

## Letter of Intent to the Community Foundation of Sonoma County

**Organization:** Audubon Canyon Ranch  
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**Organization Web site:** www.egret.org  
**Program/Project Title:** Early Detection and Rapid Response to Protect Sonoma's Wildlands  
**Field of Interest:** Environment

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1. Is your organization a 501(c)3? Yes: #94-6069140. Please see attached.

2. Describe your organization's mission and state the year you were incorporated. Audubon Canyon Ranch (ACR) protects the natural resources of its sanctuaries while fostering an understanding and appreciation of these environments. We educate children and adults, promote ecological literacy that is grounded in direct experience, and conduct research and restoration that advances conservation science. ACR was incorporated in 1962.

3. Describe the opportunity or condition(s) in the community that your proposal addresses. Of all the ways that humans are changing Earth, biological invasions are the most enduring. Human transport of organisms is reconnecting continents, resulting in devastating invasions such Sudden Oak Death, Yellow Star Thistle, and West Nile Virus. Invasions are now the second leading cause of extinction, and are very long-lasting. It will be millions of years before new species evolve to replace those lost to the biological invasion crisis.

Human medicine has dealt with analogous challenges and established early detection and rapid response (EDRR) as critical for protecting human health. Scientists and land managers are reaching similar conclusions. California's 2004 Invasive Weed Action Plan identifies early detection and rapid response as the "most important element." In 2005 the Ecological Society of America identified early detection as a key solution. While early detection is widely recognized as the most cost-effective approach, there are few EDRR efforts serving wildlands. Advances in information technology, and improved coordination among environmental professionals, now make it possible to set up robust early detection systems.

In 2006, ACR's Dan Gluesenkamp and Andrea Williams from the National Park Service established a Bay Area Early Detection Network (BAEDN) to coordinate early detection in the 9-county Bay Area. The BAEDN now includes dozens of agencies and organizations. This collaboration collects detection information from professionals and citizens, prioritizes detections to ensure important outbreaks are addressed, and provides a coordinating nexus for rapid response and monitoring of success. To complement BAEDN's detection effort, Sonoma's Weed Management Area (WMA) is building a Rapid Response Program to treat the highest priority occurrences. Outbreaks prioritized by the Bay Area Early Detection Network will be treated by Weed Management Area partners, monitored for success, and results reported back to the network.

Both of these exciting initiatives are the result of efforts by Audubon Canyon Ranch biologists, who built the BAEDN, led Sonoma's Weed Management Area, and testified in the state Capitol to create the legislation which funds WMAs. These actions reflect dual commitments: to early detection as a scientifically sound approach; to collaborative stewardship as a moral responsibility. For example, Audubon Canyon Ranch biologists are organizing annual surveys for invasive *Spartina* and Perennial Pepperweed and leading eradication actions against detected infestations. In ACR's 2006 Strategic Plan, early detection was made Strategic Goal 1.1.2.

4. Describe the proposed project that will respond to the opportunity or community conditions. The project supports the BAEDN in detecting and prioritizing the most urgent infestations in Sonoma County, and enables the WMA to respond to priority outbreaks before they cause significant harm. Finally, ACR biologists work, locally and regionally: protecting the diversity of Sonoma Valley, and building these collaborative systems to protect the wild beauty of all Sonoma County.

The proposed work will support the following actions:

- BAEDN will develop a list of priority species. Hundreds of citizens, botanists, and land managers across Sonoma will make critical detections and report these to an online database.
- BAEDN will complete the online occurrence database, which integrates the Calflora database with Google Maps. Use will be taught to partners, who will then train their staff and volunteers.
- Occurrences also will be found by data mining literature, herbaria, species lists. List will be prioritized using science-based tools, then given to Sonoma's Weed management Area and hundreds of partners so they can begin removing highest priority occurrences.
- The WMA will lead rapid response efforts, helping agencies and landowners remove priority occurrences from their lands, collecting detections, and reporting results to BAEDN.
- Audubon Canyon Ranch biologists will implement early detection goals of ACR's 2006 Strategic Plan; detect and remove outbreaks; assist neighbors; continue to lead the BAEDN and other efforts; provide science-based input toward policy that addresses the biological invasion crisis.

5. Describe changes you seek to effect concerning opportunity or conditions. We seek to create a system to improve natural land management, ultimately saving millions of dollars and protecting numerous species from extinction. This can be accomplished by improving what we are already doing.

For example: In June 2008 Distaff Thistle was detected in Sonoma Valley. Tony Nelson of the Sonoma Land Trust made the detection and reported it to Bouverie staff, who scheduled the volunteer "Bouverie Stewards" to visit Glen Oaks Ranch and remove the entire outbreak. One week later, Bouverie's Sherry Adams found Purple Star Thistle growing near the Valley's only wild population of the endangered Sonoma Sunshine. Sherry verified identification, notified neighbors, removed every thistle before seed set, and reported it to the Calflora database. While these are the first Sonoma Valley detections of these two species, they are well-known elsewhere; in Marin County thousands of acres of rangeland and open space are infested, ranchers are losing their livelihood, and county staff need enormous amounts of funding to protect an imperiled organic farming industry. The thistle stories demonstrate the power of simple solutions. The Bay Area Early Detection Network and the Weed Management Area are an opportunity to build a community of detectors and responders to multiply this simple solution by hundreds of actors over thousands of acres.

6. What is the geographic area your program or project will serve? The project supports the Sonoma County portion of a system that benefits the Bay Area and may be adopted statewide. Special benefit will be felt by Sonoma Valley.

7. State the total amount of funds requested and list kinds of expenses the grant will cover. ACR requests a \$25,000 grant to fund this project in 2008. This includes: \$9,000 for BAEDN early detection; \$5,000 for WMA rapid response; \$11,000 for ACR to lead these regional efforts and complete early detection work in the Bouverie Preserve neighborhood.

Sincerely,

Maurice A. "Skip" Schwartz, Executive Director

*Audubon Canyon Ranch Proposal to the Community Foundation Sonoma County  
September 15, 2008*



# Full Proposal to the Community Foundation of Sonoma County

## Conditions: The Ecological Challenges of Biological Invasion

We are blessed to live on a planet that nurtures a grand diversity of living forms. Most of this diversity evolved in the 250 million years since the breakup of Pangaea. As the supercontinent split into disconnected continents, the evolutionary stories of these separate zoogeographic realms diverged and radiated. Traveling among Earth's five continents is comparable to visiting different five planets, and parallel evolution has given form to alpacas in South America, ostriches in Africa, and bighorn sheep in North America. Adaptive radiation among tarplants in California has created a suite of summer-blooming annual sunflowers, including rare plants that specialize on uncommon soil types, all of them uniquely Californian. In Mediterranean Europe, adaptive radiation among starthistles has created a nearly identical suite of beautiful summer-blooming annual sunflowers that are uniquely European. Such convergence could be seen as wasteful duplication, but we cherish this diversity of flowers as the irrepressible effervescence of evolution's creative energy.

We are challenged to live in a time when the human transport of organisms through trade and via accidental introduction is reconnecting zoogeographic realms, and the diversity of life is being homogenized. Today, many of California's tarplants are in danger of extinction due to competition with invasive species such as European starthistles. In Sonoma County we recognize the biological invasion crisis as we cope with devastating invasions such Sudden Oak Death, Ludwigia, and West Nile Virus. Biological invasions are now the second leading cause of extinction. In the spring, Sonoma's grasslands were once colored with the sweet scent of native wildflowers; today they are brown with European grasses. At Kenwood Marsh and Pitkin Marsh, we find the last survivors of rare flowers that were widespread before the Sierra Nevada mountains were raised. Now they are endangered species. We dig through invasive velvet grass and Himalayan blackberry to count fewer blooms each year, and desperately seek methodologies to counter the overwhelming advantage of these aggressive invaders. If only we could have detected these invasions when they were small enough to stop!

Of all the ways that humans are changing Earth, biological invasions are the most enduring. It's possible that if humans were to cease emission of greenhouse gasses today, in a thousand years the signature of climate change would be hidden in the ratio of carbon isotopes in seashells and ice bubbles. However, we know that it may take 100 million years for new species to evolve to replace those lost to biological invasion. The signature of our current biological invasion crisis will be detectable for as long as there is life on this planet. This tragedy is compounded by the fact that the rate of introductions is increasing, with new species introduced to Sonoma County each year. Fortunately, these changes are largely preventable. Audubon Canyon Ranch (ACR), with the Community Foundation of Sonoma County as its funding partner, can organize the resources and leadership already present in Sonoma County to preserve the native biodiversity of our shared natural heritage.

### 1. ACR's EDRR Program in Sonoma County:

The Early Detection and Rapid Response program described in this proposal will identify and proactively remove the most harmful incipient plant invasions, while outbreaks are still

small enough to control and before they inflict ecological harm. Human medicine has long relied on early detection and rapid response (EDRR) to protect human health. Scientists and land managers are reaching similar conclusions. The state of California's new Invasive Weed Action Plan identifies early detection and rapid response as the "most important element" in prevention. Advances in information technology, and improved coordination among environmental professionals, now make it possible to set up robust early detection systems.

Audubon Canyon Ranch's EDRR project builds an integrated system with two main components. Early detection of the most harmful invasive plant infestations in Sonoma County is conducted by the Bay Area Early Detection Network (BAEDN). Rapid response to treat the highest priority detections is conducted by the Sonoma-Marine Weed Management Area's Rapid Response program. While these two component projects are collaborative efforts that include dozens of agencies and numerous individuals, both were initiated by ACR science staff, and ACR will continue to lead implementation of the work described in this proposal.

Specific community needs met by the EDRR program include:

- 1) Agencies and citizens need a "go-to" place, a clearinghouse which collects reports of detections and coordinate follow-through for rapid eradication in each case. Hundreds of individuals throughout Sonoma County currently are detecting occurrences of high priority weeds. However, these detections are wasted as there is nowhere to report them for tracking and response; inevitably they are neglected until the infestations have grown beyond our ability to treat. The BAEDN will provide a clearinghouse for receiving detections, a user-friendly occurrence reporting system and dedicated staff supporting all interested detection partners throughout Sonoma County. This will make it possible to treat the most harmful outbreaks and will provide critical infrastructure to protect Sonoma's natural resources.
- 2) Through organized prioritization, we can treat the most important outbreaks first. Too often, we direct our limited resources to treating large and highly visible weed populations that actually have a poor chance of control. The BAEDN will prioritize invasive plant occurrences for treatment, ensuring that we first treat the smallest populations of the worst weeds in the most ecologically sensitive sites. This valuable service will increase the strategic nature and effectiveness of invasive plant work, both within agency programs and throughout the region.
- 3) We need to remove the most harmful occurrences while they are still small enough to treat and before they harm the environment. Early detection must be followed by rapid response. The Weed Management Area (WMA) will coordinate these rapid response actions: working with WMA partners to ensure outbreaks are treated; providing support to ranchers and private landowners; conducting treatments where requested; and training volunteer teams to build our capacity to respond to the growing number of detections made by the BAEDN. This will ensure that the project results in measurable improvements to our county. It will also build a culture of accountability among natural resource managers, defining shared goals and establishing clear metrics by which we can measure our success.

## **2. Outcomes of the EDRR Program**

At the end of this project year, Sonoma County's will be served by an integrated early detection rapid response network of citizens and agencies working together to protect the health of Sonoma wildlands in the way the Centers for Disease Control protects human health. These accomplishments will prevent tomorrow's problems today and will provide infrastructure and inspiration for a new and coordinated era in saving Sonoma's singular natural legacy.

### **3. Measurable Outputs**

- A. Assess the invasive plant species of Sonoma County for invasiveness and produce a list of the highest priority detection targets.
- B. Work with CalFlora to finish a user-friendly Google maps-based occurrence reporting portal.
- C. Adapt National Park Service detection protocols for use in Sonoma County.
- D. Train volunteers and other detection partners in use of the detection portal and reporting protocols.
- E. Data mine available sources of occurrence information and put these locations in the online map database. Sources include: CNPS member plant lists; Cal-IPC county maps; agency plant lists and databases; herbarium records; local botanists and citizens.
- F. Analyze the database list of detections to prioritize individual occurrences for treatment.
- G. Provide prioritized treatment schedules and maps to agencies and rapid response partners so they can conduct treatments.
- H. Coordinate with partner agencies to ensure treatment of highest priority occurrences, and to ensure that treated occurrences are reported for tracking.
- I. Provide technical assistance, tools and resources, and labor to ensure that highest priority occurrences are treated.
- J. Evaluate annual progress and communicate Early Detection and Rapid Response project results to public and partners via a fully-illustrated annual report.
- K. Share all resources with colleagues in other regions such that our project provides the template for similar networks throughout California.

### **4. Indicators:**

- A. Prioritized inventory of the invasive plants of Sonoma County is completed.
- B. Online occurrence-reporting portal is completed, and is used by at least 5 agencies and by at least 20 individuals.
- C. Detection protocols completed and the document available to participants.
- D. At least one training for volunteers and other detection partners, with at least 25 individuals trained and including at least 5 agencies.
- E. Citizens, volunteers, and professionals reporting detections, with at least 100 invasive plant occurrences reported.
- F. List of literature and other sources to be data-mined.
- G. At least 50% of listed sources successfully integrated into occurrence database, with at least 100 occurrences entered.
- H. Database of occurrences is prioritized for treatment.
- I. Treatment prioritizations and maps provided to at least 5 agencies or other partners.
- J. On partner lands, at least 50% of top 50 highest priority occurrences are treated.
- K. Countywide, at least 50% of top 100 highest priority occurrences are treated.
- L. Maps indicating all detections and indicating all treated occurrences.
- M. Annual report completed and at least 100 copies of annual report distributed.
- N. Project templates and lessons shared at least one professional meeting or conference.

## **5. Partners and Collaborators:**

Audubon Canyon Ranch will partner with two organizations to accomplish these goals: the Bay Area Early Detection Network (BAEDN), and the Sonoma-Marine Weed Management Area (WMA). ACR's Director of Habitat Protection and Restoration, Dr. Daniel Gluesenkamp, is founder and co-chair of the BAEDN, and leader of the Sonoma-Marine WMA Rapid Response project. The requested support will fund Dr. Gluesenkamp's work to build these two programs, will support the detection and eradication work that takes place at the Bouverie Preserve of ACR in Sonoma County, and will enable ACR science staff to participate in both organizations and contribute to completion of the outcomes of the entire EDRR program.

The Bay Area Early Detection Network is a collaborative partnership of regional land managers and invasive species experts. The BAEDN coordinates Early Detection and Rapid Response throughout the nine county San Francisco Bay Area, proactively identifying incipient outbreaks before they can grow into large and costly environmental threats. This "stitch-in-time" approach prevents the environmental and economic damage caused by these invaders; educates citizens regarding natural resource stewardship; and dramatically reduces the need for the planning and resources required to control large, established invasive plant populations. The Bay Area Early Detection Network will contribute to portions of the project focused on early detection. This includes implementing Outputs A – G, J and K.

The Sonoma-Marine WMA was formed in 2001 and unites individual ownership and jurisdictions for the purpose of mapping, planning, monitoring, research, and conducting voluntary weed management programs. Active partners include the main land management agencies in Marin and Sonoma counties, and these partners collectively protect thousands of acres of wildlands, parklands, and ranchlands. These partners currently cooperate via the WMA, sharing information and strategies in bi-monthly WMA meetings. The Sonoma-Marine Rapid Response program removes incipient populations of harmful invasive plants before they can grow into large and costly control projects. The Sonoma-Marine Weed Management Area will contribute to portions of the project focused on rapid response. This includes implementing Outputs H and I.

## **6. Sequence of Steps:**

Early detection and rapid response has been a key component of Audubon Canyon Ranch's Habitat Protection and Restoration program since the program was founded 2001. In 2006, Audubon Canyon Ranch adopted a strategic plan, which identified early detection and rapid response as key to the first strategic issue. The Bay Area Early Detection Network was formed in 2006, now includes hundreds of participants from multiple agencies in the nine county San Francisco Bay Area, and will hire its first staff in the next couple months. The Sonoma-Marine WMA Rapid Response program began in 2008 and will hire new staff for the 2009 field season.

Step 1: Outputs A, B, C are expected to occur in November – December 2008.

Step 2: Outputs D, E are expected to occur in January – March 2009.

Step 3: Outputs F, G, H, I, are expected to occur in April – September 2009.

Step 4: Output J is expected to occur in January 2009.

Output K is expected to occur throughout the project period, with the most comprehensive presentations given in fall 2009.

## **7. Qualifications of Key Staff:**

Audubon Canyon Ranch is a 46-year-old organization with a strong history of programmatic success. It is governed by a 33-member Board of Directors, the great majority of who also donate volunteer time to our programs. Day-to-day operations are managed by a staff of scientists, naturalists, and administrative and fundraising personnel. Audubon Canyon Ranch also has a dedicated volunteer corps of nearly 800 skilled individuals who serve as Habitat Protection project volunteers, nature education program docents, and scientific research volunteers. The proposed work will be implemented by the following positions:

**Dr. Daniel Gluesenkamp** is the Director of Habitat Protection and Restoration for Audubon Canyon Ranch and leads in the development, implementation, and evaluation of conservation and restoration projects at ACR's preserves. His work involves experimental evaluation of management techniques, oversight of stewardship activities such as non-native species control, and regional collaboration with local landowners, non-profits, and other agencies. He earned his Ph.D. in Integrative Biology at the University of California at Berkeley. Daniel serves as current past-president of the California Invasive Plant Council, is co-founder of the Bay Area Early Detection Network, and created the Sonoma-Marin WMA's Rapid Response program.

**The BAEDN Coordinator** is the lead staffing for the Bay Area Early Detection Network. The position is funded with generous support from the California Department of Food and Agriculture, the National Fish and Wildlife Foundation, and the U.S. Fish and Wildlife Service. The Coordinator is a new 100% FTE position, to be recruited under this proposal, with employment to begin in October 2008. Goldridge Resource Conservation District serves as fiscal agent for this position and oversight is provided by the BAEDN's eight-person Steering Committee.

**The Sonoma-Marin WMA Rapid Response Coordinator** is the lead staffing for the WMA. This new position is partially funded with generous support from the California Department of Food and Agriculture and the National Fish and Wildlife Foundation. The balance of the salary of the Coordinator would be funded by CFSC through this proposal. The Coordinator is a 50% FTE position and will be hired in January for the 2009 field season. Goldridge Resource Conservation District serves as fiscal agent for this position and oversight is provided by the WMA chair.

## **8. This Grant Will Pay for:**

Audubon Canyon Ranch requests a \$25,000 grant to fund this project in 2008. Total cost for this year is projected to be \$34,564. This request includes \$11,000 for Audubon Canyon Ranch staff to direct the effort, assist with completion of the listed Outputs, and conduct detection and response on Audubon Canyon Ranch's Bouverie Preserve; \$9,000 to BAEDN for early detection in Sonoma County; and \$5,000 to the Sonoma-Marin WMA for rapid response actions in Sonoma.