



COUNTY OF SANTA CRUZ

FISH AND WILDLIFE ADVISORY COMMISSION

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 95060
(831) 454-3154 FAX: (831) 454-3128

AGENDA

Dec 2, 2021, 7:00 PM

This meeting will be conducted as a video conference -see link and call-in information on next page.
Please contact Sean Abbey sean.abbey@santacruzcounty.us if you have questions.

Agenda Item #	Start Time	End Time	Description
1	7:00	7:15	Call to Order
2			Roll Call
3			Approval of Minutes
4			Public Comments
5	7:15	7:30	Presentation: Kristen Kittleson to provide updates regarding the RCIS
6	7:30	8:30	Public Grants Program: Each applicant proposal shall be discussed to determine if funding should be approved. Once discussion is completed, the commissioners will rank each proposal.
7	8:30	8:40	Approve Meeting Schedule for 2022
8	8:40	8:50	Discuss Feb agenda <ul style="list-style-type: none">Agreement to Continue Virtual Meetings
8	8:50	9:00	Staff Reports <ul style="list-style-type: none">Final Letter to Supervisors attached for the recordWildlife Crossing money in Infrastructure Bill
9			Review Correspondence
10			Commissioner Reports and Announcements
		9:00	Adjourn

9. CORRESPONDENCE

Please see Fish and Game commission for regulatory announcements

<https://fgc.ca.gov/Regulations/2021-New-and-Proposed>

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 will be held virtually -- by teleconference only. No physical location will be available for these teleconference meetings; however, members of the public will be able to participate in the meetings via Microsoft Teams or by telephone using the information provided below.

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

Microsoft Teams meeting

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Phone Conference ID: 121 349 126#

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Click on the “Click here to join the meeting” link above. If you are asked to join in the 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:

All meeting attendees should keep their microphones on mute unless they are speaking.

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 2 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.

If you are having trouble joining the conversation, you can send a message to Sean (email sean.abbey@santacruzcounty.us) and he will call on people who want to comment.



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Meeting Minutes
November 4, 2021

1. **CALL TO ORDER** – 7:00 pm
2. **ROLL CALL**

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

P = Present E = Excused A = Absent

3. **APPROVAL OF MINUTES:** No changes suggested
 - **Motion to Approve Minutes:** Alter, **Second:** Michelsen,
 - **Ayes:** Crawford, Jankovitz, Wise, Somerton
 - **Abstain:** Berry, Gomez
 - **Minutes approved**
4. **PUBLIC COMMENTS:** None
5. **PUBLIC GRANTS PROGRAM (PGP) PRESENTATIONS:** Presentations were made by; Coastal Watershed Council, Exploring New Horizons, Monterey Bay Salmon and Trout Project, Salmonid Restoration Federation, Santa Cruz Bird Club, and WOLF School. Each presentation was followed by questions from the commissioners.
6. **DISCUSS LETTER TO THE SUPERVISORS REGARDING ILLEGAL CAMPING:**

Commissioners agreed that the main text of the letter did provide supporting information that riparian encampments are harmful to the habitats they are located in. However, commissioners debated whether solutions to riparian camping should be provided as part of the letter. Some Commissioners felt that stating the problem without providing solutions would make the letter less effective and suggested adding regulatory codes that could be used to assist in enforcement actions. Other Commissioners felt enforcement was unlikely to be effective and that long term solutions are outside the area of expertise for this Commission, so identifying solutions should be left to groups focusing on this issue. Commissioner Baron put forward a motion to add language to the letter regarding a suggestion by Captain Schindler to create an enforcement task force comprised of CDFW, public works, CHP, City Police Departments, and other agencies.

 - **Motion to add language:** Baron, **Second:** Jankovitz,
 - **Ayes:** Berry, Crawford, Alter, Wise, Gomez
 - **Nays:** Somerton, Michelsen
 - **Motion approved**

The Commissioners determined that the letter was acceptable to send to the Supervisors but would add a final paragraph stating possible solutions, including a task force, and supporting regulatory code. These would be presented not as prescriptive solutions, but as options to be considered when addressing riparian encampments.

- **Motion to Approve Letter:** Gomez, **Second:** Baron, All Aye,
- **Letter approved for submittal to Supervisors**

7. DISCUSS DECEMBER AGENDA:

- **Vote to Continue Virtual Meetings:** The passage of AB 361, regarding the continuation of remote public meetings, requires Commissioners to hold a vote on whether the following criteria is true; 1) The State continues to be under a State of Emergency, and 2) local Health Officials continue to recommend physical distancing.
 - **Motion to Approve:** Michelson, **Second:** Gomez, All Aye
 - December meeting will continue to be held completely by teleconference
- **December Meeting Agenda:** Review and approve PGP applications, Vote on continued virtual meetings

8. STAFF AND COMMISSIONER REPORTS AND ANNOUNCEMENTS:

- Commissioner Jankovitz provided an update on low flow closure status for the steelhead fisheries. Progress is being made by the state and they are currently gathering public support for the proposal.
- Commissioner Berry noted that owl boxes are being installed along the San Lorenzo River levee in the City of Santa Cruz to help reduce the ground squirrel population. This is in response to a similar project that was done on the Pajaro River levee, which was supported by the FWAC.
- Commissioner Somerton provided an update regarding the Monarch Butterfly population, which has rebounded somewhat from very low levels last year.

9. ADJOURN. Motion to Adjourn: Michelsen, **all Aye**, meeting adjourned at 9:00 pm.

County of Santa Cruz Fish and Wildlife Advisory Commission
PUBLIC GRANTS PROGRAM APPLICATION

1. Project name

Classroom Aquarium Education Program (CAEP) (AKA n as Santa Cruz Trout in the Classroom (TIC))

2. Name of organization or individual submitting the proposal:

Santa Cruz-Monterey Bay Area Subunit of the American Fisheries Society

3. Amount of funding requested: \$2000

For each of the following sections, give a brief description:

4. Project Description

CAEP (or TIC) is a statewide program in which teachers and their students set up an aquarium and rear trout eggs in the classroom. Instructors receive eggs under a special permit issued by the California Department of Fish and Wildlife (CDFW) that allows them to keep, rear, and release hatchery rainbow trout eggs with their students. The eggs develop and hatch under the students' watch, potentially culminating in a class field trip to release the hatched fry in a local watershed. This experience allows students to directly observe developmental changes, appreciate the value of aquatic habitats, and consider themselves as aquatic scientists.

Instructors often pair the developmental stages with coordinated activities to reinforce the values to their students. Teachers of students as young as kindergarteners through university instructors have successfully implemented this program in their classrooms, demonstrating the broad applications of TIC. Though the program is tailored to suit each teacher and classrooms' specific needs, each unique program emphasizes the work required to maintain and preserve our watersheds. CAEP is aligned to Next Generation Science Standards (NGSS).

The Classroom Aquarium Education Project is offered in partnership with regionally-based community organizations who serve as sponsors. Our local American Fisheries Society subunit (Santa Cruz-Monterey Bay Area Subunit of the American Fisheries Society) sponsors Santa Cruz county teachers to participate in this program. We additionally provide the teachers with volunteer coaches, often UCSC undergraduate and graduate students, who provide additional support in aquarium troubleshooting and activity planning for the teachers. This allows teachers to focus on relaying watershed concepts to their students. SCMBAS provides the necessary aquarium equipment, assistance in navigating CDFW permitting, delivering eggs, and troubleshooting rearing their trout. Funding enables expansion of teachers sponsored by our program, increasing the number of students reached, as well as the number of potential volunteer coaches.

5. Project objectives and goals

- Goals:

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PUBLIC GRANTS PROGRAM APPLICATION

- Encourage every student to consider themselves as a fisheries scientist and clean waters activist
 - Connect teachers and students with volunteer coaches from different aquatic backgrounds that are able to provide additional perspectives and classroom support
 - Increase number of Santa Cruz county teachers sponsored by our program through purchasing additional aquarium supplies
 - Empower teachers to tailor CAEP curriculum to fit their own classroom uses through SCMBAS support by providing aquarium equipment, delivering trout eggs, and assisting with releasing fry
 - Recruit enough volunteers to pair two coaches per classroom, increasing the reach of TIC values within our volunteer program
 - Provide online training workshop for teachers to learn about trout life cycles, hatcheries, the issues facing native trout populations today, and the classroom tools available to them through TIC
 - Create additional online content [for the classroom resources](#) available on the Classroom Aquarium Education Program's website
- Objectives:
 - Provide teacher training workshop virtually to instruct teachers how to successfully hatch and raise trout while following CDFW permitting
 - Provide teachers with access to CAEP classroom materials and connect them with a pair of volunteer coaches to provide additional activities and support
 - Supply classrooms with necessary aquarium equipment and instructions for use
 - Deliver eggs to classrooms
 - Collaborate with teachers on in-class activities
 - Help release fry into local lake
 - Ensure teachers follow permits so they can participate in the program next year

6. Background and history of the problem

With increasing challenges in maintaining and preserving our aquatic resources in California, the need for all citizens to see themselves as clean water stewards is BIG. Engaging hands-on activities leave lasting impacts that empower participants to carry those values forward and share them with others. Unfortunately, active engagement with conservation often has exclusive access, and many potential aquatic scientists miss out on conservation experiences. “Fish in the Classroom” programs offer a unique opportunity for students to engage with aquaculture in their own classroom. By monitoring the tank, observing developmental stages, and considering how salmonid depend on clean water, students are inspired to see themselves as aquatic scientists.

“Fish in the Classroom” programs function through the collaboration of state agencies, organization sponsors, and local teachers. Through state resources such as access to fish hatcheries, proper permitting, funding, and teacher enthusiasm, students are able to see early salmonid life cycles in person. Teachers partaking are often inspired as well. The Classroom

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Aquarium Education Program

"Fish in the Classroom" programs originated in British Columbia in the late 1970's. As a part of the new "environmental movement," classes hatched and released salmon as an educational endeavor. The success of the program allowed it to "migrate" south through Washington, Oregon and into California.

In the 1980's, a group of educators established the first programs that allow students to hatch fish in California. The program enjoyed explosive growth in the early days and has grown steadily since then spawned by the energy and enthusiasm of community partners, most of them fly-fishing clubs. The methods and technology have changed over the years but the basic premise of the program remains the same: students study local aquatic habitats and the life history of the chosen salmonid, operate a chilled aquarium in their classroom, and receive eyed-eggs from CDFW hatcheries to raise to the fry stage. The fish are released under permit into appropriate bodies of water within weeks. Throughout the state, rainbow trout are the most commonly used fish, although salmon and steelhead are used where appropriate.

Santa Cruz County hosted a vibrant and growing program hosted by the Monterey Bay Salmon And Steelhead Education Program (MBSTEP) until a combination of the drought and hatchery related issues made it impossible to utilize steelhead from a local hatchery. While native rainbow trout eggs were made available through the Department of Fish and Wildlife, the local sponsor opted to not support any teacher hatching rainbow trout and eventually ended their participation in this program in 2015.

The student-run American Fisheries Society Subunit in Santa Cruz (SCMBAS) stepped in in 2016 to fill the sponsor role serving Santa Cruz County teachers. SCMBAS helped deliver eggs to the two remaining classrooms participating in the TIC program. We have continued to sponsor this program for the last five years with great success, despite schools shutting down to quarantine. CDFW's Classroom Aquarium Education Program worked tirelessly to evolve the online classroom curriculum available for teachers and students to bridge the gap between the classroom and students at home. These new resources have strengthened the program, as well as expanding its platform. With these new resources and classrooms reopening, we have increased interest from new teachers, as well as previous teachers who stepped back in 2020.

In 2021, SCMBAS, in conjunction with the City of Santa Cruz and CDFW, is hoping to expand the program to support up to 10 new local teachers and their classrooms to accommodate our increased interest. To achieve this, we are requesting funding to obtain the necessary aquarium equipment to provide to the teachers at no cost. Materials include an insulated tank, chiller, filters, and related equipment along with curriculum, posters, and other support materials. In addition, we would like to have funds available to offer each teacher the opportunity to be reimbursed for up to \$100 for classroom materials to enhance their class study of fish and habitats.

7. How will the project be accomplished (design specifications or plans, if applicable)

All teachers currently certified in our program (6) will be allowed to continue to participate, and will be invited to participate in our online training workshop as a free refresher. Moving the workshop from in-person to a virtual platform allows for teachers to fit the training in their schedules. This workshop will meet the minimum training standards set by CDFW to allow a teacher to apply for a permit to hold, transport, and release fish (form 772 permit).

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SCMBAS will continue to act as a sponsor by providing aquarium equipment, delivering trout eggs, providing access to additional educational resources, and coordinating a pair of volunteer coaches for each classroom. The City of Santa Cruz staff at Loch Lomond Reservoir provides additional coordination and educational programs for the release of fry.

The requested funding will provide support for 10 new teachers to participate in the program.

7. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount
Incubation tanks (complete set) detailed list of components available upon request	\$3000 <i>(\$300 per tank set up x 10 new teachers = \$3000)</i>		\$3000
Classroom educational materials	\$1000 <i>(\$100 x 10 new teachers=\$1000)</i>		\$1000
Teacher time (teaching lessons, maintaining aquaria, etc.)		\$11,250 <i>(\$1125 x 10 teachers = \$11,250)</i>	\$11,250
AFS member time (deliver eggs, teach in classroom, release eggs)		\$1000 <i>(\$20/hr x 10 hrs x 5 members = \$1000)</i>	\$1000
City of Santa Cruz Loch Lomond staff (release eggs)		\$1200 <i>(\$30/hr x 2 hrs x 10 classrooms x 2 staff = \$1200)</i>	\$1200
TOTAL AMOUNTS	\$2000	\$13,450	\$17,450

8. Timeline for completion

December 2021	Existing teachers submit application for eggs to CDFW
January 2022	AFS members purchase and assemble aquarium equipment
January 2022	Training workshop for new teachers.
February 2022	Teachers set up tanks in classrooms

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February 2022	Teachers begin implementing watershed curriculum
March 2022	AFS members deliver eggs to classrooms
May 2022	Teachers release fry in authorized local waterbodies (AFS members and City of Santa Cruz assist in release)
May 2022	AFS members help teachers return permits to CDFW
September 2022	Teachers decide if participating again and either return equipment or keep their equipment for another year

9. Background or history of your organization

The Santa Cruz-Monterey Bay Area Student Subunit (SCMBAS), is a student-led subunit of the California-Nevada chapter of the American Fisheries Society (AFS). Our student subunit was founded in 2015, and has engaged in a variety of professional development, outreach, and service activities. For example, SCMBAS has supported travel to fisheries conferences, hosted speakers and popular storytelling events, and developed and executed education programs on watershed health and seafood fraud with Harbor High School. Our group is composed of both undergraduate and graduate students, as well as other local fisheries professionals.

We are incredibly proud of our involvement with Trout in the Classroom and are very excited for the opportunity to expand our program. Our own values to share our passion for fish and the aquatic environment align closely with the Trout Education Program, and we are thrilled to be able to continue to collaborate with local teachers, CDFW, and the City of Santa Cruz. SCMBAS is looking forward to bringing our personal experiences as biologists and researchers to local students that may be considering similar careers, and additionally we are excited to continue to contribute scientific research into the online curriculum.

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PUBLIC GRANTS PROGRAM APPLICATION

1. Project name: Watershed Rangers After-School Program
2. Name of organization or individual submitting the proposal: Coastal Watershed Council
3. Amount of funding requested: \$2,000
4. Project Description

Threatened and endangered anadromous fish species in the San Lorenzo River watershed provide a local lens for 24 3rd-5th grade students to investigate the connectivity between basic watershed concepts and the interactions between natural and social systems in the 12-week Watershed Rangers after-school program. Each student will conduct research on local anadromous fish species, explore factors affecting their survival, and participate in stewardship projects to help improve steelhead trout habitat. Coastal Watershed Council (CWC) educators, in ongoing partnership with site coordinators at Bay View and Gault Elementary Schools, will plan and implement programs, lead program development and evaluate the success of this program.

5. Project objectives and goals

The Watershed Rangers program seeks to strengthen students' knowledge, ability, self-efficacy and commitment to identify and improve environmental conditions affecting the San Lorenzo River, the Monterey Bay National Marine Sanctuary and anadromous fish species habitat. Curriculum content will support Next Generation Science Standards (NGSS), Santa Cruz County Office of Education's Environmental Literacy for All initiative and the following grant objectives:

- Objective 1: By May 31, 2022, 80% of students can identify and articulate actions they have personally taken during the course of the program that improve salmonid habitat.
- Objective 2: By May 31, 2022, 80% of students express a commitment (interest, motivation, attitude) to continue to participate in stewardship activities that support the overall health of the San Lorenzo River and Monterey Bay National Marine Sanctuary following their participation in the program.

6. Background and history of the problem

In Santa Cruz County, the San Lorenzo River watershed comprises 136 square miles that drain to the Monterey Bay National Marine Sanctuary. Poor water quality in this river, caused by land-based pollution, directly impacts the health of the Sanctuary. It is listed on California's 303(d) impaired water bodies list for pathogens, nutrients and sediment. The river is the primary drinking water source for 100,000 people and 90% of the watershed is privately owned property. Therefore, it is critical that residents understand their role in enhancing watershed health, particularly as communities face and respond to the increasing challenges of climate change.

That's why the Watershed Rangers program is conducted through the lens of local anadromous fish. As students engage with meaningful watershed educational experiences with a focus on threatened steelhead trout in the San Lorenzo River and Sanctuary, students increase their understanding of watershed concepts, interactions between natural and human systems and the connection between human activity and environmental conditions. Moreover, the lens of

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threatened species provides a tangible example of the effects of challenges like climate change. Tangible examples prepare elementary school students to think about how climate challenges impact rivers, oceans and ecosystems and relate to students' own daily actions and choices.

7. How will the project be accomplished (design specifications or plans, if applicable)

In partnership with after-school staff at Gault Elementary and Bay View Elementary Schools, CWC will engage 24 3rd, 4th and 5th grade students in a 12-week program conducted after-school. Each school site will have one cohort of students with each cohort engaging up to 12 students. Cohorts of this size will ensure each student gets individual attention, provides a quality experience and adheres to COVID precautions. Cohorts meet once per week for up to one hour working with CWC Education Manager Mollie Behn or CWC Environmental Educator Sam Adelson. The program consists of 12 weekly activities that engage students in the five phases of an effective service-learning program: 1) investigation 2) plan and prepare for a stewardship action project 3) implement the stewardship action project 4) reflection, and 5) celebration.

Investigation:

Students examine the concept of a watershed and their role in the watershed through the lens of salmonid habitat in the San Lorenzo River. Students engage in hands-on experimentation, modeling, data collection to identify local environmental issues affecting the health of anadromous fish habitat and the effects humans have in either harming or protecting the habitat. Examples of investigations include:

- Examine the steelhead trout life cycle and migration pattern.
- Identify and map the factors affecting the health of the San Lorenzo River.
- Examining how native plants help improve water quality and salmonid habitat.

Stewardship Action Project:

To support the health of the anadromous fish habitat and the San Lorenzo River, students will have the opportunity to design their own stewardship action project or implement a project based on a suggested list of activities that help students apply knowledge gained during field investigations.

For example, in 2019, Bay View Elementary School students chose to lead a community engagement project to provide a Public Service Announcement to protect steelhead habitat. Students brainstormed and selected the idea to create posters describing stewardship actions and planned to visit businesses along the San Lorenzo River in downtown Santa Cruz to ask store employees to display these posters to their customers. CWC supported students by printing their art on posters, which described actions to decrease pollution, conserve water and other actions to benefit steelhead habitat. CWC provided transportation and accompanied students on the field trip where the students led discussions with store employees as they requested to hang the posters in prominent displays in the stores. Students measured success by the rate of store acceptance to hang their posters. During reflections students shared their excitement to have their Public Service Announcements posted in local stores. Likewise, store employees expressed to CWC staff that they received many comments and questions about the posters. Many employees expressed an interest in further supporting future cohorts in their protection of the river.

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During the 2020-21 school year, students in the virtual program at Bay View Elementary School elected to create Public Service Announcements teaching their family and neighbors about conserving water to protect steelhead trout. The in-person cohort of campus-based students planted native plants to help reduce stormwater runoff.

Reflection and Celebration:

Following the completion of the stewardship action project, students will evaluate their stewardship action project and the impact their action project had. Additionally, students will be guided to reflect on their experience and how they can apply the knowledge gained during the program to other situations. Upon completion of the program, students will pledge their commitment to share their new knowledge with others and will be “sworn in” as a Watershed Ranger, receiving their very own wooden badge.

Program Evaluation:

The evaluation of Watershed Rangers is designed to gauge the impact of the program on students’ knowledge, skills, commitment and actions relating to local San Lorenzo River watershed conditions, the Monterey Bay National Marine Sanctuary and salmonid habitat. The evaluation will determine whether the program objectives described have been achieved by May 31, 2022. Evaluation data will also be used to improve the overall effectiveness of the program with a goal of providing the highest quality of environmental education. CWC’s goal is to ultimately using this model to bring meaningful watershed after-school experiences to every elementary school campus within the Santa Cruz City School District.

With support from NOAA Bay and Watershed Education and Training from 2018-20, CWC hired Applied Survey Research, a social research firm specializing in school readiness assessments, community assessment projects and program evaluation to develop an evaluation plan to address Watershed Rangers program objectives. The primary evaluation data comes from student surveys. Surveys were based on a review of previous CWC survey instruments and data, as well as recent research literature on best practices regarding the content and administration of student surveys for this topic and age group.

The surveys, called Watershed Ranger Profiles, serve a dualistic purpose of allowing CWC educators to evaluate program outcomes while providing an opportunity for reflection for student participants. After the data are collected, Education Manager Mollie Behn analyzes both individual survey items and composite measures of multiple items. A composite measure is an average of a set of survey responses that collectively represent a key construct cited in the program objectives. For example, a composite measure for Objective 1 (“identify personal actions”) would be created as a combination of multiple items students may have personally taken during the program to improve salmonid habitat. Thus, to measure the impact of the program on students’ knowledge, attitudes, beliefs and behaviors, the evaluator will conduct quantitative analyses of related survey items and composite measures related to each of the objectives. After the final round of data has been collected and analyzed, CWC will complete a summative report describing whether the objectives were achieved. These results will be supplemented by comments from after-school coordinators and, if available, parents about the program’s impact.

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7. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount
Personnel	\$2,000	\$11,985	\$13,985
Materials & Supplies: General teaching materials including pens, pencils, paper and printing, tape, scissors, clipboards, dry erase markers, lamination pages, art supplies, etc.		\$300	\$300
Materials & Supplies: Community outreach materials for youth-led service project		\$800	\$800
Travel: Staff mileage		\$15	\$15
Travel: Santa Cruz City Schools Buses		\$600	\$600
TOTAL AMOUNTS	\$2,000	\$13,700	\$15,700

8. Timeline for completion

Date	Task
January 2022	Coordination and outreach with After-School Coordinator and recruitment of students.
March 2022	Begin Watershed Rangers cohorts at Bay View and Gault Elementary Schools. Conduct initial student pre-survey. Regularly communicate with After-School Coordinator to ensure program will achieve results as designed.
April 2022	Continue meeting with cohorts at Bay View and Gault Elementary Schools. Regularly communicate with After-School Coordinator.
May 2022	Conduct end-of program student surveys and receive feedback from parents and/or After-School Coordinator. Complete Watershed Rangers program.
June 2022	Analyze and review evaluation data. Prepare summary report.

9. Background or history of your organization

The Coastal Watershed Council (CWC), a 501(c)(3) nonprofit, was formed in 1995 in response to the declining health of watersheds connected to the Monterey Bay National Marine Sanctuary. CWC's mission is to preserve and protect coastal watersheds through stewardship, education and monitoring. Since launching its environmental education program in 2006, CWC has inspired 21,431 students to explore, enhance and protect their local watersheds. In 2017, CWC adapted its after-school curriculum to a service-learning model, the focus of CWC's current Watershed Rangers after-school curriculum.

CWC regularly coordinates with environmental education partners to ensure that CWC's programs synergize with and do not duplicate other efforts in the region. CWC works closely with the Santa

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Cruz County Office of Education (COE) on their Environmental Literacy For All initiative. As one of the leading environmental education organizations in Santa Cruz County, CWC partners with the COE to engage teachers in collaborative education projects to engage students in environmental literacy activities focused on watersheds and watershed health. For example, for the past two years CWC supported kindergarten and third grade teachers to develop a sequence of classroom and field activities to examine the life cycle of steelhead trout, their habitat requirements and migration patterns.

CWC respectfully requests that funding be allocated to support this program, as it is creating a model of place-based and evidenced based practices to increase students' knowledge, commitment and desire to act in stewardship of anadromous fish habitat in the San Lorenzo River and the Monterey Bay National Marine Sanctuary.

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1. Project name

Outdoor Educational for San Francisco Bay Students

2. Name of organization or individual submitting the proposal:

Exploring New Horizons Outdoor Schools

3. Amount of funding requested:

\$2,000

For each of the following sections, give a brief description:

4. Project Description

Through this project, over 4,000 San Francisco Bay Area students will attend 4 to 5-day programs, engaging in hands-on learning in the redwood forest and coastal ecosystems. Our experienced naturalists lead students in place-based learning, concentrating on interdependence, cycles, energy flow, and more, deepening students' interest in science and environmental stewardship. School groups also engage in cooperative team building activities, including family style dining, designed to build trust within and between the hiking groups and participating classes. During their day hikes, and the night hike, students may observe salamanders, banana slugs, deer, hawks, woodpeckers, owls, harbor seals, whales, sea anemones, crabs, sea stars, and 2,000-year-old redwood trees. Students will also explore the sandhills and learn about the endemic species that live there. At the beach day at Natural Bridges, students will pull up ice plant and learn about invasive species. Learnings are reinforced through reflective nature journaling; drawing or nature art; participatory group songs, dances, and puppet shows; and skits where cabin groups act out a concept they have learned during the week. Conservation is also an essential part of the experience, as students weigh and graph their food waste at the end of each meal, try to take a 3-minute shower, and participate in a mock town hall meeting.

As ENH prepares to reopen our residential programs, we are excited to further our commitment to providing high-quality, affordable, residential, environmental education to San Francisco Bay Area students and to renew our focus on outdoor educational equity. Participation in a week of environmental education will increase students' academic performance and their social and emotional well-being, empowering them to better succeed in college and career, and to work together to create a healthier and more sustainable world.

5. Project objectives and goals

ENH currently tracks our impact through qualitative and quantitative surveys completed by teachers and students, and by analyzing additional feedback throughout the week from students, cabin leaders, and teachers. This helps us to better understand students' and teachers' experiences, elevate the visibility of our work, and be able to make program adjustments when necessary. Through this project, ENH expects that over 90% of participating classroom teachers will agree that after a week of outdoor education students:

- feel more connected to the environment

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- better understand the ecosystems of coastal California
- express more self esteem
- better understand their role as environmental stewards
- are more comfortable being outside
- have strengthened relationships with peers and teachers
- work better together as a team
- are more interested in learning about science

Objectives of this project include:

- To engage groups of San Francisco Bay Area students in 3 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 provide social and emotional support to students, empowering them in nature

6. Background and history of the problem

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 state of California, less than 10% of 4th–6th grade students attend 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.

7. How will the project be accomplished (design specifications or plans, if applicable)

Fall 2021:

- Continue recruitment and coordination with participating Northern California schools for the 2021-22 school year
- Continue new site preparation including setting up new infirmary, office and outdoor teaching areas.
- Continue hiring process for administrative and naturalist staff
- Coordination with participating schools to prepare them for participation in the program
- Program Director to work with participating classroom teachers to prepare students for program, providing all health forms and other preparation materials as well as pre-curriculum
- ENH staff goes through staff training including Equity, Inclusion, Diversity (EID) training

Winter & Spring 2022:

- Health Supervisor works with parents and teacher to prepare for all medical or food allergy needs for the program

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- Program Director works with classroom teachers around cabin leader recruitment and preparation
- Students, classroom teachers, and high school or parent cabin leaders participate in 3 to 5-day program, exploring the redwoods and coastal ecosystems
- Program Director meets with teachers at the end of each week of program and collects evaluations
- Program Director sends classroom teachers follow up evaluations to be completed by teachers and students 2 months after participation in the program
- ENH staff continues with trainings throughout the year

June - July:

- Evaluation data collected and analyzed by ENH staff, and the results presented to schools, funders, and other stakeholders

July - November

- Recruit and solidify participating Northern California schools for the 2022-23 school year
 - Coordination with participating schools to prepare them for participation in the program
- Program Director to work with participating classroom teachers to prepare students for program, providing all health forms and other preparation materials as well as pre-curriculum
- Staff Training
- Students, classroom teachers, and cabin leaders participate in 3 to 5-day program, exploring the redwoods and coastal ecosystems

8. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Grant funding would pay for a portion of our Program Director’s salary to manage our program. A majority of ENH’s budget is composed of fees schools pay to attend our program. ENH also seeks grant funding and individual donations in order to provide lower-income schools discounted rates. ENH has already submitted grants to past funders, the Dean & Margaret Leshner Foundation and the Joseph & Vera Long Foundation.

Item	Funds Requested	Match Contribution	Total Amount
Program Director Salary	\$2,000	\$4,000 (From Leshner and Long Foundations)	\$6,000

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TOTAL AMOUNTS	\$2,000	\$4,000	\$6,000

8. Timeline for completion

Please see timeline above.

9. Background or history of your organization

Exploring New Horizons (ENH) empowers students, builds environmental literacy, and strengthens school communities through outdoor education. Founded as a nonprofit in 1979, ENH has engaged over 200,000 students in residential outdoor education programs, taking a whole child approach focused on ecology, social emotional learning, environmental stewardship, and the arts. Over our 40-year history, our goal has always been to offer high-quality and affordable programs that enhance interpersonal relationships and create positive associations between learning and the outdoors which students can 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 230 5th-6th grade students and their classroom teachers attend 4 and 5-day programs at our new site in Scotts Valley, exploring the redwood forest, creek, and Natural Bridges State Park.

Pigeon Point: Up to 40 3rd- 8th grade students and their classroom teachers attend 2 to 4-day programs at the historic Pigeon Point Lighthouse, exploring coastal ecosystems and elephant seals at Año Nuevo State Park.

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1. Project name

Berry Creek intake road restoration

2. Name of organization or individual submitting the proposal:

Monterey Bay Salmon & Trout Project (MBSTP)

3. Amount of funding requested:

\$4,000

For each of the following sections, give a brief description:

4. Project Description

MBSTP's Kingfisher Flat Hatchery (KFH) is a central component of recovery efforts for critically-endangered Central California Coast coho salmon in Santa Cruz County. MBSTP operates the Coho Captive Broodstock Program in partnership with the CA Dept. of Fish & Wildlife and NOAA Fisheries. The captive broodstock program at Kingfisher Flat is listed as a "High Priority" recovery action for Central California Coast coho salmon. Fish rearing at the hatchery is supported by two water intakes- Big Creek (outdoor rearing tank water source) and Berry Creek (egg incubation and indoor water tank source).

The Berry Creek water intake was completely destroyed in the CZU complex wildfire of 2020. This intake provided water for incubation of eggs and early lifecycle rearing of all fish in captivity at KFH. The intake diversion, screen, and water conveyance lines must all be rebuilt in order to return KFH to its normal operation and capacity. Without a functioning water intake on Berry Creek, KFH is unable to spawn fish and incubate eggs at the facility.

MBSTP has secured separate grant funding to support the rebuild and retrofit of the Berry Creek intake. However, there is still a need to restore reliable road access to the intake for construction equipment and hatchery staff. There have been several small-medium size debris flow events on the access road since the CZU wildfire. These will need to be cleared out using heavy equipment (tractor/excavator) and qualified operators. MBSTP proposes to use funds from this grant to rent equipment and pay operators for up to two days of work to address existing slides and perform preventative maintenance to harden the access road against future debris flows. While additional debris slides are likely to occur over the next several winters, gaining access for construction equipment is the urgent need.

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5. Project objectives and goals

The ultimate objective of the Berry Creek reconstruction is to restore water conveyance to the egg incubation and indoor rearing facilities at Kingfisher Flat. The primary goal of this proposal is to restore road access to the Berry Creek intake that will facilitate rebuild of the water diversion and associated infrastructure. Once road access is restored for construction equipment, the Berry Creek intake can be rebuilt, and water conveyance to incubators can be restored. This will enable a return to regular spawning & incubation operations at KFH by winter 2022-23.

6. Background and history of the problem

The Berry Creek intake historically provided cold, reliable water sourcing for incubation of salmonid eggs at Kingfisher Flat Hatchery. The intake and related infrastructure were completely destroyed in the CZU complex wildfire of Fall 2020. Since the fire, there have been several slides/debris flows on the road providing access to the Berry Creek intake. While access on foot is still possible, these blockages currently prevent road access for the heavy equipment necessary to deliver materials and complete the intake refit. In order to rebuild the Berry Creek intake, the road will need to be cleared and hardened against future debris flow impacts.

7. How will the project be accomplished (design specifications or plans, if applicable)

MBSTP will seek out and select a competitive-rate equipment rental and operator for removal of debris on Berry Creek Rd. Once selected, the equipment will be rented and an operator hired for up to 2 days to perform removal of debris and hardening of the road against future slides. MBSTP will provide match funding for hiring of the equipment operator. It is estimated that the full project to clear the road (equipment rental & operator time) will cost roughly \$8,000.

Due to the nature of the work proposed, and the need for heavy equipment, it will be necessary to hire a professional operator/contractor to perform the majority of road work. MBSTP will apply volunteer labor and equipment to the extent feasible to help reduce overall project costs.

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7. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount
Equipment rental for road clearing project	\$4,000	\$4,000	\$8,000
Berry Creek intake repair & refit	\$0	\$14,000	\$14,000
TOTAL AMOUNTS	\$4,000	\$18,000	\$22,000

8. Timeline for completion

MBSTP anticipates completion of the Berry Creek road clearing to occur in early Summer of 2022. The current plan is for the intake to be rebuilt and fully operational by Fall of 2022. This will facilitate a return to routine operation at KFH (including spawning & incubation on-site) by Winter of 2022-23.

9. Background or history of your organization

The Monterey Bay Salmon and Trout Project (MBSTP) is a small 501c3 nonprofit organization dedicated to the recovery of native salmon and steelhead populations of the Monterey Bay area. For over forty years MBSTP has been working to prevent the extinction of local coho salmon, recover native steelhead populations, enhance ocean salmon fishing in Monterey Bay, and engage in education and outreach in local schools through the MBSTP Salmon & Trout Education Program (STEP). MBSTP operates the Kingfisher Flat conservation hatchery in northern Santa Cruz County to support ongoing recovery efforts for local at-risk salmonid populations.

MBSTP operates with the support and partnership of federal, state, and local natural resource agencies to accomplish goals in fisheries conservation. Qualified and proficient hatchery personnel are crucial to operation of the Kingfisher Flat conservation hatchery- in addition to a dedicated corps of MBSTP volunteers. This facility represents the ‘backbone’ of MBSTP’s actions in local salmonid recovery.

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Grant Recipient and Contact Person:

Salmonid Restoration Federation

Contact: Dana Stolzman, SRF Executive Director and Conference Agenda Coordinator

425 Snug Alley, Unit D, Eureka, CA 95501

(707) 923-7501 / eMail Address: srf@calsalmon.org

1. Project name: 39th Annual Salmonid Restoration Conference

The Santa Cruz Fish and Game Commission has generously funded the Annual Salmonid Restoration Conference in previous years.

2. Amount of funding requested: \$2,000

3. Project Description

The Annual Salmonid Restoration conference offers an unparalleled opportunity for stakeholders with a vested interest in the recovery of California's native salmonid populations to engage in technical education. The four-day conference, which will be held in Santa Cruz from April 19 - 22, 2022 will highlight regional and topical issues that affect salmonids and their diverse habitats by offering exemplary field tours, technical workshops, concurrent sessions, and a plenary session on the state of salmonid recovery in California. Field tours include all-day visits to dynamic, habitat restoration sites. Concurrent sessions focus on biological, physical, and policy-specific issues that affect habitat restoration and recovery of native populations of wild anadromous salmonids. The plenary session features distinguished keynote speakers including legislators, renowned academics, watershed visionaries, and scientists at the forefront of the restoration movement in California.

4. Project goals and objectives

Goals of the Annual Salmonid Restoration Conference:

- Improve salmonid habitat restoration efforts,
- Teach California Department of Fish and Wildlife (CDFW) and NOAA Fisheries protocols and methodologies to help recover salmon populations,
- Educate resource professionals about restoration techniques that address limiting factors to salmon,
- Engage the watershed community about the need and mechanisms to protect and restore wild salmon populations.

Objectives of the Annual Salmonid Restoration Conference:

- Inform individuals and groups about restoration opportunities, technical and educational methodologies, and innovative developments,
- Provide hands-on training focused on salmonid restoration techniques,
- Acquaint conference participants with the NOAA Fisheries Salmon and Multi-species

Recovery Plans, CDFW's Stream Habitat Manual, and the California Coastal Monitoring Program for Salmon and Steelhead,

- Facilitate communication and cooperation among restoration practitioners, contractors, resource managers, agency personnel and landowners, highlight specific regional and local watershed problems, treatments and restoration opportunities, and
- Address recovery actions outlined in the various salmon Recovery Plans.

5. Background and history of the problem

Anadromous fisheries in California are in a steady state of decline. The once abundant runs of salmon, steelhead, and trout in California have dwindled to small populations. Chinook and Coho salmon are extinct in much of their historic range and are listed as threatened / endangered under the Endangered Species Act. The salmonid restoration field emerged to improve habitat conditions and enhance native salmonid recovery efforts. It is vital that restoration practitioners, landowners, and agencies that are entrusted to uphold public trust values have an opportunity to learn from each other's habitat restoration successes and failures so that together we can advance salmonid recovery efforts.

Current land uses in the Santa Cruz region of the Central Coast vary by watershed but primarily include irrigated croplands, small-scale timber production, rural-residential developments, and urban and suburban enclaves. The patchwork of private lands is interspersed with protected state and county parklands. In the next 10 years, it is likely that land use will include more cannabis operations as evidenced by the number of permit applications Santa Cruz County has received. Since virtually all of the watersheds in this region are designated as TMDL impaired and suffer from excessive sediment, the transition of forest, agricultural and ranching lands to cannabis production will likely contribute to water scarcity and lack of instream flows for threatened salmonids. Anticipated growth in housing and other population-related development will also have an adverse affect on salmonid spawning and rearing habitat.

The 2022 Annual Salmonid Restoration Conference will highlight restoration techniques to address water scarcity, sediment loading, fish passage, and other factors that limit salmonid recovery. The conference location varies year-to-year but the conference agenda focuses on statewide threats and opportunities for salmon restoration and recovery. Salmonid Restoration Federation is excited to be hosting the conference in Santa Cruz in 2022 since it has been over 10 years since we last had the conference in the Central Coast region.

The conference will highlight restoration techniques, flow enhancement, fish passage, and priority recovery strategies to address the root causes of salmonid decline and opportunities for watershed restoration.

6. How will the project be accomplished (design specifications or plans, if applicable)

SRF will host the 39th Annual Salmonid Restoration Conference in Santa Cruz, CA to emphasize the recovery strategies that are being implemented in the Central California region. The 39th Annual Salmonid Restoration Conference is a statewide conference that attracts presenters and participants throughout California and the greater Pacific Northwest. The Conference will address limiting factors affecting salmonids and recovery strategies identified in the NOAA Fisheries salmon and steelhead recovery plans, as well as the recent NOAA Fisheries Multi-species

Recovery Plan. The Central Coast conference will highlight salmonid restoration efforts in several watersheds including the San Lorenzo River, Scott Creek, and San Gregorio Creek as well as the Carmel River and Butano and Pescadero watersheds. Field tours will visit the Lower Carmel River, flow enhancement projects in the Butano and Pescadero watersheds, fish passage efforts near Los Padres dam, community restoration projects in the San Lorenzo watershed, sediment reduction efforts in San Gregorio watershed, and local fish passage projects.

Technical workshops include Fish Passage Design for Road Crossings; California Environmental Flows Framework; Low-Tech Process-based Restoration with Beaver and Wood: Jump-Starting Structurally Starved Streams Workshop; and Restoration Approaches to Instream Large Wood Augmentation.

Concurrent Sessions include:

- How Is Artificial Intelligence Being Applied to Benefit Salmon Recovery?
- Seascape Ecology: Groth, Survival, and Foraging in the California Current
- Approaches for Management and Restoration of Coastal Central Lagoons
- The Technical and Ecological Considerations to Expedite Large-scale Dam Removal
- Lessons Learned from Agricultural Water Storage and Flow Enhancement Projects
- Lightning Tales Where Wisdom Sails
- Managing Non-native Predatory Fish in California's Salmon Bearing Streams
- Hydrologic Management for the Anthropocene
- Mountain Meadows: Restoring Functions in Headwater Catchments under Changing Climate and Wildfire Regimes
- Opportunities for Collaboration: Tools and Initiatives for Increasing Our Collective Impact
- Considering Life-History Variation in Salmonid Restoration
- Creating Opportunities for Community Involvement to Address Common Urban Streams Management Issues
- Beyond Physical Habitat: The Importance of Prey Availability and Productivity in Recovering Imperiled Salmonid Populations
- Collaborative Tools and Adaptive Management to Advance Integrated Water Management Planning

The production and coordination of the conference is accomplished by identifying tour, workshop, and session coordinators, building a strong conference agenda, working with co-sponsors and restoration partners, conducting targeted outreach, and coordinating conference logistics. SRF also produces a Conference Proceedings, videotapes the Plenary and other sessions, and offers an educational poster session and restoration job fair as part of the conference.

SRF produces the largest salmon watershed restoration conference in California. Our conference history has demonstrated success based on our track record of developing pertinent curriculum to advance watershed restoration in California. The SRF conference successfully engages a broad spectrum of the watershed restoration field including agency personnel, practitioners, scientists, planners, consultants, watershed groups, tribal members, students, and landowners.

7. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount
Conference Scholarships (4 @ \$250 each)	\$1,000	\$1,000	\$2,000
Personnel- SRF Staff		\$50,000	\$50,000
Conference Proceedings		\$10,000	\$10,000
Facility		\$15,000	\$15,000
Catering		\$60,000	\$60,000
Transportation		\$10,000	\$10,000
Sub-contractors	\$1,000 videographer	\$5,000	\$6,000
AV Costs		\$5,000	\$5,000
Registration costs		\$3,000	\$3,000
Honorariums		\$1,000	\$1,000
Printing & Postage		\$2,000	\$2,000
Mileage		\$2000	\$2000
Lodging		\$3000	\$3000
TOTAL AMOUNTS	\$2,250	\$168,000	\$170,000

8. Timeline for completion

The SRF Conference will be held April 19 - 22, 2022. The Conference timeline to complete tasks associated with the conference begins approximately 10 months before the conference. SRF is currently circulating the First Call for Abstracts, conducting co-sponsor outreach, coordinating logistics, and finalizing the agenda. In November, we will circulate the Final Call for Abstracts, select presentations, post the final agenda, and craft the conference agenda packet. SRF will open registration in December, distribute conference materials, and conduct logistics necessary for coordinating a conference with six field tours, four workshops, twelve concurrent sessions, and a Plenary Session with renowned keynote presenters. In January we copy-edit, design, and produce the Conference Proceedings, as well as continue to process conference registration and conduct media outreach. In February and March, we focus on logistics, donations and co-sponsorships, and publicity. After the conference, we do extensive follow-up including making Powerpoint presentations available, synthesizing the conference evaluations, and making the Plenary session video and other conference highlights available online for broader dissemination.

9. Background or history of your organization

Salmonid Restoration Federation (SRF) is a non-profit organization that promotes stewardship, sustainable management, and restoration of California's salmon, steelhead, and trout populations and their habitat. SRF provides critical educational services for California's community-based salmonid restoration organizations and agencies by producing an annual conference, regional field schools, and technical symposia. SRF's statewide conference on salmonid restoration provides an opportunity for field tours, technical workshops, panels, and a plenary session on the state of salmonid recovery.

SRF was formed in 1986 to help stream restoration practitioners advance the art and science of watershed restoration. Our organization promotes restoration, stewardship, and recovery of California native salmon, steelhead, and trout populations through education, collaboration, and watershed capacity building. Our goals are to restore and recover California salmonids, improve water quality in California watersheds, and enhance watershed restoration efforts in California. To accomplish these goals SRF coordinates workshops and tours to highlight water conservation techniques, programs, and strategies to improve instream flows for both humans and fish.

SRF is uniquely qualified to perform the proposed work based on our long and successful history of providing technical education training in the fisheries restoration field. For over 30 years SRF has been producing the premier salmonid restoration conference that focuses on biological, environmental, and physical issues that affect salmonids. For over 20 years SRF has been producing intensive field schools on various habitat restoration techniques including water conservation, sediment reduction, and erosion control; bioengineering and stream bank stabilization; and fish passage design and implementation.

SRF also produces several regional restoration events including the Annual Coho Confab, the Spring-run Chinook Symposium, and the Steelhead Summit. The beneficiaries of our educational programs are restorationists, planners, watershed stewards, consultancies, agency personnel, landowners, and students. Our technical trainings are attended by hundreds of people in the watershed restoration field and the information that they receive is disseminated back to communities through universities, Resource Conservation Districts, water agencies, state, county, and federal agencies, tribal fisheries departments, and watershed councils.

In recent years, SRF has been engaged in water conservation and water rights education to build support for community-based water conservation pilot projects that can be transferred to other coastal watersheds. Since 2013, SRF has been conducting low-flow monitoring and community outreach in the 26 square-mile Redwood Creek watershed that is a tributary to the South Fork Eel River. SRF currently has two active Wildlife Conservation Board and a State Coastal Conservancy streamflow enhancement planning grants in the South Fork Eel River watershed.

Additionally, SRF has co-written a Collaborative Water Management guidebook in conjunction The Nature Conservancy to assist other coastal watersheds in flow enhancement planning efforts. http://www.calsalmon.org/sites/default/files/files/CWM_Final_Report.pdf

SRF was also awarded the 2018 Water Quality Stewardship Award from the North Coast Regional Water Quality Control Board for "exemplary work in advancing the science and practice of stream restoration and salmonid protections on the North Coast."

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1. Project name

Santa Cruz County Breeding Bird Atlas

2. Name of organization or individual submitting the proposal:

Alex Rinkert on behalf of the Santa Cruz Bird Club

3. Amount of funding requested:

\$1,968.00

For each of the following sections, give a brief description:

4. Project Description

In 2017, the Santa Cruz Bird Club sponsored the Santa Cruz County Breeding Bird Atlas. This five-year project aims to document the breeding bird populations in Santa Cruz County and engage volunteers in the process.

A breeding bird atlas is a publication that synthesizes everything known about the breeding birds in a region. These publications discuss the distribution, abundance, timing of breeding, natural history, and conservation goals for all species in a region which makes them indispensable for guiding conservation efforts for local birds. A variety of people—land planners, natural resource managers, scientists, students, and birders—utilize breeding bird atlases as they provide foundational knowledge on local bird populations that can be cited in Environmental Impact Reports and Statements, project proposals, and scientific studies.

The Santa Cruz County Breeding Bird Atlas began with five years of data collection between 2017–2021. Volunteers, including both amateur birders and professional biologists, were trained to interpret and record breeding behavior they encountered at parks, beaches, open spaces, and their backyard. These observations were compiled into a database and are presently being synthesized into a publication that will include a narrative accompanied by maps and other visualizations for each of the county’s 160 species of breeding birds. We are planning to publish the breeding bird atlas as both an electronic and paper book, with a complementary website supporting interactive features that allow data exploration.

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5. Project objectives and goals

2022 Goals

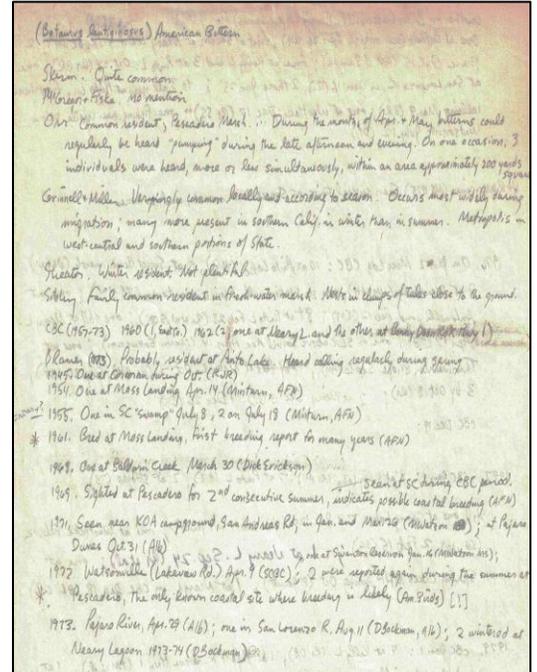
A. Continue collecting data on rare and poorly known species in one last breeding season.

These rare and poorly known species include Purple Martin, Black Swift, Vaux's Swift, which are all California Bird Species of Special Concern.



A Purple Martin feeding a nestling at a new breeding location found by atlasers in 2021.

B. Digitize the bird records of Santa Cruz County so that this historical information can be easily accessed and integrated into the species accounts of the publication. The bird records in the county from c. 1930 through 1993 are handwritten on 45-year-old pieces of paper. No copies of this information exist anywhere else! There is a dire need to digitize these records so that they are easily accessible when preparing the breeding bird atlas publication, which will draw significantly upon historical records.



An example page of notes in the county bird records. There are nearly 500 pages of notes that need to be digitized.

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2022 Objectives

- A. Hire a field technician or two interns to collect data on rare and poorly known species.** The specific position will be determined by the number of applicants and their previous experience. Our field technician and interns in previous years have helped tremendously in collecting a sufficient amount of data on these rare and poorly known species.

- B. Digitize the bird records of Santa Cruz County so that this historical information can be easily accessed and integrated into the atlas publication.** The bird records in the county from c. 1930 through 1993 are handwritten on 45-year-old pieces of paper. No copies of these records exist anywhere else! There is a dire need to digitize these records so that they are easily accessible when preparing the breeding bird atlas publication, which will draw significantly upon historical records.

6. Background and history of the problem

The main motivation for the bird club sponsoring an atlas is to provide access to the most current information on our local bird populations. This information is critically important for land planners and natural resource managers who prepare environmental impact reports, allocate resources for non-native species management, and perform habitat and infrastructure maintenance activities—all of which impact breeding birds.

Some recent examples demonstrate the value that a breeding bird atlas has locally. In 2016 a draft environmental impact statement was prepared for the Santa Cruz Wharf Master Plan that omitted Pigeon Guillemot and Pelagic Cormorant as species that breed on the wharf. Over a dozen pairs of these two species are known to breed on the wharf, yet this information is not published in an accessible resource. A breeding bird atlas describes where and when these species are breeding. With this information, impacts from construction can be minimized through mitigation.

Another example of how a breeding bird atlas can be used for better informed maintenance was illustrated in August 2019 when a large ponderosa pine at Quail Hollow Ranch County Park was slated to be removed due to apparent rot. The large tree was a granary for over 20 Acorn Woodpeckers and active woodpecker nests had been found in this specific tree. The tree removal was slated to happen in early August. Breeding bird atlas data collected between 2017–2019 shows that Acorn Woodpeckers can have active nests into early September in Santa Cruz County. In response to this information, the tree removal was postponed until after the breeding season ended for Acorn Woodpeckers.

Knowing the timing of when local breeding birds have active nests is critical to avoid

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impacting nesting birds during vegetation maintenance work. Extensive tree trimming and removal is ongoing throughout Santa Cruz County in response to massive wildfires across the state. Vegetation maintenance also regularly occurs throughout parks, urban, and suburban areas in the county. Having a resource that describes when is best for these activities to occur to minimize impacts to breeding birds will help establish better, more ecologically-minded maintenance practices.

Breeding bird atlases also serve as the foundation for scientific inquiry. Students and researchers use atlases to evaluate changes in breeding bird populations. An atlas also serves as a general reference for the community and helps increase awareness and appreciation of breeding birds and the habitats they use. Ultimately, an informed community leads to greater support for conservation measures.

7. How will the project be accomplished (design specifications or plans, if applicable)

A. Hire a field technician or two interns to collect data on rare and poorly known species.

Since 2019, the atlas has hired and trained eight interns and field technicians to collect data on breeding birds. This program offers early career professionals valuable experience they can use to further their pursuits in biology, and the data they have contributed during their position is highly valuable to the atlas. In previous years, interns have documented an increase in breeding Great Egrets and a catastrophic decrease in breeding Pelagic Cormorants, found new breeding locations for Black Swift and Vaux's Swift, defined when the breeding season is for Great-tailed Grackle and Purple Martin, and spent nearly 400 hours in total collecting data for the atlas.

A job posting will be sent to the Biology and Environmental Studies departments at UCSC and Indeed.com in January. The project director will hire, train, and coordinate the tasks of the students/recent graduates throughout the position.

B. Digitize the bird records of Santa Cruz County so that this historical information can be easily accessed and integrated into the atlas publication.

There are nearly 500 pages of handwritten notes in the county bird records that need to be digitized. A job posting will be sent to the Biology and Environmental Studies departments at UCSC and Indeed.com in January. The project director will hire a student/recent graduate and train them on how to digitize the handwritten pages of notes.

The handwritten notes will be transcribed into an Excel spreadsheet with the following data attributes: date, location, species, count, observer name, observer notes, and record notes. This format will allow the data to be easily searched, filtered, and sorted in a spreadsheet.

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7. Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount	Notes
Bird records digitization	\$1,200.00	\$1,200.00	\$2,400.00	480 pages, 15 min/page, \$15/hr
Field tech/intern fieldwork	\$600.00	\$600.00	\$1,200.00	80 hrs at \$15/hr
Fieldwork mileage reimbursement	\$168.00	\$168.00	\$336.00	600 mi (~15 outings) at \$0.56/mi
TOTAL AMOUNTS	\$1,968.00	\$1,968.00	\$3,936.00	

The matching source of the requested funds comes from an anonymous donation to the breeding bird atlas through the Santa Cruz Bird Club. The donation was for hiring a field tech/intern in 2022 and for publication preparation. The donation allows the bird club to match the requested funds dollar for dollar.

8. Timeline for completion

2022 Date	Student Internships
Feb	Post job announcement and hire for the bird records digitization position.
Mar-Apr	Complete bird records digitization project.
Apr	Post job announcement and hire for atlas fieldwork position.
May-Jul	Complete atlas fieldwork.
Oct	Submit report to Fish and Wildlife Advisory Committee.

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9. Background or history of your organization

The Santa Cruz Bird Club was organized in 1956 with the purpose of uniting those with a common interest in wild birds, so that they may better study and conserve them. The club's membership includes over 300 members of the community. Each year the club offers over 40 field trips and lectures related to birds, all free and open to the public, and has sponsored the increasingly popular Santa Cruz Christmas Bird Count for over 60 years.



The bird club has always been a prominent voice for birds on local conservation issues involving issues with land use and development. Recent issues the bird club has been involved in include the Santa Cruz City and Santa Cruz County Parks Master Plans, Santa Cruz Wharf Master Plan, San Lorenzo River Flood Control Plan, UCSC East Meadow Development Project, and the College Lake water impoundment proposal. Historically, the bird club actively campaigned to protect Schwan Lake, Neary Lagoon, and Gray Whale Ranch from development.

The bird club also supports scientific research and education about local bird populations. Since 2002 the bird club has sponsored the incredibly successful Nest Box Program at Quail Hollow Ranch County Park, which has resulted in over 1,149 birds fledging and a recovery in the local Western Bluebird population. Several other nest box projects have followed at UCSC, Soquel, and Asilomar that were inspired by the success of the Quail Hollow program. Other causes the bird club has supported include studies on the impact of the CZU Lightning Complex fire on birds, Hermit Thrush population studies at Big Basin, the Bird School Project, the World Migratory Bird Day at Natural Bridges, and the Monterey Bay Birding Festival.

In 2017 the bird club sponsored one of its largest projects yet, the Santa Cruz County Breeding Bird Atlas, to document the birds presently breeding in the county and how their populations have changed in the past 30 years. The club has partnered with the San Francisco Bay Bird Observatory, a 501(c)(3) non-profit, to support this project.

County of Santa Cruz Fish and Wildlife Advisory Commission
PUBLIC GRANTS PROGRAM APPLICATION

1. Project name: Squid for WOLF School Camp SEA Lab Students
2. Name of organization or individual submitting the proposal: UCCR/Web of Life Field (WOLF) School
3. Amount of funding requested: \$680

For each of the following sections, give a brief description:

Project Description: WOLF School's Camp SEA Lab Program fosters lifelong excitement, scientific understanding, and stewardship of our coasts and ocean by providing high quality marine science education programs for K-12th youth in the Monterey Bay Area. Lessons focus on marine conservation topics presented through hands-on, Next Generation Science Standards-aligned, STEM activities that introduce concepts such as ocean acidification, marine debris, and oceanography. WOLF School provides year-round programming through our Aptos-based school programs and a comprehensive summer camp comprised of day and residential programs.

Project objectives and goals: Each week at Outdoor School, students dissect California Market Squid, a species local to the Monterey Bay. Using scientific practices students explore the internal and external anatomy of the squid. As a part of the activity, they learn about the squid fishing industry, its management, and the role sustainable fisheries have in the future of our ocean's health and seafood supply. They even experience this seafood first-hand when their dissections turn into fried calamari. This hands-on lesson is a favorite of our teachers and therefore the need to secure a supply of squid is of importance to the quality of our program.

Background and history of the problem: Our return to full-time programming after the COVID-19 pandemic has come with many changes and shifts in partnerships. For the last 2 years we were able to secure a donation of squid through a local fish company, however, changes in ownership and financial hardships of small businesses have required us to secure new funding for squid. In addition, our site costs, food costs and staff payroll have all increased, while our capacity has decreased due to restrictions of operating a safe program during a pandemic. Support of this vital program supply would serve a weekly need of our students.

How will the project be accomplished (design specifications or plans, if applicable). Our Spring 2022 programs run from February 1, 2022 through June 2, 2022 with approximately 17 weeks of Outdoor School with each week requiring two boxes of squid at \$20 per box. We will purchase our squid from the grocery store or from a local fish market depending on supply of product.

**County of Santa Cruz Fish and Wildlife Advisory Commission
PUBLIC GRANTS PROGRAM APPLICATION**

Budget (include sufficient detail to explain use of grant monies). Specify if there are any sources of other funds committed to the proposed project.

Item	Funds Requested	Match Contribution	Total Amount
Frozen squid boxes	17 weeks x 2 boxes of squid per week at \$20 a box (cost + tax)=\$680	\$0	\$680
TOTAL AMOUNTS			\$680

Timeline for completion: We will begin purchasing our squid prior to the beginning of the season in February. We will have completed all our dissections by the first week of June.

Background or history of your organization: UCCR Web of Life Field (WOLF) School is an environmental education field school that offers outdoor science, natural history, and teambuilding programs to thousands of students and teachers each year from schools throughout Northern and Central California. WOLF School brings youth from diverse communities together at WOLF’s outdoor campuses to learn about science and natural history of local ecosystems and to teach students what it means to be stewards of the environment. WOLF School’s mission is to build respect, appreciation, and stewardship within the Web of Life.

Operating since 1989 at our Aptos Monte Toyon Camp and now also at Camp St. Francis in Seascapes, WOLF School provides public and private school students, chaperones, and teachers with 2-5 day residential learning opportunities at our campuses, as well as seasonal camps. At our outdoor school, students live together in an educational community and learn through hands-on investigations on trails and in the forest. WOLF School programs, prior to the pandemic, reached approximately 8,000 participants each year.



COUNTY OF SANTA CRUZ

FISH AND WILDLIFE ADVISORY COMMISSION

701 OCEAN STREET, ROOM 312, SANTA CRUZ, CA 95060

(831) 454-3154 FAX: (831) 454-3128

Santa Cruz County Board of Supervisors
701 Ocean Street
Santa Cruz, CA 95060

November 16, 2021

RE: Environmental Impacts of Unmanaged Camping in Riparian Corridors

Dear Honorable Supervisors,

The Santa Cruz County Fish and Wildlife Advisory Commission is an advisory body for the protection and preservation of fish and wildlife and their habitats while also considering water quality, watershed protection, and public safety. The intent of this letter is to identify potential impacts to riparian ecosystems and associated fish and wildlife resulting from illicit encampments in these areas.

Background

A growing population of the unhoused community are increasingly creating encampments along creeks and rivers throughout Santa Cruz County, with deleterious impacts on the health of our watersheds and therefore negative impacts on the whole community of Santa Cruz County. The Central Coast Basin Plan, enforced by the Regional Water Quality Control Board, regulates the following beneficial uses of riparian areas all of which are adversely impacted by activities of unhoused populations living in riparian corridors:

Municipal water supply, agricultural water supply, water contact recreation, sport fishing, cold freshwater habitat, estuarine habitat, wildlife habitat, preservation of biological habitats of special significance, rare, threatened or endangered species, migration of aquatic organisms, and spawning, reproduction and/or early development of fish (Basin Plan 2017).

Environmental impacts from encampments within riparian corridors are complex and overlapping. In an effort to illuminate the issue, the County Fish and Wildlife Advisory Commission has identified serious impacts to our waterways. However, this is not meant to be a comprehensive list of impacts. The Commission requests that these concerns be considered in future decisions regarding the unhoused community and impacts to local water bodies and riparian corridors.

Water Quality

The City of Santa Cruz, the San Lorenzo Valley and other communities in our region rely on surface water for water supply. Homeless populations camping in riparian areas upstream from municipal surface water diversions directly impact water quality. Latrines dug adjacent to the waterline along creeks and rivers throughout the county contribute high levels of fecal contamination, nutrient sources and sedimentation which can lead to algal blooms, turbidity, and adversely impact public health.

Erosion and Sedimentation

Encampment activities along riparian corridors include trail building, terracing, excavation into levees to build flat campsites, as well as vegetation removal, for building materials and firewood. Healthy riparian zones entrap and retain small particles, reducing the sediment input to streams (Studinsky, Hartman, Niles & Keyser, 2012). Excavation and vegetation removal result in erosion and delivery of sediment to streams, particularly fine particles (Kaufmann, Larsen & Faustinin, 2009). Increased inputs of sediment to streams can have numerous environmental effects, and can be particularly damaging to certain freshwater organisms. For example, shifts in aquatic invertebrate communities, which are food for fish, and decreased reproductive success of fish due to smothering of fish eggs and juveniles, etc., have been observed as a result of sedimentation (Studinsky, et al., 2012).

Vegetation Removal

The removal of riparian vegetation, while contributing directly to increased sedimentation into streams, may have additional effects upon water bodies. In particular, "removal or alteration of riparian vegetation can have important implications for stream temperature" (Poole & Berman, 2001). Temperature, due to the effects on metabolism, is one of the leading causes of death for threatened and endangered salmon species and is of particular concern in the San Lorenzo River - which is listed as "impaired" by high temperatures under the Clean Water Act. In addition to the temperature-regulating effects of riparian vegetation, plants and trees that overhang the water body provide other benefits to freshwater organisms, including organic inputs which serve as the basis of the food web in many lotic systems. Riparian vegetation is also a source of woody debris, which provides important habitat and shelter for aquatic organisms including threatened and endangered fishes and amphibians.

Flood Protection

Impacts with regard to flood control include security, maintenance logistics, and accumulation of debris from structures including wood, trash and vehicles. Debris accumulation often causes flooding and backwater events which can overtop levees. Also, excavation or damage to levees and other flood control infrastructure can undermine earthen levees and increase flood risk to surrounding neighborhoods. Furthermore, allowing entrenched camps within flood-prone areas presents risks to both the unhoused community as well as creates additional burdens for emergency responders.

Fire Hazards

One of the more dramatic outcomes of people living in heavily vegetated and wind-exposed areas is the occurrence of wildfire. This is sometimes the unintended consequence of fire building for heating and cooking purposes; however fires can also be accidentally started as a result of careless use or disposal of cigarettes and illicit drug paraphernalia. Fires in riparian zones create canopy gaps and dry conditions, allowing subsequent buildup of dead wood and establishment of fire adapted species, which increases fuel loads and the probability of another fire (Pettit & Naiman, 2007).

Fish and Wildlife

Encampments in riparian corridors can adversely impact fish and wildlife in several ways beyond those mentioned above. Trash from camps can wash into streams, rivers, and out to sea, degrading habitat for protected fish and wildlife species and adding to ocean pollution. Encampments and pets occupying wildlife corridors result in the displacement of wildlife by interfering with animals' ability to move through their range, and to find drinking water, food and mates. Likewise, water diversions for illegal gardens can reduce water availability for fish and wildlife. Illegal netting, trapping and poaching of salmon and other wildlife may reduce population sizes, which can be especially detrimental in recently restored watersheds where populations are just beginning to rebound. Additionally, human activities attract non-native rats, which (among other broader-ranging impacts) can negatively impact bird breeding success.

Conclusions

State laws and county ordinances have been created to protect riparian habitat for fish and wildlife, and local and state governments invest substantial resources in restoring and protecting these ecosystems. Yet year after year the illegal camping has continued, while ongoing clean-ups are a drain on county resources and seem to be only temporary fixes.

Some of the activities associated with encampments in riparian zones are directly contravened by county, state and federal regulations including California Fish and Game Code Section 5652¹. The Santa Cruz County Fish and Wildlife Advisory Commission strongly recommends actions by the Board that would greatly reduce or eliminate the impacts of encampments to riparian habitats and water bodies. These actions could include, for example, convening a multi-agency task force, as suggested by Captain Steven Schindler (CDFW), and which had some success in San Jose. However, because our Commission's expertise lies in wildlife and environmental issues rather than socio-economic problems, we do not feel we are equipped to prescribe solutions for the complex problems involved in housing in Santa Cruz County - rather, we hope this letter illustrates the scope of ongoing and possible future harm to the County's natural resources, particularly in sensitive riparian areas.

We appreciate your consideration of these important concerns and would be happy to further engage with the Board and other groups working on these issues, if so desired.

Sincerely,



Chris Berry
County of Santa Cruz Fish and Wildlife Advisory Commission Chair

¹ https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=FGC§ionNum=5652

Works Cited

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Fish and Wildlife Advisory Commission
Proposed 2022 Meeting Schedule

Regular Meetings

February 3, 2022

March 3, 2022

May 5, 2022

June 2, 2022

September 1, 2022

November 3, 2022

December 1, 2022

Possible dates for additional meeting:

August 4, 2022

October 6, 2022