



County of Santa Cruz
Health Services Agency ♦ Environmental Health



Fish and Wildlife Advisory Commission

701 Ocean Street, Room 312, Santa Cruz, CA 95060
(831) 454-3154 TDD/TTY -Call 711 www.sceeh.com
EnvironmentalHealth@santacruzcounty.us

AGENDA
December 1, 2022, 7:00 PM

The meeting will be held both on Microsoft Teams and in person at **the Solarium Conference Room, at 1060 Emeline Avenue.**

PLEASE NOTE: The meeting room is on the second floor, above the Water Quality Lab entrance. The door must remain locked after hours, but staff will be able to see and provide access to all attendees as they arrive.

Agenda Item #	Start Time	End Time	Description
1	7:00	7:10	Call to Order
2			Roll Call
3			Approval of Minutes
4			Public comment for items not on the agenda
5	7:10	8:40	Public Grant Program: <ul style="list-style-type: none">• Determine grant recipients and amounts awarded• Discuss potential funding amount for 2023
6	8:40	8:50	January agenda items
7	8:50	9:00	Commissioner Reports and Announcements
8		9:00	Adjourn

Items of Interest:

Fish and Game Commission regulatory announcements: [New and Proposed Regulations - 2022 \(ca.gov\)](#)

The County of Santa Cruz does not discriminate on the basis of disability, and no person shall, by reason of a disability, be denied the benefits of its services, programs, or activities. This online meeting is available to anyone with a telephone. If you are a person with a disability and require special assistance in order to participate in the meeting, please contact Sean Abbey at (831) 454-2386 or TDD number (454-2123) at least 72 hours in advance of the meeting in order to make arrangements. Persons with disabilities may request a copy of the agenda in an alternative format. As a courtesy to those affected, please attend the meeting smoke and scent free.

Commissioner and Public Participation Information and Guidelines

Pursuant to AB 361 and Cal. Gov. Code section 54953, due to the ongoing COVID 19 state of emergency and upon recommendation of the County Health Officer, public meetings of the Fish and Wildlife Advisory Committee can be held both virtually and in person. Members of the public can join in person or via the Microsoft Teams link provided below.

If you have questions, please contact Sean Abbey at sean.abbey@santacruzcounty.us.

Microsoft Teams meeting

Join on your computer, mobile app or room device

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[+1 831-454-2222,,227311762#](tel:+18314542222227311762) United States, Salinas

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Click on the “Click here to join the meeting” link above. If you are asked to join Teams with an application, click on “No thanks” and open in the browser. You should not need to download the application to join the meeting.

Commissioners are expected to have their camera on, but cameras are optional for public attendees.

Please join the meeting a few minutes BEFORE 7:00 pm so that we can start at 7:00 pm. Staff will open the video conference at 6:50 pm. Feel free to chat and say hello before 7:00 pm.

Meeting Roles and Rules:

Chris Berry, Chair, will lead the meeting. Chair Berry will announce each agenda item, identify who will be leading an item and introduce discussion and public comment periods.

Sean Abbey, staff, will assist with roll call, note taking, and tracking who wants to speak. Please allow time for staff to make notes about any decisions. Sean will monitor both email and text messages during the meeting.

There will be a public comment period for each item and the Chair will invite the public to participate at the appropriate time.

During a discussion, if two or more people speak at the same time, please defer to the person who speaks first. In any moment where we have some confusion due to multiple people wanting to speak, please pause and let the Chair take the lead. The Chair will call on someone to speak.



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Meeting Minutes
November 10, 2022

1. **CALL TO ORDER** – 7:04 pm
2. **ROLL CALL**

District	Commissioner	Status	Commissioner	Status
I	Chris Berry	P	Samuel Adelson	P
II	Sandra Baron	P	David Somerton	P
III	Liz Alter	P	Jon Jankovitz	P
IV	Matthew Wise	A	VACANT	
V	Jenni Gomez	P	Jen Michelsen	P

P = Present E = Excused A = Absent

3. **APPROVAL OF MINUTES:**
 - **Motion to Approve Minutes:** Baron, **Second:** Somerton,
 - **All Ayes:** Minutes approved
4. **PUBLIC GRANTS PROGRAM:**
 - Commissioners received presentations from grant applicants and had the opportunity to ask questions.
5. **INVASIVE SPECIES UPDATES:**
 - The Invasive Species sub-committee has put together a draft letter to the Board of Supervisors and has requested feedback and approval for release from the full commission. The comments from the commissioners are as follows.
 - Change reference of the Planning Dept to Community Development & Infrastructure Dept
 - Offer FWAC commissioner support for proposed group
 - Recommend that the chair of the group be the primary contact person for all invasive plant management tasks in the county
 - Include precedents for this type of group from other governmental agencies
 - Recommend that the letter be released once new Supervisors are sworn in
 - **Motion to approve the letter, with the revisions above, and release to the Board of Supervisors in January:** Gomez, **Second:** Alter,
 - **All Ayes:** Letter approved for January release, with revisions.

6. PUBLIC COMMENTS: Moved on the agenda from Item 4 to Item 6.

- Received public comment from Shawn Sunbari with Komodo Fire Inhibitor who stressed the importance of proactive management of wildfire prone areas to prevent hazardous materials found in homes and vehicles from being burned and released into the environment.

7. DECEMBER AGENDA ITEMS:

- Selection of grant recipients and the amounts awarded will be the primary task at the December meeting. Additional items may be added prior to agenda release.

8. STAFF AND COMMISSIONER REPORTS AND ANNOUNCEMENTS:

- **Staff Report:**
 - Staff requested more information about the “Sustainability Update” and how it may relate to the goals of the FWAC. Stephanie Hansen at the Planning Dept stated that the purpose of the update was to promote a better, more efficient, use of urban land. The update made “little substantive change related to fish, wildlife, riparian protection, etc”. The amendments related to natural features were limited and were done to comply with state laws. Given the late stage of development for the Sustainability Update, there is not much opportunity for the FWAC to give feedback. However, there is intention to update Title 16 (Environmental and Resource Protection) in the future and the Planning Commission intends to have more outreach with the FWAC than it did for the Sustainability Update.
 - President Biden’s Bipartisan Infrastructure Law created a fund of \$1 billion over five years for the new National Culvert Removal, Replacement and Restoration-Culvert Aquatic Organism Passage Program. This program intends to help communities remove and repair culverts found under roads that can prevent fish passage. Santa Cruz County Public Works intends to apply for funding for culverts on Casserly Creek near the intersection of Casserly Rd and Mt Madonna Rd in South County.
- **Commissioner Reports:**
 - Gomez: created a survey123 app for documenting Invasive plants within the county. The app identifies the primary invasive plant species in the county and can provide location information. The app was provided to the Resource Conservation District for review and received good feedback. Requests feedback from other commissioners.
<https://survey123.arcgis.com/share/14128b7d428349a9a940621b1f6fe0ae>
 - Michelsen: the Santa Cruz Mountains Bioregional Council held a symposium to share the findings of seven research projects undertaken in Big Basin after the fire. The symposium was recorded and would likely be of interest to the other commissioners.
[The Santa Cruz Mountains Bioregional Council \(SCMBC\)](#)
 - Adelson: attended a workshop showing the value of lichen in determining air quality of various locations. Lichens are particularly sensitive to poor air quality and their presence or absence can be an indicator of habitat health.

9. ADJOURN.

Meeting adjourned at 9:03pm.



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GRANT INFORMATION: PROPOSAL

This information will be included in public documents

Project Name: Resolving Santa Cruz Human-Wildlife Conflict Date: 09/22/22

Applicant name or Organization: International Bird Rescue

Project Description:

We respectfully request a first-time grant to support a small portion of the costs of necessary, expendable clinic and medical supplies, and a small portion of the utilities necessary to provide a stable clinic and rehabilitation environment for native, wild, aquatic birds rescued from Santa Cruz County and transferred to us for care.

Funding Requested **\$7,500**

ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
Clinical and Medical Supplies, incl. food	\$5,000	\$7,645	\$12,645
Veterinary & rehabilitaton staff salaries/wages		\$62,330	\$62,330
Utilities for stable clinic & rehab environment	\$2,500	\$16,296	\$18,796
Depreciation and insurance		\$5,603	\$5,603
Travel and transit		\$3,007	\$3,007
Facilities, vehicles, and equipment		\$3,476	\$3,476
Outside services (lab work)		\$120	\$120
Dues, general expenses		\$196	\$196
TOTAL AMOUNTS	\$7,500	\$98,673	\$106,173

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Experts agree that birds are in a global crisis of survival, "Since the 1970's, [North America] has lost 3 billion birds." (Science, 2019) The causes are almost all attributable to humans, including habitat disruption/loss, starvation, cruelty, pollution (incl. plastics, oil, chemicals), and fishing. The Bay Area is especially important to hundreds of species of aquatic birds because of our central location on the Pacific Flyway migratory route. Negative impact here has concentrated effects in regional and global biodiversity.

Project Goals

Our wildlife rescue and rehabilitation work provides people and native wildlife with effective, immediate, ethical, and humane solutions to the problem of native aquatic birds harmed by human impacts, at no cost to the general public. Our SF Bay-Delta Wildlife Center serves as a "referral hospital" for over a dozen Northern California Counties, treating 2,000 cases and over 100 species annually that are beyond the capacity or skills of other regional wildlife clinics. Our daily rescue and rehabilitation work keeps us ready to respond to unpredictable-yet-sadly-inevitable crises when they occur.

Project Logistics: how will the project be completed?

We efficiently and effectively rescue so many wild birds because of our well-established protocols, developed through years of direct, hands-on experience:

1. Rescue: transport by volunteers, citizens, and other rescue agencies to our Center
2. Triage Assessment: by professional vet staff (vital signs, blood work, treatment plan)
3. Medical Intervention: after the first 24 hrs in care so that initial capture trauma abates
4. Recovery: treated birds go to recovery area where their progress is closely monitored
5. Rehabilitation: birds heal wounds & gain strength in predator-proof aviary enclosures
6. Release: back into the wild at species-appropriate locations

Project Completion Timeline

This project is annual and ongoing.

Applicants Background.

International Bird Rescue is a regional and global conservation organization. We were founded in 1971 right here in the Bay Area, in response to a massive oil spill that covered 50 miles of coastline on all sides of San Francisco Bay, effecting between 7,000 and 15,000 birds. Since then, we have become a global leader in addressing man-made disasters affecting marine wildlife, such as oil spills and debris, and have pioneered life-saving techniques to address ongoing, daily human impacts on aquatic birds.



Application to the
Santa Cruz County Fish and Wildlife Advisory Commission:
Resolving Santa Cruz Human-Wildlife Conflicts

1. Funding Request and Project Description

International Bird Rescue respectfully requests a \$7,500 grant from the Santa Cruz County Fish and Wildlife Advisory Commission.

The goal of this project is to address known, ongoing Human-Wildlife Conflicts (negative human-wildlife interactions) in Santa Cruz County, and to benefit Santa Cruz residents and wildlife by providing an effective, ethical, human, and immediate solution to the problem of native aquatic birds that have been harmed by human impact. The grant's purpose is to offset the costs of essential, expendable items necessary to serve birds referred from Santa Cruz County to our San Francisco Bay-Delta Wildlife Center in Fairfield, CA between December 1, 2022 and June 30, 2023.

As a "referral hospital," we treat the most challenging cases that are beyond the capacity or skills of other regional wildlife centers and clinics, and receive hundreds of birds from other local rescues and rehabilitation centers and from the general public for treatment at our Wildlife Center, including from Native Animal Rescue of Santa Cruz County.

Our San Francisco Bay-Delta Wildlife Center admits ~2,000 local, native aquatic birds annually, and releases them back into the wild once they are successfully rehabilitated. We typically received ~300 birds annually from Santa Cruz County. Locations of rescue include Santa Cruz, Aptos, Capitola, Watsonville, Pajaro Dunes, Davenport, Ben Lomond, and Soquel.

We treat over 100 different species, from Common Murres, Snowy and Great Egrets, Green and Great Blue Herons, to Brown Pelicans, to endangered and near-threatened species such as Western Snowy Plovers. Common causes of injury include orphaned, fishing hook and line entanglements, starvation from loss of habitat, and birds that suffer blunt force traumas (from human cruelty or hit by vehicles).

2. Meeting the Requirements of Section 13103 of the Fish & Game Code

The work of International Bird Rescue addresses **multiple** elements of the California Fish and Wildlife Code, especially in Section 13103. **The proposed project is a direct expression of 13103(b): "Temporary emergency treatment and care of injured or orphaned wildlife."** The individual animals we return to the wild are then able to propagate future generations. When we work with Animal Control Officers and Game Wardens, we also address element **13103(c): "Temporary treatment and care of wildlife confiscated by the department as evidence."**

Our Wildlife Rescue and Rehabilitation, and our Emergency Response and Preparedness programs, we protect and restore local wildlife populations, especially when human impact has negatively affected those populations and individual animals. Our ongoing Research leads to innovations and new standards in wild animal care (**13103(i)**). Our public education and outreach efforts reach over 100,000 people annually through numerous social media channels and real-time events (**13103(a)**).

3. Project Need

Birds are sensitive indicators of changes in our environment, and their health is failing. Experts around the world agree that aquatic birds are in crisis:

- *"Since the 1970's, [North America] has lost **3 billion birds**" (Science, 2019)*
- *"The global population of seabirds has dropped by nearly 70% since monitoring began in the 1950s" (National Geographic, 2018).*
- *"Seabirds, which comprise more than 300 species worldwide, are declining faster than any other group of birds." (National Fish and Wildlife Foundation, 2018).*
- *"Shorebirds, the World's Greatest Travelers, Face Extinction" (New York Times, 2018.)*

The causes of this population collapse are many, but almost all are caused by humans. They include injury from fishing (hooks, nets, and lines), human cruelty, illegal shootings, habitat disruption and loss, starvation, pollution (including plastics, chemicals, and oil spills), and **climate change induced hazards such as drought and algae bloom toxicity.**

The Bay Area is especially important to hundreds of species of aquatic birds (many that are endangered or threatened) because of its central location on the Pacific Flyway: a major North-South migratory route along the coasts of North and South America. Immediate human impact here has concentrated, long-term effects on the global wildlife population.

4. Organizational Qualifications, Mission, and Programs

International Bird Rescue is a regional and global conservation organization. We were founded in 1971 right here in the Bay Area, in response to a massive oil spill that covered 50 miles of coastline on all sides of San Francisco Bay, effecting between 7,000 and 15,000 birds. Since then, we have become a *global leader* in addressing man-made disasters affecting marine wildlife, such as oil spills and debris, **and have pioneered life-saving techniques to address ongoing human impacts on aquatic birds.**

Most people know us from our decades of responding to the world's worst oil spills: Exxon Valdez in 1989, Deepwater Horizon in the Gulf of Mexico in 2010, and the Treasure Spill in South Africa in 2000 (which affected over 20,000 lives). We also provide daily rescue and rehabilitation to birds harmed by human impact, and have given second chances to over 160,000 avian lives. Today, we research best practices at our crisis response hospitals and share them worldwide.

Our mission is to inspire people to act towards balance with the natural world by rescuing waterbirds in crisis. We pursue this mission through five inter-related programs:

- **Wildlife Rescue and Rehabilitation:** Millions of birds die every year due to injury from fishing (hooks, nets, lines), human cruelty (illegal shootings), habitat disruption, starvation, pollution, and climate change-induced hazards, e.g., algae blooms and domoic acid toxicity. We treat ~3,500 native aquatic birds annually and release them back into the wild once successfully rehabilitated. This ongoing work maintains our skills and facilities, enabling us to respond rapidly to crisis events. Each case we treat is a step towards restoring balance to our global ecosystem.
- **Wildlife Emergency Response and Preparedness Services:** We provide wildlife capture, rehabilitation,

and documentation for oil spills and other marine emergencies.

- **Research:** We continually evaluate techniques and protocols to improve animal care and professional emergency response, conduct clinical trials, and publish post-release studies.
- **Education and Outreach:** Education of the public, of energy industry workers, and of wildlife first responders is an essential component of our work to protect and restore wildlife populations.
- **Innovation and Special Projects:** Our long-standing experience and proven results have been integral to establishing the standards, protocols, and best practices for the field of wildlife emergency response. We continually assess new techniques and protocols, and generously share our results.

Our goals are to:

- A) Minimize and mitigate human impact on wildlife
- B) Conserve biological diversity
- C) Inspire environmental stewardship

We are a founding partner in the State of California's Oiled Wildlife Care Network (OWCN), as well as a member of the Global Oiled Wildlife Response System (GOWRS), a consortium of leading experts trying to solve the challenges of oiled wildlife. Other partners include local, state and federal Fish and Wildlife departments, multiple Audubon Society chapters, and local Animal Control agencies.

5. Project Budget and Funding

Our \$7,500 request (our first-ever request of the Commission) is based on Santa Cruz County community demand for our services, and the need for financial support to keep the program sustainable. Commission funds will partially offset the cost of service we provide to the people and wildlife of Santa Cruz County, and represents a reasonable and modest portion of the project's annual costs (over \$100,000 in FY22), an expense we had borne exclusively for 20 years.

Unlike traditional veterinary clinics, we provide services to the general public at no-cost. Our wild, native patients come to us with no funding, no insurance, and no one directly responsible for paying the bill. Birds injured by human impact require skilled staff and large volumes of food and vitamins in order to be rehabilitated successfully and returned to the environment. Because our services are offered at no charge to the general public and referring agencies, it is only with philanthropic support from concerned citizens, foundations, corporations, and municipal agencies are we able to meet the community's demand for our services.

Our \$7,500 request for funding is to support the Santa Cruz County share of the costs of necessary, expendable, clinic and medical supplies (including food) (\$5,000), plus a portion of the utilities necessary for stable habitat and recovery environments (\$2,500).

We have strict financial controls that ensure that any invoice submitted to one funding agency is not submitted to any other agency. Our financial records are audited annually, and we consistently achieve "clean" audit opinions. While it is difficult to say in advance during the granting process with exact

certainty what each future invoice will contain, examples of some typical food and supplies (and their costs) include:

Enroquin tablets, 68mg x 250: \$286.12/bottle

Clavacillin tablets (Clavamox), 62.5mg x 210: \$75.30/bottle

Nitrile exam gloves, 100: \$19.41/box

Meloxidyl, 1.5mg/ml x 200ml: \$95.15/bottle

Clindamycin, 100mg quad tabs x 100, \$50.75/bottle

Peruvian Smelt, 30lbs/case x \$1.54/lb: \$46.20/case X 60 cases/typical order = \$2772.00

Night Smelt, 40lbs/case x \$1.96/lb: \$78.40/case X 20 cases/typical order = \$1568.00

As much as skilled veterinary and rehabilitation personnel are essential to our work (animals injured by humans don't heal themselves), **this grant request focuses on portions of the critical medicine, surgical and rehabilitation supplies, nutrition, and clean, temperature-controlled water to maintain consistent environments for the wild patients in our care.**

Since 2019, Fish and Game commissions in the counties of Alameda, Los Angeles, Solano, Sonoma, Santa Barbara, Napa, Monterey, Contra Costa, Marin, and Santa Clara have provided modest financial support of between \$2,500 and \$16,000 annually to help ensure our ability to be an effective, efficient, regional resource is sustainable. Without such support, we will be unable to continue to conserve these beautiful, vulnerable, natural, and educational resources, and unable to maintain our readiness to respond to unpredictable-yet-sadly-inevitable environmental crises like oil spills and species crashes.

Other institutional supporters include Procter & Gamble and *Dawn Dish Soap*, one of the strongest and longest-standing (40+ year) [cause-related corporate partnerships](#) in the U.S. (Yes, we *really do* use DAWN DISH SOAP to wash birds, a technique we ourselves innovated.) Please see the attached budget for further detail.

6. Permits Status

Throughout a bird's time with us, from their initial triage assessment to their release, we record data and track their progress using RaptorMed software. In addition, treated birds are banded so that other scientists, volunteers, and enthusiasts can track them in the wild, and in case a treated bird returns to us for further care. We are one of the few organizations that possess the federal permit to band birds. The data generated by the banding effort, as well as our internal data, is analyzed by our veterinary care team as part of ongoing research, and the results shared at professional conferences and with our partners in the Global Oiled Wildlife Response System, a consortium of leading experts solving the challenges of oiled wildlife globally.

7. Contact Info

Phil Kohlmetz, Grants Coordinator
International Bird Rescue
4369 Cordelia Rd.
Fairfield, CA 94534

Direct: 707-704-0350
Office: 707-207-0380
Email: grants@birdrescue.org
<https://www.birdrescue.org/>

8. Attachments

W9, Program and Organization Budgets, Aviary Newsletter



FY23 Santa Cruz County Wildlife Rescue and Rehabilitation
FY23 Program Budget: NorCal Wildlife Rescue and Rehabilitation
FY23 Organizational Budget

REVENUE	Santa Cruz County Portion of Program	Wildlife Rescue and Rehabilitation	FY23 Organization Budget
Earned:			
Client Fees	\$0	\$0	\$241,102
Extraordinary earned income (spills, response)	\$0	\$0	\$107,015
Contracts	\$0	\$89,800	\$685,970
Enterprises (Merchandise)	\$0	\$0	\$15,000
Miscellaneous	\$0	\$0	\$7,718
Contributed:			
Institutional Giving	\$88,470	\$500,000	\$942,318
Individual Giving	\$17,703	\$118,021	\$755,635
Extraordinary contributed income (bequests)	\$0	\$0	\$193,708
Special Events	\$0	\$0	\$230,000
In-kind contributions	\$0	\$0	\$431,000
TOTAL EARNED AND CONTRIBUTED REVENUE	\$106,173	\$707,821	\$3,609,466

EXPENSES	Santa Cruz County Portion of Program	Wildlife Rescue and Rehabilitation	FY23 Organization Budget
Salaries and wages	\$60,957	\$406,381	\$1,989,045
Team and professional development	\$1,373	\$9,150	\$66,400
Advertising, marketing, and communications	\$0	\$0	\$9,040
Depreciation and amortization	\$2,250	\$15,000	\$28,750
Dues and memberships	\$181	\$1,207	\$19,423
Facilities, vehicles, and equipment	\$3,477	\$23,179	\$163,162
Fundraising expenses	\$0	\$0	\$125,000
General administrative expenses	\$15	\$100	\$46,850
In-kind expenses	\$0	\$0	\$431,000
Insurance	\$3,353	\$22,351	\$41,062
Meetings and conferences	\$0	\$0	\$8,400
Outside services	\$120	\$800	\$105,100
Clinic and Medical Supplies	\$12,645	\$84,300	\$170,800
Travel related expenses	\$3,007	\$20,046	\$184,240
Utilities	\$18,796	\$125,307	\$189,715
Wildlife Emergency Response Fund	\$0	\$0	\$31,479
TOTAL EXPENSES (All Sources)	\$106,173	\$707,821	\$3,609,466
TOTAL DIFFERENCE / NET	\$0	\$0	\$0

Please see notes on reverse

NOTES:

Annual Program Expenses for the Wildlife Rescue and Rehabilitation Program in Santa Cruz County (left-most column) are a subset of FY23 Northern California Wildlife Rescue and Rehabilitation Expenses (middle column), which themselves are a subset of the FY23 Organization Budget (right column). Percentage of program is arrived at by dividing typical # of Santa Cruz birds served annually (300) by typical # of birds served annually at our Northern California Wildlife Center (2,000). Santa Cruz County service demands are ~15% of our workload and expenses.

Clinic Supplies includes animal nutrition (food), vitamins, supplements, medicine, and veterinary clinic supplies such as gauze, sutures, needles, vet wrap, tape, etc. Client Fees include billable services and contract retainers for emergency response held with the Oiled Wildlife Care Network and other companies. In-kind contributions and expenses include the donation of rent on our facilities in both Fairfield, CA and San Pedro, CA, and product donation of DAWN Dish Soap. Utilities for the Wildlife Rescue and Rehabilitation program are limited to water and electricity needed to provide a stable clinic and rehabilitation environment (consistent water and air temperatures) for birds lacking the ability to regulate their own temperature.

International Bird Rescue does not have a permanently-restricted endowment, but does have organizational reserves to manage cash flow and a Wildlife Emergency Response Fund to support unpredictable crisis response activity.



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GRANT INFORMATION: PROPOSAL

This information will be included in public documents

Project Name: Restoration at Natural Bridges State Park & Scotts Valley Date: 10.25.22

Applicant name or Organization: Exploring New Horizons Outdoor Schools

Project Description:

Through this project, over 5,000 SF Bay Area students will attend 4 to 5-day programs at our Sempervirens site in Scotts Valley, engaging in hands-on learning in the redwood forest and coastal ecosystems. Naturalists lead students in place-based learning, concentrating on interdependence, cycles, energy flow, and more, deepening students' interest in science and environmental stewardship. During day hikes and the night hike, students may observe salamanders, banana slugs, deer, hawks, owls, harbor seals, whales, sea anemones, sea stars, and 2,000-year-old redwood trees. Students will explore the sandhills and learn about the endemic species that live there. At the beach day at Natural Bridges, students will pull up invasive species and at our site in Scotts Valley, groups will pull up French Broom. Learnings will be reinforced through reflective nature journaling; drawing or nature art; participatory group songs, dances, and skits where cabin groups act out a concept they have learned during the week.

Funding Requested	\$2,000
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ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
Program Director Salary	\$2,000	\$9,673	\$11,673
		from Joseph & Vera Long Foundation	
Funding would support our Program Director to manage the program.			
TOTAL AMOUNTS	\$2,000	\$9,673	\$11,673

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Every student in the U.S. should experience a week of residential outdoor education before entering high school as participation can lead to both academic and social-emotional gains, including increased motivation to learn and achievement in school; greater self-esteem, attitudes of respect and responsibility; better conflict resolution and problem-solving skills; and decreased stress, depression, and symptoms of ADD. However, in the SF Bay Area, 1/3 of students do not participate in a multi-day outdoor education program. At the same time, few schools have incorporated outdoor education into their curriculum and children play less outdoors than they used to, spending up to 7 hours a day in front of screens. As spending time in a natural setting during the critical period of middle childhood can be the catalyst for so much emotional and intellectual development, it is imperative that all students have equitable access to a week of outdoor school. At the same time, now is a crucial time to remove invasive species that have established themselves at Natural Bridges State Park and our site in Scotts Valley at the Redwood Glen Salvation Army Camp is being taken over by French Broom.

Project Goals

Objectives of this project include:

- To engage groups of SF Bay Area students in 4 to 5-day residential, hands-on outdoor education
- To increase students' knowledge about ecology, native and invasive species, food webs, cycles, and interest in learning about science and environmental stewardship
- To remove invasive species at Natural Bridges State Park and our Sempervirens site in Scotts Valley

Project Logistics: how will the project be completed?

The ENH Sempervirens Program Director will work to prepare schools for their week of outdoor education, including providing pre-activities and curriculum to schools. Over 5,000 students will attend 4 to 5-day programs at our Sempervirens site in Scotts Valley, including 50 students from Santa Cruz Montessori. Although most students are from outside Santa Cruz County, many of these students visit Santa Cruz County and will remember their learnings from this life-changing experience for their rest of their lives, forever associating outdoor education with Santa Cruz. They will also take the lessons learned back to their home communities in Contra Costa and Alameda Counties. While attending the program, students will hike in the redwoods, explore Bean Creek, pull up French Broom from the site, go tidepooling at Natural Bridge, explore the monarch grove, pull bur clover and thistle from the monarch trail and other areas, go on a night hike and engage in other evening activities.

Project Completion Timeline

During the 2022-23 school year, over 5,000 students will attend our program and engage in the goals above.

Applicants Background.

ENH engages school groups in outdoor education programs that empower students, build environmental literacy, and strengthen school communities. Founded as a nonprofit in 1979, ENH has engaged over 215,000 students in outdoor education programs, taking a whole child approach focused on ecology, social emotional learning, environmental stewardship, and the arts. Participation in our program creates positive associations between learning and the outdoors which students take back to their classrooms and homes. ENH has two program models operating from September-June at our Sempervirens and Pigeon Point sites.

Sempervirens: Multiple schools of up to 210 5-6 grade students and their classroom teachers attend 4 and 5-day programs at our site in Scotts Valley, exploring the redwood forest, creek, and Natural Bridges State Park.

Pigeon Point: Up to 40 3-8 grade students and their classroom teachers attend 3-day programs at Pigeon Point Lighthouse, exploring coastal ecosystems and elephant seals at Año Nuevo State Park.



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Fish and Wildlife Advisory Commission

701 Ocean Street, Room 312, Santa Cruz, CA 95060
(831) 454-3154 TDD/TTY -Call 711 www.scceh.com
EnvironmentalHealth@santacruzcounty.us

GRANT INFORMATION: PROPOSAL

This information will be included in public documents

Project Name: Wildlife Rehabilitation Date: 10-27-22

Applicant name or Organization: Native Animal Rescue

Project Description:

Treatment and rehabilitation of injured, sick and orphaned native animals of Santa Cruz County, with the ultimate goal of release back into the wild.

Funding Requested **\$2,000**

ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
Food costs for wildlife	1,400	18,600	20,000
Medication and Vet Services	265	3,535	3,800
Wildlife Supplies	195	2,605	2,800
Enclosure Repairs and Maintainance	140	1,860	2,000
TOTAL AMOUNTS	\$2,000	26,600	28,600

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Native animals are frequently injured and orphaned by the action of people and their pets. Both rescue volunteers and concerned people bring distressed wildlife to our center where experienced rehabbers will take care of the animals. The ultimate goal is the release of animals back into the wild. The general public of our county truly appreciates what Native Animal Rescue does for wildlife.

Project Goals

We provide a center and experienced team of staff and volunteers so injured, sick or orphaned wildlife can be rehabilitated and hopefully released back into the wild. We provide food, housing and medical care for each individual species. Spring and Summer are our busiest times when additional volunteers are needed to feed hungry baby birds at our center or provide homecare to orphaned mammals. When an animal is released, an appropriate habitat is chosen. Animals are sometimes released where found, if safe.

Project Logistics: how will the project be completed?

Native Animal Rescue provides an emergency room/intake center open 7 days a week from 8am to dark. Animals are often received after hours as well, by 3 animal technicians who live on the property. Animals are evaluated and their injuries treated. The animal's care and treatment plan is determined, including a diet specific to their species and age. Many animals are cared for at our intake center, while some receive care offsite by rehabbers knowledgeable about a specific species. The animals are cared for until they are deemed ready to return into the wild and are released to a suitable habitat. We have several veterinarians who provide services to NAR for free or a nominal cost. NAR works directly with county animal services, law enforcement, state park personnel and beach lifeguards, who bring us animals in response to phone calls.

Project Completion Timeline

Request funding for one year.

Applicants Background.

Native Animal Rescue has been treating animals since 1980. It is the only organization in Santa Cruz County licensed by both the Federal and California Departments of Fish & Wildlife to rehabilitate local wildlife. In 2013, NAR received 1,444 animals. Every year the number of animals admitted has increased, with last year reaching 3,000 animals. Trained staff and volunteers rescue, assess and rehabilitate wildlife, both at our intake center and several offsite foster homes. We take calls advising people whether an animal should be brought in. Many times we send out a trained rescuer to pick up an animal and bring it to the center. Our website (nativeanimalrescue.org) provides information on a wide variety of topics about species in the county. We stress how we can peacefully coexist with the animals in our area. We actively engage in media outreach through e-newsletters, and Facebook. We produce two printed newsletters a year. We are starting to once again give in-person presentations to children and organizations about how people can get along with wildlife in our area. NAR receives funding from the general public, businesses, foundations, trusts and local and state governments.



County of Santa Cruz

Health Services Agency ♦ Environmental Health



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GRANT INFORMATION: **PROPOSAL**

*This information **will** be included in public documents*

Project Name: _____ Date: _____

Applicant name
or Organization: _____

Project Description:

Funding Requested	
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ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
TOTAL AMOUNTS			

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Project Goals

Project Logistics: how will the project be completed?

Project Completion Timeline

Applicants Background.



11/02/22

Santa Cruz, County of

To Whom It May Concern:

Enclosed please find the original proposal submitted by The Regents of the University of California under the direction of Dr. Eric Palkovacs entitled Monitoring the spread of invasive New Zealand mudsnail using eDNA. The proposed period of performance for this project is 1/1/23 through 12/31/23. The total request is \$16,000 from the sponsor and \$5,610 in voluntary cost share, as detailed in the attached budget document.

The Regents of the University of California, Santa Cruz, are prepared to establish the necessary written organizational agreement, and to ensure compliance with all pertinent regulations and policies.

However, the University reserves the right to negotiate the terms, conditions, and provisions included in any contract prior to its acceptance. Specifically, the University will not accept any publication restrictions or access restrictions on foreign nationals. Such restrictions are contradictory to the University's mission of educating students and openly publishing its research results. The work being performed hereunder is considered to be Fundamental Research and, as such, exempt from prepublication controls and employment restrictions on foreign persons as prescribed by the International Traffic in Arms Regulations and the Export Administration Regulations.

Furthermore, no Export Controlled material, information, or data should be provided to the University without prior written approval of an Authorized Official at the University. If it is determined the University is unable to complete their Statement of Work without access such information or material, the University will first need to determine our ability to meet all related security requirements. Santa Cruz, County of should be aware that the University will decline the acceptance of any Export Controlled information or material for which the University is unable to provide acceptable security measures.

We will be glad to provide any additional information you may need to expedite your favorable consideration of this project. All questions and comments regarding any administrative matters concerning this proposal should be addressed to the undersigned. Any agreements relating to or resulting from this award should be directed to Nicholas Theodosis, at ospdocs@ucsc.edu, for acceptance on behalf of the University.

Sincerely,

A handwritten signature in cursive script that reads "Jessi Somers".

Jessi Somers
Proposal Analyst | Office of Sponsored Projects
(831) 459-1731 | University of California, Santa Cruz

County of Santa Cruz Fish and Wildlife Advisory Commission

Monitoring the spread of invasive New Zealand mudsnail using eDNA

PI: Eric P. Palkovacs, University of California Santa Cruz

Amount Requested: \$16,000

Project Description:

We propose to use environmental DNA (eDNA) to test for the presence of the invasive New Zealand mudsnail (NZMS) in watersheds across Santa Cruz County. Due to its broad applicability and relatively low cost, eDNA is emerging as a powerful tool for detecting and monitoring the spread of invasive species. We will combine eDNA with traditional benthic macroinvertebrate sampling methods, allowing us to validate the eDNA results while testing the viability of using eDNA as a fast non-invasive method for future NZMS detection. We will sample watersheds that have known salmonid populations where NZMS could reduce native prey for ESA-listed coho salmon and steelhead trout. In each watershed, we will sample along a gradient from downstream to upstream to determine the extent of NZMS spread within invaded watersheds. Understanding the current distribution of this harmful aquatic invader can help prevent its further spread, thereby helping to conserve native biodiversity.

Methods and Sampling Design

We propose to monitor the distribution and spread of NZMS using eDNA, which is emerging as a powerful, rapid, and inexpensive tool for biomonitoring and species conservation (Pawlowski et al., 2021). Traditional biodiversity monitoring and invasive species detection requires significant effort, time, and taxonomic expertise. eDNA can alleviate the logistical difficulties of traditional biosurveying methods and streamline biomonitoring processes.

We will utilize eDNA sampling and a qPCR assay developed at UC Santa Cruz as part of the CALeDNA effort (<https://ucedna.com/>). The assay is sensitive down to 1:100,000 NZMS DNA:background DNA. The protocol we will use involves obtaining the environmental sample of interest (sediment and water), extracting DNA, and running the assay along with positive and negative controls (Meyer et al., 2019). Amplification of the targeted NZMS sequences indicates NZMS presence. We will take both a water and sediment eDNA sample at each site. Due to the discrepancies of DNA residence and degradation times in both substrates, this will likely give us a higher probability of detection (Joseph et al., 2022). In addition, we will utilize a streamlined version of the Reach-wide Benthos protocol to sample benthic communities in a given stream reach (Rehn et al., 2007). The protocol involves using a kicknet to sample 11 transects of stream benthos along a selected stream reach. The organisms from these collections will then be sorted and picked through in the field and the lab to look for NZMS. This method will allow us to validate the eDNA method and test the viability of using only eDNA as a fast non-invasive technique for NZMS detection in the future. We will sample

the major salmonid watersheds in Santa Cruz County: Waddell Creek (3 samples), Scott Creek (3 samples), San Vicente Creek (3 samples), Liddell Creek (3 samples), Laguna Creek (3 samples), San Lorenzo River (8 samples), Soquel Creek (4 samples), Aptos Creek (4 samples), and Pajaro River (4 samples). In total, we will take 35 samples. We will sample sites from downstream to upstream, including major tributaries. This approach will reveal the extent of upstream spread. We will sample during summer, when flow and physical habitat conditions may be more favorable to freshwater snails, therefore increasing our chances of detecting NZMS presence, since they may be most abundant during this time (Crowl & Schnell, 1990).

Background Of Issue Being Addressed:

New Zealand mudsnail is a highly invasive aquatic species that was first detected in California in the late 1990s and has been spreading rapidly. In Santa Cruz County, NZMS has been recorded in the lower reaches of Liddell Creek and San Lorenzo River (USGS Non-indigenous Aquatic Species Database, <https://nas.er.usgs.gov/>). NZMS can tolerate a wide range of habitat and water quality conditions and has the ability to reproduce parthenogenetically, sometimes reaching densities up to 100,000 individuals per square meter (Hall et al., 2003). NZMS is a highly successful invader with the potential to fundamentally alter freshwater ecosystems. It can outcompete native benthic macroinvertebrate herbivores, causing declines in native biodiversity and altering stream ecosystem function (Hall et al., 2003; Kerans et al., 2005; Riley et al., 2008; Moore et al., 2012). NZMS invasion can negatively impact native salmonids. It is a nutritionally poor prey item that causes reduced salmonid growth when consumed in large numbers (Bruce et al., 2009).

Project Goals

We will combine eDNA and traditional benthic macroinvertebrate sampling to survey Santa Cruz County streams for the presence of NZMS. We will survey a total of 35 sites spread across the major salmonid watersheds. We will sample from the lagoon to the upstream tributaries to determine the upstream extent of spread in invaded watersheds. We will make results publicly available via databases, such as the USGS Non-indigenous Aquatic Species Database (<https://nas.er.usgs.gov/>). We will share results with local partners, including the City and County of Santa Cruz, the Santa Cruz Water District, the San Lorenzo Valley Water District, the Scotts Valley Water District, California State Parks, Cal Poly Swanton Pacific Ranch, Cotoni-Coast Dairies National Monument, the Land Trust of Santa Cruz County, the Sempervirens Fund, and the Resource Conservation District of Santa Cruz County. In addition, we propose to potentially partner with the community groups listed above to facilitate more public education on this issue. We will work with our community partners to develop and disseminate information to the public about the harmful effects of NZMS on aquatic ecosystems and how to limit its spread. Information about NZMS ecology, spread, and decontamination techniques can be included in websites, social media postings, signage at trailheads, pamphlets, newsletters, and other types of communications.

Project Logistics

Field Work Logistics: Field sampling will be conducted during June 2023. Once we have secured access to sampling sites, we will find an appropriate stream reach to conduct sampling. We will then proceed to using a streamlined version of the reach-wide benthos protocol (Rehn et al., 2007). We will disturb the stream bottom to displace aquatic invertebrates into a 500 micron aquatic kicknet. We will repeat this 11 times in a zig-zag pattern going from right to left every 5-10 meters upstream from the last sampling point. We will collect all the samples in a bucket filled a third of the way with stream water. Once all 11 samples have been collected, we will then begin to process that sample by removing all large debris and begin to separate the benthic macroinvertebrates from the organic matter. Once the sample has been processed, we will then separate all snails from the other benthic macroinvertebrates. These snails will then be put into containers filled with 95% ethanol to be further identified in the lab. For eDNA sampling, we will follow the methods developed by CALeDNA (Meyer et al., 2019). For water eDNA sampling, we will push one liter of stream water through a 0.45um stervix filter. We will then store the filter in a cooler filled with ice to protect the integrity of the DNA bound to the filter. For sediment sampling, we will collect about 1.8ml of sediment from the stream bottom in small tubes. We will repeat this two more times within a square foot (one sample: three tubes). These samples will then be put into the same cooler to protect the integrity of the DNA bound to the sediment.

Lab Work Logistics: Lab work will be conducted in July 2023 in the CALeDNA laboratory of Dr. Rachel Meyer at UCSC. We will use a dissecting microscope to identify NZMS. For DNA extractions, we will use the CALeDNA protocol adapted from the Qiagen DNeasy Kit protocol for soil and water kits (Meyer et al., 2019). The Qiagen reagents will be used to isolate and purify the DNA. The main steps can be summarized as follows: Lysis of cells to release the DNA, separation of DNA from proteins and all other debris, precipitation of DNA with alcohol, and finally DNA purification and quantification. From here, 14 microliters of this DNA extract will be used to run the qPCR assay. The qPCR assay will be run with positive and negative controls, and amplification of the targeted sequences will indicate NZMS presence in that sample. Once the qPCR has been run, we will save the remainder of the sediment and DNA extracts in a -80 C freezer.

Data Analysis: After the qPCR assay has been completed, we will analyze the summary graph of the assay that plots the fluorescence value over the number of PCR cycles. We will first examine the positive and negative controls to determine if there were any problems with the PCR reaction. Once we have confirmed that the reaction had no issues, we will observe the amplification curve over the number of PCR cycles. We will examine the qPCR graphs for both the water and sediment samples to see if either assay detected the presence of NZMS DNA. Along with the qPCR assay, we will observe any snails from our benthic samples that have been confirmed identifications of NZMS. We will then compare the results of all methods. This will allow us to determine which method may be optimal for future detection. We will share the resulting data with the community partners and make all information available to the public.

Project Completion Timeline

January-March: Work with community partners to secure access to sampling sites.

April: Work with community partners on a dissemination plan.

May: Prepare field and lab supplies.

June: Conduct field sampling.

July: Conduct lab work.

August-September: Data analysis.

October-December: Prepare results for publication. Work with community partners to disseminate results.

Applicants Background

Dr. Eric Palkovacs is a Professor in the Department of Ecology and Evolutionary Biology and Director of the Fisheries Collaborative Program at the University of California, Santa Cruz. His research areas include freshwater ecology, fish ecology, molecular ecology, and conservation. He has published over 90 peer-reviewed journal articles. Dr. Palkovacs received his BS from the University of Michigan and his PhD from Yale University. He did postdoctoral research at the University of Maine and was McCurdy Scholar and Visiting Assistant Professor at Duke University before joining the faculty of UCSC in 2012. Dr. Palkovacs has active research collaborations in California, across the United States, Canada, and New Zealand. Dr. Palkovacs teaches undergraduate and graduate courses in Freshwater Ecology and Fisheries Ecology.

References

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GRANT INFORMATION: PROPOSAL

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Project Name: Environmental Stewardship Pilot Project Date: 11/2/22

Applicant name or Organization: Coastal Watershed Council

Project Description:

The primary goal of the year-long Environment Stewardship Pilot Program (ESPP) is to remove highly invasive species from the banks of the lower San Lorenzo River, replacing them with biodiverse native species that improve ecosystem health in a highly impacted natural area. Removing the invasive species, caring for the newly planted species and learning about riparian ecology will be up to 25 people experiencing homelessness, engaged through a unique partnership led by the Coastal Watershed Council in partnership with the Downtown Streets Team and ecologist Jane Mio.

Funding Requested	\$6,000
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ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
Personnel (including CWC, DST and Jane Mio)	\$4,500	\$36,000	\$40,500
Materials & Supplies (tools, gloves, plants, mulch, etc.)	\$1,500	\$4,260	\$5,760
Participant Basic Need Stipends	\$0	\$28,000	\$28,000
Matching Funds have been secured by CWC and the DST			
from sources including the CA. Dept of Fish and Wildlife,			
Fox Factory, Omega Nu of Santa Cruz County and others			
TOTAL AMOUNTS	\$6,000	\$68,260	\$73,760

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Starting with spring-fed headwaters in the Santa Cruz Mountains, the 29-mile long San Lorenzo River drains a 138-square mile watershed to the Monterey Bay National Marine Sanctuary. In its final 2.5-mile stretch, the river is channelized by a levee system constructed that straightened and narrowed the river, drastically impaired the coastal estuary and left poor, compacted soils along levee banks where invasive species have thrived. The loss of native riparian habitat along the San Lorenzo River compounded with the impacts of unsanctioned camping along the river corridor challenge the riparian ecosystem in this watershed. Unsanctioned camping has resulted in the destruction and vandalism to native species that support the riparian environment as food sources, bird breeding grounds, fish shade and shelter.

Project Goals

To address this challenge, a unique partnership consisting of the Coastal Watershed Council, Downtown Streets Team and ecologist Jane Mio are launching the San Lorenzo River Environment Stewardship Pilot Program (ESPP) a proven win-win approach for people experiencing homelessness, and for the San Lorenzo River environment. The ESPP project will leverage and expand habitat enhancement efforts along the lower San Lorenzo River led by Coastal Watershed Council River Ecologist Kaiya Giuliano-Monroy and ecologist Jane Mio in order to reduce highly invasive species, improve biodiversity and ecosystem function along the lower San Lorenzo River, while increasing the environmental stewardship skills, knowledge and awareness of unhoused community living near riparian areas.

Project Logistics: how will the project be completed?

Starting November 2022, ESPP will operate once weekly totaling four hours per week, with a goal of ultimately expanding to up to five days per week totaling up to twenty hours per week. Weekly training and work sessions will be led by CWC River Ecologist Kaiya Giuliano-Monroy and/or River Ecologist Jane Mio. The ESPP work will be monitored and measured by:

- 3+ acres of habitat enhancement and site monitored remediation
- Up to 25 program participants working to remove barriers to self-sufficiency
- Square footage and species of invasive plants removed
- Quantity of native plants and species planted
- Gallons of debris/trash removed per week, including the number of syringes

Project Completion Timeline

While CWC and its partners intend this pilot to extend into the years to come, this first year will end October 2023.

Applicants Background.

The Coastal Watershed Council (CWC) is working to transform the lower San Lorenzo River into a community destination by inspiring people to explore, enhance and protect this critical natural resource. In its 27-year history, CWC has engaged thousands of volunteers, including volunteers experiencing homelessness, to monitor water quality, enhance habitat and implement best management practices for a cleaner, healthier San Lorenzo River. Likewise, subcontractors Jane Mio and the Downtown Streets Team have a demonstrated track record of success, with notable examples including Mio's Benchlands Environmental Stewardship Team (BEST) and the DST litter abatement teams that reduce non-point source pollution while helping to end homelessness through the dignity of work.



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GRANT INFORMATION: PROPOSAL

This information will be included in public documents

Project Name: Documenting Salmonid Movements in the San Lorenzo River Watershed

Date: 28th Oct. 2022

Applicant name
or Organization: California Trout

Project Description:

Our pilot project is a salmonid (e.g., steelhead) monitoring effort that can indicate seasonal trends in movements to inform ongoing management efforts and future restoration actions in the San Lorenzo River watershed. We plan to replicate our proven and scalable framework to expand the passive integrated-transponder tag antenna network in the watershed from one antenna at the Felton Diversion Dam to two additional antennae on Branciforte Creek. The antenna pair will provide a clear benefit to native species and their habitats by showing the times and directions that listed salmonids swim past equipment, detecting salmonids that were tagged elsewhere in the watershed, and revealing whether salmonids from other Central Coast watersheds move up Branciforte Creek.

Funding Requested	\$5,465
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ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
2 x BioMark 15 ft. antenna	\$2,550	\$2,550	\$5,100
2 x IS1001 tag reader	\$1985	\$1985	\$3,970
Shipping from BioMark in Boise, ID	\$930		\$930
Labor	-	3,400	\$3,400
Indirect costs		2,600	2,600
TOTAL AMOUNTS	\$5,465	10,535	\$16,000

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

The San Lorenzo River watershed was a historic natural spawning source of endangered coho salmon before 1976 and approximately 19,000 threatened Central California Coast steelhead trout in 1965. Coho are now extirpated in the watershed. The Juvenile Steelhead and Stream Habitat (JSSH) Database by Santa Cruz County estimates annual fall densities, which suggest juvenile steelhead population declines over the last decade while annual adult population estimates are around 1,000 individuals. These fall estimates do not indicate other seasonal patterns in habitat use. This is why our pilot study can indicate seasonal patterns in how salmonids use habitat on Branciforte Creek throughout the year.

Project Goals

The goal of our pilot project is to document movement patterns for steelhead trout, and potentially stray coho salmon, along Branciforte Creek relative to patterns at other passive-integrated transponder antenna sites in Central California Coast watersheds. Trends in salmonid movements at our project site are one sign of watershed health for the San Lorenzo River drinking water supply that benefits the broad Santa Cruz County community because these native are ecological indicator species for the aquatic habitats that they inhabit.

Project Logistics: how will the project be completed?

This project will be completed via six objectives: (1) expanding the PIT antenna network on the San Lorenzo River, (2) comparing salmonid habitat use patterns in Branciforte Creek to patterns at the Felton Diversion Dam antenna and (3) other Central Coast watershed antennae, (4) documenting whether salmonid move between compared sites, (5) garnering support for extended monitoring, and (6) sharing fish movement information with stakeholders. Each objective is divided into tractable actions, which are described in our supporting documentation.

Project Completion Timeline

Order equipment (Jan. 2023), install equipment in Branciforte Creek (Nov. 2023), & begin pilot study (June - July 2024)

Applicants Background.

The California Trout Bay Area Region has a record of successful passive integrated transponder tag surveys on Pescadero Creek in San Mateo County and Walker Creek in Marin County. Our 2019-20 pilot survey on Pescadero Creek resulted in an expanded and ongoing monitoring program, another long-term monitoring program on Butano Creek, our data being added to the Southwest Fisheries Science Center cloud database, and spawning surveys by the California Department of Fish & Wildlife. Similarly, our initial work on Walker Creek resulted in a resulting graduate research project by a student at University of California, Davis.

Documenting Salmonid Movements in the San Lorenzo River Watershed

Background

Before 1976, the San Lorenzo River provided the southernmost naturally spawning habitat for endangered coho salmon (*Oncorhynchus kisutch*) on the West Coast, and according to informal California Department of Fish & Wildlife (CDFW) estimates, supported 19,000 federally threatened Central California Coast steelhead trout (*O. mykiss irideus*) in 1965 (Snyder 1908; CDFW 1965; Brown et al. 1994). Today, the San Lorenzo River watershed is a habitat sink for stray coho from other watersheds above Santa Cruz County and annual steelhead population estimates in the San Lorenzo River are around 1,000 individuals, according to Mathers Rowley, former executive director of the Monterey Bay Salmon and Trout Project. The 2016 Coastal Multispecies Recovery Plan by the National Marine Fisheries Service (NMFS) lists the San Lorenzo River as a historic population source of steelhead that remains essential for recovery of this species. The 2013 coho recovery plan by NMFS does not list the river as important for recovery, however, the San Lorenzo River is likely crucial for coho recovery since its watershed is larger and its main channel is longer than other creeks listed on the 2013 coho recovery plan.

Particular features of the San Lorenzo River watershed and other recent efforts within it may support salmonid population growth. The Lagoon Culvert Project is expected to stabilize water levels in the lower reaches of the Lorenzo River by reducing the likelihood of natural and manual breaches that minimize steelhead rearing habitat. Local and state parks line the upper reaches along the river as sandhills filter water into the Santa Margarita Aquifer that feeds the main channel. Despite the critical salmonid habitat and cold-water storage capacity of the San Lorenzo River watershed, it currently has only one passive integrated transponder (PIT) tag antenna near the Felton Diversion Dam (FDD) that is unable to detect salmonids that could enter the watershed without swimming through the upper portion of the main channel where the antenna is located. The FDD antenna also does not indicate the direction of salmonid movements. Current salmonid monitoring surveys for the County of Santa Cruz occur annually each fall, and there are anecdotes that approximately ten percent of tagged steelhead juveniles move up Branciforte Creek, a major tributary to the tidally-influenced portion of the San Lorenzo River (Figure 1). The 2016 recovery plan lists multiple actions on the creek that can help increase salmonid numbers, while the County of Santa Cruz and the Santa Cruz Resource Conservation District have latent interest in the flood control channel on the lower portion of Branciforte Creek. Installation of a PIT tag antenna on Branciforte Creek would contribute data to help clarify the percentage of tagged steelhead, and potentially stray coho, that swim up this tributary during fall, and other seasons, to contextualize ongoing monitoring and inform future management considerations.

Goals

The goal of this pilot project is to document juvenile and adult salmonid movements in Branciforte Creek relative to other sites in Santa Cruz Mountain watersheds to fill in key data gaps on fish movements in the San Lorenzo River watershed and straying from other watersheds. This will enable comparison of coho and steelhead movements in the San Lorenzo River to reveal whether salmonids from other coastal watersheds utilize Branciforte Creek. The project goal also addresses stakeholder (e.g., Southwest Fisheries Science Center, San Mateo County Resource Conservation District, Sempervirens) interest in coordinating both data collection and sharing for salmonid movements within watersheds across the Santa Cruz

Mountains for near real-time insights. The additional, and more precise, fish detection information gathered through this project will support coho salmon and steelhead trout recovery by informing both ongoing fisheries management and future habitat restoration of the San Lorenzo River watershed.

Objectives

The project objectives are to:

1. expand the PIT tag antenna network on the San Lorenzo River,
2. compare salmonid movement patterns in Branciforte Creek to patterns at the Felton Diversion Dam site,
3. compare salmonid movements patterns in Branciforte Creek to patterns at antennas in other Central Coast watersheds (e.g., Pescadero Creek, Butano Creek, Scott Creek),
4. document whether salmonids move between compared sites,
5. use pilot results to garner support for an extended monitoring effort that collects and sends information to the Southwest Fisheries Science Center cloud database, and
6. share this fish movement information with stakeholders (e.g., resource agencies, academics, non-profits, the City and County of Santa Cruz) to inform ongoing management and restoration.

Actions

We plan to achieve objective one by deploying a PIT antenna in Branciforte Creek based on features (e.g., wetted stream width, bed substrate, channel depth) and battery-powered antenna reader boxes on the stream bank for detection calibration and data collection. This field-tested framework was implemented by *California Trout* during a [pilot project](#) to continuously monitor Central California Coast coho and steelhead on Pescadero Creek in San Mateo County from October 2019 to March 2020. This scalable and cost-effective framework complemented lagoon population surveys and indicated movement by tagged salmonids from within the system and strays from adjacent watersheds. The pilot survey resulted in an expanded monitoring effort throughout the watershed, redd and spawning surveys fueled by collaboration between the Southwest Fisheries Science Center, California Department of Fish and Wildlife, San Mateo County Resource Conservation District, and *California Trout*.

After expanding the PIT tag antenna network in the San Lorenzo River watershed, we plan to achieve objectives two, three, and four by comparing patterns in salmonid detections at the Felton Diversion Dam (FDD) site and the Branciforte Creek site. We will do so by following another proven *California Trout* framework of requesting fish detection data from Joe Kiernan at the Southwest Fisheries Science Center, formatting the dataset for visualization, repeating these steps for Branciforte Creek detections, compiling datasets, including detailed data review methods and links to composite datasets in the resulting spreadsheet for replication, and embedding summary visuals in the compiled spreadsheet. These summary visuals will show the counts of detected salmonids by species (e.g., *Oncorhynchus kisutch*, *O. mykiss irideus*), life stage, detection location, origin watershed for strays, and environmental conditions (e.g., mean flow for stream gauge nearest to detection location). [These](#) slides show how we reviewed and compiled multiple datasets on coho and steelhead detections in Pescadero Creek as well as documenting how these tagged salmonids moved between adjacent watersheds.

Our plan to achieve objectives five and six is to present pilot study results to project partners, and other stakeholders (e.g., Monterey Bay Trout and Salmon Project, Santa Cruz Resource Conservation District) who have the resources to support an extended monitoring effort. This presentation will leverage data visuals for our pilot study results showing patterns in how salmonids moved through the project site on Branciforte Creek relative to patterns at other sites (e.g., FDD, Pescadero Creek). We will also highlight equipment performance to share improvements that bolster the extended monitoring effort. The final step will be our request that the Southwest Fisheries Science Center adds new PIT readers to its clouds database to support near real-time data collection and equipment monitoring via the BioLogic platform that the Center enabled California Trout to use for PIT antennae in the Pescadero Creek watershed following the pilot study that this project is modeled after.

Outcomes

Our pilot project will provide a clear benefit to native species by contextualizing current monitoring efforts and informing ongoing management considerations for both coho and steelhead (e.g., stocking hatchery raised fish) in the San Lorenzo River watershed and informing future habitat restoration work to support their recovery by addressing [Fish & Game Code](#), section 13103(i). Project results showing patterns in when steelhead, and potentially coho, swim up and down Branciforte Creek will benefit the general public in the Santa Cruz County community, which value the presence of salmonids in their regional watersheds based on local news articles. Determining movement patterns of salmonids along Branciforte Creek, relative to PIT tag antenna sites elsewhere, also benefit the Santa Cruz County community because salmonids are sensitive to changes in the aquatic environments that source the water supply for people - and these fish are also ecological indicators for other listed species.

Budget

This proposal is a good value and provides a good cost/benefit ratio for requested funds relative to project outcomes. We respectfully request a total of \$5,465 from the Public Grants Program by the Santa Cruz County Fish and Wildlife Advisory Commission for equipment costs, which are listed in Table 1. *California Trout* provide matching funds worth \$10,535 via private contributions, fundraising, and in-kind resources to match grant support via staff time contributed for installation, sourcing equipment, and maintenance for the antenna equipment for the duration of the grant is valued at \$3,000. Requested and matched funds total to a project budget of \$16,000.

Table 1: The proposed project budget is the same as that in the proposal form.

Itemized Budget Items	Requested Funds	Total Amount
2x BioMark 15' Antenna	2x @ \$2,550	\$5,100
2x IS1001 tag reader	2x @ \$1985	\$3,970
Shipping from BioMark in Boise, ID	\$930	\$930
Labor	-	\$3,000
Indirect costs	\$2,600	\$2,600
Total	\$5,465	\$16,000



Figure 1: Revised map of Santa Cruz County watersheds with a Biogeographic Information and Observation System map Branciforte Creek in the top right corner courtesy of Claire Buchanan - *California Trout*.

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County of Santa Cruz
Health Services Agency ♦ Environmental Health



Fish and Wildlife Advisory Commission

701 Ocean Street, Room 312, Santa Cruz, CA 95060
(831) 454-3154 TDD/TTY -Call 711 www.scceh.com
EnvironmentalHealth@santacruzcounty.us

GRANT INFORMATION: PROPOSAL

This information will be included in public documents

Project Name: Kingfisher Flat Flood/Drought Emergency Preparedness Date: 11/2/2022

Applicant name or Organization: Monterey Bay Salmon & Trout Project (MBSTP)

Project Description:

MBSTP will be operating the Kingfisher Flat Conservation hatchery facility for the first time over winter since the CZU lightning complex fire heavily damaged the facility in Fall of 2020. The winter spawning season poses several threats re: flooding, debris flows and intake blockage. MBSTP proposes to purchase a high-power utility pump to assist in the event of emergency (i.e. debris flow), and potentially support water supply to egg incubation systems in the event of future severe drought conditions.

Funding Requested	\$5,490.82
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ITEMIZED BUDGET ITEMS	Requested Funds	Matching Funds	Total Amount
Dayton Engine Driven Utility Pump, 13hp	\$5,249.65	\$0	\$5,249.65
Shipping for pump	\$241.17	\$0	\$241.17
50ft. flexible 4in. PVC suction hose	\$0	\$1,618.60	\$1,618.60
300ft. 4in. lay-flat discharge hose (150psi)	\$0	\$2,600	\$2,600
Suction strainer	\$0	\$50	\$50
TOTAL AMOUNTS	\$5,490.82	\$4,268.60	\$9,759.42

Each item description should be sufficient to clearly define the full item. In addition to funds being requested, note any matching funds committed to the proposed project.

For each section, provide a brief written response.

Background of the issue being addressed

Because of the post-fire condition of the Big Creek watershed where Kingfisher Flat Hatchery (KFH) is located, there is a substantial risk of flooding, debris flows, and intake blockage. This could compromise broodstock spawning and egg incubation capabilities at the hatchery. The primary issue being addressed is minimizing the risk to the KFH facility and incubating coho eggs throughout the winter season.

Project Goals

The goal of this project is to provide MBSTP with the equipment and capability to protect spawning/rearing/incubation infrastructure at KFH which houses critically-endangered Central California Coast coho salmon. The goal of this project will substantially increase the security of the KFH facility during heavy rainfall events, and provide a meaningful response in the event of flooding (and potentially drought) conditions in the Big Creek watershed.

Project Logistics: how will the project be completed?

This project will be relatively straightforward to complete- MBSTP will source an appropriate vendor and purchase a single, 4inch, 13hp engine-driven utility pump (i.e Dayton. MBSTP proposes to utilize SCC FWAC funding to purchase the pump itself, and purchase the necessary flex and discharge hose as match components. The combination of the pump and flexible hose will give hatchery staff the capability to adjust emergency response based on creek conditions/flooding location.

Project Completion Timeline

Pump will be purchased and on-site at KFH by January 1, 2023

Applicants Background.

MBSTP is a 501c3 nonprofit organization dedicated to the recovery of native salmon & steelhead of the Monterey Bay area. MBSTP works in partnership with federal, state, and local natural resource agencies to accomplish goals in fisheries conservation. MBSTP has operated the Kingfisher Flat Conservation hatchery (KFH) facility for over 40 years to support recovery efforts for local salmonids. Qualified and proficient hatchery personnel are a crucial component of the operation of KFH, and are capable of enacting the project as planned.



County of Santa Cruz

Health Services Agency ♦ Environmental Health



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2022-23 NOTICE OF AVAILABLE GRANT FUNDING

The Santa Cruz County Fish and Wildlife Advisory Commission (FWAC) is soliciting applications for its Public Grants Program. Grants are funded by fines and settlements collected for violations of California Fish and Game laws within Santa Cruz County.

There is a **total of \$16,000** available for this year's grants program. All requested amounts will be considered.

FUNDING PRIORITIES:

- Benefits native fish and wildlife and habitats.
- Education programs for school age children related to fish and wildlife
- Support of California Fish and Game related law enforcement.

SELECTION CRITERIA: The highest consideration will be given to projects which:

- Are highly rated by Commissioner Score Sheet metrics (Appendix 1)
- Complies with [Fish and Game Code 13103](#) (Appendix 2)
- Proposals may include funding for labor costs.

SCORING PROCESS: Each proposal will be scored by all commissioners. Commissioner scores will then be added together, and the proposals will be ranked by total points scored. Starting with the highest ranked proposals, the commission will decide to fully fund, partially fund or not fund each proposal.

APPLICATION PROCESS:

1. Individuals, organizations, and agencies can find application forms on the FWAC webpage: [Fish & Wildlife Advisory Commission \(scceh.org\)](http://Fish & Wildlife Advisory Commission (scceh.org)).
 - a. Individuals should have an affiliation with an organization to receive funding.
2. Additional documentation can be included with the application forms; however, the document length should be kept to 8 pages or less. We encourage concise grant proposals, but budget information is required.
3. Proposals must be received by 3:00 PM Thursday, November 3, 2022, as an electronic file to Sean Abbey sean.abbey@santacruzcounty.us. Hardcopy applications will be accepted, but electronic applications are preferred.
4. Grant applications will be reviewed by the Commission at their November 10, 2022, FWAC meeting at 7:00 p.m. Applicants are encouraged to attend and summarize their proposal in a short presentation (not to exceed 3 minutes in length).
5. Final selection is scheduled for the December 1, 2022, FWAC meeting

**Appendix 1:
Commissioner Score Sheet**

PROPOSAL		TOTAL SCORE	
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Annual Work Plan Goal: Invasive Species Management **3 points**

Proposal's primary goal is related to invasive species	3 points	
There are components of the proposal related to invasive species	1-2 point	
Proposal does not address invasive species	0 points	
SCORE 1		

Benefits native species and habitats through a project, education, or enforcement: **12 points**

Proposal provides a clear benefit to native species and habitats through a project, education, or enforcement	8-12 points	
Proposal provides some benefit to native species and habitats	4-7 points	
Proposal provides limited benefit to native species and habitats	1-3 points	
Proposal does not benefit native species or habitats	0 points	
SCORE 2		

Cost Effectiveness: **3 points**

Proposal is a good value and provides a good cost/benefit ratio	3 points	
Proposal provides moderate cost/benefit ratio	1-2 point	
Proposal has a high cost for the benefits and/or does not have funding for the complete project secured:	0 points	
SCORE 3		

Benefit to the Santa Cruz Community: **2 points**

Proposal will benefit a Santa Cruz County community or habitat	1-2 point	
Proposal will not benefit a Santa Cruz County community or habitat	0 points	
SCORE 4		

Expected Project Success: **3 points**

Applicant has a record of successful projects, or a new applicant presents a solid foundation for success	3 points	
Applicant has a mixed record for success on past projects or a new applicant does not provide evidence for potential success	1-2 point	
Applicant has had multiple unsuccessful projects or has failed to provide an update on the past year's project	0 points	
SCORE 5		

Appendix 2:
FISH AND GAME CODE: SECTION 13103

Expenditures from the fish and wildlife propagation fund of any county may be made only for the following purposes:

- a) Public education relating to the scientific principles of fish and wildlife conservation, consisting of supervised formal instruction carried out pursuant to a planned curriculum and aids to education such as literature, audio and video recordings, training models, and nature study facilities.
- b) Temporary emergency treatment and care of injured or orphaned wildlife.
- c) Temporary treatment and care of wildlife confiscated by the department as evidence.
- d) Breeding, raising, purchasing, or releasing fish or wildlife which are to be released upon approval of the department pursuant to Sections [6400](#) and [6401](#) onto land or into waters of local, state, or federal agencies or onto land or into waters open to the public.
- e) Improvement of fish and wildlife habitat, including, but not limited to, construction of fish screens, weirs, and ladders; drainage or other watershed improvements; gravel and rock removal or placement; construction of irrigation and water distribution systems; earthwork and grading; fencing; planting trees and other vegetation management; and removal of barriers to the migration of fish and wildlife.
- f) Construction, maintenance, and operation of public hatchery facilities.
- g) Purchase and maintain materials, supplies, or equipment for either the department's ownership and use or the department's use in the normal performance of the department's responsibilities.
- h) Predator control actions for the benefit of fish or wildlife following certification in writing by the department that the proposed actions will significantly benefit a particular wildlife species.
- i) Scientific fish and wildlife research conducted by institutions of higher learning, qualified researchers, or governmental agencies, if approved by the department.
- j) Reasonable administrative costs, excluding the costs of audits required by [Section 13104](#), for secretarial service, travel, and postage by the county fish and wildlife commission when authorized by the county board of supervisors. For purposes of this subdivision, "reasonable cost" means an amount which does not exceed 3 percent of the average amount received by the fund during the previous three-year period, or three thousand dollars (\$3,000) annually, whichever is greater, excluding any funds carried over from a previous fiscal year.
- k) Contributions to a secret witness program for the purpose of facilitating enforcement of this code and regulations adopted pursuant to this code.
- l) Costs incurred by the district attorney or city attorney in investigating and prosecuting civil and criminal actions for violations of this code, as approved by the department.
- m) Other expenditures, approved by the department, for the purpose of protecting, conserving, propagating, and preserving fish and wildlife.