Frog Farming in Alameda County

Overcoming Barriers, Creating Opportunities

Like many ranchers in the Bay Area, Tim Koopmann has a few stock ponds on his land that he would like to repair. His biggest problem is the spillway on his largest pond, which has failed and is in serious need of repair. He used to fix such problems by throwing debris into the spillway to help hold the water and soil and act as a make-shift dam—as did his father and grandfather—but Tim has ceased this practice. He considered repairing the spillway with money out of his own pocket, but after reviewing the costs, he realized that it was just too expensive. "The cattle are paying their way," he says, "but I'm just getting by."

Cattle and red-legged frogs co-exist in harmony on the Koopmann Ranch. Photo courtesy of the Alameda County RCD

The deteriorating condition of the stock ponds is more than just an issue for ranchers and their cattle. These ponds provide important habitat for California red-legged frogs and California tiger salamanders, species that are at risk of local extinction. While the species continue to hang on in stream lagoons and natural ponds in California, much of their habitat has been degraded or lost after more than a century of human-caused damage to wetlands and riparian habitats. They now depend in large part on man-made ponds like Tim's for habitat. Fortunately, the Alameda County Conservation Partnership is creating new opportunities to help Tim and other ranchers repair these failing ponds.

Many of the estimated 650 ponds in existence in Alameda County today were installed between the late 1940s and 1960s. Almost half of these ponds were installed through cost-share and technical assistance programs conducted under the early Agricultural Conservation and Stabilization Service and Soil Conservation Service. Local ranchers installed some without federal assistance. They installed them to increase range productivity and, therefore, cattle herd size and income. Secondly and more importantly, the lagging profitability of ranching required ranchers to take a second job in town to help support their families and ranch. Ranchers needed a dependable source of water for their animals while they were away.

The ponds, designed to last 10 to 20 years, lasted well into the late 1980s until spillway erosion and sedimentation began to threaten their integrity. By this time, the cost to repair the ponds, along with the cost of environmental permits, became so expensive and time consuming that the ranchers began "letting the ponds go" and turning to spring development and tank and trough installation for cattle water.

"It's very expensive to repair these ponds," says Terry Huff of the Alameda County office of the USDA Natural Resources Conservation Service (NRCS). "Many ranchers don't even need them anymore since they now use solar power to pump water for cattle and other devices." So why are ranchers even interested in pond restoration? They still view their ponds as important parts of the landscape, recognizing that they also provide important wetland habitat for a variety of species.

Even though the landowners preferred to keep the ponds, few had the means to address the myriad hurdles to repair them. They would have to work with six different regulatory agencies and comply with an intimidating set of regulations covering endangered species, water quality, water rights, wetlands, public works, and navigable waters. Obtaining a Biological Opinion under the Endangered Species Act can include some very detailed and costly resource inventory and analysis, and take in excess of a year and a half. Some landowners took action by repairing their ponds without permits and with minimal engineering design — as did earlier generations — but soon gave up under threat of fines from the agencies. Now they have another option.

The Alameda County Permit Coordination Program

Tim Koopmann is one of many ranchers in Alameda County who has already applied for a new pond restoration program with a streamlined permitting process and a unique package of incentives. The Alameda County Permit Coordination Program is a joint project of the Alameda County Resource Conservation District (RCD) and NRCS. Together, the agencies work as the Alameda County Conservation Partnership, which seeks to facilitate small-scale conservation projects.

First developed in 1998 with the Elkhorn Slough Watershed Permit Coordination Program, permit coordination is a genuine "one-stop shopping" process for efficiently obtaining conservation permits. Since then, resource conservation districts and their partners have created similar programs in Morro Bay, the Salinas River watershed, the Navarro River watershed, and Marin County. Four more programs, including Alameda, are near completion, and nine more are being planned.

www.suscon.org/pir/watersheds/elkhorn.asp

Karen Sweet, Executive Officer of the RCD, and Terry Huff, NRCS District Conservationist, recognized the Elkhorn program as a model for Alameda County. With support from the RCD board of directors, they are making it happen. The resulting program will have agreements and master permits from six regulatory agencies for a set of 18 specified conservation practices and methodologies. The master permits cover eligible projects so long as landowners adhere to the agreements. In addition, the program will offer assistance with conservation planning, cost-share funding, and legal assurances to protect ranchers from increasing their liability under the Endangered Species Act. While most permit coordination programs focus on stream restoration, Alameda's program is the first to include pond restoration.

Tim Koopmann lauds the program. "It's a wonderful project," he says. And he should know. As a Watershed Manager for the San Francisco Water District, Tim worked with NRCS to help shepherd two individual pond restorations before the program was available. He is aware of the time, effort, and cost to permit and restore degrading stock ponds individually.

Tim looks forward to restoring his pond and to the peace of mind it will bring. "If not for the government funds, Environmental Quality Incentive Program (EQIP) and the Conservation Partnership, I would just have to let it deteriorate and come up with a cheaper fix, like tapping the pond into a trough and be done with it." He is also anxious to remove the accumulated debris from the spillway. "Restoration makes sound environmental sense," says Tim. As with other landowners, he feels the squeeze between doing the right thing for his business and the environment, and the costs to meet the needs of both.

Creating a Package of Incentives for Rancher Friendly Conservation

Development of a Conservation Program

Considering the potential workload of restoring up to 650 ponds in the county, the Conservation Partnership recognized the need to address the challenges identified by the landowners in a coordinated fashion. With six individual permitting authorities taking up to a year and a half to permit an individual project and costing thousands of dollars in permit fees, the first major challenge was clear.

With the RCD board of directors' approval in 2001, the Conservation Partnership met with Alameda County, the California Coastal Conservancy, and Sustainable Conservation, a non-profit environmental organization from San Francisco, to develop a cooperative agreement to fund development of a local program. The Conservation Partnership hosted stakeholder meetings with the local ranching community to determine its conservation needs and concerns. Aging stock ponds was just one of those issues raised. A grant from Alameda County enabled NRCS in 2002 to hire Ivana Noell as staff biologist, to provide the technical work, review local biological resources, and work with the regulatory agencies that permit local projects. In April 2003, the Partnership invited six regulatory agencies to attend a workshop. "They all showed up, so there was at least some interest," says Karen Sweet. At the meeting, all six agencies agreed to work collaboratively to develop a program that, in theory, would allow every agency's legislative mandates to be met.

Making Pond Restoration Work for Permitting Agencies

All six regulatory agencies eventually signed on to the Alameda County Permit Coordination Program. These agencies include the United States Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NOAA Fisheries); United States Army Corps of Engineers; California Department of Fish and Game; Regional Water Quality Control Board; and Alameda County Public Works Agency. The Public Works Agency gave regulatory exemptions to the Alameda County RCD, as it will hold the master permits and assume responsibility for the permit program.

Initially, two of the agencies expressed serious concerns that pond restoration might impact the Alameda Creek Watershed by causing erosion or the release of unwanted species into the local ecosystem. They raised questions about the effects on both native tiger salamander and the red-legged frog, and the invasive and predatory bullfrog. They were also concerned about the possible impact on the steelhead trout and its continued repopulation back into the watershed.

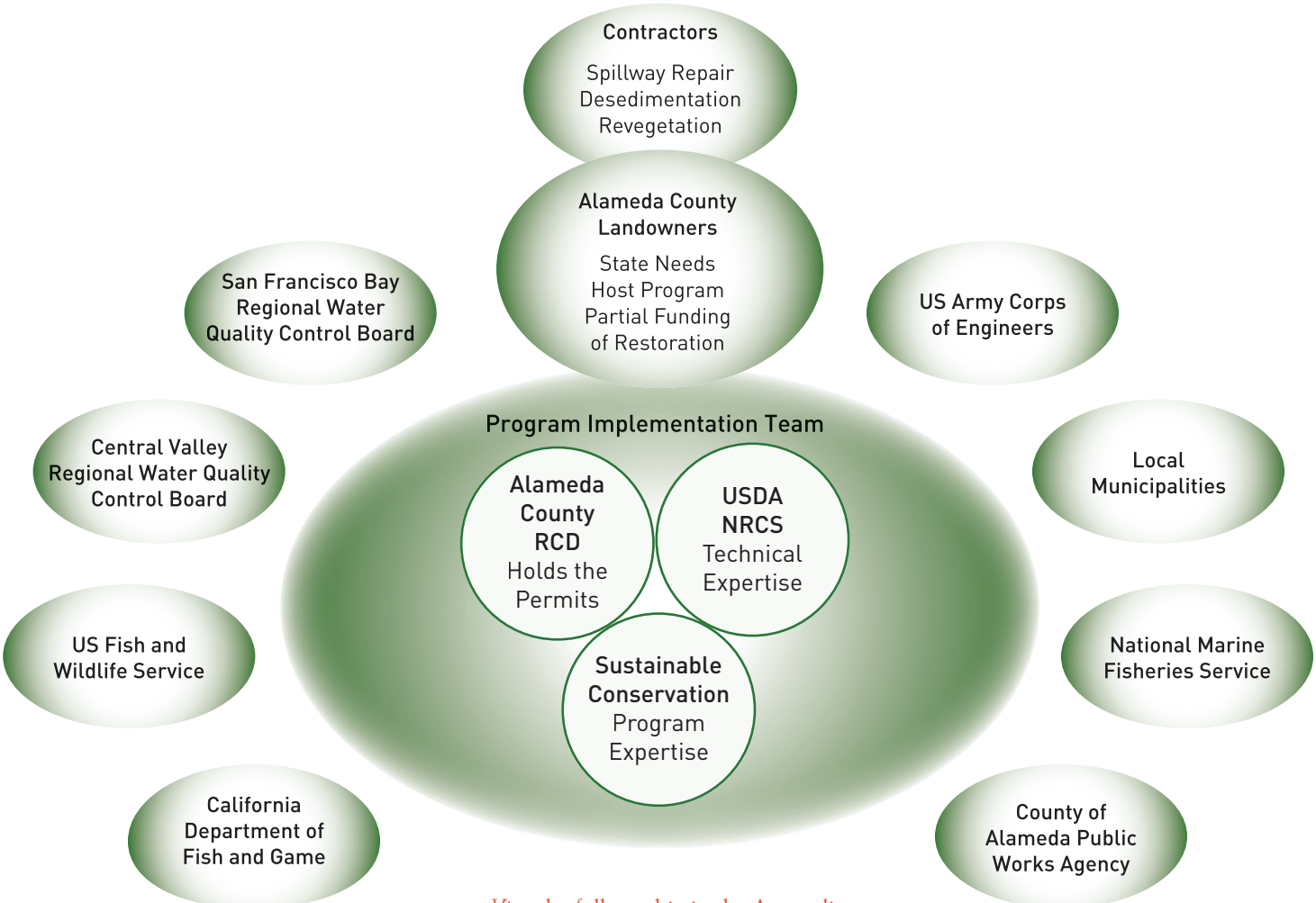
In response, the Partnership agreed to take greater care in planning the restoration and management of ponds near creeks and agreed to conduct pond restoration only upstream of existing steelhead trout barriers. In essence, when restoring stock ponds near steelhead-bearing streams, the Partnership agreed to act as if barriers had already been removed and the trout already repopulated.

www.dfg.ca.gov/nafwb/pubs/1998/manual3.pdf

http://swr.nmfs.noaa.gov/hcd/NMFSSCG.PDF

Alameda County Permit Coordination Program

Local Partnerships



View the full graphic in the Appendix

NRCS' trusted relationship with local ranchers enables Jackie Charbonneau to evaluate frog populations on private land. Photo by Keith Proctor

Once the program is fully in place, application time for pond restoration and other conservation projects will be approximately 30 days, not 1–2 years or more as under the existing permitting system. The program takes a huge load off of the regulatory agencies' staff and budgets and streamlines the process for landowners.

The pond restoration program can be used only for existing ponds. The California Department of Fish and Game requires that each landowner have a water-rights permit or application on file for the pond.

Encouraging Landowners to Restore Ponds

Not only does the program promise permit streamlining; it offers additional incentives that many landowners won't do without—cost-share funds and safe harbor agreements.

Each pond restoration project is estimated to cost on average $25,000. When the program was first announced, NRCS offered 50% cost-share assistance through EQIP. Although the program reduces the permitting challenge, few ranchers applied because their out-of-pocket share was too high. Realizing the need for more enticements to draw landowners into the program, the Partnership sought additional cost-share funds to reduce the landowners' share further.

The US Fish and Wildlife Service (USFWS) Recovery Branch and the Partners for Wildlife offered to cover an additional 40% of the cost-share for ranchers who restored ponds and took extra measures to enhance habitat for red-legged frogs and tiger salamanders. With a potential 90% cost-share, program applicants now will pay no more than $3,000 for each pond. "When we announced a 90% cost-share for pond restoration, our applications went from three to twenty in one month," says Huff. NRCS is seeking additional funding to pay landowners $1,000 per year per pond to maintain them for 10 years, at which time full maintenance costs revert to the rancher. For now, a 90% cost-share program with technical assistance and a 30-day application and permit process is hard to pass up.

The final challenge was landowners' concerns that, by preserving their habitat and attracting species, they would become subject to additional liability under the Endangered Species Act. To address this, the Conservation Partnership forged a partnership with Environmental Defense, a national environmental organization, and negotiated with USFWS to develop a wildlife-friendly pond design and to include safe harbor-like legal assurances into the Biological Opinion for the permit coordination process.

The Biological Opinion provides incidental "take" authority covering red-legged frogs and tiger salamanders during restoration and management of the ponds, as well as during routine ranching activities. This provides assurances that if a landowner improves his land in a way that attracts listed species, the landowner will not incur any new regulation. Additionally, if the landowner satisfies the conditions of the agreement with the Partnership and at the end of the agreement needs to use the land for another purpose, the landowner will not incur any new regulation as a result of the loss of the species habitat (the "reversibility clause"). In light of landowners' historical distrust of the environmental regulatory system, this important program component provides the landowner with peace of mind.

Timeline to Implementation of the Alameda County

June 2001
Partnership began discussions with Alameda County Public Works Agency on the need for a coordinated environmental permitting program following the lead of the Elkorn Slough Partners in Restoration Program.

January 2002
Applied to the California Coastal Conservancy for a $50,000 grant to support staffing for the permit coordination program. Grant approved and received in September 2002.

"It's a win-win solution to repair ponds within the ESA and CEQA [California Environmental Quality Act] regulations," Karen Sweet observes. "A repaired or enhanced pond has more value when selling an easement or a parcel in fee title for habitat mitigation. At the very least, landowners have the satisfaction that they are doing the right thing for their land's resources for the long term and for their heirs. They are demonstrating their stewardship ethic. Landowners deserve recognition for their conservation commitment and investment." Karen envisions future service agreements or mitigation fees will pay ranchers to manage endangered species habitat.

The program thus created a comprehensive package of innovative solutions and incentives. To participate, the first step for ranchers is to develop a resource management plan with NRCS. This free assistance creates a detailed plan that addresses all the issues concerning soil, water, air, plants and animals, and the people who manage the land. The plan may cover the entire ranch or only the portion that the conservation project will affect. It enables landowners to manage literally hundreds of resource problems from eroding stream banks to failing ponds to loss of raptor habitat.

In summary, the Alameda County Permit Coordination Program offers a one-stop process for landowners interested in restoring and enhancing pond habitat including:

- A detailed resource management plan
- EQIP cost-share assistance
- USFWS cost-share assistance for pond restoration
- A coordinated permit for all agencies with limited costs
- Built in legal assurances for endangered species liability

A serious set of challenges has been addressed head-on, benefiting the landowners, agencies, and endangered species. Twenty ponds have been slated for restoration in 2005–2006 in the new program.

View the Aladmeda County RCD Permit Budget

Karen Sweet, Executive Officer of Alameda County RCD, and her husband Darrel, former president of the California Cattleman's Association, also have stock ponds on their ranch in Alameda County. • Photo courtesy of Alameda County RCD

Permit Coordination Program

June 2002
Developed a co-operative agreement contract with NRCS and Alameda County to fund staffing for the permit Coordination Program. $125,000 received.

December 2002
Hired biologist to provide program leadership. NRCS biologist and ecologist attend four-day training workshop on permit coordination presented by Sustainable Conservation in San Francisco.

January 2003
Began negotiations with agencies, including formal and informal meetings and communications.

April 2003
Conservation Partnership held regulatory forum in Alameda Co. Attended by all six jurisdictional regulatory agencies.

May 2005
Partnership hosted a workshop on the biology, habitat, and threats to the California red-legged frog with noted biologists Galen Rathbun and Norman J. Scott, Jr.

July 2005
Expected completion of review process of the Permit Coordination Program.

Restoring Stock Ponds to Create Habitat for Red-Legged Frogs*

Outside of stream lagoons and natural ponds that still exist, man-made stock ponds on rangeland provide important supplementary habitat for the California red-legged frog. The little amphibian is very adaptable to its environment, provided it does not have to worry about predators or early-drying ponds. However, either of these conditions can lead the disappearance of entire populations. The Mediterranean climate of Central California is characterized by wet, rainy winters that flush waters clean, and long, dry summers that often break the life cycle of some of the red-legged frog's greatest predators.

The red-legged frog breeds in winter, between December and April. At any one location, breeding takes place during a short period of 2–3 weeks. Depending on water temperature (the warmer, the better), eggs will hatch within a few days or a few weeks. Tadpoles will develop through spring, and should complete their metamorphosis to juvenile by late August. Some tadpoles will over-winter in certain instances, but this is rare. In summer, frogs prefer water deeper than one meter to escape predators. Warm, dry summers can cause water to be scarce, so the frog might find refuge in well boxes, deep water holes of a drying stream, squirrel holes, near small springs and seeps, and under damp leaf litter.

Carefully timing the drainage of stock ponds can also help the red-legged frog survive, while dealing an additional blow to predators. Draining and drying stock ponds is not necessary each year; every three or four years will also have an impact on predator life cycles. The majority of bullfrog tadpoles will not develop fully until the following year, so draining a pond after August helps control this non-native frog as well as predatory fish. Chemical control of ponds is possible, but this option requires additional permits from the California Department of Fish and Game and the USFWS. To provide alternative water for cattle when the pond is drained, a catch basin could be placed below the pond and managed to prevent any predator growth. This is also a good idea if draining the pond might release unwanted predators into streams below the pond. When the pond is refilled, provided it has both deep and shallow sections and partial vegetation, the red-legged frog should return in its own time.

If a pond is suitable habitat, the frogs will come, though they might not do so right away. They are looking for two main conditions: deep water for cover and shallow water for rearing and growth. They do prefer some vegetation in and around the pond, but too much can cool the water beyond the frog's comfort level.

Cattle grazing can help control predators by keeping shallow areas free of vegetation. Controlling the number of cattle visiting a stock pond at any one time, perhaps by fencing a part of the pond, may help maintain good habitat while allowing continued cattle access. Maintaining a nearby dense terrestrial habitat for short-term frog refuge when the pond dries is helpful.

Pond Repair

The Permit Coordination Program in partnership with Environmental Defense and USFWS has established a wildlife-friendly pond design, specifying pond depths, loafing areas, vegetation, and management measures for the surrounding landscape. For example, maintaining ground squirrel habitat

Fencing controls livestock access to the pond during sensitive breeding periods. Photo by Keith Proctor

* Source: Scott, Norman J., Jr. and Galen B. Rathbun. 2002. Stockpond management for the benefit of California Red-legged frogs *(Rana aurora draytonii)*; Alameda County Conservation Partnership. Workshop. Biology and Management of the California Red-legged frog *(Rana draytonii)*. Livermore, California. May 2–3, 2005.

during the restoration process is important to support aestivation habitat for the frogs and salamanders.

View the Timeline to Implementation of the Alameda County Conservation Permits Coordination Program

Pond restoration begins after the environmental review process is done and master permits are issued. Contractors are hired to carry out spillway repair, desedimentation, revegetation and drain installation. "The contractors that tend to work on the ponds and other agricultural projects are usually local contractors that either are ranchers themselves or who work primarily on agricultural lands," explains NRCS Ecologist Jackie Charbonneau. "Many of the local, licensed contractors are second or third generation ranchers. Usually it is better to have somebody that has a ranching background work on these types of projects because some ponds may be situated in difficult terrain. Contractors with ranching experience generally know how to deal with these conditions."

Robert Nielsen is that someone who knows how to deal with these conditions. A third generation rancher as well as a licensed contractor, Robert notes that spillway erosion is a major cause of pond failure. "Spillways should be used for emergency flow, not continuous flow," he says. "The greater the slope of the spillway, the greater the chance that it will erode much quicker. Less slope; less erosion." Robert admits there are some situations where it might be better, cheaper, and faster to just build a new pond. Although he doesn't work directly with the various regulatory agencies, he operates under the watchful eye of biologists on site. During the project, he must be able to recognize various listed species immediately when he sees them, and then proceed according to strict protocols.

In the past, landowners threw debris into broken spillways. Today, there are other armaments with which to reconstruct a spillway, including a geoweb (honeycombed cell with backfill dirt), riprap (rocks crushed to a certain dimension for the project), or cabled cinderblocks. Hearty compaction of earth around the armament coupled with strong vegetation growth complete the new spillway's strength.

View Pond Restoration Costs

Educational Workshops

In May 2005, the Conservation Partnership hosted a workshop on the biology, habitat, and threats to the California red-legged frog with noted biologists Norman J. Scott, Jr. and Galen B. Rathbun. Both biologists have studied the red-legged frog for more than 10 years. The workshop, entitled Biology and Management of the California Red-legged Frog *(Rana draytonii)*, focused on the threatened amphibian and its life cycle as well as habitat management. It provided extensive background on its history, identification, causes for population decline, and various studies, anecdotes, and resources.

The workshop complemented the Permit Coordination Program by educating local landowners, private businesses, and regional regulatory staff about the threatened species and the relative ease of providing good habitat for these species.

View Red-legged Frog Information

Workshop field tour. • Photo by Keith Proctor

Summary

Management of land for both agricultural and environmental benefits is creating a cultural shift in America, as both policy makers and the general public develop effective programs such as this one. This shift is well underway in Alameda County, thanks to the leadership and innovativeness of the Conservation Partnership and the collaboration of organizations such as Environmental Defense and government agencies. Ranchers are deliberately enhancing habitat for endangered species in man-made stock ponds, thereby supplementing the broader public effort to recover endangered species populations in their natural environment. Regulatory agencies are learning to value the resources and knowledge of local landowners whose hands-on experience and long-term commitment to the land they manage is essential to making "best land-use practices" work effectively.

In short, challenges are opportunities—you just need a vision and dedication like the Conservation Partnership to develop the tools, provide leadership, and facilitate innovation and voluntary conservation. The overall goal is to provide financial, technical and regulatory incentives to encourage landowners to strategically manage their lands for specific species habitat in the belief that once developed, this habitat will support species recovery for many years to come.

Critical Steps to Success

The Alameda County Permit Coordination Program is built on the three pillars of local leadership, participation incentives and partnership. The key ingredients for local conservation projects are in evidence here.

Vision: The Alameda County Conservation Partnership is pursuing a clear vision—facilitating voluntary programs that manage regulations for the benefit of the whole working landscape. They recognize that problems (eroding stock ponds) are really opportunities (habitat enhancement sites for endangered species).

Collaboration: The program is built upon a high level of trust developed during sixty years of partnership with private landowners. Likewise, by understanding the heavy workload of coordination with regulatory agencies and by providing practical solutions, the Partnership has built important mutual understanding and respect with the agencies and other organizations.

Resources/Resourcefulness: Focusing on the common interests of all stakeholders, the Partnership has leveraged both funding and in-kind resources from a wide variety of sources including Alameda County, US Fish and Wildlife Service, the California Coastal Conservancy, and Environmental Defense.

Planning: Faced with up to 650 failing ponds in the county, the Partnership recognized that a project-by-project approach wouldn't work. Working with a team of organizations and regulatory agencies, they created a systematic approach to handling multiple issues, including permitting and legal assurances.

Implementation: The landowners will hire contractors from the ranching community to repair the ponds, leveraging local knowledge and skills to meet new conservation goals.

Education: The Partnership conducted workshops to provide training in the biology and management of red-legged frog habitat. In addition, the Partnership is conducting media outreach, presentations, and field tours for the public, government agencies and legislators to showcase landowners' voluntary commitment to natural resources enhancement.

Comparing male and female frogs. • Photo by Keith Proctor

Summary of the Program's Innovative Conservation Strategies

- Stock pond repair for frog habitat benefits ranchers, endangered species, and the watershed as a whole.
- Permit coordination facilitates and streamlines conservation.
- Legal assurances under the Endangered Species Act are important for landowners who voluntarily enhance habitat for endangered species on their land.
- Increased cost-share assistance provides a significant incentive to participate in pond repair.

Recommendations/Lessons Learned

- Work first with the ranching community's leaders; others will follow.
- Develop goodwill, mutual understanding and respect to improve relationships with landowners, government agencies, organizations and the general public alike.
- The CEQA process is not as difficult as anticipated, but it is advantageous to have a CEQA advisor work with your board and staff.

Case Study written by Keith Proctor, with assistance from Terry Huff, Karen Sweet, and Ivana Noell.

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