bears, birds, and frogs are managed separately from vegetation. Would like see wildlife co-managed with plants.

Velvet grass removal on 15 river miles stretch. Hasn't incorporated wildlife considerations but recognizes that it would be a good thing to do. Need to think about canopy cover for small mammals and birds. How far up in elevation has the invasion gone? – into golden trout habitat.

SF Bay National Wildlife Refuge – restore communities adjacent to the tidal marsh. Most of the habitats are nearly extirpated; can't use herbicide because the area is too large.

Monitoring grazing: people don't like seeing grazing animals near their homes or where they hike.

Ecosystem approach until you are dealing with a specific listed species then it turns to a species specific approach.

Coastal wetland and dune restoration – having listed species might influence agencies not to use herbicide but how do you measure the residual/baseline soil contamination so that you can determine if the contamination is from your project or from previous projects. Look into the elkhorn slough: they have dealt with this problem before (after a levee break moved contaminated soil into their land).

Joshua Tree NP – How do we incorporate invasive species management with wildlife projects? Brassica tournefortii is a big issue – the desert tortoise is federally listed – not a lot of research but apparently the brassica is a bad source of food for the tortoises

San Francisco peninsula watershed – restoration for red legged frog. Each site has a different spin on how much emergent vegetation there should be in the pond. The young require sunny areas and the adults require cover – waiting to see which ponds are successful based on how emergent the vegetation is.

Volunteer in San Diego – Tecalote canyon. Can't do restoration work in certain areas because of the homeless population along the river – need police escort. Arundo resides in a lot of backyards as well. A problem with palm trees in san diego riparian areas (they are invasive in this area) – people like palm trees so get a lot of resistance from the public. What about use by orioles? Haven't seen a lot of orioles in the canyon and the issue has not come up.

Golden Gate National Park Conservancy – Palm trees with orioles here. There is a lot of diversity of song birds – when I remove the invasive species, how do I maintain the high bird diversity? How do I maintain good habitat while doing large restoration efforts? You can use artificial structures and nest boxes. If the birds are using scrub, you could plant more scrub. If there are nonnative plants that aren't invasive and “drop out” efficiently after native seeding but that are good habitat maybe you can think about keeping those in your plots.

Stagnation of data sets because have to stay consistent with previous methodology in order to compare. Trying to develop more protocols for monitoring wildlife that allows for dynamic flexibility. Suggestion: do updated method simultaneously with old method and compare to see if they give you consistent results, or so that the biases of either method can be accounted for.

How do nonchemical techniques such as hydroblasting affect the wildlife and soil erosion of an ecosystem? Can use concentrated seawater which is not a mixed compound so it's not regulated – but would there be negative effects on the ponds? What about soil salinity? Is not species or genera specific – may kill all of the plants that are present. Salt bush and salt grass showed up more and monkey flower came back. After a few years most of it leached out, restoring the soil salinity. Check with Joe Trumbo with fish and game regarding toxicity of glyphosate against

amphibian larvae, which are not regularly tested for toxicity because EPA standards do not rely on amphibian responses.

UC Davis McLaughlin reserve – The reserve was recently an industrial gold mining site and previously mercury mining site. Mining restoration project. Foothill yellow legged frog needs to be preserved during revegetation.