Berkeley Rausser
College of Natural Resources

DENNIS BALDOCCHI, PROFESSOR of BIOMETEOROLOGY, EXECUTIVE ASSOCIATE DEAN
DEPARTMENT OF ENVIRONMENTAL SCIENCE, POLICY, AND MANAGEMENT

January 30, 2023

Dr. Thomas E. Fish
National Coordinator
Cooperative Ecosystem Studies Units (CESU) National Network
U.S. Department of the Interior, National Park Service
1849 C Street NW, Room #2649
Washington, DC 20240

Dear Dr. Fish:

The University of California at Berkeley has had the honor to serve as the host institution for the California Cooperative Ecosystem Studies Unit since July 2003. We are pleased to submit this renewal request for a new five-year period beginning July 1, 2023 on behalf of the University of California and all of our partners. Enclosed is our five-year renewal application.

We have contacted all our non-federal partners and have determined that they wish to continue as partners for the next five years. Since our last amendment, we have voted in five new partners. Their application packages are included in our renewal application.

We look forward to hearing from you and hope we can continue another five years of CA-CESU research and projects.

Sincerely,

Dennis Baldocchi
Professor, Executive Associate Dean
College of Natural Resources
University of California, Berkeley

Dennis Baldocchi
Digitally signed by Dennis Baldocchi
DN: cn=Dennis Baldocchi, o=University of California, Berkeley, ou=Environmental Science, Policy and Management, email=baldocchi@berkeley.edu, c=US
Date: 2023.01.30 11:33:42 -08'00'

Pam Miller
Executive Director
Sponsored Projects Office
University of California, Berkeley

Lourdes G. DeMattos
Director
Research Policy Analysis & Coordination
University of California, Office of the President

Five-Year Renewal Application: Self-Assessment
Californian Cooperative Ecosystem Studies Unit

January 2023

Submitted by
University of California (HOST)
(UC-Berkeley, UC-Davis, UC-Irvine, UC-Los Angeles, UC-Merced, UC-Riverside, UC-San Diego, UC-Santa Barbara, UC-Santa Cruz) and

California State University, Channel Islands California State University, Chico California State University, Fresno California State University, Fullerton California State University, Humboldt California State University, Los Angeles California State University, Monterey Bay California State University, Northridge California State University, Pomona California State University, Sacramento California State University, San Diego California State University, San Francisco California State University, San Luis Obispo California State University, Sonoma California State University, Stanislaus Contacts:	Carnegie Mellon University Occidental College School of Architecture, University of Southern California California Association of Resource Conservation Districts California Department of Fish and Wildlife California Invasive Plant Council Institute for Bird Populations Institute of Wildlife Studies Point Blue Conservation Science San Bernardino County Museum San Diego Natural History Museum Santa Barbara Botanic Garden Zoological Society of San Diego

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Introduction

California is home to a unique set of ecosystems and many endemic species due to its seasonal, Mediterranean type climate and unique geography; this state is bounded by the ocean to the west, Sierra Nevada mountains to the east, deserts to the south and rain forests to the north.

California's set of unique ecosystems and climate space demands a collaborative research and outreach framework that is up to the task. The Californian Cooperative Ecosystem Studies Unit (CA- CESU) has built and sustained a network of dedicated professionals and researchers to meet this challenge. Over the past twenty years, our university, non-federal and federal agency partners have collaborated on scores of studies spanning the spectrum of California's major environmental concerns. Participation has not been limited to agency employees and university researchers; both undergraduate and graduate students have taken part in CESU activities, contributing to the social capital that has been the foundation of our efforts. Our network of institutions has broadened in recent years, incorporating the resources of more campuses in the California State University system and in numerous organizations in the non-government sector. Indeed, the fertility of ongoing collaboration is evident on the campuses themselves, particularly at UC Berkeley, where federal agency personnel are based in university departments.

Membership in the CA-CESU expanded notably during these past five years to include six new non-federal partners:

- Marine Ecology and Telemetry Research
- The Marine Mammal Center
- Stanford University
- Sierra Streams Institute
- California Academy of Sciences
- National Association of Tribal Historic Preservation Officers

Building upon the last fifteen years, the CA-CESU has continued to grow in the fourth five-year period; between 2018 and 2022, our unit collaborated in 421 CESU projects, totaling $169 million in funding. This compares to 479 projects valued roughly at $107 million for the previous five-year period. Importantly, project information from NRCS, USFS, BLM, BOR, and USGS was only compiled for 2020 - 2022, thus the number of projects and funding during 2018-2022 is much higher than reported here.

The University of California, with UC Berkeley as host institution, has continued to provide space, coordination, and administrative support for operation of the CA-CESU. We started 2021 with Director Nick Mills and Ruxin Liu as the administrative lead for the CA-CESU. In 2022, Dennis Baldocchi became Director and Nalui Garcia administrative lead. Ben Becker assumed duties as NPS Science Advisor and Research Coordinator in 2021.

University of California and the CA-CESU host campus at Berkeley have continued to endure budget cuts year after year. In line with this new normal, we have drastically suppressed our internal costs and are proposing to maintain the same level of administrative cost for hosting the CESU at UC Berkeley as for the past five year period. We require that all federal partners help support this administrative burden; each of the 14 federal partners are, at minimum, expected to contribute a total of $21,400 annually to the host university during the 5-year tenure of this agreement.

All CA-CESU partners have expressed intent for continued participation for the next five years of the program. The charts below and throughout the report summarize CA-CESU activity.

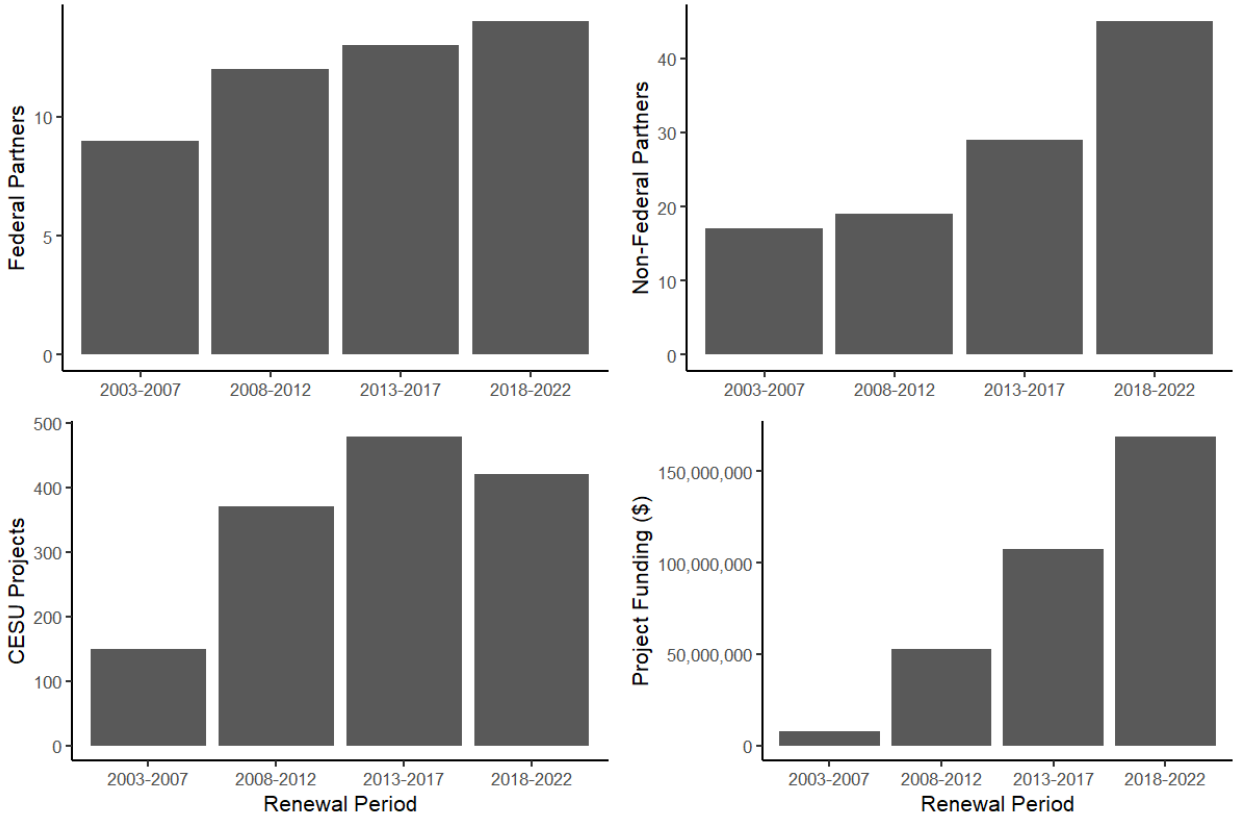

Figure 1. Trends in Californian CESU federal partners, non-federal partners, projects, and funding over the four 5-year renewal periods since establishment of the CA-CESU in 2003. Note that project information from NRCS, USFS, BLM, BOR, and USGS was only compiled for 2020 - 2022, thus the number of projects and funding during 2018-2022 is much higher than reported here. Note that prior reports indicated 5-year periods are titled with 6 year overlapping periods (e.g., 2013-2018). We now begin with 5 year non-overlapping titles for 2018-2022. Nonetheless, prior period reporting only reported projects during the correct 5-year reporting term.

CESU Host University and Nonfederal Partner Self-Assessment Report

The host university, working with its tribal and nonfederal partners, shall prepare a self-assessment that includes:

- a three to five page self-assessment report reflecting on the activities of the CESU over the current five-year term according to the CESU renewal criteria and questions provided (pp. 5-7);
- additional supporting documents related to the activities of the CESU (e.g., strategic plan, annual meeting agendas, meeting minutes); and
- additional information or insights (e.g., successes, challenges) deemed useful to share with the CESU Council for the development of the CESU and the CESU Network. CESU Renewal Criteria and Questions

For each question listed below, indicate "**YES**" or "**NO**" (as appropriate) AND provide additional details and/or examples in support of your answer (e.g., participation statistics, student involvement on projects, tangible and intangible benefits, challenges, best practices). Questions were derived from Article II of the CESU agreement.

Category A: Federal Responsibilities

Did <u>each</u> federal agency in the CESU…

1. Provide opportunities for coordinated, collaborative scientific and scholarly activities (i.e., research, technical assistance, and education) that inform stewardship of, and education about, public trust heritage resources in alignment with CESU, agency, and partner mission goals, programmatic objectives, and authorities? Provide details, including reference to agency-support (or lack thereof) and activities over the current five-year term (e.g., number of projects; types of projects; management issues, topics, or subject matter areas).

From 2018 to 2022, a total of 421 collaborative research, technical and education projects were conducted through the CA-CESU. These projects represented a broad variety of research topics in biological, physical, social and cultural disciplines. Ten federal agencies provided over $169 million dollars in funding across 35 partners. Two federal partners, the Bureau of Indian Affairs and the National Aeronautics and Space Administration, had no CESU projects with the Californian Unit during this period that we are aware of.

Table 1. Projects and funding by the Federal Agency from 2018-2022.

Department	Federal Agency	Number of Projects	Total Funding ($) (2018-2022)
Agriculture	NRCS*	11	2,832,656
Agriculture	USFS*	1	25,000
Commerce	BOEM	11	6,977,360
Defense	Air Force	8	2,727,958
Defense	Army	3	2,395,707

Defense	Marine Corp	11	3,271,651
Defense	Navy	72	32,109,803
Defense	USACE	53	66,319,363
Interior	BLM*	35	3,247,236
Interior	BOR*	8	28,047,366
Interior	NPS	143	12,684,176
Interior	USFWS	60	5,525,481
Interior	USGS*	21	2,651,578

**Data for NRCS, USFS, BLM, BOR, and USGS only compiled for 2020 - 2022 and therefore can be assumed to be only ~60% of total projects and funding.*

In today's climate of change looming as an ever-pressing challenge, foreseeably hamstrung research budgets, and the increasing need for environmental discourse, the collaborative framework offered by the CA-CESU is more important than ever. The organization that has been built by the CA-CESU has proved resilient in the face of the financial hardships of recent years, and has increased in participation and scope. We look forward to the discoveries and accomplishments of the next five years.

2. Provide funds for basic support and salary for CESU host university (or other non-federal partner institution) faculty/personnel, as appropriate? How have federal partners provided support to the host university over the current five-year term (both financial and in-kind) specifically to support CESU operations? Provide details regarding support (e.g., support by agency, fiscal year, instrument/mechanism) and associated expenditures.

Federal partners provided financial support to bear the administrative burden of the host university: $64,441 from NPS cooperative agreement for FY18-22, award #P21AC11997 and $122,587 from NPS cooperative agreement for FY18-23, award #P19AC01004. The total host campus support for the period was $187,028 representing less than half of the associated expenditures: 5% of the CESU Director's time at $18,283 per year, 15% of the CESU Coordinator's time at $10,276 and 5% of the transitional CESU Coordinator's time at $6,861 including 17.5% IDC for a grand total for five year period of $204,520.

3. Make available federal personnel to serve on the CESU Federal Managers Committee? Did all federal technical representatives actively participate in CESU Federal Managers Committee activities, CESU partner meetings, and other CESU activities (e.g., communication, planning, reporting)? Provide details, including reference to consistent agency participation (or lack thereof) over the current five- year term (identified by agency, as appropriate).

Most federal managers actively participated in committee activities. Examples include attending and actively contributing in annual CESU meetings, distributing information (requests for statement of interests, notice of funding opportunities, job and internship announcements announcements, etc.) among managers and partners, and providing letters of support for new members. We met remotely for an annual

meeting of all federal agencies and partners each year in December with NPS and UC Berkeley facilitating the meetings. The NPS representative compiled information annually from the other federal partners in their reporting and co-planned and facilitated the annual meeting. Federal partners also played an important role in seeking, nurturing, and adding new members/institutions to join the CA-CESU.

4. Comply with CESU Network, host university, and nonfederal partner institution rules, regulations, and policies (e.g., professional conduct; health and safety; use of services and facilities; use of animals, recombinant DNA, infectious agents or radioactive substances) and ensure its employees follow the Code of Ethics for U.S. Government Employees? Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).

The CESU Network, host university and non-federal partners complied with institution rules, regulations and policies. Examples include 1) standard language in agreements that address compliance with regulations and code of ethics of the various institutions, 2) language in agreements regarding best practices in handling biohazards, safety, etc., 3) data and benefits sharing agreement assistance, NEPA compliance for research in federal lands. A specific example is the Grinnell Resurvey Research Project conducted by several CA-CESU partners on federal lands in California, which required extensive coordination, permitting, and adherence to federal regulations to conduct this important study on numerous federal lands including Yosemite NP, Death Valley NP, Lassen Volcano NP, Joshua Tree NP, among others managed by BLM and the Forest Service. The project published several important peer-reviewed papers on climate change adaptation and response of desert birds and mammals which were presented to the park managers and scientists in 2021.

5. Did federal agency employees actively participate in the activities of the host university and nonfederal partner institutions, including serving on graduate student committees or teaching courses? Provide details, including examples of courses or other service activities.

Various federal agencies and partners gave seminars for numerous classes (2018-2022) Class examples include - Conservation Biology (NPS annually), Marine Mammals, Mammalogy, Conservation Seminars, and ESPM Seminars). NPS and BLM co-taught a seminar (Fall 2019 and 2020) at the host University (UCB) on Science and Stewardship for Public Lands (3 units). Guest lecturers were from most of the federal agencies that are members of the CESU (FWS, USGS, NPS, DOD, NPS, BLM as examples). In Spring 2018, an NPS scientist, Patrick Gonzalez, co-taught a seminar on Special Topics in Environmental Science, Policy, and Management.

Since 2021, the NPS Science Advisor at UC Berkeley has implemented a data science mentoring program for undergraduates working on projects fulfilling NPS data analysis needs for parks including Yosemite, Pinnacles, Golden Gate NRA, Point Reyes NS, and several inventory and monitoring networks. This program is planned to expand over the next CESU renewal period.

Several CA-CESU members served on committees of graduate students including at UCB, Sonoma State University and San Francisco State University

Numerous technical agreements specifically focused on educating students. Specifically UC Berkeley's agreement of science for the next generation training students for careers and expertise needed to work in public lands research and management.

6. Take responsibility for their respective agency's role in administering the CESU agreement, transferring funds, and supervision of agency employees? Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).

The federal agencies and host university have maintained a good working relationship. The federal partners have been responsive to information requests and have provided financial support for funding opportunities/etc. Host support funding for UC Berkeley comes from the federal agencies at the Washington level and has been more consistent since 2020, greatly enhancing the ability of UCB to engage and support the CESU program.

7. Provide administrative assistance, as appropriate, necessary to execute the CESU agreement and subsequent amendments or modifications (e.g., timely processing, signatures)? Provide details, including reference to consistent and/or effective assistance (or lack thereof) over the current five- year term (identified by agency, as appropriate).

The NPS Science Advisor has been proactive in securing support for the host campus and has taken initiative to manage the website proposal regarding updating the California CESU website. The Proposal to Update the California Cooperative Ecosystem Studies Unit (CESU) Website is to align the website more closely with the mission and the evolving scope of activities of the CESU and to promote cooperative research sponsored by federal partner agencies with partner universities and research institutions of the California CESU. The first draft of the proposal was produced in the Summer and Fall of 2020 and the target date for completion for the first phase of the website reconfiguration was October 2022.

We have been successful in securing signatures from our federal agencies and partners regarding our latest amendments to the Joint and Cooperative Venture Agreement. While there has always been some delay with voting and RSVPing for annual meetings, the majority of the members respond timely. We remain hopeful that the next 5-year period will yield greater lines of communication and collaboration given the introduction of our updated website.

Category B: Host University Responsibilities

Did the host university…

1. Allow and encourage its faculty to engage in participating federal agency sponsored research, technical assistance and education activities related to the CESU objectives? Provide details, including description of faculty engagement and two highlighted/example projects.

Please see below, an example of an UC Berkeley faculty led CESU Project:

PI Ted Grantham, sponsor National Park Service (P19AC01004-03), Science for the Next Generation, 9/01/2021 - 12/31/2024.

Professor Grantham's research involves analyzing underwater videos taken in the summer of 2021 in the Lagunitas Creek watershed, encompassing four streams: Lagunitas Creek, Olema Creek, Devil's Gulch, San Geronimo Creek. Data collection from these videos includes identifying coho salmon and steelhead

trout, measuring each fish, and assigning different foraging behaviors to each fish. Data from these videos will help assess how coho salmon populations across the watershed respond to extreme drought and go towards understanding linkages between summer stream habitat and juvenile population dynamics.

2. Provide basic administrative and clerical support over the current five-year term (i.e., in support of CESU operations)? Provide details (e.g., nature and level of support).

2a. How much did it cost the host institution to support the CESU over the current five-year term? Provide details (e.g., CESU-specific costs, Director and/or staff time, % FTE, travel, facilities, administrative services, equipment, supplies, communications, printing, web hosting).

The administrative and clerical support for the host institution were are follows: 5% of the CESU Director's time at $18,283 per year, 15% of the CESU Coordinator's time at $10,276 and 5% of the transitional CESU Coordinator's time at $6,861 including 17.5% IDC for a total of $204,520 for the five year period.

2b. Where is the CESU Director's office officially stationed within the host institution (e.g., Office of the President, School of Natural Resources, Department of Forest Resources)? Provide details (e.g., location relative to other departments, schools, greater organization), as appropriate.

The CESU Director and Coordinator offices are located at the Office of the Dean, Rausser College of Natural Resources which is centrally located on the main University of California, Berkeley campus. The Director also maintains an office at 345 Hilgard Hall on the Berkeley campus.

3. Provide access for CESU federal agency personnel (e.g., CESU Research Coordinator) to campus facilities, including library, laboratories, and computer facilities? Provide details and examples.

As the host university, we provide NPS and other federal personnel access to university privileges. We grant NPS and other federal personnel access to extensive UC Berkeley libraries, museums and computing facilities. Laboratory accommodations are provided upon request. Additionally, we provide access to our Zoom platform and IT support in handling website updates and development.

4. Provide suitable office space, furniture and laboratory space, utilities, computer network access and basic telephone service for CESU federal agency personnel (e.g., CESU Research Coordinator) to be located at the Host University? Provide details (e.g., challenges, successful approaches, examples).

As the host university during 2018 to 2022, UC Berkeley provides support in the form of office space and administrative support to the on-campus NPS CA-CESU Science Advisors (Sarah Allen (2018-2019), and Ben Becker (2021-Present); Principal Climate Change Scientist, Patrick Gonzalez; and BLM Ecologist, James Wiegand. Offices are located in Mulford Hall, the main administrative and teaching building for the Department of Environmental Science, Policy, and Management. Offices have access to wifi, wired internet, and phone. Teaching and meeting room facilities are also provided via department staff.

The Host Institution has been very welcoming and supportive to the federal partners on campus. UCB has provided centrally located office space shared by federal agency staff (NPS (2018 - 2022) & BLM (2018 - 2020), access to computer network, IT support, mail service, and basic telephone services. UCB also has

provided administrative support and classrooms to CESU federal partners. A classroom was provided with AV equipment for a seminar for UCB students co-taught by federal agency staff in fall of 2018 - 2020. The CA-CESU also currently shares office space with the UC Berkeley Natural Reserve to host student offices.

5. Offer educational and training opportunities to participating federal agency employees, as appropriate? Provide details (e.g., number of trainings, number of people, course dates, course descriptions).

Yes, a variety of training and educational opportunities provided by UC campuses and offices are easily accessible for federal representatives. CA-CESU representatives are often able to share information regarding these opportunities with their agency colleagues. For example, federal agency personnel are eligible to participate in the College of Natural Resources statistics (R programming) courses regularly hosted on campus.

6. Coordinate activities, as appropriate, with the CESU federal, tribal, and nonfederal partners and develop administrative policies for such coordination? Provide details.

6a. Was a CESU Managers Committee maintained and convened, at least annually? Please provide details (e.g., meeting dates, meeting agendas, number/affiliation of participants, meeting minutes).

CESU managers participated in annual meetings and the agendas and participant lists are included in this packet. Federal Managers are beginning inter-agency CA-CESU coordination meetings in February 2023 to improve project coordination across agencies and partners where feasible and appropriate.

6b. Were periodic meetings of the CESU partners convened, at least annually, for the purpose of collaboration and coordination of CESU activities? Provide details (e.g., meeting dates, meeting agendas, level of participation, affiliation of participants, meeting minutes).

For the past five years, we held annual meetings for the CA-CESU partners. The meetings from 2018-2022 were held in December via Zoom. The meeting sessions lasted between two and three hours, and were fruitful in discussing new research opportunities, new members, and ideas for improving collaboration among our partner institutions. A diverse group of partners have been able to attend, representing member university faculty and staff, federal managers and representatives, as well as non-federal agency partners. Our annual meeting minutes can be found on our website, additionally, the agendas and participant lists for all meetings are included with this packet.

6c. What efforts were made to communicate each tribal and nonfederal partner institution's strengths and expertise to the federal partners (e.g., listing investigators on the CESU website, expertise database, meetings)? Provide details (e.g., challenges, successful approaches).

During our annual meetings, we discussed ways to increase collaboration among members. For the past few years, we have worked on updating our website to address the issue of visibility and connection among all the partners. In the upcoming period, we will continue to identify productive and efficient ways to establish best practices.

6d. How were federal funding announcements and/or other opportunities communicated to partners across the CESU? Provide details (e.g., challenges, successful approaches).

Federal funding announcements and job opportunities are sent to the host campus coordinator, who uploads the documents to the CA-CESU website and sends all the partners the information and link via email. Since the introduction of our updated website, we have successfully kept our contact list up-to-date and have enabled website features for partners to update their information when needed.

Category C: Participation of all Partners

1. What efforts did the host university, tribal, non federal, and federal partners undertake to engage students in projects and other activities of the CESU? Provide details (e.g., challenges, best practices, statistics for graduate and undergraduate student involvement, example projects).

The vast majority of CA-CESU projects include undergraduate or graduate student participation, although this is difficult to precisely track due to lack of recording by most agency partners. However, there are many examples of CA-CESU projects that provide direct funding for student research projects, internships and research positions at the university.

Undergraduate students have been trained and are leading data analysis and report preparation for numerous national parks in California in a program designed to foster student interest in federal science careers and to meet diversity goals of federal agencies.

The NPS Research Coordinator located at the Host Institution--the UC Berkeley College of Natural Resources-- mentors students, oversees student research, assists with finding internships, employment, and other project opportunities. These opportunities help foster the discovery of new avenues of research and provide training for future professionals in the field. It also educates students, staff, and faculty about the work of the federal agencies, creating even more opportunities for partnership.

2. Did all partners actively participate in CESU activities (e.g., meetings, phone calls, signing amendments, strategic planning, reporting)? Provide details (e.g., if not, why not? participation statistics, challenges to participation, successful approaches, best practices).

Most partner institutions actively participated in CESU activities. This includes meetings and conference calls as well as developing, writing, editing, and refining content for publications, outreach, and general communications. They have also been involved in coordinating projects, research, and reporting. Annual Meetings involved presentations from multiple federal agencies, new partner agencies, specific emerging research activities around fire, indigenous co-management of resources, and recent archaeology. Similar discussion and planning occurs around administrative logistics, opportunities for future research and collaboration, and strategic plan discussions.

3. .What percentage of partners received funding through the CESU over the current five-year term?

Provide details (e.g., partner funding statistics, notable barriers, successful approaches).

Thirty-nine of 45 (87%) non-federal partners engaged in research and education partnerships from 2018 - 2022.

Table 2. Number of projects and total funding to each non-Federal partner from 2018 - 2022.

Non-Federal Partner	Projects	Funding
Cal. Assoc. of Resource Conservation Districts	3	$611,998
California Department of Fish and Wildlife	1	$434,615
California Invasive Plant Council	1	$34,991
California State University (CSU)	2	$34,617
CSU-Cal Poly Humboldt	22	$924,467
CSU-Cal Poly San Luis Obispo	13	$10,168,723
CSU-Channel Islands	4	$32,302
CSU-Chico	5	$242,530
CSU-Fresno	2	$52,051
CSU-Fullerton	2	$142,240
CSU-Monterey Bay	6	$778,402
CSU-Northridge	1	$25,000
CSU-Sacramento	6	$253,383
CSU-San Diego	27	$5,432,616
CSU-San Francisco	3	$177,683
CSU-Sonoma	5	$1,127,927
CSU-Stanislaus	3	$95,273
Institute for Bird Populations	10	$1,889,029
Institute for Wildlife Studies	17	$13,592,018
Marine Ecology and Telemetry Research	1	$842,448
Occidental College	2	$222,866
Point Blue Conservation Science	4	$1,663,008
San Diego Natural History Museum	11	$1,539,449
San Diego Zoo	7	$7,749,108
Santa Barbara Botanical Garden	13	$1,365,888
Sierra Streams Institute	1	$465,292

Smithsonian Institution	1	$74,671
Southern California Marine Institute	1	$750,000
Stanford University	1	$2,991,295
University of California	22	$510,100
University of California, Berkeley	20	$687,773
University of California, Davis	85	$30,648,296
University of California, Los Angeles	24	$3,803,735
University of California, Merced	6	$245,329
University of California, Riverside	10	$1,582,058
University of California, San Diego	34	$58,980,150
University of California, Santa Barbara	24	$4,807,651
University of California, Santa Cruz	26	$13,662,004
University of Southern California	2	$174,350

4. What efforts were made to encourage and broaden participation in the CESU by all partners (e.g., HBCUs, tribal colleges, small academic institutions, state and local government agencies)? Provide details (e.g., participation statistics, challenges to participation, successful and/or novel approaches).

Federal partners actively engaged new partners to join the CA-CESU. Over the past five years they have helped new partners to be included. Since 2018, we have welcomed six new members to the CA-CESU.

- Marine Ecology and Telemetry Research
- The Marine Mammal Center
- Stanford University
- Sierra Streams Institute
- California Academy of Sciences
- National Association of Tribal Historic Preservation Officers

Applications are being processed for 2 additional applicants in early 2023. These institutions and organizations have been actively engaged with federal partners on numerous projects over the past several years. NOAA, DOD, NPS just to name a few have encouraged these institutions to join the network because of their long-standing collaborations on several projects.

We also reached out to State Agencies who are doing ecosystem research, like the Delta Stewardship Council and the Department of Water Resources, to solicit their engagement in joining. Their representatives joined the annual virtual meeting. They also express interest in being able to provide research funding, like the Federal Agencies, to other CA CESU members and partners, if rules at the Federal level are able to change.

5. What is the date of the most current version of the CESU's strategic plan? How well do the activities of the CESU reflect the priorities and objectives outlined in the plan? Provide details (e.g., challenges, best practices, example projects).

The latest CA-CESU strategic plan was developed in collaboration with our partners, adopted locally, and submitted to the National CESU Council in June of 2004. The plan, with its aims of fulfilling relevant scientific and social objectives, was reviewed at the meeting of partners in 2008 and has been retained without changes. We are hopeful that the next 5-year period will allow us to revisit and revise our strategic plan to meet new challenges in managing and protecting federal resources.

CA-CESU mission statement reads: "The mission of the Californian Cooperative Ecosystem Studies Unit is to provide research, technical assistance and education across the biological, physical, social, and cultural sciences to address natural and cultural resource management issues at multiple scales and in an ecosystem context in California and nationally as appropriate." The mission statement, which is similar to the CESU network mission statement, has remained relevant and has not changed.

6. Did the participating federal agencies, host university, tribal, and nonfederal partners develop and follow annual work plans to guide the activities of the CESU? Provide details (e.g., challenges, successful approaches, example projects).

Yes, we followed work plans established in the 2004 strategic plan. During the current 5-year period we conducted business following well-established and practical procedures from past years. Each federal representative, including the NPS CA-CESU Science Advisor has CESU responsibilities detailed in their work plan.

7. Have partners successfully obtained the tribal, federal, state, or local government permits and/or permissions from private landowners necessary to execute projects under the CESU agreement over the current five-year term? Provide details (e.g., challenges, successful approaches, examples).

Partners have obtained tribal, federal, state, or local government permits to execute projects under the CESU agreement. Specifically, NPS CESU projects generally require compliance and permitting under NEPA for research activities in NPS units.

8. What instances exist where projects, programs, or partners have derived benefit as a result of the established CESU relationship, independent of federal awards administered through the CESU (i.e., where simply being a partner in the CESU aided furtherance of other efforts; without/outside direct funding through a CESU project award)? Provide a brief description of any such examples.

CESU projects enabled partners indirect learning on agency protocols, procedures, contacts, organizational structure, navigating agency bureaucracy while doing research on federal and state lands. CESU network facilitates interagency collaboration, leveraging expertise, and sharing information and resources. The ability to engage students, and for them to learn and contribute to federal agency activities has also been beneficial to both parties. Good examples of collaboration that grew out of and was initially independent of federal awards was the informal relationship between NPS and various UC campuses providing accommodations for researchers and their students while doing research in parks.

Table 3: Summary of CA-CESU Agreement funding (in $1,000s) provided by Agencies (Top) to Non-Federal Partners (Down) from 2018 - 2022.

Partner	Air Force	Army	BLM	BOEM	BOR	Marine Corps	Navy	NPS	NRCS	USACE	USFS	USFWS	USGS
Cal. Assoc. of Res. Cons. Districts	$592							$20					
CA Department of Fish and Wildlife							$348			$87			
California Invasive Plant Council								$35					
California State University								$35					
CSU-Cal Poly Humboldt			$266	$462				$24	$105			$68	
CSU-Cal Poly San Luis Obispo	$54		$117	$418	$9,349			$96				$134	
CSU-Channel Islands								$32					
CSU-Chico			$57		$30			$155					
CSU-Fresno			$40					$12					
CSU-Fullerton							$118	$25					
CSU-Monterey Bay			$452				$325	$2					
CSU-Northridge											$25		
CSU-Sacramento								$159				$94	
CSU-San Diego				$300		$ -	$4,393	$39		$641		$11	$49
CSU-San Francisco								$130					$48
CSU-Sonoma						$923		$205					
CSU-Stanislaus			$20		$75								
Institute for Bird Populations		$284	$50					$1,492		$63			
Institute for Wildlife Studies			$50				$10,895	$478		$2,169			
Marine Ecology and Telemetry Research							$842						

Occidental College							$223						
Point Blue Conservation Science	$1,237						$81			$345			
San Diego Natural History Museum						$595	$806	$22		$117			
San Diego Zoo						$293	$6,125			$1,331			
Santa Barbara Botanical Garden			$417				$895					$54	
Sierra Streams Institute	$465												
Smithsonian Institution						$75							
Southern California Marine Institute				$750									
Stanford University										$2,991			
University of California								$329				-$289	$470
University of California, Berkeley								$477	$14	$198		$0	
University of California, Davis		$2,112	$1,596		$10,710		$940	$5,685	$2,464	$1,520		$4,845	$775
University of California, Los Angeles						$753	$1,576	$930		$492		$53	
University of California, Merced			$40		$31			$174					
University of California, Riverside	$379		$25			$633		$295	$250				
University of California, San Diego							$3,978	$213		$54,790			
University of California, Santa Barbara			$117	$2,320			$83	$990				$396	$901
University of California, Santa Cruz				$2,727	$7,852		$431	$631		$1,575		$160	$287
University of Southern California							$52						$122

Table 4: Compiled List of Californian CESU Projects from 2018 - 2022

Using the data provided by the CESU Federal Managers Committee, the CESU Director has compiled a list of agency-supported CESU projects conducted over the current five-year CESU term. Note that project information from NRCS, USFS, BLM, BOR, and USGS was only compiled for 2020 - 2022. Negative dollar amounts generally result from unspent funds being de-obligated from projects initiated prior to FY18.

- Agency Project Number
- Federal agency
- Fiscal Year
- Partner(s) (i.e., award recipient)
- Project title (First 50 characters from database)
- Amount of award

ProjectNumber	Agency	FY	PARTNER	TITLE	TOTAL
W9126G-18-2-0034	Air Force	2018	Cal. Assoc. of Resource Conservation Districts	Natural Resources Support	$326,620
W9126G-18-2-0035	Air Force	2018	Cal. Assoc. of Resource Conservation Districts	Natural Resources Support (Habitat)	$265,403
W9126G-18-2-0039	Air Force	2018	Point Blue Conservation Science	Natural Resources Support (Sea Birds)	$117,443
W9126G-19-2-0003	Air Force	2019	Point Blue Conservation Science	Natural Resources Support (Sea Birds)	$1,037,065
W9126G-19-2-0032	Air Force	2019	University of California, Riverside	Natural Resources Support (Pollinators)	$379,264
W9126G-21-2-0022	Air Force	2021	CSU-Cal Poly San Luis Obispo	Natural Resources Support	$54,082
W9126G-21-2-0009	Air Force	2021	Point Blue Conservation Science	Natural Resources Support	$82,789
W9126G-21-2-0053	Air Force	2021	Sierra Streams Institute	Dry Creek Riparian Restoration Management for Natural	$465,292
W9126G-18-2-0071	Army	2018	Institute for Bird Populations	Avian Presence and Abundance	$93,466
W9126G-19-2-0070	Army	2019	Institute for Bird Populations	Avian Study II	$190,141
W9126G-22-2-0001	Army	2022	University of California, Davis	Researching Methods to Improve Passage and Determine	$2,112,100
L19AC00034	BLM	2020	CSU-Cal Poly Humboldt	CA Elephant Seal Monitoring King Range NCA	$83,371
L19AC00209	BLM	2020	CSU-Cal Poly Humboldt	Impact of Larval Newt Predation of California Red-	$24,404
L19AC00211	BLM	2020	CSU-Cal Poly San Luis Obispo	Subterranean Ecology of Endangered Species	$47,186
L20AC00415	BLM	2020	CSU-Chico	Post-Fire Vegetation Recovery in Dozer Lines	$57,165
L19AC00267	BLM	2020	CSU-Monterey Bay	Return of the Natives to Fort Ord National Monument	$101,051
L20AC00447	BLM	2020	Institute for Bird Populations	Mapping Avian Diversity, and Rare and Management S	$49,667
L20AC00365	BLM	2020	Institute for Wildlife Studies	Assessing Pronghorn Connectivity Among Three State	$49,990
L19AC00196	BLM	2020	Santa Barbara Botanical Garden	Saving for the Future Conservation Seed Banking	$44,077
L20AC00445	BLM	2020	Santa Barbara Botanical Garden	Inventory and Monitoring for Priority Sensitive Sp	$99,236
L20AC00476	BLM	2020	Santa Barbara Botanical Garden	Understanding and Conserving the Endangered Kern M	$105,928
L20AC00477	BLM	2020	Santa Barbara Botanical Garden	Restoring Pollination Networks for the California	$49,992
L19AC00331	BLM	2020	University of California, Davis	Desert Wildlife Corridor Evaluation	$ -
L20AC00489	BLM	2020	University of California, Davis	DNA Metabarcoding Tools for the Endangered Blunt-N	$239,000
L20AC00490	BLM	2020	University of California, Davis	Impacts of Solar Energy Development on Desert Wild	$402,453

L20AC00495	BLM	2020	University of California, Davis	Restoring the Amargosa Legacy and Preserving the I	$50,000
L20AC00496	BLM	2020	University of California, Davis	Size-Dependent Survival and the Impact of Ravens o	$344,655
L19AC00343	BLM	2020	University of California, Santa Barbara	Endangered Species Prey Items	$117,419
L21AC10484	BLM	2021	CSU-Cal Poly Humboldt	North Coast Seabird Protection Network: Seabird Di	$46,092
L21AC10501	BLM	2021	CSU-Monterey Bay	RON/FONM: Ensuring Native Plant Success and Future	$228,857
L17AC00027	BLM	2021	CSU-Stanislaus	Kit Fox Conservation	$20,000
L12AC10518	BLM	2021	University of California, Davis	Restoration of Desert Wetlands to Support a Source	$150,000
L21AC10412	BLM	2021	University of California, Davis	Genetic Diversity Study of Rare and Common Flannel	$70,000
L21AC10469	BLM	2021	University of California, Riverside	Assessing the Impacts of Aridity on Selected Species	$25,000
L22AC00223	BLM	2022	CSU-Cal Poly Humboldt	Student Opportunities to Support Native See Collec	$26,846
L22AC00308	BLM	2022	CSU-Cal Poly Humboldt	Management of an Invasive Fish Species in the Eel	$60,000
L22AC00319	BLM	2022	CSU-Cal Poly Humboldt	Elephant Seal and Harbor Seal Population Baseline	$25,000
L22AC00357	BLM	2022	CSU-Cal Poly San Luis Obispo	An Integrated Population Model for Giant Kangaroo	$30,000
L22AC00360	BLM	2022	CSU-Cal Poly San Luis Obispo	Projecting impacts of climate change on blunt-nose	$40,000
L22AC00395	BLM	2022	CSU-Fresno	Repatriation and Preservation of Blunt-Nosed Leopard	$40,000
L22AC00303	BLM	2022	CSU-Monterey Bay	Return of the Natives and Graduate Student Assistant	$121,648
L22AC00336	BLM	2022	Santa Barbara Botanical Garden	Monitoring California Jewelflower Demography in th	$58,548
L22AC00352	BLM	2022	Santa Barbara Botanical Garden	Conservation Seed Banking for BLM Special Status	$59,651
L21AC10518	BLM	2022	University of California, Davis	Restoration of Desert Wetlands to Support a Source	$300,000
L22AC00358	BLM	2022	University of California, Davis	Current Rangewide Status and Habitat Affiliations	$40,000
L22AC00479	BLM	2022	University of California, Merced	Reproduction of Blunt-Nosed Leopard Lizards in Wil	$40,000
PC-16-01 M16AC00023	BOEM	2018	CSU-Cal Poly San Luis Obispo	Scenarios for Replacing Conventional Energy with O	$418,352
PC-14-04 M15AC00012	BOEM	2018	CSU-San Diego	Archaeological and Biological Assessment of Submer	$299,755

PC-15-05 M15AC00006	BOEM	2018	University of California, Santa Barbara	A Demonstration Marine Biodiversity Observation Ne	$900,000
PC-15-02 M15AC00007	BOEM	2018	University of California, Santa Cruz	BOEM-MARINe (Multi-Agency Rocky Intertidal Network	$884,000
PR-19-HSU M19AC00005	BOEM	2019	CSU-Cal Poly Humboldt	Offshore Wind Generation and Load Compatibility As	$462,368
PC-15-03 M15AC00014	BOEM	2019	University of California, Santa Barbara	Synthesis of Pacific Platform Research	$ -
PC-16-x07 M16AC00025	BOEM	2019	University of California, Santa Barbara	Net Environmental Benefit Analysis of Pacific Plate	$ -
PC-19-04 M19AC00011	BOEM	2019	University of California, Santa Barbara	Understanding Biological Connectivity Among Offsho	$945,000
PC-19-01 M19AC00023	BOEM	2019	University of California, Santa Cruz	BOEM-MARINe (Multi-Agency Rocky Intertidal Network	$1,842,885
PC-20-02 M21AC00021	BOEM	2021	Southern California Marine Institute	The Environmental Status of Artificial Structures	$750,000
PC-21-02 M21AC00023	BOEM	2021	University of California, Santa Barbara	Using Outcomes from Marine Protected Area Implement	$475,000

NA	BOR	2018	University of California, Santa Cruz	Assessing the Impacts of Different Contract Points	$23,170,253
R20AC00111	BOR	2020	CSU-Chico	Modeling Effects of Wildfire and Fire Retardant on	$15,000
R20AP00261	BOR	2020	CSU-Stanislaus	Tulare Basin Endangered Species Surveys	$75,273
R17AC00129	BOR	2020	University of California, Davis	Drivers of Delta Smelt Health Condition and Reprod	$850,000
R20AC00027	BOR	2020	University of California, Davis	Conservation Hatchery Operation for Delta Smelt Re	$3,070,264
R20AC00094	BOR	2020	University of California, Davis	Food-Temperature Optimization Model for Central Va	$239,756
R20AC00021	BOR	2020	University of California, Merced	Delta-Mendota Sub-basin Models and Evaluation of S	$30,859
R18AP00136	BOR	2020	University of California, Santa Cruz	Assessing the Impacts of Different Contact Points	$595,961
N62473-17-2-0017	Marine Corps	2018	University of California, Riverside	Provide Monitoring and Management of Federally Thr	$632,853
N62473-19-2-0007	Marine Corps	2019	CSU-Sonoma	Manage and Research the Archaeological Collection	$923,096
N62470-15-2-8015	Marine Corps	2019	San Diego Natural History Museum	Collect Herbarium Specimens to Prepare a Scientific	$39,375
N62473-17-2-0015	Marine Corps	2019	University of California, Los Angeles	Address Captive Rearing and Associated Research of	$509,444
N62473-20-2-0008	Marine Corps	2021	CSU-San Diego	Rangewide Monitoring and Management of Flat-tailed	$ -
N62473-21-2-0017	Marine Corps	2021	San Diego Natural History Museum	Avian Species Studies Surveys	$354,892
N62473-20-2-0004	Marine Corps	2021	San Diego Zoo	Western Snowy Plover	$292,902
N62473-21-2-0001	Marine Corps	2021	University of California, Los Angeles	Desert Tortoise Head Start Program	$243,919
N62473-22-2-0012	Marine Corps	2022	San Diego Natural History Museum	Sierra Nevada Red Fox Status Update for the Mono L	$94,000
N62473-22-2-0013	Marine Corps	2022	San Diego Natural History Museum	Golden Eagle Monitoring and Management	$106,500
N62473-22-2-0004	Marine Corps	2022	Smithsonian Institution	Range Wide Western Pond Turtle Study/Surveys	$74,671
W9126G-17-2-0016	Navy	2018	California Department of Fish and Wildlife	Navy/CDFG CESU agreement for NR Law Enforcement	$347,692

N62473-17-2-0010	Navy	2018	CSU-San Diego	Restoration of a One Acre Dune Habitat with Site M	$36,287
N62473-18-2-0009	Navy	2018	CSU-San Diego	Provide Support for the Recovery of Black Abalone	$132,500
W7126G-18-2-0024	Navy	2018	CSU-San Diego	Demonstration of Multi-Sensor Airborne Mapping Too	$233,059
W9126G-15-2-0034	Navy	2018	CSU-San Diego	Vegetation Classification and Mapping of Vegetation	$ -
W9126G-16-2-0044	Navy	2018	CSU-San Diego	Botanical Program Implementation	$368,719
W9126G-16-2-0047	Navy	2018	CSU-San Diego	Dune Restoration	$60,000
W9126G-17-2-0029	Navy	2018	CSU-San Diego	Fog and Coastal Low Cloud Analysis for Federally L	$208,730
W9126G-18-2-0068	Navy	2018	CSU-San Diego	Shrub Cover Monitoring and Sensitivity Analyses of	$226,861
W9126G-16-2-0007	Navy	2018	Institute for Wildlife Studies	San Clemente Island Bell's Sparrow Monitoring	$303,539
W9126G-16-2-0018	Navy	2018	Institute for Wildlife Studies	Island Fox Management in Support of the Loggerhead	$1,293,182
W9126G-17-2-0030	Navy	2018	Institute for Wildlife Studies	Seabird and Shorebird Monitoring	$549,941
W9126G-18-2-0003	Navy	2018	Institute for Wildlife Studies	SCI Shrike Captive Breeding	$2,882,687
W9126G-18-2-0026	Navy	2018	Institute for Wildlife Studies	SCI Shrike Monitoring	$2,735,136
W9126G-18-2-0050	Navy	2018	Institute for Wildlife Studies	Bell's Sparrow Management Plan	$235,723
W9126G-18-2-0072	Navy	2018	Institute for Wildlife Studies	Predator Research and Ecosystem Management	$2,286,218
N62473-18-2-0012	Navy	2018	Occidental College	Conduct Subtidal Habitat Surveys for Invertebrates	$71,216
N62473-18-2-0007	Navy	2018	San Diego Natural History Museum	Design and Implement Bat Surveys	$52,238
W9126G-18-2-0005	Navy	2018	San Diego Natural History Museum	Predator Management and Research to Protect the Ca	$463,739
W9126G-18-2-0069	Navy	2018	San Diego Natural History Museum	Update Flora and Modernize Herbarium Specimen Data	$124,585
W9126G-14-2-0001	Navy	2018	San Diego Zoo	SCI Shrike Captive Breeding	$86,000
W9126G-17-2-0003	Navy	2018	San Diego Zoo	Least Tern & Snowy Plover Monitoring and Raptor Ma	$2,376,558
Wj9126G-14-2-0001	Navy	2018	San Diego Zoo	SCI Shrike Captive Breeding	$84,680
N62473-17-2-0005	Navy	2018	Santa Barbara Botanical Garden	Address Erosion Control and Habitat Enhancement	$15,651
N62473-18-2-0018	Navy	2018	Santa Barbara Botanical Garden	Survey for Terrestrial Invertebrates	$250,000
N62473-18-2-0004	Navy	2018	University of California, Davis	Monitor for the Seasonal Occurrence and Habitat Us	$679,172
N62473-18-2-0014	Navy	2018	University of California, San Diego	Provide for the Eradication of the Argentine Ant	$1,463,636
N62473-18-2-0016	Navy	2018	University of California, San Diego	Support the Navy's Passive Acoustic Monitoring Req	$857,557
N62473-17-2-0018	Navy	2018	University of California, Santa Cruz	Collect and Analyze Hearing Data on Hawaiian Monk	$383,530

N62473-18-2-0001	Navy	2018	University of California, Santa Cruz	Provide Black Abalone Surveys	$47,000
W9126G-15-2-0017	Navy	2018	University of California, Santa Cruz	Investigations into Recruitment Enhancement and Cl	$ -
W9126G-17-2-0040	Navy	2018	University of Southern California	Reconstruction of Historical Topography to Estimate	$52,460
N62473-19-2-0018	Navy	2019	CSU-Monterey Bay	Conduct Imagery-Based Subtidal Surveys for Fishes	$324,769
W9126G-19-2-0059	Navy	2019	CSU-San Diego	Vegetation Studies (USGS Burn Plots, Invasive Spec	$87,011
W9126G-19-2-0073	Navy	2019	CSU-San Diego	Botany SCI	$1,558,617
W9126G-19-2-0010	Navy	2019	Institute for Wildlife Studies	Bell's Sparrow Monitoring	$944,737
W9126G-19-2-0067	Navy	2019	Point Blue Conservation Science	Migratory Bird Support	$80,558
N62473-19-2-0003	Navy	2019	Santa Barbara Botanical Garden	Conduct Voucher Specimen Cataloging	$447,080
N62473-19-2-0016	Navy	2019	University of California, Los Angeles	Monitor Several Physical and Biological Parameters	$1,453,996
N62473-20-2-0007	Navy	2020	CSU-San Diego	Studying the Impacts of Non-Native Species on Nati	$35,029
N62473-20-2-0008	Navy	2020	CSU-San Diego	Rangewide Monitoring and Management of Flat-tailed	$186,481
N62473-20-2-0014	Navy	2020	CSU-San Diego	Rare Plant Surveys and Monitoring	$107,464
W9126G-20-2-0019	Navy	2020	CSU-San Diego	Coral Reef Arks	$201,177
N62473-19-2-0025	Navy	2020	Marine Ecology and Telemetry Research	Cuvier's Beaked Whale and Fin Whale Survey at South	$842,448
N62473-20-2-0006	Navy	2020	San Diego Natural History Museum	Bat Surveys at Naval Base San Diego	$33,202
N62473-20-2-0012	Navy	2020	University of California, San Diego	Southern California Beaked Whale Occurrence	$425,000
N62473-20-2-0013	Navy	2020	University of California, Santa Barbara	EFH Amphibious Landing Area Surveys at SCI	$83,361
N62473-21-2-0013	Navy	2021	CSU-Fullerton	Safety Zone Rocky Intertidal Biodiversity Surveys	$117,660
N62473-19-2-0017	Navy	2021	CSU-San Diego	I Botany Management Program Implementation	$192,558
N62473-21-2-0004	Navy	2021	CSU-San Diego	NBC Dune Restoration and San Clemente Island Polli	$82,990
W9126G-21-2-0020	Navy	2021	CSU-San Diego	Environmental Monitoring Research	$159,988
N62473-21-2-0011	Navy	2021	Occidental College	Safety Zone Kelp Forest Surveys	$151,651
N62473-19-2-0015	Navy	2021	San Diego Natural History Museum	Detachment Fallbrook Multiple Taxonomic Group Surv	$51,838
N62473-19-2-0024	Navy	2021	San Diego Natural History Museum	Bat Surveys at NBPL and MCMWTC	$80,363
N62473-21-2-0002	Navy	2021	Santa Barbara Botanical Garden	Invasive Algae Survey to Benefit Rare and Endanger	$57,775
N62473-21-2-0005	Navy	2021	Santa Barbara Botanical Garden	NBVC Vouchered Flora for Wetlands	$56,826
N62473-19-2-0023	Navy	2021	University of California, Davis	Abalone Reproductive Survey	$116,424

W9126G-21-2-0067	Navy	2021	University of California, Los Angeles	Spatial Analysis & Conservation Planning Rare Plan	$122,082
N62473-19-2-0006	Navy	2021	University of California, San Diego	SDB Automated Environmental Data Collection	$52,270
N62473-21-2-0012	Navy	2021	University of California, San Diego	Southern California Beaked Whale Monitoring	$363,470
N62473-22-2-0005	Navy	2022	CSU-San Diego	Historic Chinese Abalone Fishing Industry Study at	$369,500
N62473-22-2-0009	Navy	2022	CSU-San Diego	Evaluation of Microhabitat Associations in Support	$146,053
W9126G-22-2-0007	Navy	2022	Institute for Wildlife Studies	Fox Population Monitoring and Veterinary Care and	$308,114
W9126G-22-2-0018	Navy	2022	Institute for Wildlife Studies	Seabird and Shorebird Monitoring Project	$174,182
W9126G-22-2-0025	Navy	2022	Institute for Wildlife Studies	Shrike Monitor & Release	$777,387
W9126G-22-2-0028	Navy	2022	Institute for Wildlife Studies	Predator Research and Ecosystem Management	$597,932
W9126G-22-2-0017	Navy	2022	San Diego Zoo	SCI Shrike Captive Breeding	$752,931
W9126G-22-2-0019	Navy	2022	San Diego Zoo	California Least Tern and Western Snowy Plover Nes	$630,916
N62473-22-2-0015	Navy	2022	Santa Barbara Botanical Garden	Naval Outlying Field San Nicolas Island and Other	$67,370
N62473-22-2-0007	Navy	2022	University of California, Davis	Study of Abalone Reproductive Biology in Support o	$144,560
N62473-22-2-0003	Navy	2022	University of California, San Diego	Eradication of the Argentine Ant (Linepithema Humi	$349,708
N62473-22-2-0014	Navy	2022	University of California, San Diego	Southern California Beaked Whale Distribution	$466,030
P18AC01148	NPS	2018	Cal. Assoc. of Resource Conservation Districts	Range Management collaboration	$19,975
P18AC01261	NPS	2018	CSU-Cal Poly Humboldt	_	$15,920
P17AC01178	NPS	2018	CSU-Cal Poly San Luis Obispo	_	$103,927
P14AC01613	NPS	2018	CSU-Channel Islands	_SENIOR CAPSTONE RESEARCH PROJECTS FOR MEDN PARKS	-$1,400
P16AC01497	NPS	2018	CSU-Channel Islands	_SURVEY AND DOCUMENTATION OF HISTORIC ARCHEOLOGICA	$ -
P14AC01614	NPS	2018	CSU-Chico	_STREAM MONITORING DESIGN AND ASSESSMENT FOR MEDIT	$16,635
P13AC01160	NPS	2018	CSU-Monterey Bay	_PREDICTING HABITAT SELECTION BY YELLOWSTONE BISON	-$7,967
P18AC00300	NPS	2018	CSU-Sacramento	_	$39,103
P18AC00308	NPS	2018	CSU-Sacramento	DENA 217675 XXX SHELLABARGER PASS PALEO_DENA 21767	$42,468

P13AC00727	NPS	2018	CSU-San Diego	_ARCHAEOLOGICAL INVESTIGATION OF CHINESE ABALONES	$0
P17AC01401	NPS	2018	CSU-San Diego	_SANTA ROSA ISLAND ARCHEOLOGICAL DATA RECOVERY	-$6,055
P18AC01163	NPS	2018	CSU-San Diego	_	$31,213
P17AC01613	NPS	2018	Institute for Bird Populations	_	$383,488
P18AC01099	NPS	2018	Institute for Bird Populations	_	$43,346
P18AC01215	NPS	2018	Institute for Bird Populations	_	$348,664
P12AC10860	NPS	2018	Institute for Wildlife Studies	_NATURAL RESOURCE CONDITION ASSESSMENTS IN THE INT	$ -
P14AC01310	NPS	2018	Institute for Wildlife Studies	_NATURAL RESOURCE CONDITION ASSESSMENTS FOR PUHE,	$21,744
P15AC01667	NPS	2018	University of California	_DEVELOPING GRAZING GUIDELINES FOR THE ASH MOUNTAIN	-$105
P18AC00006	NPS	2018	University of California	_	$ -
P18AC00684	NPS	2018	University of California	_	$8,887
P18AC00826	NPS	2018	University of California	_	$118,246
P13AC01171	NPS	2018	University of California, Berkeley	_DEVELOPING UPDATED RANGELAND MONITORING METHODS F	-$1
P15AC01877	NPS	2018	University of California, Berkeley	_SCIENCE FOR THE NEXT GENERATION	$11,867
P16AC01700	NPS	2018	University of California, Berkeley	_LEADERSHIP, COORDINATION, AND ADMINISTRATIVE OVER	$37,800
P12AC10724	NPS	2018	University of California, Davis	_DEVELOPING TOOLS FOR MEADOW MANAGEMENT AT YOSEMITE	-$405
P15AC00996	NPS	2018	University of California, Davis	_TREE-LEVEL MONITORING OF GIANT SEQUOIA RESPONSET	$27,351
P15AC01816	NPS	2018	University of California, Davis	_GENETIC IDENTIFICATION AND HABITAT ASSOCIATIONS O	$26,725
P16AC01786	NPS	2018	University of California, Davis	_PESTICIDE PRIORITIZATION MONITORING IN CALIFORNIA	$73,648
P17AC01193	NPS	2018	University of California, Davis	_BOTANICAL INTERNSHIPS AT LASSEN VOLCANIC NP	$11,207
P17AC01416	NPS	2018	University of California, Davis	MASTER COOPERATIVE AGREEMENT_ASSESSMENT OF WATER Q	$145,000
P18AC00036	NPS	2018	University of California, Davis	_	$648,039

P18AC01222	NPS	2018	University of California, Davis	MASTER COOPERATIVE AGREEMENT_MASTER COOPERATIVE AG	$2,993,815
P12AC15022	NPS	2018	University of California, Los Angeles	_ASSESS AQUATIC INVERTEBRATES AND ALGAE AS INDICATOR	-$1,542
P13AC01174	NPS	2018	University of California, Los Angeles	_MACROINVERTEBRATE IDENTIFICATION AND ANALYSES DUR	$10,842
P16AC01575	NPS	2018	University of California, Los Angeles	P13AC00676_REVIEW AND CONSERVE SEQUOIA AND KINGS C	$47,950
P16AC01801	NPS	2018	University of California, Los Angeles	_MACROINVERTEBRATE ASSEMBLAGES ALONG THE TUOLUMNE	$199,999
P17AC01374	NPS	2018	University of California, Los Angeles	_	$40,000
P18AC00495	NPS	2018	University of California, Los Angeles	_	$34,016
P18AC01431	NPS	2018	University of California, Merced	_	$ -
P18AC00332	NPS	2018	University of California, Riverside	_	$ -
P18AC01395	NPS	2018	University of California, Riverside	_	$75,000
P14AC01661	NPS	2018	University of California, Santa Barbara	_ANALYSIS AND PUBLICATION OF LONG-TERM CHANNEL ISL	$ -
P15AC01121	NPS	2018	University of California, Santa Barbara	_MERCED RIVER RESTORATION IN YOSEMITE VALLEY	$235,520
P18AC01415	NPS	2018	University of California, Santa Barbara	_	$96,602
P19AC01203	NPS	2019	California State University	CONDUCT CULTURAL RESOURCE ASSISTANCE OF ABANDONED	$34,700
P12AC10931	NPS	2019	CSU-Cal Poly Humboldt	WHITEBARK PINE MONITORING, DISEASE DYNAMICS, AND M	-$231
P13AC00744	NPS	2019	CSU-Cal Poly Humboldt	_CLIMATE SENSITIVITY IN WHITE SPRUCE AS INDICATED	-$117
P15AC01072	NPS	2019	CSU-Cal Poly Humboldt	SHARING TRIBAL STORIES ON THE OREGON AND CA NHTS_SH	-$38
P16AC01303	NPS	2019	CSU-Cal Poly Humboldt	THIS STUDY WILL PROVIDE A QUANTIFICATION OF THE EF	-$523
P17AC01583	NPS	2019	CSU-Cal Poly San Luis Obispo	THE NPS WILL COLLABORATE WITH KEY PROFESSIONALS AT	-$171
P17AC01689	NPS	2019	CSU-Channel Islands	ESTABLISH A LONG-TERM, COLLABORATIVE RELATIONSHIP	$34,033

P19AC01202	NPS	2019	CSU-Chico	STREAM CONDITION MONITORING AND DATA ANALYSIS FOR	$138,730
P19AC00784	NPS	2019	CSU-Fresno	THE GOAL OF THIS PROJECT IS TO PROCESS BAT CALLS R	$12,051
P19AC01148	NPS	2019	CSU-Sonoma	IDENTIFICATION AND EVALUATION OF WWII AND MEXICAN	$130,000
P19AC01236	NPS	2019	San Diego Natural History Museum	CONSERVATION OF NATIVE BIODIVERSITY IN SOUTHERN CA	$21,503
P15AC01683	NPS	2019	University of California	ANZA TRAIL AND 4-H OUTREACH INTERNSHIP_ANZA TRAIL	-$2,177
P19AC01146	NPS	2019	University of California	MONITORING SPREAD OF PHYTOPHTHORA RAMORUM IN REDWO	$31,673
P19AC01239	NPS	2019	University of California	THE PURPOSE OF THE STUDY IS TO DETERMINE SCIENTIFIC	$33,943
P19AC01249	NPS	2019	University of California	ASSESSMENT OF THE CURRENT CONDITION AND FUTURE VUL	$59,972
P15AC01366	NPS	2019	University of California, Berkeley	P13AC00676_CATALOG AND DIGITIZE HISTORIC JOHN MUIR	-$34
P15AC01889	NPS	2019	University of California, Berkeley	GRAZING MANAGEMENT PLAN AND MAPPING ON RANCHING SP	$41,813
P16AC01770	NPS	2019	University of California, Berkeley	_CATALOG, PRESERVE, AND DIGITIZE DR. ROBERT ALLEN'	-$624
P19AC01004	NPS	2019	University of California, Berkeley	THIS PROJECT WILL PREPARE THE NEXT GENERATION OF S	$122,586
P19AC01226	NPS	2019	University of California, Berkeley	EVALUATE VARIABILITY AND LONG-TERM TRENDS IN BAY A	$22,891
P19AC00118	NPS	2019	University of California, Davis	FIELD STATION PARTNERSHIP WITH THE UNIVERSITY OF C	$ -
P16AC01848	NPS	2019	University of California, Merced	PROVIDE OPPORTUNITIES FOR PUBLIC SERVICE YOUTH EMP	$14,000
P19AC01223	NPS	2019	University of California, Riverside	PREPARE HISTORIC RESOURCES STUDY OF CLIMBING FOR J	$105,929
P19AC01015	NPS	2019	University of California, San Diego	3D PHOTOGRAMMETRY PROCESSING AND VISUALIZATION_3D	$14,076
P19AC00789	NPS	2019	University of California, Santa Barbara	THE NATIONAL PARK SERVICE WILL COLLABORATE WITH TH	$59,925
P19AC00882	NPS	2019	University of California, Santa Barbara	GEOMORPHIC ASSESSMENT OF THE TUOLUMNE RIVER IN TUO	$231,500
P19AC01210	NPS	2019	University of California, Santa Barbara	PROVIDE STUDENTS WITH OPPORTUNITIES TO ENGAGE IN S	$40,020

P13AC01084	NPS	2019	University of California, Santa Cruz	MEDITERRANEAN COAST NETWORK ROCKY INTERTIDAL AND K	$0
P15AC00724	NPS	2019	University of California, Santa Cruz	IMPROVE TREATMENT OF CONDORS FOR LEAD EXPOSURES BY	-$2
P19AC00863	NPS	2019	University of California, Santa Cruz	THIS PROJECT WILL IMPLEMENT THE ROCKY INTERTIDAL M	$140,481
P19AC00930	NPS	2019	University of California, Santa Cruz	ASSESSING ENDANGERED BLACK ABALONE RECRUITMENT AT	$47,235
P19AC01001	NPS	2019	University of California, Santa Cruz	THIS PROJECT WILL ESTABLISH THE USE OF ADDITIONAL	$89,381
P16AC00582	NPS	2020	California State University	BIRD AND BUTTERFLY COMMUNITY RESPONSE TO LARGE-SCA	-$83
P17AC01144	NPS	2020	CSU-Cal Poly Humboldt	A CASE STUDY IN YUROK TRADITIONAL ECOLOGICAL KNOWL	-$318
P16AC01448	NPS	2020	CSU-Cal Poly San Luis Obispo	GRAZING ALLOTMENT MONITORING AND REVIEW OF EXISTING	-$7,926
P20AC01013	NPS	2020	CSU-Fullerton	TO EXPAND ON LIMITED NPS RESEARCH AND INTERPRETATI	$24,580
P20AC01011	NPS	2020	CSU-Sacramento	ENGAGING UNIVERSITY HISTORY DEPARTMENT FACULTY AND	$34,004
P15AC01455	NPS	2020	CSU-San Diego	COOPERATIVE RESEARCH AND TRAINING PROGRAMS - RESOU	-$3,164
P20AC00867	NPS	2020	CSU-San Diego	THE IMPACT OF CHANGING OCEAN CONDITIONS ON THE REC	$17,026
P20AC00906	NPS	2020	CSU-San Francisco	WEST COAST ACID DEPOSITION ANALYSIS_WEST COAST ACI	$41,223
P15AC01544	NPS	2020	University of California	RESTORING WILDFIRE UNDER CHANGING CLIMATE: HOW MUCH	-$323
P13AC01288	NPS	2020	University of California, Berkeley	ADMINISTRATIVE SUPPORT FOR THE CALIFORNIAN CESU PA	-$1
P15AC01818	NPS	2020	University of California, Berkeley	COOPERATIVE RESEARCH AND TRAINING PROGRAMS - RESOU	-$1,920
P16AC01594	NPS	2020	University of California, Berkeley	STATE-OF-THE-ART SEARCHABLE WEB INTERFACE FOR AMER	$ -
P16AC01664	NPS	2020	University of California, Berkeley	PARTNERSHIP TO PROVIDE INTERNSHIPS IN FIELD SCIENCE	$0

P16AC00024	NPS	2020	University of California, Davis	TULE ELK HEALTH ASSESSMENT AT POINT REYES NATIONAL	-$3,501
P16AC01102	NPS	2020	University of California, Davis	RESEARCH AND DEVELOPMENT TO SUPPORT THE INTERAGENCY	-$3,601
P16AC01670	NPS	2020	University of California, Davis	FISHERIES INFORMATION SYSTEMS HISTORY AND ENVIRONM	$0
P20AC00781	NPS	2020	University of California, Davis	GENETIC ANALYSIS AND HISTORY OF OLIVE ORCHARD AT J	$17,916
P20AC00863	NPS	2020	University of California, Davis	USING ENVIRONMENTAL DNA AND AERIAL IMAGERY TO CHAR	$36,190
P20AC00946	NPS	2020	University of California, Davis	COMMEMORATING THE 19TH AMENDMENT AND SUPPORTING IN	$31,977
P14AC01074	NPS	2020	University of California, Los Angeles	COOPERATIVE RESEARCH AND TRAINING PROGRAMS - RESOU	-$1
P15AC01218	NPS	2020	University of California, Los Angeles	CONSERVE YOSEMITE ETHNOGRAPHIC COLLECTIONS_CONSERV	-$9,802
P15AC01615	NPS	2020	University of California, Los Angeles	SURVEY AND CONSERVE YOSEMITE NATIONAL PARK PAPER C	-$7,801
P20AC00516	NPS	2020	University of California, Los Angeles	DOCUMENTATION AND DEVELOPMENT OF A MANAGEMENT PLAN	$199,000
P20AC01047	NPS	2020	University of California, Los Angeles	THE PURPOSE OF THIS STUDY IS TO EVALUATE THE IMPACT	$134,999
P20AC01093	NPS	2020	University of California, Los Angeles	POPULATION GENETIC STRUCTURE OF SMALL VERTEBRATES	$75,000
P20AC00527	NPS	2020	University of California, San Diego	DATA DRIVEN ANALYSIS AND FORECASTING: A PARTNERSHIP	$158,626
P16AC01701	NPS	2020	University of California, Santa Barbara	CRITICAL RESTORATION EFFORTS NEEDED TO RECOVER END	$ -
P20AC01115	NPS	2020	University of California, Santa Barbara	THIS COLLABORATIVE PROJECT BETWEEN INVESTIGATORS A	$232,880
P14AC01528	NPS	2020	University of California, Santa Cruz	KLAMATH NETWORK INTERTIDAL COMMUNITY STRUCTURE MON	-$810
P15AC01395	NPS	2020	University of California, Santa Cruz	EXPANDING AND UPDATING ROCKY INTERTIDAL MONITORING	-$491
P15AC01275	NPS	2021	CSU-Channel Islands	CONNECTING MULTICULTURAL PRE-SERVICE TEACHERS WITH	-$332

P21AC11278	NPS	2021	CSU-Monterey Bay	CSUMB STUDENT ILLUSTRATOR INTERNSHIP AT MT. RAINIE	$10,043
P21AC12081	NPS	2021	CSU-San Francisco	JUAN BAUTISTA DE ANZA NATIONAL HISTORIC TRAIL: PUB	$88,461
P21AC10366	NPS	2021	CSU-Sonoma	IDENTIFICATION OF UNIQUE RESOURCE TYPES AT AMACHE_	$24,943
P21AC11318	NPS	2021	CSU-Sonoma	ARCHAEOLOGICAL DATA RECOVERY PROGRAM FOR THE FORT	$49,888
P21AM00011	NPS	2021	CSU-Sonoma	SONOMA STATE UNIVERSITY CESU MASTER AGREEMENT SONO	$ -
P21AC10259	NPS	2021	Institute for Bird Populations	BIRD COMMUNITY MONITORING AND PROGRAM REVIEW FOR P	$317,712
P21AC11997	NPS	2021	University of California, Berkeley	CA-CESU - LEADERSHIP, COORDINATION AND ADMINISTRATION	$64,441
P21AC11294	NPS	2021	University of California, Davis	RESEARCH AND DEVELOPMENT TO SUPPORT THE INTERAGENCY	$1,562,798
P21AC12213	NPS	2021	University of California, Los Angeles	MACROINVERTEBRATE ASSEMBLAGES ALONG THE TUOLUMNE R	$144,998
P21AC12291	NPS	2021	University of California, Los Angeles	SUPPORT CESAR CHAVEZ NATIONAL MONUMENT MUSEUM AND	$33,088
P21AC10907	NPS	2021	University of California, Merced	DIGITIZE AND PRESERVE SEQUOIA AND KINGS CANYON ARC	$105,020
P16AC01162	NPS	2021	University of California, Riverside	UPDATE HISTORIC RESOURCES STUDY: HOMESTEADS AND IN	-$1,058
P21AC10394	NPS	2021	University of California, San Diego	3D PHOTOGRAMMETRY PROCESSING, VISUALIZATION, AND H	$40,000
P21AC10873	NPS	2021	University of California, Santa Barbara	BACKCOUNTRY ARCHAEOLOGICAL INVENTORY AND CONDITION	$57,912
P21AC12290	NPS	2021	University of California, Santa Barbara	SANDY BEACH ANALYSIS AND PROGRAM REVIEW_SANDY BEAC	$36,095
P21AC11692	NPS	2021	University of California, Santa Cruz	PROVIDING EDNA SERVICES THROUGH CALEDNA_PROVIDING	$195,558
P21AC12018	NPS	2021	University of California, Santa Cruz	LONG-TERM ROCKY INTERTIDAL MONITORING TREND ANALYSIS	$78,311
P22AC01245	NPS	2022	California Invasive Plant Council	THIS PROJECT WILL PROVIDE: TRAINING SESSION FOR NP	$34,991

P22AC01789	NPS	2022	CSU-Cal Poly Humboldt	CALIFORNIA STATE POLYTECHNIC UNIVERSITY, HUMBOLDT	$8,820
P22AC01893	NPS	2022	CSU-Sacramento	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$43,808
P22AC01055	NPS	2022	Institute for Bird Populations	FUNDING OPPORTUNITY NUMBER: P-P-CESU-22-006 PURPOSE	$30,480
P22AC02259	NPS	2022	Institute for Bird Populations	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$78,211
P22AC02338	NPS	2022	Institute for Bird Populations	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$290,505
P22AC00217	NPS	2022	Institute for Wildlife Studies	INVESTIGATORS WITH THE INSTITUTE FOR WILDLIFE STUD	$312,675
P22AC01336	NPS	2022	Institute for Wildlife Studies	THE INSTITUTE FOR WILDLIFE STUDIES WILL REVIEW THE	$143,737
P22AC01730	NPS	2022	University of California	THE GOAL OF THIS AGREEMENT IS TO COMPLETE A TREND	$79,000
P22AC01582	NPS	2022	University of California, Berkeley	PERFORMANCE GOALS THIS PROJECT WILL DETERMINE PR	$137,860
P22AC02433	NPS	2022	University of California, Berkeley	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$40,076
P22AC02330	NPS	2022	University of California, Davis	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$117,729
P22AC02418	NPS	2022	University of California, Los Angeles	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$28,924
P22AC02421	NPS	2022	University of California, Merced	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$55,450
P22AC01122	NPS	2022	University of California, Riverside	JOSHUA TREE NATIONAL PARK JOTR AND RECIPIENT STA	$103,031
P22AC01419	NPS	2022	University of California, Riverside	THIS PROJECT WILL STUDY THE IMPACTS OF WILDFIRE ON	$12,246
P15AC01412	NPS	2022	University of California, Santa Barbara	RESTORING RARE FROGS IN YOSEMITE NATIONAL PARK_RES	$0
P22AC02283	NPS	2022	University of California, Santa Cruz	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$34,076
P22AC02366	NPS	2022	University of California, Santa Cruz	PROGRAMMING SUPPORTS A COMPREHENSIVE NETWORK OF CO	$46,950
NR183A750007C002	NRCS	2018	University of California, Berkeley	CA Herbarium Data	$13,514
NR183A750023C005	NRCS	2018	University of California, Davis	CA Central Valley CEAP Watershed	$275,000

NR1874820006C001	NRCS	2018	University of California, Davis	Redevelopment of SoilWebs Native Apps	$100,000
NR193A750023C011	NRCS	2019	University of California, Davis	Machine-Based Algorithms	$99,409
NR193A750023C015	NRCS	2019	University of California, Davis	CEAP Wetlands CCV Water Benefits	$180,000
NR193A750023C016	NRCS	2019	University of California, Davis	Central Valley CEAP	$560,450
NR203A750023C003	NRCS	2020	CSU-Cal Poly Humboldt	Wetlands management -- California	$105,000
NR203A750023C017	NRCS	2020	University of California, Davis	Environmental effects/aquifer recharge	$800,000
NR213A750025C002	NRCS	2021	University of California, Davis	Soil Web Maintenance / New Development	$150,000
NR213A750025C008	NRCS	2021	University of California, Riverside	Wildfire Impacts-DSP in Steep Shrublands	$249,793
NR223A750023C010	NRCS	2022	University of California, Davis	Wildfire Effects on California Soils	$299,491
W912HZ-11-2-0047 P00004	USACE	2018	University of California, Berkeley	Phage-based Bio-Laminar Nanoscale Structures	$0
W912HZ-17-2-0001 P00001	USACE	2018	University of California, Davis	Evaluating Atmosphere Modeling to Predict Risk to	$ -
W912HZ-17-2-0001 P00002	USACE	2018	University of California, Davis	Evaluating Atmosphere Modeling to Predict Risk to	$ -
W912HZ-17-2-0001 P00003	USACE	2018	University of California, Davis	Evaluating Atmosphere Modeling to Predict Risk to	$719,853
W912HZ-14-2-0025 P00004	USACE	2018	University of California, San Diego	Coastal Ocean Data Systems (CODS): Development and	$2,941,803
W912HZ-14-2-0025 P00007	USACE	2018	University of California, San Diego	Coastal Ocean Data Systems (CODS): Development and	$185,946
W912HZ-15-2-0019 P00007	USACE	2018	University of California, San Diego	Research to Investigate Atmospheric Rivers (AR) an	$3,997,134
W912HZ-17-2-0024 P00002	USACE	2018	University of California, San Diego	Innovative Technologies in Structural Health Monit	$1,998,096
W912HZ-15-2-0019 P00010	USACE	2019	University of California, San Diego	Research to Investigate Atmospheric Rivers (AR) an	$ -
W912HZ-15-2-0019 P00011	USACE	2019	University of California, San Diego	Research to Investigate Atmospheric Rivers (AR) an	$ -

W912HZ-15-2-0019 P00012	USACE	2019	University of California, San Diego	Research to Investigate Atmospheric Rivers (AR) an	$3,999,915
W912HZ-15-2-0019 P00013	USACE	2019	University of California, San Diego	Research to Investigate Atmospheric Rivers (AR) an	$ -
W912HZ-17-2-0024 P00003	USACE	2019	University of California, San Diego	Innovative Technologies in Structural Health Monit	$1,999,833
W912HZ-19-2-0020	USACE	2019	University of California, San Diego	Development and Testing Advancements in Spectral W	$9,219,225
W912HZ-19-2-0023	USACE	2019	University of California, San Diego	Research to continue investigation of Atmospheric	$5,750,000
W9126G-17-2-0016	USACE	2020	California Department of Fish and Wildlife	Navy/CDFG CESU agreement for NR Law Enforcement	$86,923
W9126G-18-2-0068	USACE	2020	CSU-San Diego	Other	$ -
W9126G-19-2-0073	USACE	2020	CSU-San Diego	Botany of San Clemente Island	$544,630
W9126G-20-2-0019	USACE	2020	CSU-San Diego	Coral Reef Arks	$96,281
W9126G-19-2-0070	USACE	2020	Institute for Bird Populations	Avian Study II	$63,347
W9126G-16-2-0018	USACE	2020	Institute for Wildlife Studies	Island Fox Management in Support of the Loggerhead	$374,103
W9126G-17-2-0030	USACE	2020	Institute for Wildlife Studies	Seabird and Shorebird Monitoring	$219,385
W9126G-18-2-0026	USACE	2020	Institute for Wildlife Studies	SCI Shrike Monitoring	$693,085
W9126G-18-2-0072	USACE	2020	Institute for Wildlife Studies	Predator Research and Ecosystem Management	$566,987
W9126G-19-2-0010	USACE	2020	Institute for Wildlife Studies	Bell's Sparrow Monitoring	$315,177
W9126G-19-2-0003	USACE	2020	Point Blue Conservation Science	Natural Resources Support Seabirds - VAFB	$345,153
W9126G-18-2-0005	USACE	2020	San Diego Natural History Museum	Predator Management and Research to Protect the Ca	$117,214
W9126G-17-2-0003	USACE	2020	San Diego Zoo	Least Tern & Snowy Plover Monitoring and Raptor Ma	$600,478
W9126G-18-2-0003	USACE	2020	San Diego Zoo	San Clemente Island Shrike Captive Breeding	$731,001
W912HZ-20-2-0073	USACE	2020	University of California, Berkeley	Levee Monitoring with Distributed Strain Sensing,	$108,000
W912HZ-20-2-0004	USACE	2020	University of California, Los Angeles	Quantitative Model for Optimizing Coastal Systems	$330,000
W912HZ-15-2-0019	USACE	2020	University of California, San Diego	Water Operations Technical Support: Research to In	$ -
W912HZ-17-2-0024	USACE	2020	University of California, San Diego	Cyber Modeling: A Digital Surrogate Approach for Op	$1,998,579
W912HZ-20-2-0015	USACE	2020	University of California, San Diego	Predicting Coastal Water Quality - Understanding t	$249,976
W9126G-17-2-0040	USACE	2020	University of Southern California	Reconstruction of Historical Topography to Estimate	$ -

W9132T-19-2-0006 P00001	USACE	2021	University of California, Los Angeles	INVESTIGATING THE INFLUENCE OF ENVIRONMENTAL NON-S	$105,914
W9132T-19-2-0006 P00002	USACE	2021	University of California, Los Angeles	CESU INVESTIGATING THE INFLUENCE OF ENVIRONMENTAL	$55,798
W912HZ-17-2-0024 P00005	USACE	2021	University of California, San Diego	CYBER MODELING, A DIGITAL SURROGATE APPROACH FOR OP	$ -
W912HZ-17-2-0024 P00006	USACE	2021	University of California, San Diego	CYBER MODELING, A DIGITAL SURROGATE APPROACH FOR OP	$1,990,256
W912HZ-19-2-0020 P00002	USACE	2021	University of California, San Diego	TASK 4 AND TASK 5 ARE VITAL TO OBTAINING HIGH QUAL	$ -
W912HZ-19-2-0020 P00003	USACE	2021	University of California, San Diego	DEVELOPMENT AND TESTING ADVANCEMENTS IN SPECTRAL W	$5,000,192
W912HZ-19-2-0020 P00004	USACE	2021	University of California, San Diego	DEVELOPMENT & TESTING ADVANCEMENTS IN SPECTRAL WAV	$ -
W912HZ-19-2-0023 P00002	USACE	2021	University of California, San Diego	RESEARCH TO CONTINUE INVESTIGATION OF ATMOSPHERIC	$ -
W912HZ-19-2-0023 P00003	USACE	2021	University of California, San Diego	RESEARCH TO CONTINUE INVESTIGATION OF ATMOSPHERIC	$4,000,000
W912HZ-21-2-0024	USACE	2021	University of California, Santa Cruz	UPDATE OF THE STANDARD ASSESSMENT METHODOLOGY (SAM	$653,705
W912HZ-21-2-0047	USACE	2021	University of California, Santa Cruz	ASSESSING THE ROLE OF RISK SCIENCE AND RISK TRANSFER	$210,477
W9132T2220006	USACE	2022	Stanford University	Integrated Microgrids	$2,991,295
W912HZ-22-2-0012	USACE	2022	University of California, Berkeley	â€œLevee Monitoring with Distributed Strain Sensin	$90,000
W912HZ-22-2-0022	USACE	2022	University of California, Davis	Libby and Bonneville Dams Maximum Precipitation St	$800,001
W912HZ-19-2-0020 P00005	USACE	2022	University of California, San Diego	Opt 3/YR 4 - â€œDevelopment and Testing Advancements	$5,497,464
W912HZ-19-2-0023 P00004	USACE	2022	University of California, San Diego	Research to Continue Investigation of Atmospheric	$4,000,000
W9132T-22-2-0014	USACE	2022	University of California, San Diego	Innovative Technologies in Structural Health Monit	$1,961,358
W912HZ-21-2-0024 P00001	USACE	2022	University of California, Santa Cruz	Exercise Tasks 5,6,&9 and NCTE for Task 10 for Upd	$710,779

22-PA-11050100-017	USFS	2022	CSU-Northridge	Unmanned Aerial Systems/Vehicles (UAV) Data process	$25,000
F16AC00685	USFWS	2018	CSU-Cal Poly Humboldt	HSU-DEVELOP [WATERBIRD SURVEY PROTOCOL_WATERBIRD MO	-$436
F16AC00692	USFWS	2018	CSU-Cal Poly Humboldt	CA-ARCATA FWS SNOWY PLOVER MONITORING_WESTERN SNOW	$36,995
F18AC00487	USFWS	2018	CSU-Cal Poly San Luis Obispo	OVERWINTERING MONARCH BUTTERFLIES MICROCLIMATE CON	$48,667
F18AC00521	USFWS	2018	CSU-Sacramento	CA-RO8-INTEGRATION OF REFUGE DATA_CA-RO8-INTEGRATION	$49,000
F18AC00527	USFWS	2018	CSU-Sacramento	CA-RO8-WATER RESOURCE DATA_CA-RO8-WATER RESOURCE D	$45,000
F18AC00913	USFWS	2018	CSU-San Diego	SDSU FOUNDATION - TEXELLA_SDSU FOUNDATION - TEXELL	$10,906
F18AC00003	USFWS	2018	University of California	"SELENIUM EXPOSURE IN SPLIT TAIL _SELENIUM EXPOSURE	$ -
F18AC00008	USFWS	2018	University of California	INVESTIGATE THE SPAWNING BEHAVIOR AND MICROHABITAT	$ -
F17AC00020	USFWS	2018	University of California, Berkeley	CESU UC BERKELEY_A WORKSHOP: CORRIDORS AS ADAPTAT	-$493
F17AC00034	USFWS	2018	University of California, Davis	_MAINTENANCE OF JSATS ARRAY IN SOUTH DELTA FOR USF	$149,999
F17AC00555	USFWS	2018	University of California, Davis	NV-RENO FWO-UC DAVIS-RELICT DACE_NV-RENO FWO-UC DA	$ -
F18AC00006	USFWS	2018	University of California, Davis	WA-ABERNATHY FTC-GENETIC EVALUATION_WA-ABERNATHY	$70,444
F18AC00057	USFWS	2018	University of California, Davis	CA-SF BAYDELTA-UC DAVIS CTR FOR AQ BIO&C_CA-SF BAY	$99,500
F18AC00058	USFWS	2018	University of California, Davis	CA SF BAY DELTA-UC DAVIS FISH_CA SF BAY DELTA-UC DAV	$97,036
F18AC00059	USFWS	2018	University of California, Davis	CA-SF BAY DELTA-UC DAVIS CONS CLTR LABS_CA-SF BAY DE	$99,902
F18AC00060	USFWS	2018	University of California, Davis	CA-SF BAY DELTA-UC DAVIS CTR FOR AQUATIC DEVELOPM	$95,500
F18AC00061	USFWS	2018	University of California, Davis	CA SF BAY DELTA-UC DAVIS FISH CONS & CULT_CA SF BAY	$96,692

F18AC00075	USFWS	2018	University of California, Davis	CA SF BAY-DELTA DETERMINE SMELT SPAWNING BEHAVIOR_	$212,888
F18AC00085	USFWS	2018	University of California, Davis	CA-SF-BAYDELTA-SELENIUM SPLITTAIL_CA-SF-BAY DELTA-S	$75,727
F18AC00275	USFWS	2018	University of California, Davis	F18AC00275_F18AC00275	$47,000
F18AC00276	USFWS	2018	University of California, Davis	_	$47,955
F18AC00277	USFWS	2018	University of California, Davis	_	$47,668
F18AC00334	USFWS	2018	University of California, Davis	F18AC00334_F18AC00334	$45,272
F18AC00479	USFWS	2018	University of California, Davis	U.S FISH AND WILDLIFE WATERBIRD HABITAT ASSESSMENT	$93,131
F16AC01284	USFWS	2019	University of California	NO-COST EXTENSION_SEED AMPLIFICATION FOR SIX TAXA	-$1
F16AC00465	USFWS	2019	University of California, Davis	UC DAVIS CESU AGREEMENT_DESIGN AND IMPLEMENTATION	-$1,499
F16AC00735	USFWS	2019	University of California, Davis	AMEND TO PROVIDE ADDITIONAL FUNDS AND EXTEND PERIO	$93,647
F16AC01292	USFWS	2019	University of California, Davis	INVASIVE SPECIES MAPPING IN TULE LAKE NWR AND LOWE	-$44
F19AC00062	USFWS	2019	University of California, Davis	_	$1,235,145
F19AC00561	USFWS	2019	University of California, Davis	UC DAVIS SHERLOCK METHOD TO DETECT PRESENCE OF DEL	$308,927
F19AC00577	USFWS	2019	University of California, Davis	WALL CANYON SUCKER GENETICS PROJECT_WALL CANYON SU	$68,608
F19AC00939	USFWS	2019	University of California, Davis	CA-SF BAY DEL IMPR SURVIVAL DELTA SMELT_CA-SF BAY	$447,199
F19AC00940	USFWS	2019	University of California, Davis	MOLECULAR BASIS OF HATCHERY ADAPTATION IN DELTA SM	$449,941
F19AC00943	USFWS	2019	University of California, Davis	THE SIGNIFICANCE OF TURBIDITY IN SAFEGUARDING DELT	$400,000
F19AC00944	USFWS	2019	University of California, Davis	TESTING OF WAKASAGI HATCHING FRAMES FOR DELTA	$99,997
F19AC00410	USFWS	2019	University of California, Santa Cruz	DOUBLE-CRESTED CORMORANT MONITORING IN CALIFORNIA_	$46,081
F20AC11270	USFWS	2020	CSU-Cal Poly Humboldt	FUNGAL COMMUNITY ASSOCIATED WITH APPLEGATE'S MILKV	$16,685
F20AC11404	USFWS	2020	CSU-Cal Poly Humboldt	CONTINUED MONITORING OF NATIVE AND TRANSPLANTED AP	$15,801

F20AC10888	USFWS	2020	CSU-Cal Poly San Luis Obispo	CAMATTA CANYON AMOLE: CAMATTA RANCH AND LOS PADRES	$36,000
F20AC11996	USFWS	2020	CSU-Cal Poly San Luis Obispo	SA MONARCH MICROHABITAT_SA MONARCH MICROHABITAT	$49,385
F18AC00965	USFWS	2020	CSU-Stanislaus	CA-BITTER CREEK NWR SURVEYS & MONITORING_CA-BITTER	$ -
F20AC10887	USFWS	2020	Santa Barbara Botanical Garden	RECOVERY ACTIONS FOR THREE ENDANGERED PLANT SPECIE	$53,755
F15AC00525	USFWS	2020	University of California, Davis	VERNAL POOL SPECIES GENETICS STUDY_CONSERVING RARE	-$28,267
F20AC00037	USFWS	2020	University of California, Davis	DEVELOPMENT OF A GENOMIC TOOL SIERRA NEVADA RED FOX	$45,658
F20AC11492	USFWS	2020	University of California, Davis	CONTINUED MONITORING OF NATIVE AND TRANSPLANTED AP	$160,203
F20AC10886	USFWS	2020	University of California, Los Angeles	RESEARCH TO SUPPORT CONSERVATION AND RECOVERY OF F	$75,924
F20AC00043	USFWS	2020	University of California, Santa Barbara	CHYTRID TESTING AND TREATMENT_CHYTRID TESTING AND	$49,500
F20AC00045	USFWS	2020	University of California, Santa Barbara	MOUNTAIN YELLOW-LEGGED FROG TRANSLOCATIONS IN YOSE	$49,504
F20AC00046	USFWS	2020	University of California, Santa Barbara	CHYTRID RAPID RESPONSE KITS_CHYTRID RAPID RESPONSE	$9,293
F20AC10843	USFWS	2020	University of California, Santa Barbara	FOOTHILL YELLOW-LEGGED FROG REINTRODUCTION FEASIBLE	$287,259
F20AC10885	USFWS	2020	University of California, Santa Cruz	GENETIC ADMIXTURE STUDIES OF THE SANTA CRUZ LONG-T	$114,000
F16AC00805	USFWS	2021	CSU-Cal Poly Humboldt	SPECIES IN CONFLICT: HUMANS, PLOVERS, AND RAVENS I	-$4
F16AC00808	USFWS	2021	CSU-Cal Poly Humboldt	MODELING HABITAT CONNECTIVITY FOR PACIFIC MARTEN A	$ -
F16AC01114	USFWS	2021	CSU-Cal Poly San Luis Obispo	PLANT CONSERVATION RESEARCH_PROMOTING PLANT CONSER	-$2
F16AC00540	USFWS	2021	University of California, Davis	GENETIC MONITORING OF THE SIERRA NEVADA RED FOX DP	-$1,383

F17AC00123	USFWS	2021	University of California, Davis	CLIMATE COMMONS AND CENTRAL VALLEY LANDSCAPE CONSE	$0
F17AC00487	USFWS	2021	University of California, Davis	U.S. FISH AND WILDLIFE REFUGES THREAT AND VULNERAB	$ -
F17AC00444	USFWS	2021	University of California, Los Angeles	LANDSCAPE GENOMICS TO INFORM UPCOMING USFWS LISTING	-$23,014
F16AC00809	USFWS	2022	CSU-Cal Poly Humboldt	HABITAT USE AND CONSERVATION MANAGEMENT FOR THE PT	-$1,170
F17AC00335	USFWS	2022	University of California, Davis	GENETIC AND PROPAGATION PLANS FOR DEVILS HOLE PUPF	$ -
G20AC00058	USGS	2020	University of Southern California	USGS Innovation Fund Support for Development of a	$121,890
G19AC00020	USGS	43423	University of California	Hydrology, Habitat, and Climate Adaptation Managem	$74,904
G19AC00025	USGS	43430	University of California	Are Mountain Lakes on a Trajectory of Rapid Eutrop	$10,000
G19AC00027	USGS	43430	University of California	Assessment of the Body Condition of Diving Ducks i	$18,083
G19AC00033	USGS	43437	University of California	Using Dynamic Rupture Models to Better Understand	$100,000
G19AC00058	USGS	43515	University of California	Improved Hydrologic Forecasting through Synthesis	$50,000
G19AC00097	USGS	43556	University of California, Davis	Predicting Nitrate in Domestic and Production Well	$115,959
G19AC00105	USGS	43617	CSU-San Diego	Genetic Connectivity in the California Freshwater	$49,000
G21AC00026	USGS	44166	University of California, Santa Barbara	Improving Seasonal Scale Crop Yield Forecasting an	$700,862
G21AC10003	USGS	44180	CSU-San Francisco	Communities at Risk in the HayWired Scenario	$47,999
G21AC10094	USGS	44245	University of California, Davis	Applied Decision Methods for the Glen Canyon Dam A	$23,781
G21AC10200	USGS	44319	University of California	Bringing the outside in: Using controlled studies	$17,700
G21AC10432	USGS	44378	University of California, Santa Cruz	Five-year Cooperative Agreement between the U.S. G	$108,260
G21AC10560	USGS	44427	University of California	Coral Reef Science to Protect Coasts	$144,000
G21AC10640	USGS	44440	University of California, Davis	A biogeochemical framework to predict mercury risk	$216,000
G21AC10753	USGS	44454	University of California	Supporting the coastal hazards and stakeholder eng	$55,199
G21AC10747	USGS	44470	University of California, Davis	Viral discovery and surveillance in North America	$244,766
G21AC10566	USGS	44470	University of California, Santa Cruz	Tectonics, Earthquake Hazards, Slope Stability, an	$123,398
G22AC00369	USGS	44793	University of California, Davis	A decision framework for managing European Green C	$174,577
G22AC00432	USGS	44805	University of California, Santa Cruz	eDNA metabarcoding to detect northern Western spad	$55,200

G22AC00565	USGS	44825	University of California, Santa Barbara	Long-lead crop yield forecasting and crop condition	$200,000

Figure 2. Number of Projects by Federal Agency for 2018-2022

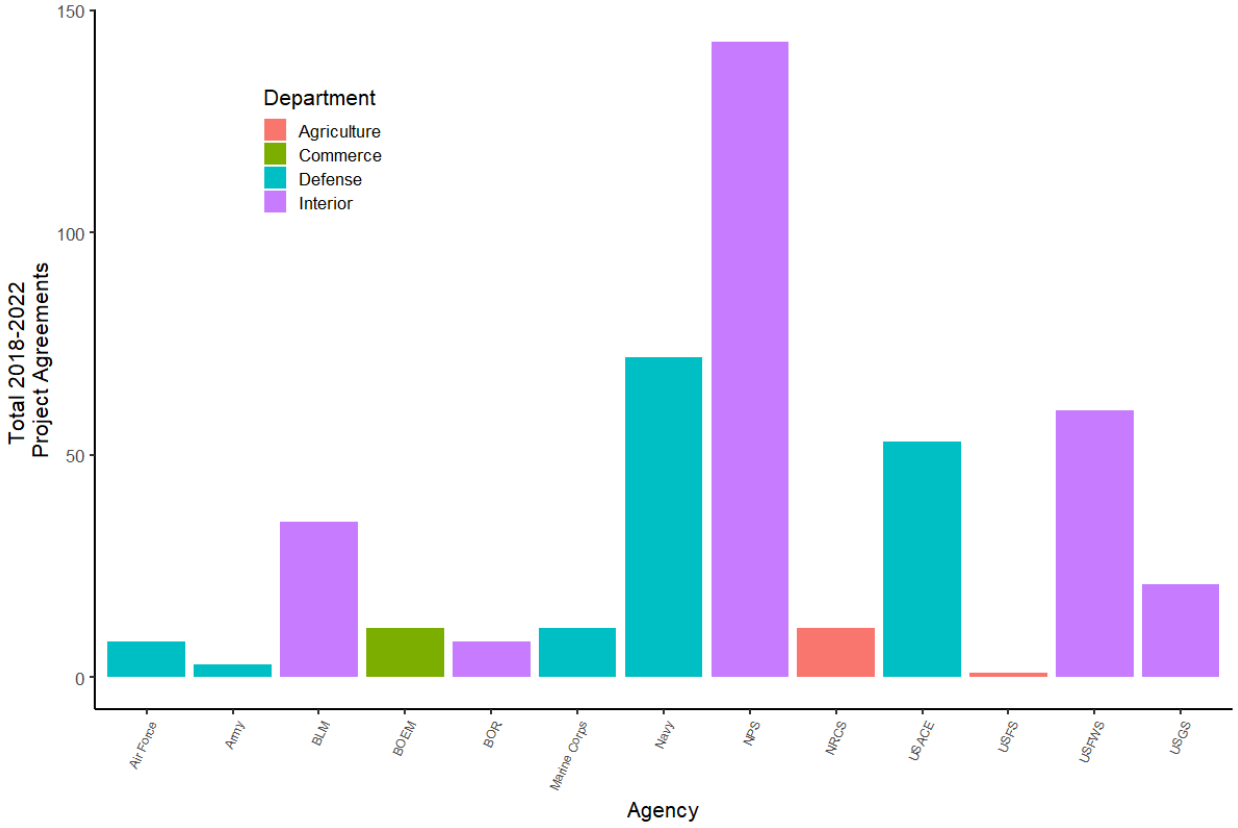

Figure 3. Funding by Federal Agency for 2018-2022

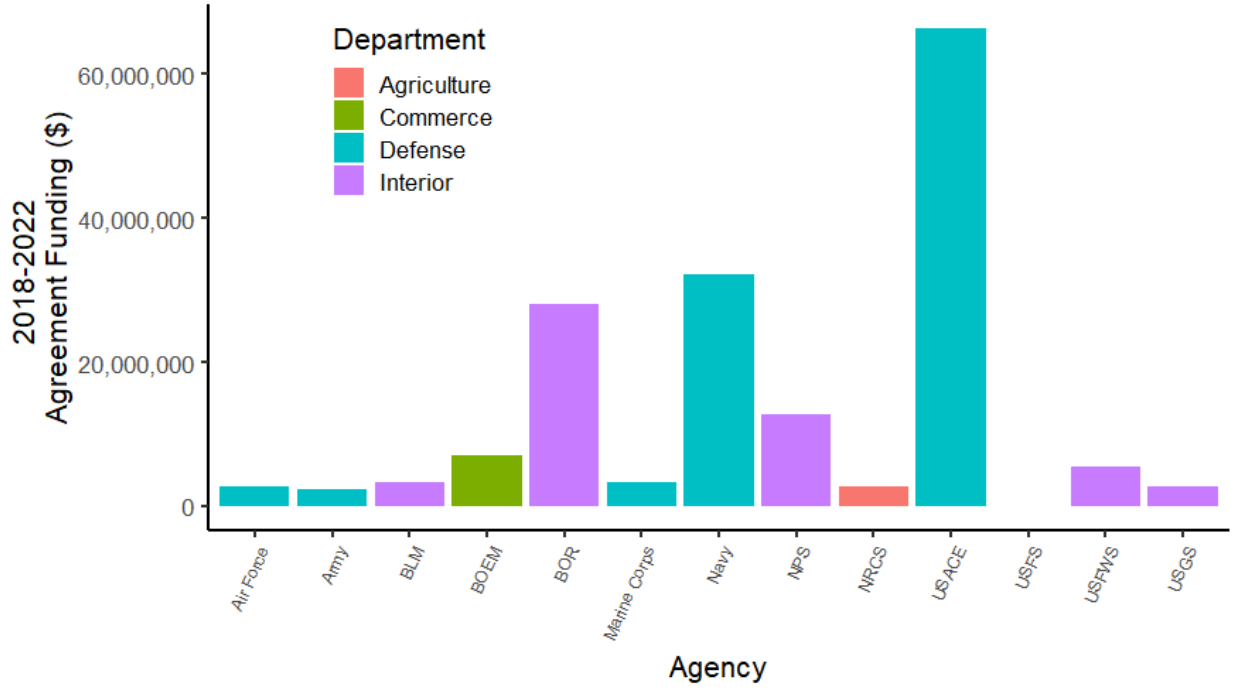

Figure 4. Number of Projects by Non-Federal Partner for 2013-2018

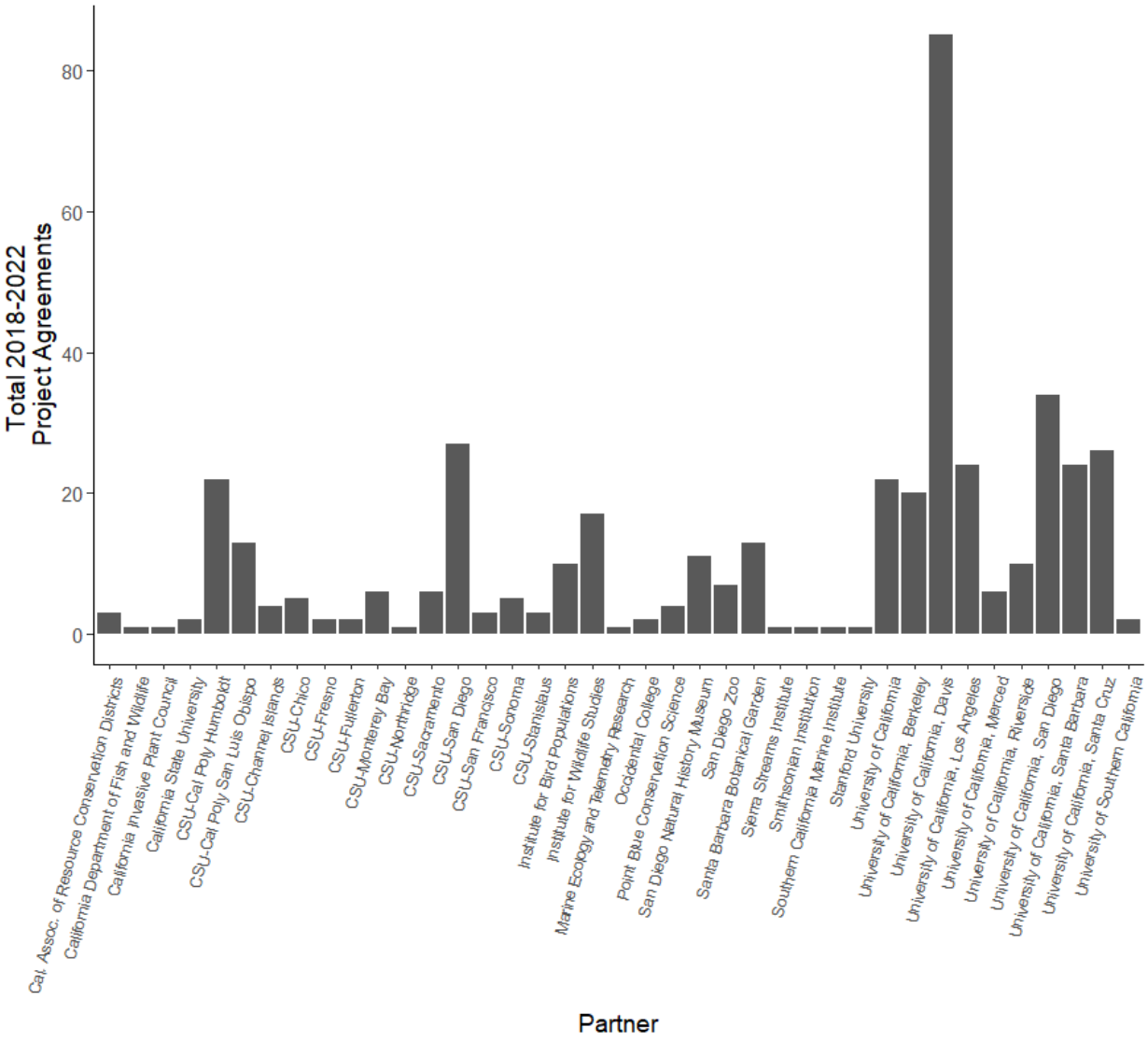

Figure 5. Funding by Non-federal Partner for 2018-2022

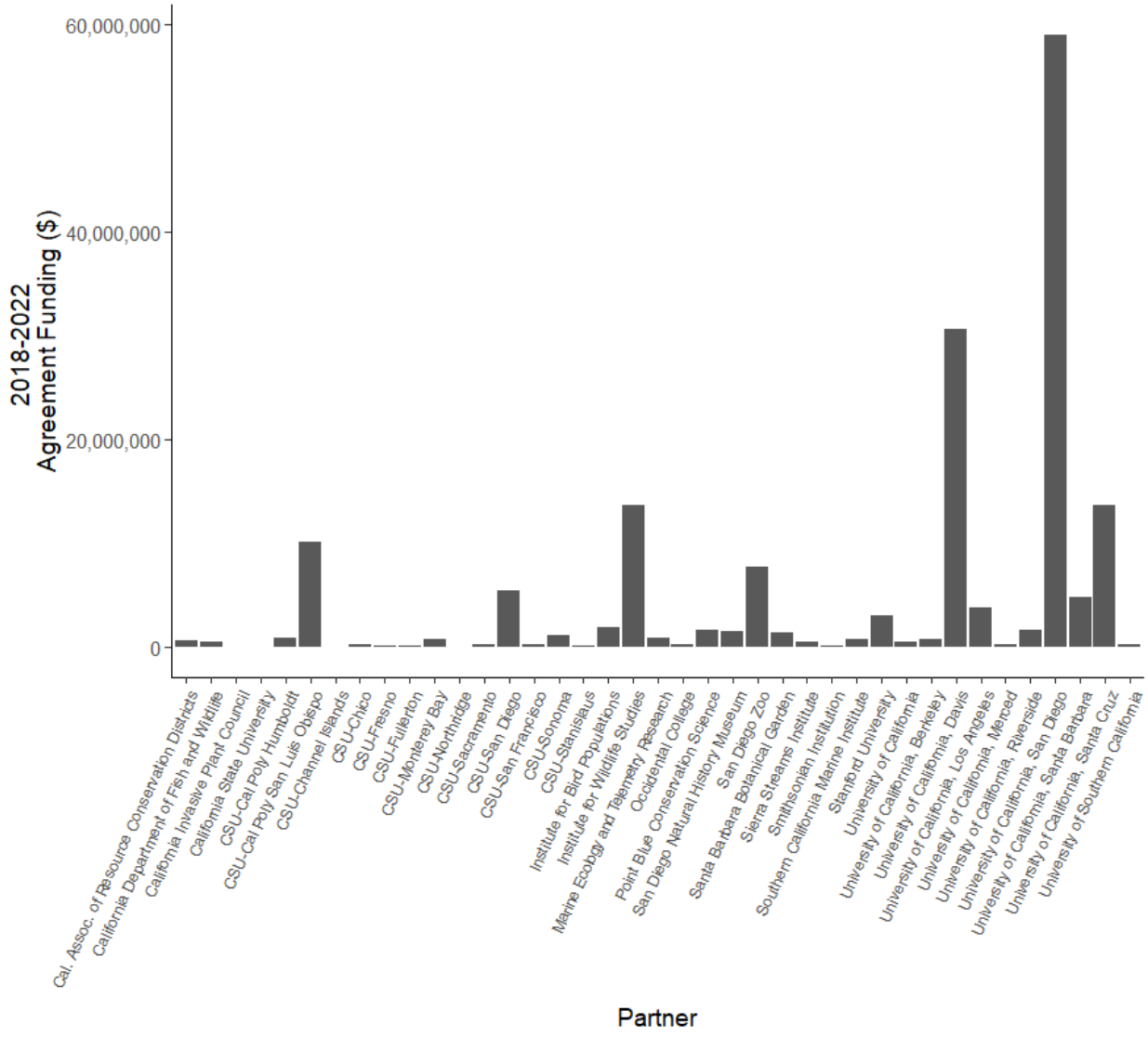

Table 6. Non-federal Partner Abbreviations:

Non-federal Partner	Name
CARCD	California Association of Resource Conservation Districts
CDFW	California Department of Fish and Wildlife
CMU	Carnegie Mellon University
CPIC	California Invasive Pest Council
CSU-C	California State University, Chico
CSU-CI	California State University, Channel Islands
CSU-F	California State University, Fresno
CSU-FUL	California State University, Fullerton
CSU-H	California State University, Humboldt
CSU-LA	California State University, Los Angeles
CSU-M	California State University, Monterey Bay
CSU-N	California State University, Northridge
CSU-P	California Polytechnic State University - Pomona
CSU-S	California State University, Stanislaus
CSU-SAC	California State University, Sacramento
CSU-SD	California State University, San Diego
CSU-SF	California State University, San Francisco
CSU-SLO	California Polytechnic State University, San Luis Obispo
CSU-SO	California State University, Sonoma
IBP	Institute for Bird Populations
IWS	Institute for Wildlife Studies
OXY	Occidental College
Point Blue	Point Blue Conservation Science
SBBG	Santa Barbara Botanic Garden

SDNHM	San Diego Natural History Museum
SDZ	San Diego Zoo
UC NRS	University of California Natural Reserve System
UCANR	University of California Agriculture and Natural Resources
UCB	University of California, Berkeley
UCD	University of California, Davis
UCI	University of California, Irvine
UCLA	University of California, Los Angeles
UCM	University of California, Merced
UCR	University of California, Riverside
UCSB	University of California, Santa Barbara
UCSC	University of California, Santa Cruz
UCSD	University of California, San Diego
USC	School of Architecture, University of Southern California

	Complied List of CA-CESU Partners					
Renew	**Member**	**Institution/Agency**	**Title**	**Name**	**Contact Information**	**Address and Phone Number**
YES	Federal	Bureau of Land Management	Ecologist	Jim Weigand	jweigand@blm.gov	2800 Cottage Way, Room W-1623, Sacramento, CA 95825-1886, Phone: (916) 978-4656
YES	Federal	Bureau of Ocean Energy Management	Coordinator	Cathie Dunkel	catherine.dunkel@boem.gov	760 Paseo Camarillo, Suite 102 (CM 102), Camarillo, CA 93010, Phone: (805) 384-6386
YES	Federal	Bureau of Reclamation	Chief	Jobaid Kabir	jkabir@usbr.gov	2800 Cottage Way, Sacramento, CA 95825, Phone: (916) 978-5091
YES	Federal	U.S. Army Corps of Engineers	Program Manager	Kathy Mitchell	Kathy.s.mitchell@usace.army.mil	P. O. Box 17300, Fort Worth, Texas 76102-0300USACE Ft. Worth District, Phone: (817) 886-1709
YES	Federal	U.S. Army Corps of Engineers	Program Manager	Sherry Whitaker	sherry.l.whitaker@usace.army.mil	3909 Halls Ferry Road, Vicksburg, MS 39180, Phone: (601) 634-2990
YES	Federal	U.S. Fish and Wildlife Service	Chief	Cesar Cadena Blanco	cesar_blanco@fws.gov	2800 Cottage Way ,Sacramento, CA 95825, Phone: (916) 978-6190
YES	Federal	U.S. Fish and Wildlife Service	Assistan Regional Director	Larry Rabin	larry_rabin@fws.gov	650 Capitol Mall, 8th Floor, Room 8-300, Sacramento, CA 95814, Phone: (916) 414-6498
YES	Federal	National Aeronautics and Space Administration	Program Manager	Tina Norwood	tina.norwood-1@nasa.gov	300 E Street SW, Suite 2U82, Washington, DC 20546
YES	Federal	National Aeronautics and Space Administration	Deputy Director	Rose Grymes	rosalind.a.grymes@nasa.gov	300 E Street SW, Suite 2U82, Washington, DC 20546
YES	Federal	National Oecanic and Atmospheric Administration	Deputy Director	Kristen Koch	kristen.c.koch@noaa.gov	8901 La Jolla Shores Drive, La Jolla, CA 92037, Phone: (858) 546-7081
YES	Federal	National Oecanic and Atmospheric Administration	Director of Operations	Meghan Donahue	meghan.donahue@noaa.gov	8901 La Jolla Shores Drive, La Jolla, CA 92037, Office: (858) 546-7081
YES	Federal	National Park Service	Science Advisor	Ben Becker	ben_becker@nps.gov	160 Mulford Hall, MC #3114, Berkeley, CA 94720-3110, Phone: (510) 643-0665
YES	Federal	U.S. Army Corps of Engineers	Acting Director	Jennifer M. Seiter-Moser	Jennifer.M.Seiter-Moser@usace.army.mil	3909 Halls Ferry Road, Vicksburg, MS 39180, Phone: (601) 634-2990
YES	Federal	U.S. Forest Service	Forest Wildlife Biologist	Stephanie Coppeto	stephanie.coppeto@usda.gov	631 Coyote Street, Nevada City, CA 95959, Phone: (530) 559-1794
YES	Federal	Natural Resource Conservation Service	Deputy Director	Jacqueline Davis-Slay	Jacqueline.Davis-Slay@wdc.usda.gov	1400 Independence Avenue SW, Room 6006-S, Washington, DC 20250, Phone: (202) 720-6646
YES	Federal	U.S. Geological Survey	Supervisory Research Geographer	Miguel Villarreal	mvillarreal@usgs.gov	P.O. Box 158, Menlo Park, CA 94035, Phone: (650) 329-4261
YES	Federal	Bureau of Indian Affairs	Manager	Crystal Keys	crystal.keys@bia.gov	1849 C Street, N.W., Washington, D.C. 20240, Phone: (405) 247-1549
YES	Federal	Department of Defense	Program Director	Elizabeth Galli-Noble	elizabeth.j.galli-noble.civ@mail.mil	53560 Hull Street, San Diego, CA 92152-5001, Phone: (619) 553-7585
YES	Federal	Department of Defense - Navy	Manager	Kimberly O'Connor	kimberly.oconnor@navy.mil	1400 Defense Pentagon, Washington, DC 20301-1400
YES	State	California Department of Fish and Wildlife	Science Institute Lead	Christina Sloop	Christina.Sloop@wildlife.ca.gov	715 P Street, Sacramento, CA 95814, Phone: (916) 445-0411
YES	Private	Occidental College	Associate Professor, Biology Department	Dan Pondella	pondella@oxy.edu	1600 Campus Road, Los Angeles, California 90041, Phone: (323) 259-2955
YES	Private	Occidental College	Assistant Director, Vantuna Research Group	Chelsea Williams	cmunoz@oxy.edu	1601 Campus Road, Los Angeles, California 90041, Phone: (323) 259-2618
YES	Private	USC School of Architecture	Associate Dean for Academic Affairs	Doug Noble	dnoble@usc.edu	Watt Hall, Suite 204, Los Angeles, California, 90089-0291, Phone: (213) 740-4589
YES	Private	Carnegie Mellon University	Prof. & Chair, Environmental Science	Sean Anderson	Sean.Anderson@csuci.edu	1 University Dr., Camarillo CA, 93012, Phone: (805) 437-8984
YES	Private	Stanford University	Douglas Provostial Professor and Chair	Robert B. Jackson	rob.jackson@stanford.edu	450 Jane Stanford Way, Stanford, CA 94305–2004, Phone: (650) 497-5841
YES	NGO	California Academy of Sciences	Co-Director	Rebecca F. Johnson	rjohnson@calacademy.org	55 Music Concourse Drive, San Francisco, CA 94118, (415) 379-8000
YES	NGO	Institute for Bird Populations	Executive Director	Rodney Siegel	rsiegel@birdpop.org	P.O. Box 518, Petaluma, CA 94953, Phone: (707) 789-3224
YES	NGO	Institute for Wildlife Studies	President	David Garcelon	garcelon@iws.org	P. O. Box 1104, Arcata CA 95518, Phone: (707) 822-4258
YES	NGO	Santa Barbara Botanic Garden	Executive Director	Steve Windhager	swindhager@sbbg.org	1212 Mission Canyon Rd, Santa Barbara, CA 93105, Phone: (805) 682-4726
YES	NGO	San Bernardino County Museum	Museum Director	Melissa Russo	Melissa.Russo@sbcm.sbcounty.gov	2024 Orange Tree Lane, Redlands, CA 92374, Phone: (909) 798-8608
YES	NGO	San Diego Nat History Museum	Ecologist	Kevin Clark	kclark@sdnhm.org	1788 El Prado, Balboa Park, San Diego, CA 92101, Phone: (619) 255-0296
YES	NGO	California Invasive Plant Council	Executive Director	Doug Johnson	dwjohnson@cal-ipc.org	1442-A Walnut St. #462, Berkeley, CA 94709, Phone: (510) 843-3902
YES	NGO	San Diego Zoo	Brown Chair/Director	Ron Swaisgood	Rswaisgood@sandiegozoo.org	2920 Zoo Dr, San Diego, CA 92101, Phone: (619) 231-1515
YES	NGO	California Association for Resource Conservation Districts	Executive Director	Nancy Wahl-Scheurich	nancy-wahlscheurich@carcd.org	705 E Bidwell Street, Suite 2-415, Folsom, CA 95630, Phone: (916) 457-7904
YES	NGO	Point Blue Conservation Science	Coastal Marine Program Leader	Dan Robinette	drobinette@pointblue.org	999 Mesa Road, Bolinas CA 94924, Phone: (415) 868-0655
YES	NGO	The Marine Mammal Center	Executive Director	Jefferey Boehm	boehmj@tmmc.org	2000 Bunker Road, Fort Cronkhite, Sausalito, CA 94965-2619, Phone: (415) 289-7335
YES	NGO	Marine Ecology and Telemetry Research	President	Gregory Schorr	gschorr@marecotel.org	2468 Camp McKenzie Trail NW, Seabeck, WA 98380-4513
YES	NGO	Smithsonian Institution	Associate Director	Karen Otiji	OtijiK@si.edu	1000 Jefferson Dr SW, Washington, DC 20560, Phone: (202) 633-1000
YES	NGO	Sirerra Streams Institute	President, Board of Directors	Lang Waters	alltheyearscombine@gmail.com	117 New Mohawk Road, Suite H, Nevada City, CA 95959
YES	NGO	Sirerra Streams Institute	Interim Executive Director	Jeff Lauder	jeff@sierrastreamsinstitute.org	117 New Mohawk Road, Suite H, Nevada City, CA 95959, Phone: (530) 470-6037
YES	NGO	Southern California Marine Institute	Budget and Research Coordinator	Adriana Stowell	Adriana.Stowell@csulb.edu	820 South Seaside Avenue, Terminal Island, CA 90731, Phone: (562) 985-3177
YES	NGO	Southern California Marine Institute	Assistant Director	Chelsea Williams	cmunoz@oxy.edu	821 South Seaside Avenue, Terminal Island, CA 90731, Phone: (562) 985-3172
YES	NGO	National Association of Tribal Historic Preservation Officers	Executive Director	Valerie Grussing	valerie@nathpo.org	PO Box 19189, Washington, DC 20036-9189, Phone: (202) 628-8476
YES	NGO	National Association of Tribal Historic Preservation Officers	Operations Director	Melissa Madrigal	melissa@nathpo.org	PO Box 19189, Washington, DC 20036-9189, Phone: (202) 628-8477
YES	UC	Berkeley	Professor of Conservation Biology	Steve Beissinger	beis@berkeley.edu	130 Mulford Hall, University of California, Berkeley, CA 94720-3110, Phone: (510) 643-3038
YES	UC	Davis	Professor of Environmental Science & Policy	James Quinn	jfquinn@ucdavis.edu	One Shields Avenue, Davis, CA 95616, Phone: (530) 752-8027
YES	UC	Irvine	Director, Center for Environmental Biology	Travis Huxman	thuxman@uci.edu	449 Steinhaus Hall, Irvine, CA 92697, Phone: (949) 824-2594
YES	UC	Los Angeles	Asst. Director of Stunt Ranch Mountains Reserve	David Blake	dblake0405@g.ucla.edu	La Kretz Hall, Suite 300, Box 951496, Los Angeles, CA 90095-1496, Phone: (310) 825-5008
YES	UC	Los Angeles	Manager of Ecology & Evolutionary Biology	Phillip Q. Spinks	pqspinks@ucla.edu	La Kretz Hall, Suite 300, Los Angeles, CA 90095-1496

Attachment 1 - Compiled List of CESU Partners

YES	UC	Merced	Asst. Professor of Management of Complex Syst.	Jeffrey Jenkins	jjenkins8@ucmerced.edu	5200 North Lake Rd, Merced, CA 95343, Phone: (209) 228-4400
YES	UC	Riverside	Asst Professor of Plant Pathology & Microbiology	Emma Aronson	emma.aronson@ucr.edu	900 University Ave, Riverside, CA 92521, Phone: (951) 827-4201
YES	UC	San Diego	Professor, Division of Biological Sciences	Johnathan Shurin	jshurin@ucsd.edu	UC San Diego 9500 Gilman Dr. La Jolla, CA 92093, Phone: (858) 534-2230
YES	UC	Santa Barbara	Exe. Director, Natural Reserve System	Marion Wittmann	mwittmann@nrs.ucsb.edu	UC Santa Barbara, Santa Barbara, California 93106, Phone: (805) 893-6179
YES	UC	Santa Cruz	Director, Institute of Marine Science	Dan Costa	costa@biology.ucsc.edu	UC Santa Cruz, 1156 High Street, Santa Cruz, CA 95064, Phone: (831) 459-2786
YES	CSU	Cal Poly	Asst. Professor, Biological Sciences Department	Benjamin Ruttenberg	bruttenb@calpoly.edu	1 Grand Avenue, San Luis Obispo, CA 93407, Phone: (805) 756-2498
YES	CSU	Channel Islands	Associate Professor/Chair	Donald Rodriguez	donald.rodriguez@csuci.edu	1 University Dr., Camarillo CA, 93012, Phone: (805) 437-8400
YES	CSU	Chico	Professor, Psychology Department	Richard J. Tafalla	rjtafalla@csuchico.edu	400 West First Street, Chico, CA, 95929, Phone: (530) 898-4609
YES	CSU	Fresno	Associate Professor, Department of Biology	Steve Blumenshine	sblumens@csufresno.edu	2555 East San Ramon Ave M/S SB73, Fresno, CA 93740, Phone: (559) 278-8770
YES	CSU	Fullerton	Associate Professor of Biological Science	Jennifer Burnaford	jburnaford@fullerton.edu	800 N. State College Blvd, Fullerton, CA 92831-3599, Phone: (657) 278-2382
YES	CSU	Humboldt	Dean, College of Natural Resources	James H. Howard	cnrsdean@humboldt.edu	1 Harpst Street, Arcata, CA 95521, Phone: (707) 826-3011
YES	CSU	Los Angeles	Associate Professor of Biological Sciences	Andres Aguilar	aaguil67@calstatela.edu	5151 State University Drive, Los Angeles, CA 90032, Phone: (323) 343-3000
YES	CSU	Monterey Bay	Professor/ Chair of Marine Science	James Lindholm	jlindholm@csumb.edu	100 Campus Center, Seaside, CA 93955, Phone: (831) 582-4662
YES	CSU	Moss Landing Marine Laboratories	Professor and Chair, Moss Landing Marine Laboratories	Ivano Aiello	iaiello@mlml.calstate.edu	8272 Moss Landing Road, Moss Landing, CA 95039, Phone: (831) 771-4480
YES	CSU	Northridge	Associate VP, Research & Sponsored Programs	Chris Sanford	christopher.sanford@csun.edu	18111 Nordhoff Street, Northridge, CA 91330, Phone: (818) 677-1200
YES	CSU	Cal Poly Pomona	Assistant Professor, Biological Sciences	Jayson Smith	jaysonsmith@cpp.edu	3801 West Temple Avenue, Pomona, CA 91768, Phone: (909) 869-3625
YES	CSU	Sacramento	Professor and Chair, Chemistry Department	Susan Crawford	scrawford@csus.edu	6000 Jed Smith Dr, Sacramento, CA 95819, Phone: (916)-278-6542
YES	CSU	San Diego	Associate Professor, Biology Department	Rebecca Lewison	rlewison@sdsu.edu	4165 Spruance Rd, San Diego, CA 92101, Phone: (619) 594-8287
YES	CSU	San Francisco	Assistant Professor, Department of Biology	Gretchen LeBuhn	lebuhn@sfsu.edu	1600 Holloway Avenue, San Francisco, CA 94132, Phone: (415) 405-0729
YES	CSU	Stanislaus	Professor & Coord, Endangered Species Recovery Prog.	Patrick Kelly	pkelly@csustan.edu	One University Circle, Turlock, California 95382, Phone: (209) 667-3446
YES	CSU	Stanislaus	Director, Office of Research & Sponsored Programs	Joyce Bell	jbell6@csustan.edu	One University Circle, Turlock, California 95382, Phone: (209) 667-3784
YES	CSU	Sonoma State University	Prof. & Director for Interdisciplinary Geospatial Analysis	Mathew Clark	matthew.clark@sonoma.edu	1801 East Cotati Ave, Rohnert Park, CA 94928, Phone: (707) 664-2558

Attachment 1 - Compiled List of CESU Partners

Join Zoom Meeting: https://berkeley.zoom.us/j/292262682 Meeting ID: 292-262-682 phone: +1 877 853 5247 (US Toll-free)

9:00 am	*Steve Lindow* • Agenda and objectives for meeting
9:10 am	5-Year Renewal of Master Agreement • *Steve Lindow* – renewal process at Host Campus • *Tom Fish* – renewal progress at National Council • Q&A
9:30 am	2018 Projects Overview& Future Research Directions (10-15 min each) • *Jobaid Kabir* - Bureau of Reclamation • *Sarah Allen* - National Park Service • *Federal Managers* – research priorities
10:00 am	Presentation from a prospective new partner (10-15 min) • *Jean Moran* – CSU East Bay
10:15	Research interests, capabilities, updates • *Open for all* - elevator pitches
10:45	CESU Research Connections • *Open for all* - How are connections made for project interests and funding?
11:15 pm	CA-CESU Business • *Jobaid Kabir* - CA-CESU annual project tracking Summary of new agreements and modifications by federal agencies • *Sarah Allen* – Ideas about communicating CESU research
12:00 pm	Adjourn

Join Zoom Meeting: https://berkeley.zoom.us/j/5106427171 Meeting ID: 510 64 7171 phone: +1 877 853 5247 (US Toll-free)

To consider before we meet:

We jointly perceive compelling need to generate scientific knowledge that improves federal resource management for public benefit. Appropriate scale, analyses, delivery, and communication of findings are in great demand. Better integration among disciplines and a deficit in training for early-career scientists and landscape managers call on us to marshal our capabilities and opportunities more efficiently. How can the Californian CESU operate more effectively to produce more scientific knowledge and education? At this time we sk for your collective input about ways to move the CESU forward to address more cogently the expectations of individual CESU members and society at large.

9:00 am	*Nick Mills and Ruxin Liu, UC Berkeley Californian CESU Office* • Introductions • Agenda and objectives for meeting
9:15 am	*Tom Fish, CESU National Program Coordinator, National Park Service, Washington Office* • Recent Developments • New Initiatives and Expectations for 2020 • Federal Agency Support for CESUs
9:30 am	2019 Projects Overview & Future Research Directions (5 min each[WJF1]) • *Jobaid Kabir* - Bureau of Reclamation • *Jim Weigand* - National Park Service and Bureau of Land Management • *Federal Managers* – research priorities
10:20 am	*Californian CESU University and NGO Researchers* Innovative Research, New Focus, and Updates from •
11:20 am	*All CESU Members* • Opportunities for Greater Integration of CESU Activities

Attachment 2 - Annual Meeting Agendas and Attendees List

	• Flow of Information within the CESU Partnership
11:50 am	*Nick Mills and Ruxin Liu, UC Berkeley Californian CESU Office* *Jim Weigand, Californian CESU Coordinator* • Ad Hoc Work Groups • Communications Media
12:00 pm	Adjourn

California Cooperative Ecosystem Studies Unit

2020 Annual Meeting

December 3rd, 9am - 12 pm, Pacific Time

FINAL MEETING AGENDA

9:00 am	*Nick Mills and Ruxin Liu, UC Berkeley Californian CESU Office* ● Introductions ● Agenda and objectives for meeting
9:10 am	*Tom Fish, CESU National Program Coordinator, National Park Service, Washington Office* and *David Louter, Cultural Resources Division / CESU Program Manager for NPS Regions 8, 9, 10, and 12* ● Recent Developments ● New Initiatives for 2021 ● Federal Agency Support for CESUs ● Grant Solutions Agreement Processes ● Californian CESU Research Coordinator Position
9:30 am	*2020 Projects Overview & Future Research Directions (5 min each)* ● *Jim Weigand* - National Park Service ● *Jobaid Kabir* - U.S. Bureau of Reclamation ● *Jennifer Seiter-Moser* – Army Corps of Engineers ● *Catherine Dunkel* – Bureau of Ocean Energy Management ● *Other Federal Manager* – research priorities
10:00 am	*New Directions for NPS Research – Presentation by* Ashley Pipkin Dark Skies and Acoustic Research Program
10:20 am	*University and NGO Researchers, New Prospective Californian CESU Members, (10 min each)* Innovative Research, New Focus, and Updates from ● *William White* – a guest speaker, Anthropology Department, UC Berkeley **Break - 10 minutes** ● *Brenda Rone* – Marine Ecology & Telemetry Research ● *CA CESU research partner* – research news New Prospective CA CESU Members ● *Karen Otiji* – Smithsonian Institution ● *Adriana Stowell* – Southern California Marine Institute ● *Joanne Hild* – Sierra Streams Institute

11:20 am	*Federal Managers Workgroup – Focus on Big Issues for California Public Lands* *Jobaid Kabir*
11:30 am	*Californian CESU Website Update and Expansion* *Jim Weigand, Nick Mills, Ruxin Liu*
11:40 am	*CA CESU University and Research Institution Proposals for CESU Direction*
12:00 pm	Adjourn

Timestamp	First & Last Name	Affiliation	Annual Meeting on Thursday, Dec 3, 2020 from 9:00am to 12:00pm?
11/23/2020 9:33:51	Adriana Stowell	Southern California Marine Institute	Yes, I am able to attend via Zoom meeting
11/30/2020 17:42:22	Ashley Pipkin	Federal NPS	Yes, I am able to attend via Zoom meeting
12/1/2020 15:47:16	Benjamin Ruttenberg	Cal Poly (CSU San Luis Obispo)	Yes, I am able to attend via Zoom meeting
11/24/2020 10:04:18	Brenda Rone	Marine Ecology and Telemetry Research	Yes, I am able to attend via Zoom meeting
12/1/2020 9:34:42	Cesar Blanco	U.S. Fish & Wildlife Service	Yes, I am able to attend via Zoom meeting
11/23/2020 8:29:48	Chelsea Williams	Occidental College	Yes, I am able to attend via Zoom meeting
11/30/2020 12:05:49	Dan Costa	UCSC	Yes, I am able to attend via Zoom meeting
11/24/2020 10:37:28	Dan Robinette	Point Blue Conservation Science	Yes, I am able to attend via Zoom meeting
11/30/2020 13:24:41	Dave Louter	National Park Service	Yes, I am able to attend via Zoom meeting
12/1/2020 15:12:31	David Garcelon	Institute for Wildlife Studies	Yes, I am able to attend via Zoom meeting
11/30/2020 12:18:35	Emma Aronson	UC Riverside	Yes, I am able to attend via Zoom meeting
11/30/2020 13:36:19	Jadelyn Nakamura	National Park Service - Hawaii-Pacific Islands CESU Coordinator	Yes, I am able to attend via Zoom meeting
11/22/2020 16:19:55	Jeffrey Jenkins	UC Merced	Yes, I am able to attend via Zoom meeting
11/30/2020 13:32:10	Jim Harvey	Moss Landing Marine Labs	Yes, I am able to attend via Zoom meeting
11/30/2020 12:35:23	Jim Quinn	UC Davis	Yes, I am able to attend via Zoom meeting
11/24/2020 14:34:32	Joanne Hild	Sierra Streams Institute	Yes, I am able to attend via Zoom meeting
11/23/2020 8:24:28	Jobaid Kabir	BOR	Yes, I am able to attend via Zoom meeting
11/22/2020 15:58:59	Karen Otiji	Smithsonian Institution	Yes, I am able to attend via Zoom meeting
11/23/2020 11:34:25	Kristen Murphy	CA Association of Resource Conservation Districts	Yes, I am able to attend via Zoom meeting
11/23/2020 13:50:13	Lang Waters	Sierra Streams Institute	Yes, I am able to attend via Zoom meeting
11/30/2020 10:12:18	Larry Rabin	US Fish and Wildlife Service	Yes, I am able to attend via Zoom meeting
11/23/2020 8:27:54	Miguel Villarreal	USGS	Yes, I am able to attend via Zoom meeting
12/1/2020 5:39:54	Nancy Wahl-Scheurich	California Association of Resource Conservation Districts	Yes, I am able to attend via Zoom meeting
11/30/2020 12:02:49	Nick Mills	UC Berkeley	Yes, I am able to attend via Zoom meeting
11/30/2020 18:23:59	Regina Rochefort	NPS, PNW CESU	Yes, I am able to attend via Zoom meeting
11/23/2020 8:51:28	Rodney Siegel	The Institute for Bird Populations	Yes, I am able to attend via Zoom meeting
11/23/2020 14:58:36	Sarah Sawyer	USDA Forest Service	Yes, I am able to attend via Zoom meeting
11/23/2020 8:08:59	Steve Blumenshine	CSU Fresno	Yes, I am able to attend via Zoom meeting
12/1/2020 11:21:44	Tom Fish	CESU Network National Office	Yes, I am able to attend via Zoom meeting
11/22/2020 21:33:36	William White	University of California, Berkeley	Yes, I am able to attend via Zoom meeting
11/25/2020 21:38:54	Jennifer Seiter-Moser	Army Corps of Engineers	Yes, I am able to attend via Zoom meeting
11/25/2020 22:44:00	Catherine Dunkel	Bureau of Ocean Energy Management	Yes, I am able to attend via Zoom meeting
11/26/2020 13:35:19	James Weigand	NPS, PNW CESU	Yes, I am able to attend via Zoom meeting
	Renee Thomas	Host campus	Yes, I am able to attend via Zoom meeting
	Ruxin Liu	Host campus	Yes, I am able to attend via Zoom meeting

Californian Cooperative Ecosystem Studies Unit

2021 Annual Meeting
Thursday, December 2nd, 9am - 12 pm, Pacific Time
MEETING AGENDA

9:00 am	Zoom login and troubleshooting https://berkeley.zoom.us/j/99148498431 Meeting ID: 991 4849 8431 Backup Dial-In: 1 669 219 2599 Meeting ID: 991 4849 8431
9:05 am	*Welcome from **David Ackerly**, Dean, Rausser College of Natural Resources, UC Berkeley*
9:10 am	***Nick Mills, Ruxin Liu and Nalui Garcia**, UC Berkeley, Californian CESU Host Campus* ● Introductions and Host Campus Roles ● New CA-CESU Website Late Spring 2022
9:15 am	***Ben Becker, Science Advisor, NPS Californian CESU*** ● *Agenda and objectives for meeting* ● *Partner and Agency Slides* ● *Welcome New Members* ● *Brief Overview of CESU Program*
9:25am	***Tom Fish, CESU National Program Coordinator, Washington Office*** ● New Initiatives for 2022 ● Recent Developments ● Federal Agency Support for CESUs ● Grant Solutions Agreement Processes
9:40 am	***Partner Slide Show*** ● New Partner: California Academy of Sciences ● Veteran Partners ~1 Minute each

10:00 am	***Recent Projects Overview & Future Research Directions (2-3 min each)*** ● *Miguel Villarreal* - USGS ● *Jim Wiegand* - Bureau of Land Management ● *Jobaid Kabir* - U.S. Bureau of Reclamation ● *Ben Becker* - National Park Service ● *Catherine Dunkel* – Bureau of Ocean Energy Management ● *Other Federal Representatives* – research priorities
10:20 am	***Partner Questions for Federal Agencies***
10:30 am	*Peter Nelson* – Assistant Professor, Department of Environmental Science Policy and Management, UC Berkeley ● ***"Climate Change, Heritage Preservation, and Indigenous Stewardship in California."***
10:50 am	*Break*
11:00 am	*How can the CESU program be more effective?* · ***Break up into 3 Groups for 15 min (shoot for ~7 people per group)*** · ***Assign facilitator, note taker, and report out person*** *1. What are the features of an effective CA-CESU in 2025? (Nalui)* *2. How would partners and agencies like to interact to foster more collaboration. (Nick)* *3. What should the CA-CESU priorities be over the next year? (Ben)*
11:20 am	*Each group reports out and provides notes.*
11:45 pm	*Decide on any next steps for the year*
11:55 pm	*Adjourn*

Email	First and Last Name	Affiliation	Attending Annual Meeting on Thursday, Dec 2, 2021 from 9:00am to 12:00pm via ZOOM?
cmunoz@oxy.edu	Chelsea Williams	Vantuna Research Group, Occidental College	Yes
rob.jackson@stanford.edu	Rob Jackson	Stanford	No
dwjohnson@cal-ipc.org	Doug Johnson	California Invasive Plant Council (Cal-IPC)	Yes
jburnaford@fullerton.edu	Jennifer Burnaford	CSU Fullerton	Yes
otijik@si.edu	karen otiji	smithsonian institution	Yes
peteran@berkeley.edu	Peter Nelson	UC Berkeley	Yes
buhr	karen	CARCD	Yes
sblumens@csufresno.edu	Steve Blumenshine	CSU-Fresno	Yes
jshurin@ucsd.edu	Jonathan Shurin	UCSD	Yes
bruttenb@calpoly.edu	Benjamin Ruttenberg	Cal Poly San Luis Obispo	Yes
swindhager@sbbg.org	Steve Windhager	Santa Barbara Botanic Garden	No
brenda.rone@marecotel.org	Brenda Rone	Marine Ecology and Telemetry Research	Yes
larry_rabin@fws.gov	Larry Rabin	U.S. Fish and Wildlife Service	Yes
rjohnson@calacademy.org	Rebecca Johnson	California Academy of Sciences	Yes
rsiegel@birdpop.org	Rodney Siegel	The Institute for Bird Populations	Yes
adriana.stowell@csulb.edu	Adriana Stowell	Southern California Marine Institute	Yes
bbecker@berkeley.edu	Ben Becker	NPS	Yes
garyb@ucla.edu	Gary Bucciarelli	UCLA	No
jfquinn@ucdavis.edu	Jim Quinn	UC Davis	Yes
mvillarreal@usgs.gov	Miguel Villarreal	USGS	Yes
garcelon@iws.org	David Garcelon	Institute for Wildlife Studies	Yes
wawhite@berkeley.edu	William White	Anthropology	Yes
costa@ucsc.edu	Daniel Costa	UCSC	Yes
Karpst@sonoma.edu	Steve Karp	Sonoma State University	Yes
sean.anderson@csuci.edu	Sean Anderson	CSU Channel Islands	Yes
ruxinl@berkeley.edu	Ruxin Liu	Host campus	Yes
nmills@berkeley.edu	Nicholas Mills	Host campus	Yes
naluig@berkeley.edu	Nalui Garcia	Host campus	Yes

Californian Cooperative Ecosystem Studies Unit

2022 Annual Meeting
Thursday, December 8th, 9 AM - 12 PM, Pacific Time
MEETING AGENDA

9:00 am	Zoom login and troubleshooting https://berkeley.zoom.us/j/2499323841 Meeting ID: 249 932 3841 Backup Dial-In: 1 669 219 2599 Meeting ID: 249 932 3841
9:10 am	***Dennis Baldocchi and Nalui Garcia**, UC Berkeley, Californian CESU Host Campus* ● Introductions and Host Campus Roles
9:15 am	***Ben Becker, Science Advisor, NPS Californian CESU*** ● *Agenda and objectives for meeting* ● *Partner and Agency Slides* ● *Welcome New Members* ● *Brief Overview of CESU Program and projects/funding* ● *CA-CESU Renewal Process (Nalui)*
9:25 am	***Thuy-Tien Bui and Agnes Villaroman, CA-CESU @ UC Berkeley*** ● *Overview of New CA-CESU Website* ● *Draft Californian CESU logo vote*
9:35 am	***Tom Fish, CESU National Program Coordinator, Washington Office*** ● New Initiatives for 2023 ● Recent Developments ● Federal Agency Support for CESUs ● Grant Solutions Agreement Processes
9:50 am	***Partner Slide Show*** ● New Partner: National Association of Tribal Historic Preservation Officers (NATHPO) - *Valerie Grussing and Melissa Madrigal* ● Veteran Partners ~1 Minute each

10:00 am	***Recent Federal Projects Overview & Future Research Directions (2 min each)*** ● *Catherine Dunkel* – Bureau of Ocean Energy Management ● *Sarah Sawyer* - US Forest Service ● *Stephanie Coppeto* - US Fish and Wildlife Service ● *Ben Becker* - National Park Service & BLM ● *Miguel Villarreal* - USGS ● *Jobaid Kabir* - U.S. Bureau of Reclamation ● *Other Federal Representatives* – Research priorities
10:15 am	*Welcome from **David Ackerly**, Dean, Rausser College of Natural Resources, UC Berkeley*
10:30 am	*Miranda Redmond* – Assistant Professor, Department of Environmental Science Policy and Management, UC Berkeley ● ***"Managing for Forest and Woodland Resilience to Global Change"***
10:50 am	*Break*
11:00 am	*Revisit 2021 Break Out Group Recommendations on "How can CESU program be more effective?"*
11:20 am	*Discussion on goals for 2023*
11:55 pm	*Adjourn*

Timestamp	Email	First and Last Name	Affiliation	Attending Annual Meeting on Thursday, Dec 8, 2022 from 9:00am to 12:00pm via ZOOM?
11/22/2022 13:46:13	melissa@nathpo.org	Melissa Madrigal	NATHPO	Yes
11/22/2022 15:51:29	nancy-wahlscheurich@carcd.org	Nancy Wahl-Scheurich	CARCD	Yes
11/22/2022 16:13:40	sblumens@csufresno.edu	Steve Blumenshine	CSU-WATER (CSU-Fresno)	Yes
11/22/2022 16:14:07	otijik@si.edu	karen otiji	Smithsonian Institution	Yes
11/22/2022 16:56:55	drobinette@pointblue.org	Dan Robinette	Point Blue Conservation Science	Yes
11/23/2022 7:36:23	bbecker@berkeley.edu	Ben Becker	NPS	Yes
11/23/2022 8:09:18	dblake0405@g.ucla.edu	David Blake	University of California - Los Angeles	Yes
11/23/2022 9:07:35	rsiegel@birdpop.org	Rodney Siegel	The Institute for Bird Populations	Yes
11/23/2022 10:46:19	cesar_blanco@fws.gov	Cesar Blanco, Ph.D.	U.S. Fish & Wildlife Service	Yes
11/23/2022 13:24:56	jshurin@ucsd.edu	Jonathan Shurin	UCSD	Yes
11/28/2022 10:47:18	annie@sierrastreamsinstitute.org	Annie Baker	Sierra Streams Institute	Yes
11/28/2022 15:36:25	cohnb@oxy.edu	Brian Cohn	Vantuna Research Group	Yes
11/29/2022 7:10:49	mvillarreal@usgs.gov	Miguel Villarreal	USGS	Yes
11/29/2022 15:22:48	aaguil67@calstatela.edu	Andres Aguilar	Cal State Los Angeles	Yes
11/29/2022 15:39:20	adriana.stowell@csulb.edu	Adriana Stowell	Southern California Marine Institute	No
11/29/2022 15:59:10	emma.aronson@ucr.edu	Emma Aronson	UCR	Yes
11/29/2022 20:35:35	stephanie.coppeto@usda.gov	Stephanie Coppeto	US Forest Service	Yes
11/30/2022 6:35:21	murday@usc.edu	James Murday	Univ So Calif	Yes
11/30/2022 8:34:55	Katherine.Bandy@water.ca.gov	Katherine Bandy	CA Department of Water Resources	Yes
12/1/2022 17:13:22	tenglerm@tmmc.org	Mariah Tengler	The Marine Mammal Center	Yes
12/2/2022 16:23:36	baldocchi@berkeley.edu	dennis baldocchi	uc berkeley	Yes
12/2/2022 16:49:41	Christina.Sloop@wildlife.ca.gov	Christina Sloop	CA Department of Fish and Wildlife	No
12/2/2022 17:04:18	Wawhite@berkeley.edu	William White	UC Berkeley anthropology department	Yes
12/4/2022 16:38:10	rjohnson@calacademy.org	Rebecca Johnson	California Academy of Sciences	No
12/6/2022 6:34:00	costa@ucsc.edu	Dan Costa	Univ of Calif Santa Cruz	Yes
12/8/2022 8:20:54	bruttenb@calpoly.edu	Benjamin Ruttenberg	Cal Poly San Luis Obispo	Yes
	baldocchi@berkeley.edu	Dennis Baldocchi	Host campus	Yes
	naluig@berkeley.edu	Nalui Garcia	Host campus	Yes

NATIONAL ASSOCIATION OF TRIBAL HISTORIC PRESERVATION OFFICERS

P.O. BOX 19189
WASHINGTON, D.C. 20036-9189
(202) 628-8476
INFO@NATHPO.ORG
WWW.NATHPO.ORG

March 14, 2022

Nicholas Mills
Director, Californian CESU
Department of Environmental Science, Policy, & Management
UC Berkeley
130 Mulford Hall #3114
Berkeley, CA 94720
nmills@berkeley.edu

Dear Dr. Mills,

Please consider our application materials for the National Association of Tribal Historic Preservation Officers (NATHPO) to become a partner of the California Ecosystem Studies Unit (CA-CESU). NATHPO is the only national organization devoted to supporting Tribal historic preservation programs. Founded in 1998, NATHPO is a 501(c)(3) non-profit membership association of Tribal Historic Preservation Officers (THPOs) and Tribal government officials who implement federal and Tribal historic preservation programs and laws.

We provide guidance to preservation officials, elected representatives, and the public about national historic preservation legislation, policies, and regulations. We promote Tribal sovereignty, develop partnerships, and advocate for Tribes in governmental activities on preservation and funding issues. NATHPO provides information, resources, technical assistance, and networking opportunities through the annual National Tribal Preservation Conference, new annual Sacred Sites Summit, workshops, webinars, public programs, and our website.

We have reviewed the general CA-CESU descriptive materials as well as the CA-CESU Cooperative and Joint Venture Agreement, and we agree to abide by all the responsibilities and expectations of partner institutions. You will find our complete application attached.

We are honored that our application is supported by DOI's Bureau of Indian Affairs and National Park Service. Letters of support are included with our application.

Please let me know if you need anything more from us and if you have any questions.

Sincerely,

Valerie J. Grussing

Valerie J. Grussing, Ph.D.
Executive Director

Application to Join California CESU

National Association of Tribal Historic Preservation Officers (NATHPO)

March 16, 2022

Desire to Enroll: Expression of desire to enroll in the CESU as a new nonfederal partner institution/organization.

The National Association of Tribal Historic Preservation Officers (NATHPO) is interested in enrolling as a nonfederal partner organization in the CESU Network.

Confirmation and Agreement: Confirmation that the institution/organization has read the CESU multi-partner agreement and agrees to support the CESU mission and goals and fulfill the roles and responsibilities of a nonfederal partner, as described in the CESU agreement.

NATHPO has read the CESU multi-partner agreement and agree to support the CESU mission and goals and fulfill the roles and responsibilities of a nonfederal partner.

Organization Description: Description of the institution/organization, its mission, and the primary focus of collaborative activities to be supported through the CESU in the context of the CESU mission. Enrollment is expected at the level of the entire institution – enrollment by subordinate institutional units (e.g., individual college, school, or department within a university; individual division, branch, or program within a nonacademic organization) is not appropriate. However, a partner may elect to designate a specific institutional unit with primary technical or administrative responsibilities for participation in a CESU.

NATHPO is the only national organization devoted to supporting tribal historic preservation programs. Founded in 1998, NATHPO is a 501(c)(3) non-profit membership association of Tribal government officials who implement federal and Tribal preservation laws. NATHPO empowers Tribal preservation leaders protecting culturally important places that perpetuate Native identity, resilience, and cultural endurance. Connections to cultural heritage sustain the health and vitality of Native peoples.

NATHPO supports and encourages Tribal Historic Preservation Programs. NATHPO provides guidance to preservation officials, elected representatives, and the public about national historic preservation legislation, policies, and regulations. NATHPO promotes Tribal sovereignty, develops partnerships, and advocates for Tribes in governmental activities on preservation issues.

NATHPO provides information, resources, technical assistance, and networking opportunities through the annual National Tribal Preservation Conference, new annual Sacred Sites Summit, workshops, webinars, public programs, and our website (nathpo.org).

Tribal Historic Preservation Officers (THPOs) have the responsibilities of State Historic Preservation Officers on Tribal lands and advise and work with federal agencies on the management of Tribal historic properties. THPOs also preserve and rejuvenate the unique cultural traditions, practices, and languages of their Tribal communities.

Primary Programs: Description or list of the primary programs, departments, or other institutional units of relevance to federal land management, environmental, and research agencies that will likely be engaged in CESU activities. Include website addresses for further information, as appropriate.

- Conference: The Annual National Tribal Preservation Conference hosted by NATHPO provides opportunities for learning, networking, and knowledge exchange among practitioners in tribal historic and cultural preservation. Participants include representatives of Tribal, federal, state, and local governments, universities, and non- and for-profit organizations. In addition to conference presentations and listening sessions, programming also includes cultural presentations, field trips, and workshops.
- Capacity Building: NATHPO provides high-quality solutions-focused programming with information and resources for Tribal Historic Preservation Officers and staff nationwide. This includes in-person and virtual workshops and webinars to equip and empower them to perform their duties under the National Historic Preservation Act and more effectively protect Native places.
- Advocacy: We provide guidance to preservation officials, elected representatives, and the public about national historic preservation legislation, policies, and regulations. We elevate Tribal voices in Washington, DC and advocate for Tribes in governmental activities on preservation issues, including funding for Tribal Historic Preservation Officers and activities, as well as statutes, regulations, and government policies and practices with Tribal implications and impacts.
- Sacred Sites Summit: This new event offers a space for Native voices, legislators, and agency leadership & staff to come together in understanding the current legal and policy framework and ways to strengthen them in protection of Tribal sacred sites. Each subsequent annual Sacred Sites Summit will help effect real change through accountability, as well as through the establishment new goals and relationships. Event sessions progress through four aspects of protecting sacred sites. First, connecting to place through virtual experiences with the land and those who hold it sacred. Second, what is the state of current sacred sites protection in the U.S.? What is the existing legal and policy framework and what are the gaps from the Tribal perspective? Third, what should be in place to close the gaps? What solutions would truly address the issues and protect the places that define us? Fourth, action by defining recommendations and deliberate, measurable steps forward for preservation and reconciliation.

Staff: A list of and brief description of the staff or faculty with expertise in disciplines and subject matter areas of relevance to federal land management, environmental, and research agencies (do not submit CVs).

Valerie J. Grussing, PhD (Executive Director): Valerie Grussing is committed to protecting culturally important places that perpetuate Native identity, resilience, and cultural endurance through support, guidance, and advocacy of Tribal Historic Preservation Officers. She enjoys group projects and creating collaborative solutions-focused programming. She is passionate about advocating for and elevating Native interests and voices in protecting and revitalizing Native cultures and places. Valerie is honored to be part of an ongoing paradigm shift in how agencies and industry work with Indigenous groups by ensuring that staff and leadership are knowledgeable about principles of sovereignty, self-determination, and proactive engagement and relationship building. Valerie holds a BA in History from North Carolina State University, an MA in Anthropology from the University of Iowa, and a PhD in Coastal Resources Management from East Carolina University.

Attachment 3 - New Member Applications and Support Letters

Melissa Madrigal (Operations Director): Melissa Madrigal is committed to bridging the gap between protecting cultural & Native resources and emergency/hazardous response. She has experience in archaeology focused on the southeastern US, underwater archaeology with NOAA's National Marine Sanctuaries, oil spill response & environmental planning, and process hazard analysis. She also has experience with non-profit organizations and has been working with NATHPO's Board on productivity goals. Melissa is highly invested in helping foster communication between groups and has focused on developing the NATHPO contact database and member management platform. She also helped develop, launch, and maintain the new NATHPO website. Melissa holds a BS in Anthropology and a BS in Psychology from University of Houston, and ABD Coastal Resources Management PhD from East Carolina University.

Julie Nelson (Programming & Communications Director): Julie Nelson is a strategic marketing & communications consultant and coach dedicated to her clients' organizational growth. Her holistic approach identifies client goals, then develops the step-by-step strategy to achieve them - all supported by coaching techniques that equal powerful results. Through her work, Julie is dedicated to empowering positively minded organizations, both for-profit and non-profit, in doing the most possible good. While working as part of the NATHPO team, notable projects to date include, rebranding the organization's look and communication style to create a sense of community, creating the framework for and helping to organize NATHPO's virtual conference and Sacred Sites Summit, as well as working with agency and private fund sources to secure major project and operational funding.

Ted Monoson (Government Affairs Coordinator): Ted Monoson is a Principal in 4th St Communications. He has more than two decades of experience working as a reporter, senior policy aide and senior communications aide. Ted served as the Senior Director of Government Affairs at the National Conference of State Historic Preservation Officers. In this role, he led the successful effort to almost triple Historic Preservation Fund appropriations to $144 million and positioned NCSHPO as the organization that Congressional staff turned to for questions about historic preservation. Ted is a strong proponent of the need to increase diversity in historic preservation, specifically the preservation of Tribal Nations' sacred sites and places associated with the Civil Rights Movement. As a reporter, Ted covered agriculture, natural resources and energy issues for CQ. He also covered Washington, D.C., for large circulation daily newspapers in the American West, including The Billings Gazette, the Casper Star Tribune and the Missoulian. Ted spent almost five years working for House Speaker John Boehner as an aide focused on agriculture, natural resources and energy issues. He also served as Communications Director for the House Committee on Agriculture.

Shasta Gaughen, PhD (Chairman of the Board): Shasta Gaughen is the Environmental Director and the Tribal Historic Preservation Officer for the Pala Band of Mission Indians in Pala, California. She has worked for Pala since January 2005, and established Pala's Tribal Historic Preservation Office in 2008. She was an adjunct professor in the Anthropology Department at California State University San Marcos from 2006 - 2019. Dr. Gaughen received her PhD in Anthropology from the University of New Mexico. She is Chair of the National Association of Tribal Historic Preservation Officers, a member of the Advisory Council on Historic Preservation, Secretary of the Board for the Native American Environmental Protection Coalition, lead of the Tribal Working Group for the Climate Science Alliance, and a member of the Institute of Tribal Environmental Professionals' Climate Change Advisory Committee. Dr. Gaughen oversees the Tribal Climate Health Project, a grant-funded education and outreach project that includes

a website, resource clearinghouse, webinars, videos, and in-person presentations on climate change and health adaptation in Tribal communities.

Our finances are overseen by an outside accounting firm and our Board of Directors provides ultimate oversight and fiduciary responsibility for the organization.

For academic institutions, include a description of student demographics and the institution's status as a minority-serving institution (e.g., as defined by the U.S. Department of Education).

N/A

Institute Support: Description or list of facilities, equipment, centers, or institutes that would provide support to the research, technical assistance, or educational activities of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

NATHPO is an independent non-profit membership organization of Tribal government officials, with numerous partners and supporters representing federal and state agencies, academic institutions, industry, law firms, intertribal organizations, and other non-profit organizations.

Past Technical and Educational Services: Description or list of past research, technical assistance, and educational services supported through federal financial assistance awards that are of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

- 22nd Annual National Tribal Preservation Conference, and past annual conferences (event)
- Sacred Sites Summit (virtual event)
- Regional SHPO/THPO/NPS Meetings: an annual opportunity to discuss areas of mutual interest and collaboration
- Tribal Consultation: Best Practices In Historic Preservation (guidance document)
- Emergency Preparedness in Indian Country and Tribal Preservation Planning Needs: Recommendations and Resources for Tribes and Other Stakeholders (guidance document)
- Cultural Preservation Along the Lewis & Clark National Historic Trail (publication)
- TurboTHPO: Expert Help Establishing a Tribal Historic Preservation Office (virtual workshop)
    - Instructors include NPS THPO Program Manager as well as current and former THPOs sharing their knowledge and experience to help participants begin the process of standing up a program for their own tribe. Participants are paired with an expert to guide them step-by-step through the process, including subsequent review of their completed application draft before submission to NPS.
- THPO Toolkit: So You're a THPO, Now What? (virtual workshop): This new workshop series provides information and best practices for those establishing their office or looking to streamline processes. This forum for "baby THPOs" and "elder THPOs" alike will bring the family together and build a community of practice.
- THPO Talk Series (webinar): Discussion by Tribal Historic Preservation Officers about their THPO programs and experiences.
- Tribal Historic Preservation Grants-Stravaganza (webinar): Overview of funding opportunities from NPS, IMLS, and the National Trust for Historic Preservation.

Formal and Informal Federal Relationships: Description or list of current formal agreements and informal relationships with federal agencies that are of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

- Department of the Interior
    - National Park Service (NPS) Cultural Resources
        - P16AC00380
        - P16AC01310
        - P18AC00726
        - P19AC00687
- Inland Oil Spill Preparedness Program (IOSPP)
    - Beyond Horizons Initiative (upcoming)
- U.S. Department of Agriculture
    - Natural Resources Conservation Services (NRCS)
        - 69-3A75-18-030
        - NR213A750010G003
    - US Forest Service
        - FS 1500-23 20-CS-11132547-045
- Bureau of Indian Affairs
    - Subcontracts related to Tribal capacity building workshops and Beyond Horizons Initiative

Confirmation of Indirect Rate: Confirmation of the institution's/organization's willingness to accept the CESU programmatic indirect cost (IDC) rate and cost items to which this rate is applicable for activities conducted through the CESU, including research, technical assistance, and educational activities (this IDC rate applies to the entire institution/organization for CESU activities).

NATHPO is willing to accept the CESU programmatic indirect cost (IDC) rate and cost items to which this rate is applicable for activities conducted through the CESU.

Technical Representative: Designation of a technical representative (with full contact information – name, title, full address, phone, fax, email) to serve on the CESU Executive Committee, participate in CESU annual/semi-annual partner meetings, and facilitate internal and external communication, promotion, and response to CESU correspondence and administrative actions (e.g., announcements, new partner applications, processing agreements/amendments, five-year reviews, periodic reporting).

Valerie Grussing, Executive Director
1255 22nd St. NW, #19189
Washington, DC 20036
252.531.7540
valerie@nathpo.org

Administrative Representative: Designation of an administrative or grants and agreements representative (with full contact information – name, title, full address, phone, fax, email) to serve as financial assistance point of contact.

Attachment 3 - New Member Applications and Support Letters

Melissa Madrigal, Operations Director
1255 22nd St. NW, #19189
Washington, DC 20036
713.245.6205
melissa@nathpo.org

Agreement to Relay Information: Agreement to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other institutional/organizational members (e.g., faculty, students, staff).

NATHPO agrees to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other institutional/organizational members.

Endorsement: Signature (or endorsement) from an appropriate official, with authority to commit institutional resources in a binding multi-year federal cooperative and joint venture agreement (e.g., president, executive director, chief financial officer, vice president for research, authorized organizational representative, director of sponsored programs).

Valerie Grussing, signature on intent letter above, has the authority to commit resources in a binding multi-year federal cooperative and joint venture agreement.

Letters of Support: Letter(s) of support from one or more CESU federal agency partners sponsoring the new partner's application, including a description of successful past collaborative work supported through federal financial assistance awards.

- NPS Region 1
- BIA Western Region

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1-North Atlantic and Appalachian
Tribal and Cultural Affairs Program
115 John St., Fourth Floor
Lowell, MA 01852

November 23, 2021

CESU National Coordinator
1849 C Street NW
Room 2649
Washington DC 20240
202.354.1825
cesu.org

Dear CESU National Coordinator,

Good Day,

I am writing in support of the National Association of Tribal Historic Preservation Officers' (NATHPO) application to be a member of the Cooperative Ecosystem Study Unit Program (CESU). Over the past 10 years I have supervised many Primary Investigators from more than 20 institutions around the country in my capacity as a program manager of the National Park Service (NPS) across three separate Regions. In my current capacity as the Tribal and Cultural Affairs program manager for Region 1 of the NPS I am acutely aware of the lack of capacity for partnership with Native Nations and their officials through the CESU Network. Given the Government-to-Government status between the federal and Tribal governments, I am not surprised that adding a level of paperwork often makes it bothersome for Native Nations to find their way to inscribing into the CESU Network. Partnering with NATHPO offers a potential solution that could facilitate more work directly with Indian Country in meaningful ways that support Tribal Historic Preservation Officers in raising up their interests on our Public Lands.

Interior Region 1 continues to work with the Native Nations in the Northeastern United States through their Tribal Historic Preservation Officers and directly with NATHPO. At times, working between the NPS and the THPOs directly is an effective way to ensure that Sovereignty is maintained over resources held in trust within the federal boundaries at our units. Often, however, we have programmatic needs for developing expert research and comment or consulting on broad issues that affect multiple Nations, like off-shore wind energy compliance. Having NATHPO to partner with agencies as they meet these growing engagements of Native Nations on federal land management through the CESU is a logical and intentional step that brings their expertise and community to bear on the resource management issues of the day as they emerge.

I can see multiple ways in which we will seek NATHPO's expertise in the future to investigate policy development and resource management applications. I believe that they can be more effective partner than they already are across the scope of land management as a CESU member. I would appreciate any opportunity to talk with you or the CESU Program Mangers about their admission into the Network. Please reach out with any questions that you may have for me.

Sincerely,

David J. Goldstein, Lead
david_goldstein@nps.gov

Rebecca F. Johnson
Co-Director, Center for Biodiversity and Community
California Academy of Sciences
55 Music Concourse Dr.
San Francisco, CA 94118
rjohnson@calacademy.org

April 21, 2021

Nicholas Mills
Professor, Executive Associate Dean
Rausser College of Natural Resources
University of California, Berkeley
760 University Hall MC # 3100
Berkeley, CA 94720-3100
nmills@berkeley.edu

Dear Dr. Mills,

The California Academy of Sciences is applying to become a member of the California Ecosystem Studies Unit (CA-CESU). The California Academy of Sciences is a natural history museum in San Francisco, California, that is among the largest museums of natural history in the world, housing over 46 million specimens. We are home to more than 100 research scientists with expertise spanning Zoology, Botany, Geology, Genomics, Microbiology, Community Science, and more. In addition, the Academy is one of the major resources for science and environmental education in Northern California and beyond. On an annual basis, the Academy provides over 3.2 million educational engagements onsite ranging from hands-on workshops, science demonstrations, classes, and public programs.

CALIFORNIA ACADEMY OF SCIENCES

55 Music Concourse Drive
Golden Gate Park
San Francisco, CA 94118

We have reviewed the general CA-CESU descriptive materials as well as the CA-CESU Cooperative and Joint Venture Agreement, and we agree to abide by all the responsibilities and expectations of partner institutions. You will find our complete application attached. We are honored that our application is supported by the Department of Defense, a Federal partner of CA-CESU. Our letter of support will be sent directly to you, Dr. Mills. Please let us know when you receive the letter. Please let me know if you need anything more from us and if you have any questions.

Sincerely yours,

Rebecca F. Johnson, Ph.D.

rjohnson@calacademy.org
Co-Director, Center for Biodiversity and Community
Co-PI, Summer Systematics Institute
Research Associate, Department of Invertebrate Zoology

CALIFORNIA ACADEMY OF SCIENCES

55 Music Concourse Drive
Golden Gate Park
San Francisco, CA 94118

California Academy of Sciences CA-CESU Application

Contact person
Rebecca F. Johnson, Ph.D.
Co-Director, Center for Biodiversity and Community
California Academy of Sciences
55 Music Concourse Dr.
San Francisco, CA 94118
415-269-4562 (cell)
415-379-5252 (desk)
rjohnson@calacademy.org

The California Academy of Sciences (Academy or CAS) is a natural history museum in San Francisco, California, that is among the largest museums of natural history in the world, housing over 46 million specimens. In addition, the Academy is one of the major resources for science and environmental education in Northern California and beyond. On an annual basis, the Academy provides over 3.2 million educational engagements onsite ranging from hands-on workshops, science demonstrations, classes, and public programs.

Relevant Programs

- **The Academy's Institute for Biodiversity Science and Sustainability** (IBSS) is home to more than 100 research scientists and nearly 46 million scientific specimens from around the world—38,000 of which are alive and on display in the Academy's Steinhart Aquarium. The Institute also leverages the expertise and efforts of the Academy's aquarium biologists and more than 100 international Research and Field Associates and 450 distinguished Fellows. Relevant programs include:
    - 15 IBSS Research Scientists hold appointments as Graduate Faculty in the Department of Biology at San Francisco State University where they advise M.Sc. graduate students. 16 graduate students are currently enrolled and dozens of students advised by Academy Scientists have received degrees since 2010.
    - IBSS Research Scientists advise and co-advise graduate students through adjunct appointments and other arrangements at several institutions including the University of California Berkeley and the University of California Santa Cruz.
    - The Summer Systematics Institute (SSI), funded by the National Science Foundation (NSF) for 26 years, provides training in taxonomy and systematics for 10 undergraduate students each year.
    - The Center for Biodiversity and Community connects people to their local nature and each other through community science while simultaneously collecting data critical to science and management, engaging thousands of California's every year.
    - iNaturalist is the largest community science platform for biodiversity in the world, with almost 60 million verifiable nature observations shared by 1.4 million people globally, including 6 million observations from California. iNaturalist shares verified observations with the Global Biodiversity Information Facility (GBIF)

- **The Academy's Public Engagement and Education** includes our Education Departments (Public Programs, Teacher Professional Development, K12 in-person and digital programs, Youth Programs), our Steinhart Aquarium, and our Morrison Planetarium and Visualization Studio. The Public Engagement and Education Division includes 30 educators and 300+ volunteers with expertise in teacher professional development, youth programs, and public programs etc; a science visualization and film production studio producing award-winning digital planetarium shows distributed to over 100 domes across the globe, as well as educational media that has been viewed by educators in every country; the Morrison Planetarium, which delivers live astronomy and life sciences programming to the Academy's 1.3 million visitors each year; and 30 aquarium biologists and veterinarians who care for 90,000 live animals and plants, and partner with Academy scientists to advance biodiversity discoveries in coral reefs, island habitats, and across California. The Steinhart Aquarium also leads or co-leads several international collaborations with other zoos and aquarium to conserve threatened and endangered species through the Association of Zoos and Aquarium's SAFE initiative, including leading the AZA SAFE program on Caribbean Coral and playing an active role in the AZA SAFE program on African penguins.
  Relevant programs and facilitates include:
  - Facilitating the visits of 130,000 - 150,000 schoolchildren and their teachers to Academy free of charge or at discounted admission rates each year.
  - Hands-on interactions with natural history specimens and exhibits, face-to-face encounters with docents and other interpreters, and opportunities to investigate more deeply on the web or in the Naturalist Center.
  - The Academy reaches out to Bay Area educators and schools to bring its scientific research and resources directly to students and teachers. On an annual basis, over 1,500 Bay Area teachers are trained through educator workshops and customized in-services offered by the Academy. These workshops and professional development programs give science teachers up-to-date scientific information, curriculum and training, including support implementing the new Next Generation Science Standards.
  - The Academy's 2-year paid internship for youth underrepresented in the sciences, and an annual Teen Science Night together serve over 2,000 youth from around the Bay Area and beyond.
  - The Academy has a 2,000-square-foot Early Childhood Center, the Curiosity Grove, which was recently redesigned to provide expanded space and learning opportunities for families focused on California ecosystems, and science skills. The 2,100-square-foot Naturalist Center provides opportunities for in-depth inquiry at all levels through access to staff, natural history specimens, art, and nature play.
  - The Academy's Science Action Club, an afterschool citizen program for middle schoolers, has operated in over 30 states, over 400 communities, serving 63,000 students and 700 communities since inception.
  - The Academy's Science and Environmental Media Lab has produced over 425 free, online videos and interactive lessons for K-12 teachers everywhere, with

over 18 million teacher views globally since launch, including 5 million in just 2020 alone.
    - The Morrison Planetarium's productions mentioned above are licensed internationally in over a dozen countries around the world.

Expertise

- **Maricela Abarca, B.A.** Participated in various native California vegetation surveys and restoration efforts for the US Forest Service (USFS). Experience in small mammal trapping surveys domestically in urban-rural gradients and in desert habitats, as well as in rainforests abroad.
- **Elizabeth C. Babcock, Ph.D. (Chief Public Engagement Officer & Roberts-Wilson Dean of Education)** Cultural Anthropologist and education specialist. Extensive teaching experience at K-12, undergraduate, graduate and adult levels including students with special needs. Oversees the Academy's K12 education initiatives (including online learning and creation and distribution of digital educational materials), public programs, aquarium exhibits, and planetarium productions.
- **Rayna Bell, Ph.D.** Amphibian and reptile specialist and evolutionary geneticist with extensive domestic and international field experience. Relevant expertise includes biodiversity surveys, providing checklists/species inventories to management agencies, and conservation genomic analyses for species status assessments and other conservation-focused projects in collaboration with the Department of Defense (DoD), U.S. Geological Survey (USGS), and the U.S. Fish and Wildlife Service (USFWS).
- **Shannon Bennett, Ph.D. (Chief of Science, Hind Dean of Science & Research Collections)** Microbiologist and parasitologist with a focus on viruses and infectious disease. Extensive domestic and international field experience. Relevant expertise includes research on mosquito borne pathogens, parasitic roundworms, and coronavirus. Oversees the Academy's Science and Research Collections.
- **Sarah Crews, Ph.D.** Terrestrial arthropod biologist specializing in aridlands worldwide, with nearly two decades of experience conducting research in California deserts. Projects focus on biodiversity surveys as well as targeted collecting of salt-flat endemic spiders and beetles, including collecting at China Lake Naval Air Weapons Station and extensively in the Mojave National Preserve and Death Valley National Park.
- **Rose Deguzman, B.S.** Experience conducting bird nesting surveys for USGS and California Waterfowl Association.
- **John Dumbacher, Ph.D**. Avian biologist and evolutionary geneticist with extensive domestic and international field experience. In California, recent projects include avian surveys combining point counts and automated recording units (ARUs) and conservation management of Barred and Spotted Owls in partnership with the California Department of Fish and Wildlife (CDFW), the USFWS, and the USFS..
- **Erica Ely, B.S**. Amphibian and reptile specialist with extensive domestic field experience. Relevant projects include biodiversity surveys and voucher specimen collection in California and Nevada.

- **Lauren Esposito, Ph.D**. Arachnologist and evolutionary geneticist with extensive domestic and international field experience. Relevant expertise includes biodiversity surveys and providing checklists/species inventories to management agencies.
- **Brian Fisher, Ph.D**. Ant specialist and evolutionary geneticist with extensive domestic and international field experience. Extensive partnerships and technological innovations for monitoring biodiversity and mediating climate change impacts in Madagascar. Recent projects include developing a COI barcode library to enable rapid identification of ants.
- **Moe Flannery, M.Sc.** Marine mammal specialist and Marine Mammal Stranding Network member with extensive field experience in coastal California. Relevant projects include dead stranded marine mammal recovery (including large whale necropsy response) and data collection in partnership with the National Oceanographic and Atmospheric Administration (NOAA) and small mammal inventory projects in partnership with the USFWS.
- **Christine Garcia, M.Sc.** Geologist and paleontologist specializing in foraminifera. Domestic and international field experience in marine benthic biodiversity surveys. Relevant experience includes implementation and oversight of restoration projects in marine, estuarine, and freshwater ecosystems for Palm Beach County Environmental Resources Management, West Palm Beach, Florida.
- **Terrence Gosliner, Ph.D.** Marine invertebrate zoologist specializing in nudibranchs and other mollusks. Also expertise in California vascular plants, Have partnered extensively with Gulf of the Farallones Marine Sanctuary, Fitzgerald Marine Reserve, California Fish and Wildlife, Marin Chapter California Native Plant Society, Marine Municipal Water District and numerous other agencies, resource managers and environmental NGOs.
- **Chris Grinter, B.S.** Entomologist with expertise in moths, butterflies, and parasitoid wasps. Relevant experience includes biodiversity surveys, species descriptions, collecting and import/export permitting, and working with federal and state management agencies.
- **Sarah Jacobs, Ph.D.** North American plant specialist and evolutionary geneticist with extensive field experience in temperate North America. Relevant expertise includes biodiversity surveys, developing rare species monitoring programs, and field-based training courses for students and agency employees.
- **Rebecca Johnson, Ph.D.** Marine invertebrate specialist and evolutionary biologist with extensive field experience along the rocky shores of California. Relevant experience includes designing and running community and citizen science campaigns for biodiversity data collection and field-based training courses for volunteers, students, and agency employees.
- **Durrell D. Kapan, Ph.D**. Evolutionary ecologist with expertise in insects, vertebrates, genomics and modeling. Kapan has extensive domestic and international field experience. In California, relevant projects include conservation genomics of extinct Xerces blue butterflies in partnership with local NGOs and the Presidio Trust and the resilience of forest bird and wildlife communities in partnership with the USFS and California Wildlife Conservation Board.
- **Rebekah Kim, M.L.I.S.** Librarian and Archivist with experience in documenting and collecting natural history materials in California. Experience in data collection and

management for corporate institutions, like Dolby Laboratories and Google, as well as small museums, like the GLBT Historical Society and Yerba Buena Center for the Arts.

- **Emily Magnaghi, M.Sc**. Botanist with field experience throughout California, and in the Eastern U.S. and Caribbean. Relevant projects include threatened and endangered plant surveys for Federal Railroad Administration, California Department of Transportation, and National Park Service (NPS); plant voucher collection for U.S.Department of Agriculture (USDA) and USFS; endangered butterfly host plant surveys for USFWS (Dade Co. Florida).
- **Rich Mooi, Ph.D.** Echinoderm specialist and evolutionary biologist with extensive field experience in western North America from Alaska to Baja surveying marine biotas, both fossil and extant. Recent projects include serving as scientific coordinator for SFBAY:2K, a four-year study of benthic faunas in San Francisco Bay.
- **Lindsay Palaima, M.A.** Museum Registrar specializing in natural history collections. Skilled in Native American Graves Protection and Repatriation Act (NAGPRA), Integrated Pest Management, databases, and exhibition.
- **Sue Pemberton.** Marine mammal expert. Relevant experience includes thirty years of field experience in rescue of live and dead marine mammals. Relevant projects include dead stranded marine mammal recovery (including large whale necropsy response) and data collection in partnership with NOAA.
- **Christina Piotrowski, M.Sc.** Polychaete annelid specialist with general expertise in marine invertebrate zoology and extensive domestic and international field experience, including survey of San Francisco Bay benthic invertebrates (SFBay:2K Project). Relevant contract work with NOAA, including Curation of Invertebrates of the Eastern Chukchi Sea. Member of the Cordell Bank National Marine Sanctuary Advisory Council.
- **Giovanni Rapacciuolo, Ph.D.** Biodiversity data scientist specializing in the use of disparate ecological data sources to quantify and map the ongoing and likely future impacts of environmental changes on the abundance and distribution of species and ecosystems. Relevant expertise includes Geographic Information Systems, biostatistics, species distribution modeling, and systematic conservation planning.
- **Luiz Rocha, Ph.D.** Ichthyologist and evolutionary biologist with extensive field experience. Recent projects include a book on the marine fishes of California.
- **Peter Roopnarine, Ph.D.** Paleontologist and evolutionary ecologist with expertise in marine and aquatic invertebrates, particularly molluscs, mathematical modelling of paleo- and modern marine and terrestrial communities/ecosystems, and application of the preceding to issues of extinction and conservation. Relevant experience includes familiarity with both deep and shallow time fossils records of the western United States, and field work in western North America, including Alaska, British Columbia, California, Nevada, Utah, Arizona, Baja California and Sonora.
- **Lauren Scheinberg, M.Sc.** Amphibian and reptile specialist with extensive domestic and international field experience. Relevant projects include biodiversity surveys with the USFS and USFWS on National Forest lands and in Desert National Wildlife Refuge.
- **Brian Simison, Ph.D.** Evolutionary biologist using modern methods in genomics to better understand the role hybridization plays in speciation. Currently studying hybrid zones in turtles and woodrats.

- **Matthew H. Van Dam, Ph.D.** Entomologist and evolutionary biologist. Specialties include beetle systematics, comparative genomics, bioinformatics, phylogenomics. He has spent 25+ years identifying insects and has a strong general knowledge of insects, especially beetles. Aided in identification of beetles and flies for the Bureau of Land Management (BLM) (Las Vegas field office), surveys of the Big Dune recreation area. Worked on biological surveys reporting to the USFWS for endangered species (Delhi Sands flower-loving fly, *Rhaphiomidas terminatus abdominalis*).
- **Gary Williams, Ph.D.** Coral specialist working across a broad marine depth range (shallow-water, mesophotic, and deep-sea habitats). Relevant projects include biodiversity surveys for resource management and boundary modification assessments in the National Marine Sanctuaries.
- **Alison Young, M.Sc.** Intertidal ecologist with extensive field experience in California. Relevant experience includes designing and running community and citizen science campaigns for biodiversity data collection and field-based training courses for volunteers, students, and agency employees.

**Academy staff have extensive experience in providing species identifications across all taxonomic groups for Federal and State agencies.

Collections, Equipment, and Facilities

Scientific Collections
Anthropology – The CAS Anthropology collection consists of more than 16,000 objects, most of which are ethnographic. These pieces originate from around the globe, documenting the diversity of human cultures and the ways in which we humans have adapted to Earth's varying environments. Current strengths of the collection include holdings from the U.S. Southwest and the Pacific Islands, and basketry from California. Additional California materials include pottery from the southeast, lithics, foodways procurement, processing and serving tools and implements, and carved materials such as antler spoons and purses.

Botany – The herbarium at CAS houses one of the world's largest and most extensive collections of plant species in North America, especially western North America and California. Numbering nearly 2.3 million worldwide with at least 460,000 of those from California, these specimens document the diversity of plant species and serve as a reference for species identification and distribution across space and through time.

Entomology (including Arachnology) – CAS Entomology ranks among the largest two non-governmental collections in the US, with some of the most comprehensive holdings of California specimens dating to the late 19th century. There are estimated to be over 2 million unique California specimens across all orders of insects, with a particular strength in beetles, ants, and plant-bugs. The arachnid collections at CAS are the largest in the world for California fauna and serve as a reference for species identification and distribution data through time. We maintain a frozen tissue collection of arachnids that serve as a genetic voucher of species for

current and future researchers. We have a particularly rich collection from Bob Banta's extensive surveys of CA deserts.

Herpetology – The CAS Herpetology collection houses the sixth largest herpetology collection in the world and a tissue collection of nearly 40,000 samples from vouchered specimens. The collection contains more than 25,000 amphibian specimens and 32,000 reptile specimens from California, dating from 1890 to present, with over 6,000 associated tissues.

Ichthyology – The CAS Ichthyology collection houses 26,500 cataloged lots of California fishes, both freshwater and marine, dating from 1888 through 2015 that are available to researchers for a variety of studies.

Invertebrate Zoology – The CAS Invertebrate Zoology (CASIZ) collection holds one of the largest and most diverse marine invertebrate collections in the country, alongside extensive freshwater and terrestrial non-entomological invertebrate collections. These unique collections include approximately 10 million specimens across 800,000 unique specimen records. The California fauna is a chief regional strength, including unparalleled San Francisco Bay and northern California holdings for most taxonomic groups, encompassing approximately 300,000 unique California records. The diversity of these unique collections and the historical marine survey data they encompass serve as critical comparative material towards assessing distributional changes in CA marine fauna through time. The CASIZ Collections also include unique non-marine resources, including California vernal pool crustaceans and historically collected freshwater mussels.

Geology – The CAS Geological collections contain an estimated 8 million specimens including one of the most significant collections of California Cenozoic and Mesozoic marine fauna, including vertebrates, invertebrates, foraminifera. The department is also home to one of the largest fossil and recent diatom collections in the world, as well as significant mineral and petrographic collections, including the petrographic collection of Charles Chesterman (California Division of Mines and Geology).

Microbiology – The CAS Microbiology collection holds over 100,000 items including microbial living collections and host tissue specimens in *cryocollection* form. Items from California include frozen virus metagenomic samples and vector tissues.

Ornithology and Mammalogy – The CAS Ornithology collection includes over 111,000 bird specimens (~50,000 from California) including traditional study skins, skeletons, eggs, nests, mounts, and frozen tissues. The CAS Mammalogy collection includes more than 32,000 specimens (~18,000 from California) including the world's largest collection of California Sea Lion (*Zalophus californianus*) and Southern Sea Otter (*Enhydra lutris nereis*) specimens.

Library – The Academy Library, founded in 1853, is a research library devoted to natural history and the natural sciences. The Library holds over 10,000 items and the Archive consists of 750 unique collections. The Archive houses an extensive collection of field notes, photographs, and personal papers from Academy scientists and community members. These materials provide records of expeditions, research and field conditions, as well as early collecting information focusing on California.

Scientific Equipment
Each of the departments listed above has the equipment needed for collecting and processing specimens (including high-resolution photography, 3D scanning, x-ray unit, and a dermestid beetle colony) and the tools for identification (including microscopes).

Scientific Facilities
Center for Comparative Genomics (CCG) – A three-unit core **Molecular Lab** facility that includes Eight Biosafety Level 2 certified laboratories with state-of-the-art equipment for DNA & RNA library preps, Illumina MiSeq sequencing, and Sanger sequencing. The CCG includes a dedicated **Freezer Room** housing the Academy's "CryoCollection" in eight -80Cº freezers and five liquid nitrogen freezers. The CCG includes substantial **Computational Resources** including compute servers, digital storage, and programming/scripting support for genomic analysis. Currently a total of 408 cores and 420TB of redundant storage. **Lab Staff** includes two full time PhD Evolutionary Biologists, a Computational Biologist, and a lab technician.

Dive Operations – The Academy employs a full time dive safety officer and maintains extensive dive equipment for use by trained staff and scientific divers.

Geology Labs – **Microscopy lab**: two compound microscopes with integrated DSLR cameras, and two stereomicroscopes with integrated DSLR cameras, computers and imaging software; sample processing equipment including sieves and splitters, electronic scale, chemicals and fume hood. **Large sample prep lab**: rock crusher, trim and slab saws, sand blaster, ultrasonic cleaner, fume hood, other general equipment. **Mineral processing lab:** XRD analyzer, gem refractometer, carat scale, geiger counter, UV lamp, other general equipment.

Imaging Lab and Equipment – Hitachi SU3500 Scanning Electron Microscope, Visionary Digital Big Kahuna Canon DSLR imaging system, DigiMacro, Artec Space Spider and Leo handheld 3D light scanners, Corsi Digitization Lab.

Transportation – The Academy has one Toyota Sienna All Wheel Drive, 8-person minivan and a Ford F-350 utility truck available for fieldwork within California.

Expertise Relevant to CESU objectives

Entomology (including Arachnology) − Arachnology (S. Crewes, L. Esposito) has been permitted to collect arthropods in National Parks, Military Installations, and BLM as part of an ongoing project regarding endemic salt-flat animals across North American deserts. Invited to give scientific presentations at the USGS Geologic and Biotic Perspectives on Late Cenozoic Drainage History of the Southwestern Great Basin and Lower Colorado River Region and at the Desert Symposium in Death Valley to celebrate 100 years of National Parks. Participated in educational activities at the Death Valley BioBlitz and prepared articles for the MNP's Science Newsletter whose goal is for scientists/researchers "to communicate some of the more compelling findings of their work to a broad audience."

*Botany −S*taff and curators in the Botany department have worked with the NPS, USFS, BLM, California Native Plant Society, state and county agencies over the years to assist with plant inventory and survey work, voucher preparation and curation. We participated in a survey of seeds on herbarium specimens of presumably extinct species in CA at CAS/DS, UC/JEPS, and RSA/POM funded by and for the USFWS.

Geology – Various department staff (including P. Roopnarine, C. Garcia, R. Deguzman, M. Abarca and others) have been awarded grants from NOAA and NASA, have conducted surveys for the USGS, and have provided material identifications for US Customs and Border Protection. Roopnarine serves as PI on five active NSF grants all focused on the generation of big ecological data and/or ecosystem-level response to disturbance across deep-timescales. Roopnarine is currently working in partnership with USFS to develop a model of wildlife resilience for the central Sierra Nevada.

Herpetology – The Herpetology Department (R. Bell, E. Ely, L. Scheinberg) has worked with the DoD, USFS, and USFWS performing reptile/amphibian surveys on National Forest lands, in Desert National Wildlife Refuge, and DoD installations. The Department also collaborates with the USGS and USFWS to provide conservation genetic insights into endangered species listing (Spring Salamanders [*Gyrinophilus subterraneus/porphyriticus]* in West Virginia) and conservation management recommendations (Coqui Frogs [*Eleutherodactylus spp*] in Puerto Rico).

Invertebrate Zoology – The Invertebrate Zoology department (C.Piotrowski, R. Mooi, G Williams) co-supervised a NOAA Hollings Scholar with the Monterey Bay National Marine Sanctuary and Greater Farallones National Marine Sanctuary in summer of 2020 to build a comparative species list for CA National Marine Sanctuaries. CASIZ also held a 2012 contract with Cordell Bank National Marine Sanctuary for identification of underwater invertebrate images from the CBNMS and annual contracts between 1995 and 2013 with NOAA to provide curation of marine invertebrates and a recruitment survey of NOAA/NMFS mooring buoy settling panels. CASIZ provides occurrence data for freshwater invertebrates to the CDFW California Natural Diversity Database and reports novel occurrences of fisheries-related wildlife to CDFW staff. The

department also regularly assists CDFW staff with taxonomic support and species determinations. G. Williams has conducted fieldwork off the California coast since 2012 funded by NOAA, NMS, and OET. Fieldwork involves deep-sea exploration, discovery, biodiversity surveys, and collection of invertebrate material for the CAS collections.

Ornithology and Mammalogy – The Ornithology & Mammalogy Department (J. Dumbacher, M. Flannery, S. Pemberton) sits on the Barred Owl Science Team (organized by CDFW and USFWS, USFS and other state and federal agencies) to advise on the science related to Barred Owl and Spotted Owl conservation needs, is working on Forest Resilience projects in the Central Sierra Nevada surveying birds and other animals and studying how they are affected by fire (funded by the USFS), and has received funding from NOAA to support data and specimen collection of dead marine mammals along 400 miles of coast and bay shoreline in the Bay Area.

Center for Biodiversity and Community – Our team (R. Johnson, G.Rapacciuolo, A.Young) has been funded by the California Ocean Protection Council (part of the California Natural Resources Agency) to mobilize volunteers to collect species occurrence data for marine organisms along the California coast from 2018-2022. Through this work we are crowdsourcing biodiversity surveys. We are also analyzing those data to account for biases and have built a dashboard for looking at population trends along the coast. We are now working with them to build an Early Warning and Forecasting System for climate-driven biodiversity changes and introduced species on the California coast, using community collected data.

Relationships with Federal Agencies

Bureau of Land Management(BLM)

- CAS Entomology and Arachnology has current permits for ongoing surveys with the Carrizo Plain National Monument, the Barstow Field Office, the Needles Field Office, and the Ridgecrest Field Office.
- CAS Geology is an approved Curation Facility for BLM California

Department of Defense (DOD)

- CAS Herpetology is working with Naval Facilities Engineering Command to perform amphibian and reptile surveys on otherwise inaccessible DoD lands (ongoing, SERDP funding application pending).

U.S. Geological Survey (USGS)

- Occupancy and genetics of the West Virginia Spring Salamander (2018 – 2020). Due to its limited range, the WV spring salamander (*Gyrinophilus subterraneus*) is currently under review for listing under the Endangered Species Act. CAS Herpetology contributed to the species status assessment including genomic analysis, demographic modeling, and risk assessment as part of the listing recommendation for USFWS.

- Habitat conservation and adaptive strategies for recovery and conservation of *Eleutherodactylus* (coqui) frogs in Puerto Rico (ongoing). This multi-disciplinary project aims to gain foundational knowledge to develop a robust, well-informed adaptive conservation strategy to prevent *Eleutherodactylus* frogs endemic to the island of Puerto Rico from becoming “threatened” or “endangered”. CAS Herpetology is leading the conservation genomics aims of this USFWS and USGS Climate Adaptation Science Center funded project.

U.S. Fish and Wildlife Service (USFWS)

- All collection departments serve as repositories for confiscated imports of wildlife, while regularly assisting USFWS staff with taxonomic support and species determinations.
- CASIZ serves as a voucher repository for endangered vernal pool crustaceans for federally permitted work (Vernal Pool Crustacean Survey).
- CAS Ornithology and Mammalogy and Herpetology have performed in-depth surveys and collections of amphibians, reptiles, and small mammals for USFWS reserves, most recently for the Desert National Wildlife Refuge.

U. S. Forest Service (USFS)

- CAS Ornithology is documenting bird diversity in the El Dorado National Forest, before and after a prescribed burn and a wildfire, with funding from USFS (ongoing).
- CAS Botany is the repository of the USFS Region 5 herbarium and smaller regional Forest Service herbaria such as the Tahoe and Modoc National Forest herbaria. The Academy Botany department also has informal working relationships with all National Forests in California for performing inventories and making voucher specimens.
- CAS Geology (Roopnarine) is working in collaboration with CAS staff (Kapan, Dumbacher, Rapacciuolo) and the USFS to develop a model and metrics of forest wildlife resilience for the Sierra Nevada, focused on the Lake Tahoe Basin Management Unit and the Tahoe-Central Sierra Initiative landscape.

National Oceanic and Atmospheric Administration (NOAA)

Ocean Exploration Trust (in partnership with Office of Ocean Exploration and Research, NOAA)

- The California Academy of Sciences is the collections repository for Cordell Bank NMS and Greater Farallones NMS and the Monterey Bay NMS (ongoing).
- G.Williams has been the on board scientist on the FSV Bell M. Shimada, the RV Fulmar and the EV Nautilus focused on coral systematics and biodiversity.
- CAS IZ experts have staffed land-based team, consultations, taxonomic identifications for deep-sea submersible expeditionary work
- CAS Ornithology and Mammalogy has a long-term cooperative relationship with the Greater Farallones Association (non-profit partner of the GFNMS) Beach Watch Program which includes data sharing and volunteer training. The program documents dead birds and marine mammals along the coast (ongoing).
- CAS Geology houses processed diatom samples from several DSDP and ODP legs.

National Park Service (NPS)

- The Academy works under NPS scientific collecting permits to collect data and specimens of dead stranded marine mammals along the coast including the Point Reyes National Seashore and Golden Gate National Recreation Area (ongoing).
- The Academy Botany department has informal working relationships with various National Parks within the NPS for performing inventories and making voucher specimens.
- CAS Entomology and Arachnology are currently designated as repositories of specimens from Pinnacles NP, the Presidio NM (including extinct species), Death Valley NP, and the Mojave National Preserve. We have also served as experts for identifications.
- CAS Geology serves as a repository for paleontological resources from Point Reyes National Seashore
- CAS Ornithology is working with partners from GGNRA, Muir Woods National Park, and Point Reyes National Seashore to study the impact of Barred Owls on local Northern Spotted Owls.

Inter-agency

- CAS Ornithology is quantifying the impacts of invasive Barred Owls on native Spotted Owls, and providing scientific consultation on potential solutions. This is part of an interagency effort between USFS, NPS, USFWS convened by CDFW.

Services to be provided

The Academy can serve as a dedicated specimen repository for research collections generated through Academy partnerships with Federal Agencies. Academy collections span Anthropology, the Life Sciences, and Earth Sciences, and specimen records are freely available through databases such as GBIF and iDigBio. Agency staff can become Research or Field Associates at the Academy. Agency staff can work with the Academy to plan outreach events at the museum.

Overhead Rate

The Academy agrees to an overhead rate of 17.5% for CESU activities.

Administrative Support

The Academy's Accounting and Legal Departments can assist with and facilitate subcontracts, and money transfers. We can receive funds between partners and through the national CESU network. All faculty and staff have office spaces at the Academy with internet, phone, and general office resources.

Time and Services

One or more undergraduate interns per summer (9 weeks), could be co-advised by Academy and Agency staff to work on joint projects on Federal lands, with stipends and housing paid through the Summer Systematics Institute ($12,000 per intern).

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

SUSTAINMENT

Dr. Nicholas Mills
Professor, Executive Associate Dean
Rausser College of Natural Resources
University of California, Berkeley
760 University Hall MC #3100, Berkeley, CA 94720-3100

April 26, 2021

Dear Dr. Nicholas Mills:

I am writing to express support for the California Academy of Sciences' (Academy) application to become a member of the Californian Cooperative Ecosystems Studies Unit (CESU).

With more than 100 scientists actively engaged in a broad range of research areas, the Academy's Institute for Biodiversity Science and Sustainability (IBSS) is well poised to enhance the current capabilities of the Californian CESU. IBSS scientists' expertise in a suite of taxonomic groups (including plants, birds, reptiles, amphibians, terrestrial and marine mammals, and terrestrial and marine invertebrates), and their experience in biodiversity surveys, ecosystem restoration, conservation genomics, rare species monitoring programs, and species status assessments are particularly relevant to meeting the needs of the Department of Defense (DoD) and other CESU partners. The Academy has worked effectively with many federal agencies, including the DoD and DoD partner agencies, and admitting the Academy to the Californian CESU would facilitate the establishment of additional collaborative relationships. The DoD would welcome the ability to use the Californian CESU as a vehicle for conducting future work with the Academy.

I respectfully ask that you consider the Academy's application to become a member of the Californian CESU. Please feel free to contact me regarding this letter of endorsement at 406-581-8148 or elizabeth.j.galli-noble.civ@mail.mil. Or contact Kimberly O'Connor, DoD representative to the Californian CESU, at 808-864-5938 or kimberly.oconnor@navy.mil, if you require additional information.

Sincerely,

GALLI-NOBLE.ELIZABETH.J.1553297547

Digitally signed by GALLI-NOBLE.ELIZABETH.J.1553297547
Date: 2021.04.26 10:21:03 -04'00'

Elizabeth Galli-Noble
Senior Program Manager
DoD Natural Resources

Cc: Kimberly O'Connor, Commander, U.S. Pacific Fleet
Ryan B. Orndorff, Director, DoD Natural Resources

Smithsonian Institution

Office of the Acting Under Secretary for Science and Research

11 August 2020

Mr. Nicholas Mills, California CESU Director
University of California, Berkeley
Department of Environmental Science, Policy, and Management
130 Mulford Hall, #3114
Berkeley, CA 94720

Re: Smithsonian Institution's Application to the Californian CESU

Dear Mr. Mills,

The Smithsonian Institution (SI) submits this letter of interest and the accompanying materials to express its desire to join the Californian Cooperative Ecosystem Studies Unit (CA-CESU) as a 501(c)(3) non-profit partner institution. The Smithsonian has a distinguished history of collaborating with federal partners in support of initiatives advancing common goals and objectives of the Institution and its partners. The attached materials describe and demonstrate the breadth of our mission and commitment, and the importance of the collaborative partnerships we seek to advance basic research, education, and outreach as it relates to federal CESU members.

As the Smithsonian Institution's Acting Under Secretary for Science and Research and on behalf of Smithsonian research centers and museums, I have read the Californian CESU Cooperative and Joint Venture agreement. To the extent that our common goals align, the Smithsonian Institution agrees to support the mission and goals of the Californian CESU, as well as fulfill the responsibilities of a non-profit partner as described in the CA-CESU agreement.

Secretary Lonnie Bunch oversees the Smithsonian's 19 museums, numerous research units, the National Zoo, multiple offices and programs related to education, the Office of Fellowships and Internships, the Smithsonian Scholarly Press, the Smithsonian Institution Archives and the Smithsonian Libraries. The Secretary has appointed three Under Secretaries (Science/ Research, Education, Museums/Culture) to direct these various units' activities. Specifically, as the Acting Under Secretary for Science and Research, I have been tasked to lead and promote multidisciplinary activities and excellence in research across the Smithsonian.

Please accept the attached application from the Smithsonian Institution to join the Californian Cooperative Ecosystems Studies Unit (CA-CESU). This partnership would enable the Smithsonian to increase its contribution to the management of natural and cultural resources in the state of California through increased collaboration with CESU partners. We look forward to expanding the capabilities of the CESU with the Smithsonian's research and technical expertise.

Sincerely,

Digitally signed by Roger Brissenden
Date: 2020.08.11 10:20:40 -04'00'

Roger Brissenden
Acting Under Secretary for Science and Research

Attachments

cc: Rux[illegible] Coordinator CA-CESU ([illegible])

Smithsonian Institution

Office of Sponsored Projects

11 August 2020

Mr. Nicholas Mills
California CESU Director
University of California, Berkeley
Department of Environmental Science, Policy, and Management
130 Mulford Hall, #3114
Berkeley, CA 94720

Re: Smithsonian's Institution Application to the Californian CESU (CA-CESU)

Dear Mr. Mills,

This letter confirms that the Smithsonian Institution has reviewed the general CESU descriptive materials, as well as the CA-CESU Cooperative and Joint Venture Agreement and agrees to abide by all the responsibilities and expectations of partner institutions.

As the Institutional Official designated to accept incoming sponsored project grants, contracts, and cooperative agreements, I can confirm that the Smithsonian Institution understands and accepts the CESU overhead rate cap of 17.5% on any CESU funded research, technical assistance, or educational activities. In keeping with the Smithsonian's current negotiated indirect cost rate, any CESU projects would be charged 17.5% of total direct costs, with the exception of equipment and participant support costs. In addition, the Smithsonian has the ability to transfer, subcontract and receive funds between CESU partners and through the national CESU network, as demonstrated by the many past and current federally funded projects listed in our application.

Smithsonian research staff are comprised of Federal and Trust employees. The Smithsonian does not charge for the time and effort of our Federal research staff, when working on federal cooperative agreements, grants or contracts. Therefore, the Smithsonian would contribute the Federal researchers' time and effort on Californian CESU projects, as well as provide the use of Federally funded Smithsonian facilities, which include laboratories, research centers and office space at no cost to CESU-California.

If there are further questions regarding the Smithsonian's application, please contact Karen Otiji of my office at OtijiK@si.edu or at 202-633-7111.

Sincerely,

Tracey Fraser

Tracey Fraser
Director
Office of Sponsored Projects

Attachments
cc: Ruxin Liu, Coordinator, CA-CESU (Ruxinl@berkeley.edu)

Smithsonian Institution

Cooperative Ecosystem Studies Unit (CESU) - California
Non-profit Partner Application

The Smithsonian Institution (www.si.edu), a non-profit trust instrumentality of the United States created in 1846 by an act of the United States Congress, has its principal place of business at 1000 Jefferson Drive, SW, Washington, D.C. 20560. The Smithsonian's mission is to promote "*the increase and diffusion of knowledge.*" Its 2017-2022 Strategic Plan identifies **Five Grand Challenges** that its museums and research centers strive to address:

- **Magnifying the Transformative Power of Arts and Design**

  Every day, through our museum exhibitions and collections, research, and education and outreach programs, our staff explores the arts and their impact on our world. We ask how artists are able to pose trenchant questions about the meaning of life, how the arts and design improve the lives of individuals and communities, how the arts have served and continue to serve as means for people and communities to express and share values and ideas, and how the creative process can help all people experience our shared humanity.

- **Unlocking the Mysteries of the Universe**

  We will continue to lead in the quest to understand the fundamental nature of the cosmos, using next-generation technologies to explore our own solar system, meteorites, the Earth's geological past and present, and the paleontological record of our planet.

- **Understanding and Sustaining a Biodiverse Planet**

  We will use our resources, across scientific museums and centers, to significantly advance our knowledge and understanding of life on Earth, respond to the growing threat of environmental change, and sustain human well-being.

- **Valuing World Cultures**

  As a steward and ambassador of cultural connections, with a presence in some 100 countries, and expertise and collections that encompass the globe, we will

build bridges of mutual respect, and present the diversity of world cultures and the joy of creativity with accuracy, insight, and reverence.

❖ **Understanding the American Experience**

America is an increasingly diverse society that shares a history, ideals, and an indomitable, innovative spirit. We will use our resources across disciplines to explore what it means to be an American and how the disparate experiences of individual groups strengthen the whole, and to share our story with people of all nations.

In addition, Smithsonian has identified **Seven Goals** within the Strategic Plan, three of which would provide direct benefit to a CESU partnership:

Goal #2: Catalyze new conversations and address complex challenges.

- We will create new forums across the Smithsonian to proffer solutions to problems of national and global import.
- We will magnify our national and global reach through new collaborative approaches.

Goal #5: Drive large, visionary, interdisciplinary research & scholarly projects.

We will:

- more strongly engage experts from multiple sectors from around the globe to address the Five Grand Challenges;
- make our academic, industry, and government partnerships more strategic;
- ensure that most promising and important research projects move forward; and
- Increase the impact of Smithsonian research, scholarship, and education by emphasizing data science and data analytics.
- Optimize the shared use of Smithsonian facilities;
- Pursue an asset-light strategy to expand its national and global footprint;
- Balance preservation and sustainability.

Goal #6: Preserve natural and cultural heritage while optimizing assets.

- Smithsonian will deploy an Institution-wide collections plan based on an overall framework and the needs of the individual collecting units.
- Optimize the shared use of Smithsonian facilities;
- Pursue an asset-light strategy to expand its national and global footprint;
- Balance preservation and sustainability.

1. List of programs relevant to federal land management, environmental and research agencies that will likely be engaged in CESU activities.

The ***National Museum of Natural History*** (NMNH), the ***National Zoological Park/Smithsonian Center for Biology Institute*** (NZP/SCBI), the ***Smithsonian Environmental Research Center*** (SERC), and the **Smithsonian Tropical Research Institute** (STRI) are the primary institutional departments that will be engaged in relevant CESU activities. In addition, should historical studies need to be done, the **Smithsonian Libraries and Archives** (SLA) **National Museum of American History** (NMAH), the **National Museum of African American History and Culture** (NMAAHC), and the **Center for Folklife and Cultural Heritage** (CFCH) can provide consultants in historical research, anthropological, ethnographic, political, or general cultural studies.

National Museum of Natural History (NMNH)
https://naturalhistory.si.edu

NMNH's mission is to promote understanding of the natural world and our place in it. Steward of a collection of 145 million specimens, the museum tells the story of the planet and are a record of human interaction with the environment and one another. The museum preserves and shares the scientific specimens and artifacts that tell Earth's 4.6-billion-year story, and conducts basic research to inspire curiosity about the planet, the species that inhabit it, the cultures that depend upon it, and the forces that now alter it. They collaborate with scores of partners—within the Smithsonian Institution, in federal agencies and academia, and beyond—to serve our diverse and growing audiences. NMNH collections contain a very large number of specimens from California, some of which have already been digitized, with plans to digitize the remaining specimens.

National Zoological Park/Smithsonian Conservation Biology Institute (NZP/SCBI) https://nationalzoo.si.edu

NZP/SCBI plays a leading role in the Smithsonian's global effort to save wildlife species from extinction and train future generations of conservationists. SCBI spearheads research programs at its headquarters in Front Royal, Virginia, the National Zoo in DC, and at field research stations sites worldwide. SCBI Scientists tackle some of today's most complex conservation challenges by applying and sharing what they learn about animal behavior and reproduction, ecology, genetics, migration and conservation sustainability. Its major research initiatives are organized in five science centers: conservation, ecology, conservation and sustainability, conservation genomics, migratory birds, and species survival. Approximately 250 scientists and students collaborate with colleagues in more than 25 countries.

NZP/SCBI researchers have been monitoring and researching endangered species in the California area for decades, with ongoing projects dedicated to conservation and ecological study of threatened species in the California region. In collaboration with zoo archaeologists, Research biologist **Scott Sillett,** geneticist **Jesus Maldonado**, and research zoologist **Robert Fleischer** are part of multiple projects involving ecological and genomic research, including archaeogenomics and the genetic monitoring of birds and mammals in the Channel Islands. In addition to these collaborative projects, Jesus Maldonado also conducts genetic research on San Joaquin foxes and ornate shrews, while Robert Fleischer studies genetic structure and conservation strategies for threatened desert tortoises and phainopepla. Senior research biologist **Katherine Ralls** conducts research on several endangered and threatened species in California, including southern sea otters, San Joaquin kit foxes, island foxes, and California condors. Her work focuses on non-invasive survey methods and DNA analysis, and she currently serves as the genetics advisor to the California Condor Recovery Program.

Smithsonian Environmental Research Center (SERC)
https://serc.si.edu/about-us

SERC provides science-based knowledge to meet the environmental challenges of the 21st century. SERC leads research on coastal ecosystems—where the land meets the sea—to inform real-world decisions for wise policies, best business practices, and a sustainable planet. SERC research is urgent. The world's coastal zones are home to more than 70 percent of the global population and experience intense economic activity. The rate of environmental change is accelerating at an alarming rate.

SERC explains environmental science in ways that change how people view the biosphere, inspiring them to be responsible stewards of the Earth. SERC staff and volunteers lead hands-on education programs for grades K-12 that align with the Next Generation Science Standards. Teachers can also take advantage of SERC's professional development programs.

In collaboration with ***San Francisco State University's Estuary & Ocean Science Center***, ecologist **Andrew Chang** conducts extensive research in the San Francisco Bay Area. His work includes studying the impact of climate change on invertebrate communities in San Francisco Bay and surrounding areas, such as how changes in storms, droughts, and heat waves may affect invasions and the workings of underwater communities. Chang also does work for the California Department of Fish and Wildlife surveying California waters for invasive species, as well as testing Living Shorelines-based approaches to shoreline strengthening in the face of climate change.

Smithsonian Tropical Research Institute (STRI)
https://stri.si.edu

The Smithsonian Tropical Research Institute was founded with the purpose of increasing and sharing knowledge about the past, present and future of tropical ecosystems and their relevance to human welfare. STRI employs 40 staff scientists and hosts some 1,400 scientific visitors every year, from undergrads and interns to postdoctoral investigators and tenured research associates. Together, they collaborate on 350 running research projects and publish more than 400 peer reviewed articles in scientific journals every year. The research is not only shared widely around the global scientific community, but also reaches policymakers in Panama and beyond, receives media coverage around the globe, and is the foundation of an outreach and training program that reaches hundreds of teachers and tens of thousands of schoolchildren every year.

In collaboration with the University of California, Santa Barbara, research biologist **Mark Torchin** conducts experiments in marine sciences in the Santa Barbara region. His primary research compares species interactions and invasions across latitudes, as well as studying marine invasions in the Channel Islands, marine protected areas, and other habitats on the outer coast of California. Torchin has also conducted research examining parasites and disease dynamics in California estuaries, including work on aquaculture species and commercial shellfish such as oysters and mussels.

National Museum of American History (NMAH)
http://americanhistory.si.edu

Through its incomparable collections, rigorous research, and dynamic public outreach, NMAH explore the infinite richness and complexity of American history. We help people understand the past in order to make sense of the present and shape a more humane future.

The National Museum of American History is home to more than 1.8 million objects and more than three shelf-miles of archival collections. On behalf of the nation, we preserve and share this extraordinary national collection encompassing everything from the original Star-Spangled Banner to Abraham Lincoln's top hat; from the first computer bug to the first artificial heart; from Dizzy Gillespie's angled trumpet to Dorothy's ruby slippers from *The Wizard of Oz*. NMAH's archival collections include a remarkable array of American history in documents, photographs, and other works, including major holdings on the histories of American business and music. Their artifacts form a fascinating mosaic of American life and comprise the greatest single collection of American history in the world.

The museum's exhibitions explore fundamental American ideals and ideas—such as democracy, opportunity, and freedom—and major themes in American history and culture, from European contact in the Americas to the present day. Major exhibitions on innovation, money, and business history explore these topics from

a range of perspectives and challenge visitors to consider what is distinctly American about them. The full reinvention of the West Wing will be completed in 2020 with the opening of new third floor exhibitions on entertainment, culture, and the arts.

Researchers of the NMAH are currently conducting research on the intersection of agricultural production and consumption within immigration history, namely the Mexican and Asian-Pacific immigrant communities. **L. Stephen Velasquez**, curator of the Division of Cultural and Community Life, is currently conducting research examining California wine production and vineyard work in relation to the Mexican and Mexican American community, as well as the role of immigration in the temporary guest worker programs of WWII.

In addition to Latinx history, research by **Sam Vong**, the curator of Asian Pacific American History, examines how the labor and culture of Asian Pacific immigrants have impacted and shaped California's agricultural industry and fisheries from the mid-19th century to the present. Dr. Vong is also studying the formation of Filipino, Japanese, Sikh, and Southeast Asian communities in Central California, the San Joaquin Delta region, and Sacramento and how these communities have shaped the agricultural landscape and introduced new agricultural methods. Through ethnographic and archival research, Dr. Vong is currently building a collection of artifacts at NMAH and collecting oral histories that document the integral role of Asian immigrants in California.

Smithsonian Institution Archives (now *Smithsonian Libraries and Archives*)
https://siarchives.si.edu/

The Smithsonian Institution Archives collects, preserves, and makes available the official records of the Smithsonian's nineteen museums, nine research centers, and the National Zoo that document Smithsonian staff, artifacts, benefactors, events, exhibits, buildings, and research. Personal papers, special collections, records of professional societies, and oral/video histories supplement these records. The SLA staff handles the preservation, conservation and digitization of collections, making them available to both scholarly researchers and the general public.

The **Biodiversity Heritage Library** (BHL), housed within the Smithsonian Libraries and Archives, is a digital library of open access biodiversity literature produced by a consortium of libraries with a Secretariat at the Smithsonian. It currently provides free access to over 55 million pages of biodiversity literature. Much of this is relevant to California, and the BHL consortium includes several partner libraries in California. A search for the word "California" in the BHL returns 168,000 hits. BHL is actively adding digital content, and improving discovery tools.

SLA Fellow **Brian Daniels** currently leads the California Indian Terminated Tribes Project (CITTP), a collaborative, multi-tribal initiative with non-federally recognized tribes and terminated tribes on issues surrounding recognition, repatriation, land use, and cultural and natural heritage.

National Museum of African American History and Culture (NMAAHC)
https://nmaahc.si.edu

The National Museum of African American History and Culture is the only national museum devoted exclusively to the documentation of African American life, history, and culture. It was established by Act of Congress in 2003, following decades of efforts to promote and highlight the contributions of African Americans. To date, the Museum has collected more than 36,000 artifacts and nearly 100,000 individuals have become members. The Museum opened to the public on September 24, 2016, as the 19th and newest museum of the Smithsonian Institution.

There are four pillars upon which the NMAAHC stands:

1. It provides an opportunity for those who are interested in African American culture to explore and revel in this history through interactive exhibitions

2. It helps all Americans see how their stories, their histories, and their cultures are shaped and informed by global influences

3. It explores what it means to be an American and share how American values like resiliency, optimism, and spirituality are reflected in African American history and culture

4. It serves as a place of collaboration that reaches beyond Washington, D.C. to engage new audiences and to work with the myriad of museums and educational institutions that have explored and preserved this important history well before this museum was created.

The NMAAHC is a public institution open to all, where anyone is welcome to participate, collaborate, and learn more about African American history and culture.

Center for Folklife and Cultural Heritage (CFCH)
https://folklife.si.edu

CFCH promotes greater understanding and sustainability of cultural heritage across the United States and around the world through research, education, and community engagement.

The Center for Folklife and Cultural Heritage is a research and educational unit of the Smithsonian Institution that produces the Smithsonian Folklife Festival, Smithsonian Folkways Recordings, exhibitions, documentary films and videos, symposia, publications, and educational materials.

CFCH also maintains the Ralph Rinzler Folklife Archives and Collections, conduct ethnographic and cultural heritage policy oriented research, and provide educational opportunities through fellowships, internships, and training programs. In addition to the Folklife Festival, we produce major national cultural events, such as the National World War II Reunion, the First Americans Festival for the opening of the National Museum of the American Indian, and the opening of the National Museum of African American History and Culture in September 2016.

Their philosophy is to join high-quality scholarship with strong community participation and engaging educational outreach. This has led to activities that have affected cultural heritage policies and practices at local, national, and international levels. Programs and products have earned serious scholarly review, popular acclaim, broad media attention, and professional recognition. CFCH's staff is culturally diverse and extremely productive, combining interdisciplinary scholars with technical specialists.

2. **List and brief description of the staff or personnel with the expertise in disciplines and interdisciplinary work relevant to federal land management, environmental and research agencies (do not submit CVs).**

The Smithsonian is home to over 1700 seasoned research employees and affiliated research associates who conduct primary and secondary research in a wide array of disciplines, from art history to zoology. A recently launched website, Smithsonian Profiles (https://profiles.si.edu) provides a searchable database of Smithsonian staff expertise. In addition, a comprehensive listing of Smithsonian researchers, curators and education staff, along with some specifics about their areas of research, is also available at https://www.smithsonianofi.com/sors-introduction/.

Although the Smithsonian Institution is not a degree-granting organization, it has a long history of providing hand-on training opportunities for university students, from undergraduate to postdoctoral levels. In Fiscal year 2017, The Smithsonian hosted over 1700 interns and nearly 800 Fellows, who came from across the United States as well as internationally. In addition, the Smithsonian funds several internship opportunities that specifically target under-represented students, in order to encourage them to follow careers in scientific research or museum studies.

3. **List and brief description of relevant facilities, equipment, centers, or institutes that would provide support to research, technical assistance, or educational activities of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.**

As the world's largest museum, research and education complex, the Smithsonian comprises 19 museums, nine research centers, the National Zoo, and many educational units and programs. Smithsonian facilities specifically relevant to federal land management, environmental or research agencies that may be engaged in CESU activities include the National Zoological Park (Washington, DC) and the Smithsonian Conservation Biology Institute (Front Royal, VA), and the Smithsonian Environmental Research Center (Edgewater, Maryland), which hosts a satellite facility at SFSU. In addition, the National Museums of Natural History, America History and African American History (Washington, DC), and the Center for Folklife and Cultural Heritage (Washington, DC), and the provide exhibit, educational and research space to accommodate their respective missions. The Smithsonian also maintains a highly respected research facility in Panama, Central America (Smithsonian Tropical Research Institute) for the conduct of a wide array of biological and cultural research.

National Museum of Natural History

- Lab of Analytical Biology

  The Lab is the biotechnology core of the NMNH molecular research program. Its mission is to enable biodiversity discovery and document using modern biotechnology and bioinformatics platforms.

- Biorepository

  The NMNH Biorepository began operations in 2011 and is believed to be the largest museum-based natural history biorepository in existence. Our current capacity exceeds 4.2 million standard 2 ml cryovials, potentially expandable to 5 million cryovials. Researchers at the National Museum of Natural History (NMNH) have collected material for projects in biodiversity, phylogenetics, population genetics, toxicology, environmental monitoring, etc., since the early 1970s. The recent explosion of genomic science has increased the value of these materials and the rate of genomic collection growth.

- Smithsonian Marine Station at Fort Pierce

  The Smithsonian Marine Station (SMS) at Fort Pierce, Florida is a research center specializing in marine biodiversity and ecosystems of Florida. Research focuses on the Indian River Lagoon and the offshore waters of Florida's east central coast, with comparative

studies throughout coastal Florida. The Station also provides logistical and administrative management of the Caribbean Coral Reef Ecosystems Program (CCRE) based at the Carrie Bow Cay Field Station on the Meso-American Barrier Reef in Belize. SMS and CCRE are vital parts of the Marine Global Earth Observatory (MarineGEO), directed by the Smithsonian's Tennenbaum Marine Observatories Network (TMON).

- Museum Support Center

  The Museum Support Center (MSC) is the principal off-site conservation and collections storage facility for the National Museum of Natural History's irreplaceable national collections. One of the first such facilities in the world, MSC was designed to address the needs of collections storage, conservation, and research. Located in Suitland, Maryland, this state-of-the-art facility houses more than 31 million objects.

  MSC is home to the Biorepository Center, the Laboratories of Analytical Biology (LAB), the Smithsonian's Museum Conservation Institute (MCI), and numerous department collections from the National Museum of Natural History. It also houses collections from the Hirshhorn Museum, the National Museum of American History, and the National Anthropological Archives.

National Zoological Park and Conservation Biology Institute

The National Zoological Park and Conservation Biology Institute consists of 163 acres of land in Washington, DC and 3,200 acres in Front Royal, Virginia with close to 2,000 animals in the collection. The Zoo is committed to conservation, research and education where scientists perform a wide range of research projects ranging from veterinary and reproductive research to save wildlife to understanding genetics of small populations of endangered wild species. The Smithsonian Conservation Biology Institute (SCBI), located in Front Royal, VA, was founded in 1974. Research Scientists at SCBI study and breed more than 20 species of wildlife including animals that were once considered extinct in the wild such as Scimitar-Horned Oryx. These facilities include a state-of-the-art veterinary clinic, research labs for endocrinology, GIS, and reproductive physiology, and houses the joint Smithsonian-Mason School of Conservation.

Smithsonian Environmental Research Center

Since its creation in 1965, SERC has been conducting peer-reviewed research to understand the causes and consequences of rapid change in Chesapeake Bay and around the world. SERC is headquartered on Chesapeake Bay, and the site serves as a natural laboratory for long-term and cutting-edge ecological research. Its 2,650-acre campus spans forests, wetlands, marshes and 15 miles of protected shoreline where scientists explore the most pressing issues affecting the environment, including: water quality, fisheries, invasive species, conservation, land use, toxic chemicals and global change.

The Smithsonian has a long-term partnership with local institutions at the Estuary & Ocean Science Center, including San Francisco State University and the San Francisco Bay National Estuarine Research Reserve (part of NOAA).

4. **List and brief description of relevant experience in research, technical assistance and education linked to CESU Network objectives (such as previous grants, special projects awards, etc.)**

   Please refer to the *attached listing* of 88 federal financial assistance awards that Smithsonian has received (2/01/19-3/31/20) from federal agencies who participate as CESU Californian federal partners and individual researchers and projects currently active in the California area.

5. **List and brief description of current formal and informal relationships with federal land management, environmental, and research agencies that will be engaged in CESU activities.**

   The Smithsonian has developed a variety of formal and informal agreements and relationships with federal agencies that are of relevance to federal land management, as outlined below. In addition, the Institution coordinates its science activities with other federal agencies and the private sector in many ways, including:

   - Participation in many federal inter-agency committees and working groups (especially those under the Office of Science and Technology Policy/National Science and Technology Council structure)

   - Invitations for administrative and scientific colleagues from federal agencies to planning meetings for Smithsonian activities

   - Participation in planning activities in the broader scientific community, such as the decadal plans organized by the National Academy of Sciences in astronomy and the National Ecological Observatory Network organized by the National Science Foundation

General

- Many NSTC activities, including GEOSS and Federal Interagency Working Group on Scientific Collections
- Host Integrated Taxonomic Information System (ITIS) with USDA, USGS, EPA, NOAA, etc.

Agriculture

- NMNH - USDA Systematic Entomology Laboratory
- STRI and Forest Service – core SIGEO partner running CTFS plot in Puerto Rico
- SERC – forest ecology and structure
- NZP - Wildlife ecology monitoring
- NZP - Arthropod chemical deterrents

Commerce

- NMNH - NOAA Systematics laboratory
- NASM and NOAA – Exhibits
- SERC and NOAA - Chesapeake Bay Program
- SERC and NOAA - Coastal ocean research priorities
- SERC and NOAA - Fisheries management and restoration
- NZP and NOAA – Sea turtle conservation in Latin America

Defense

- NMNH - Mosquito research program
- NMNH - Bird strike identification program
- NZP and Armed Forces Institute of Pathology - training pathologists
- NZP - Arthropod chemical deterrents

Interior

- Collaboration in use of the National Mall (e.g., Folk Life Festival)
- NMNH and USGS - Wildlife systematics laboratory
- NMNH and USGS – Global Volcanism Program
- NMNH and NPS – Park surveys and data provision
- NMNH and MMS – Archiving voucher specimens (marine invertebrates)
- NZP and FWS – Recovery of rare species (e.g. black footed ferret)
- NZP (CRC) and NPS – Cooperation with adjacent Shenandoah Park on ecological monitoring and NEON
- SERC and USGS, FWS – Marine biology, pollution, and invasive species
- STRI and USGS –Tropical soils and hydrology
- SERC and USGS - Online database on invasive aquatic and marine species

Attachment 3 - New Member Applications and Support Letters

- SERC and USGS - Sea level rise and wetlands
- SERC and USGS - Watershed discharges
- SERC and NPS – Chesapeake Gateways Network

NASA

- NASM – Mars exploration
- NASM – Exhibits
- NASM – Agreement for first refusal of NASA artifacts
- NMNH – Antarctic meteorite program
- SAO – many, including managing Chandra space telescope
- MCI - Effects of lunar soil on textiles of spacesuits
- SERC – Atmospheric change
- SERC – Remote sensing technology and ground truthing
- NZP - GIS Habitat Monitoring

6. **Description of services to be provided to the participating federal agencies and federal employee (s)**

   The Smithsonian is poised to provide research services in social sciences and basic science areas, depending on the needs of the participating federal agencies. Due to the broad scope of Smithsonian researchers' expertise in these areas, we can be responsive to a wide range of federal agency requests for assistance.

7. **Description of the actual, assessed overhead rate (not to exceed 17.5%) to be charged, and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance and educational services.**

   The Smithsonian Institution agrees to accept a limited overhead rate of 17.5% on its activities conducted through CESU, including research, technical assistance and educational services. A letter from the Director, Smithsonian's Office of Sponsored Projects, confirms this understanding and is attached.

8. **Description of administrative support, including the ability (and administrative charges, if any) to transfer, subcontract, and receive funds between CESU partners and through the national CESU network**

   The Smithsonian possesses the administrative support and ability to transfer, subcontract or receive funds between CESU partners and through the national CESU network, as required. Such functions would be handled by the Smithsonian's Office of Sponsored Projects. An Institutional letter of support from the Smithsonian's

Director of the Office of Sponsored Projects, confirming the Institution's ability to commit institutional resources and enter into binding agreements, is attached to this application.

9. **Staff, faculty time, educational services, and other commitments the university wishes to offer the CESU, including the amount, kind, dollar value and duration of assistantships, work-study funds, clerical support, etc.**

   Smithsonian research staff are comprised of Federal and Trust employees. The Smithsonian does not charge for the time and effort of our Federal research staff, when working on federal cooperative agreements, grants or contracts. Therefore, the Smithsonian would contribute the Federal researchers' time and effort on CESU-California projects, as well as provide the use of Federal funded Smithsonian facilities, including laboratories, research centers and office space at no cost to CESU-California.

10. **Designation of a contact person (administrative and technical representative), along with their title, full address, phone number, fax and email address to serve on the CESU steering committee, participate in CESU annual partner meetings, facilitate internal and external communication, promotion, and response to CESU correspondence and administrative actions.**

Administrative Representative

Karen Otiji, Associate Director
Office of Sponsored Projects
Smithsonian Institution
P.O. Box 37012, MRC 1205; Washington, DC 20013-7012
For Fed-Ex, UPS, and other express courier:
1000 Jefferson Drive, SW, Washington, D.C. 20560
Main Telephone: (202) 633 -7110 **Direct:** (202) 633-7111
Mobile: (202) 285-9432 - **Fax:** (202) 312-2823
Email: Otijik@si.edu

Technical Representative

Scott Miller, Chief Scientist
Office of the Under Secretary for Science and Research
Smithsonian Institution
P.O. Box 37012, MRC 040; Washington, DC 20013-7012
For Fed-Ex, UPS, and other courier:
1000, Jefferson Drive, SW, Washington DC 20560
Main Telephone: (202) 633-5135 **Direct:** (202) 633-5132
Email: MillerS@si.edu

Attachments

1. Letter from Smithsonian's Acting Under Secretary for Science and Research
2. Letter from Smithsonian's Director of the Office of Sponsored Projects
3. Letters of support from CESU federal agency partners (US Fish and Wildlife Service, US Geological Survey National Oceanic and Atmospheric Administration, and National Park Service, as well as from California State University – Stanislaus).
4. Listing of past and current federal grants, cooperative agreements and contracts from federal agencies participating in Californian CESU.

FINANCIAL ASSISTANCE AWARDS FROM CESU PARTNERS TO SMITHSONIAN (FEBRUARY 2019 - MARCH 2020)

DEPARTMENT	DATE AWARDED	PRINCIPAL INVESTIGATOR	SPONSOR	PROJECT TITLE	Allotment	CFDA Num
National Air and Space Museum	26-Aug-19	DELANEY,MICHELLE	U.S. Department of Commerce	Activity 16: NASM Discovery Stations	$180,000	00.IAA
Natl Museum of American Hist	1-Apr-19	DELANEY,MICHELLE	U.S. Department of Commerce	Activity 17: Military Invention Day	$45,650	00.IAA
Nat'l Mus'm of Natural History	8-Jan-20	QUATTRINI,ANDREA	DOC (pass thru funds from Lehigh University)	Connectivity of Coral Ecosystems in the Northwestern Gulf of Mexi	$171,431	11.478
Nat'l Mus'm of Natural History	1-Aug-19	JOHNSON,MAGGIE	DOC (pass thru funds from University of Florida)	CHRP 2018: Assessing Hypoxia Threat...Coral Restoration Efforts	$116,680	11.478
Nat'l Mus'm of Natural History	5-Sep-19	Ushijima,Blake	DOC/NOAA	Developing Probiotic Treatments...Coral for Conservation Efforts	$51,279	11.482
SI Environmental Research Ctr	15-Aug-19	ASHTON,GAIL	DOC (pass thru funds from Pacific States Marine Fisheri	Bering Sea Days Invasive Species and Invertebrate Education and B	$49,344	11.437
SI Environmental Research Ctr	11-Dec-19	OGBURN,MATTHEW	DOC (pass thru funds from Rutgers, State University of I	Data Wrangler and Management of MATOS for the ATN	$75,000	11.012
SI Environmental Research Ctr	12-Mar-19	ZABIN,CHELA	DOC (pass thru funds from State of California)	New Living Shorelines Project at Giant Marsh	$178,588	11.463
SI Environmental Research Ctr	22-Apr-19	ZABIN,CHELA	DOC (pass thru funds from University of California at Da	Using Native Food Webs to Reduce Impacts of Non-native Predato	$25,441	11.417
SI Environmental Research Ctr	22-Jan-20	ZABIN,CHELA	DOC (pass thru funds from University of California at Da	Using Native Food Webs to Reduce Impacts of Non-native Predato	$25,441	11.417
SI Environmental Research Ctr	10-Jan-20	OGBURN,MATTHEW	DOC (pass thru funds from University of Maryland)	Advancing Monitoring and Management of Chesapeake Bay Alosin	$21,675	11.417
SI Environmental Research Ctr	10-Jan-20	WHIGHAM,DENNIS	DOC (pass thru funds from University of Maryland)	2020-0023: What Happens after the Phragmites is Killed?	$69,849	11.417
SI Environmental Research Ctr	11-Jun-19	OGBURN,MATTHEW	DOC/NOAA	The Value of Shallow Tributary Habitats of Upper Chesapeake Bay.	$113,200	11.457
SI Environmental Research Ctr	18-Oct-19	CARNEY,KATHARINE	DOI (pass thru funds from University of Maryland)	Assessing the Potential Impact of Dominion Cove Point...Bay.	$13,830	15.663
SI Environmental Research Ctr	24-Mar-20	OGBURN,MATTHEW	DOI (pass thru funds from State of Delaware)	Delaware Fish Ladder Operation, Maintenance, and Biological Mon	$25,000	15.605
National Air and Space Museum	17-Feb-20	CAMPBELL,BRUCE	NASA - Jet Propulsion Laboratory	MRO Contract with JPL	$20,000	43.RD
National Air and Space Museum	3-Sep-19	GRANT,JOHN	NASA - Jet Propulsion Laboratory	Defining the Geologic History and Record of Potentially Habitable E	$70,617	43.RD
National Air and Space Museum	11-Apr-19	CAMPBELL,BRUCE	NASA - Jet Propulsion Laboratory	Radar for Icy Moon Exploration (RIME) - FY19-20	$50,000	43.RD
National Air and Space Museum	2-Mar-20	STOFAN,ELLEN	NASA - Johns Hopkins Applied Physics Laboratory	Dragon Fly	$477	43.RD
National Air and Space Museum	12-Mar-19	WATTERS,THOMAS	NASA (pass thru funds from Arizona State University)	Lunar Reconnaissance Orbiter Camera (LROC)	$46,000	43.RD
National Air and Space Museum	26-Sep-19	WATTERS,THOMAS	NASA (pass thru funds from Arizona State University)	Lunar Reconnaissance Orbiter Camera (LROC)	$26,000	43.RD
National Air and Space Museum	16-Dec-19	WATTERS,THOMAS	NASA (pass thru funds from Arizona State University)	Lunar Reconnaissance Orbiter Camera (LROC)	$20,000	43.RD
National Air and Space Museum	12-Mar-20	WATTERS,THOMAS	NASA (pass thru funds from Arizona State University)	Lunar Reconnaissance Orbiter Camera (LROC)	$13,296	43.RD
Nat'l Mus'm of Natural History	7-Feb-19	MCCOY,TIMOTHY	NASA (pass thru funds from Arizona State University)	Psyche: Journey to a Metal World	$2,709	43.RD
Nat'l Mus'm of Natural History	11-Jun-19	MCCOY,TIMOTHY	NASA (pass thru funds from Arizona State University)	Psyche: Journey to a Metal World	$5,360	43.RD
Nat'l Mus'm of Natural History	11-Sep-19	MCCOY,TIMOTHY	NASA (pass thru funds from Arizona State University)	Psyche: Journey to a Metal World	$7,690	43.RD
National Air and Space Museum	14-Aug-19	Martin,Emily	NASA (pass thru funds from Johns Hopkins Applied Phys	Geologic Evidence for a South Polar Impact on Enceladus	$13,067	43.001
Nat'l Mus'm of Natural History	10-Feb-20	CORRIGAN,CATHERINE	NASA (pass thru funds from Johns Hopkins University)	Iron Meteorites and Early Solar System Processes	$14,796	43.001
National Air and Space Museum	27-Mar-19	GRANT,JOHN	NASA (pass thru funds from University of Arizona)	HiRise Mission: High Resolution Imaging Science Experiment-Phase	$30,000	43.RD
SI Environmental Research Ctr	15-Apr-19	RUIZ,GREGORY	NASA (pass thru funds from University of Hawaii at Mar	Physical and Biological Processes Maintaining a Unique Floating Ec	$49,746	43.001
SI Environmental Research Ctr	23-Oct-19	RUIZ,GREGORY	NASA (pass thru funds from University of Hawaii at Mar	Physical and Biological Processes Maintaining a Unique Floating Ec	$109,653	43.001
National Air and Space Museum	3-Jan-20	WATTERS,THOMAS	NASA (pass thru funds from University of Notre Dame)	Developing the Lunar Geophysical Network Mission	$3,451	43.001
National Air and Space Museum	5-Jun-19	CAMPBELL,BRUCE	NASA (pass thru funds from University of Texas/Austin)	REASON	$500	43.RD
National Zoological Park	21-May-19	MCSHEA,WILLIAM	NASA (pass thru funds from Yale University)	Activities to Advance, Build, and Deliver Remote-Sensing Supporte	$14,900	43.001
National Air and Space Museum	7-Feb-19	DEVORKIN,DAVID	NASA- Goddard Space Flight Center	Bahcall Distinguished Lecturer 2019	$27,000	00.IAA
National Air and Space Museum	24-Mar-20	DEVORKIN,DAVID	NASA- Goddard Space Flight Center	Bahcall Distinguished Lecturer 2020	$27,000	00.IAA
National Air and Space Museum	13-Aug-19	Martin,Emily	NASA Headquarters	Building a Geologic Map of Neptune's Moon Triton	$75,719	43.001
National Zoological Park	24-Feb-19	LEIMGRUBER,PETER	NASA- Shared Services Center	Diverse Forest Landscapes and Sociopolitical Drivers of Deforestati	$221,222	43.001
National Air and Space Museum	28-Aug-19	CRADDOCK,ROBERT	NASA- Shared Services Center	High-Resolution Mapping and Geomorphological Studies of Martia	$27,000	43.001
National Air and Space Museum	17-Sep-19	CRADDOCK,ROBERT	NASA- Shared Services Center	High-Resolution Mapping and Geomorphological Studies of Martia	$79,416	43.001
National Air and Space Museum	13-Sep-19	IRWIN III,ROSSMAN	NASA- Shared Services Center	Runoff Production on Early Mars	$42,905	43.001
National Air and Space Museum	13-Sep-19	GRANT,JOHN	NASA- Shared Services Center	Constraining the Geology and Near Surface Properties of the InSigh	$82,583	43.001
Nat'l Mus'm of Natural History	16-Sep-19	ANDREWS,BENJAMIN	NASA- Shared Services Center	Multi-Decadal Sulfur Dioxide Climatology from Satellite Instrument	$40,808	43.001
Nat'l Mus'm of Natural History	17-Sep-19	CORRIGAN,CATHERINE	NASA- Shared Services Center	Understanding Near Earth Objects through Characterization of U.S	$32,030	43.001
Nat'l Mus'm of Natural History	17-Sep-19	CORRIGAN,CATHERINE	NASA- Shared Services Center	Cosmic ray exposure ages of pristine sample horizons	$18,288	43.001
Nat'l Mus'm of Natural History	26-Dec-19	CORRIGAN,CATHERINE	NASA- Shared Services Center	Cosmic ray exposure ages of pristine sample horizons	$18,842	43.001
National Air and Space Museum	18-Sep-19	PURDY,SHARON	NASA- Shared Services Center	Fresh Shallow Valleys and Pollywog Craters: Insight Into Post-Noac	$48,611	43.001
SI Environmental Research Ctr	26-Nov-19	HOLMQUIST,JAMES	NASA- Shared Services Center	Data-Model Integration for Monitoring and Forecasting Coastal We	$368,959	43.001
National Air and Space Museum	27-Jan-20	GRANT,JOHN	NASA- Shared Services Center	In Situ Geochronology for the Next Decade	$8,000	43.001
National Air and Space Museum	12-Feb-20	PURDY,SHARON	NASA- Shared Services Center	Preparing a Geologic Map in Margaritifer Terra	$45,876	43.RD
Natl Museum of American Hist	9-Oct-19	STEPHENS,CARLENE	NPS - National Park Service	Hearing History Saving Sound Recordings from Alexander Graham	$488,150	15.929
Anacostia Community Museum	26-Nov-19	LASHLEY,KATRINA	NPS - National Park Service	Anacostia Park Oral Histories	$40,000	15
National Zoological Park	12-Jun-19	JOHNSON,AMY	NPS - National Park Service	Grassland restoration monitoring at Manassas National Battlefield	$3,000	00.IAA
SI Environmental Research Ctr	24-May-19	WHIGHAM,DENNIS	U.S. Army Garrison Fort AP Hill	Support Endangered Species Management 2019	$46,780	00.IAA
SI Environmental Research Ctr	30-Mar-20	WHIGHAM,DENNIS	U S. Army Garrison Fort AP Hill	Support Endangered Species Management 2020	$26,147	00.IAA

Attachment 3 - New Member Applications and Support Letters

Nat'l Mus'm of Natural History	8-May-19	DOVE,CARLA	U.S. Department Of Air Force	Bird Aircraft Strike Hazard (BASH) Program - Air Force	$50,988	00.IAA
Nat'l Mus'm of Natural History	17-Dec-19	DOVE,CARLA	U.S. Department Of Air Force	Bird Aircraft Strike Hazard (BASH) Program - Air Force	$384,700	00.IAA
SI Environmental Research Ctr	19-Feb-19	GILMOUR,CYNTHIA	U.S. Department of Defense/Dept of Army	Actively Shaken In Situ Passive Sampler Platform for Methylmercur	$155,281	00.IAA
Nat'l Mus'm of Natural History	26-Jun-19	LINTON,YVONNE	U.S. Department of Defense/Dept of Army	Medically Important Arthropod Curator 2019 (MIPR 11342092)	$233,163	00.IAA
Nat'l Mus'm of Natural History	11-Feb-20	LINTON,YVONNE	U.S. Department of Defense/Dept of Army	Medically Important Arthropod Curator 2020 (MIPR 11438750)	$18,500	00.IAA
Nat'l Mus'm of Natural History	27-Feb-20	LINTON,YVONNE	U.S. Department of Defense/Dept of Army	Medically Important Arthropod Curator 2020 (MIPR 0011456370)	$118,436	00.IAA
Nat'l Mus'm of Natural History	29-Jan-20	DOVE,CARLA	U.S. DoD/Department of the Navy	Bird Aircraft Strike Hazard (BASH) Program - Navy	$78,298	00.IAA
SI Environmental Research Ctr	23-Oct-19	RUIZ,GREGORY	US Coast Guard	2020 National Ballast Information Clearinghouse (NBIC) … program	$2,629,692	00.IAA
Smithsonian Exhibits	13-May-19	KINSER,TODD	US DoD/Defense Intelligence Agency	DIA Museum Development Phase 3 Installation	$44,046	00.IAA
Smithsonian Exhibits	23-May-19	KINSER,TODD	US DoD/Defense Intelligence Agency	DIA Museum Development Phase 4 Fabrication	$375,886	00.IAA
Smithsonian Exhibits	18-Dec-19	KINSER,TODD	US DoD/Defense Intelligence Agency	DIA Museum Development Phase 4 installation	$33,920	00.IAA
Smithsonian Exhibits	26-Mar-20	KINSER,TODD	US DoD/Defense Intelligence Agency	DIA Museum Development Phase 4 final	$51,227	00.IAA
Nat'l Mus'm of Natural History	24-May-19	PAUL,VALERIE	USACE FINANCE CENTER	CERP: Benthic Infaunal Monitoring of the St. Lucie Estuary.. 20189	$89,000	00.IAA
Nat'l Mus'm of Natural History	19-Sep-19	PAUL,VALERIE	USACE FINANCE CENTER	CERP: 2019 supplemental funds	$6,454	00.IAA
National Zoological Park	26-Jun-19	ZIMMERMAN,DAWN	Defense Advanced Research Proj. Agency	A Pan-Regional Vector Biosurveillance Network to Detect, Characte	$179,000	00.IAA
Nat'l Mus'm of Natural History	27-Jun-19	LINTON,YVONNE	Defense Advanced Research Proj. Agency	Assessing vector-borne disease risk in military relevant areas in Ho	$55,000	00.IAA
SI American Art Museum	27-Aug-19	KOETSCH,MARGARET	U.S. Department of Defense/DoDEA	American Art K-12 Curricula Resources	$135,910	0
National Zoological Park	16-May-19	MARRA,PETER	U.S. Department of Interior-USGS	Kirtland's Warbler Isotope Study	$19,250	00.IAA
USMRP	12-Jul-19	WEGENER,CORINE	U.S. Department of the Interior	DOI Mission Assignment to Puerto Rico	$10,000	00.IAA
USMRP	4-Sep-19	WEGENER,CORINE	U.S. Department of the Interior	DOI Mission Assignment to Puerto Rico	$1,000	00.IAA
Nat'l Mus'm of Natural History	19-Mar-19	WHITE,MARK	U.S. Department of the Interior/OEPC	Recommendations for the stabilization and long-term care of the I	$10,000	00.IAA
Nat'l Mus'm of Natural History	1-May-19	BALDWIN,CAROLE	U.S. Geological Survey	West Virginia Spring Salamander research	$12,400	00.IAA
Nat'l Mus'm of Natural History	8-Mar-19	ANDREWS,BENJAMIN	U.S. Geological Survey	Volcano Hazard Awareness Films and Images	$203,500	00.IAA
Nat'l Mus'm of Natural History	22-Jul-19	ORRELL,THOMAS	U.S. Geological Survey	Data Development for the Integrated Taxonomic Information Syste	$399,474	00.IAA
National Zoological Park	11-Mar-19	MARRA,PETER	United States Fish and Wildlife Service	Life-Cycle Population Modeling for Select Species-Yr3	$40	0
National Zoological Park	2-Dec-19	ZIMMERMAN,DAWN	United States Fish and Wildlife Service	Investigation of Febrile Illness in Rescued Wild Orangutans in West	$94,981	15.629
National Zoological Park	27-Jan-20	ZIMMERMAN,DAWN	United States Fish and Wildlife Service	Investigation of Febrile Illness in Rescued Wild Orangutans in West	$53,378	15.629
National Zoological Park	25-Feb-19	COHEN,EMILY	United States Fish and Wildlife Service	Mapping spring and fall stopover habitat around the Great Lakes	$32,032	0
Nat'l Mus'm of Natural History	24-Jul-19	WEIGT,LEE	USDA	Research	$17,600	10.001
Nat'l Mus'm of Natural History	25-Sep-19	WEIGT,LEE	USDA	Systematics of Insects and Mites: Plant pests, predators and diseas	$5,000	10.001
Nat'l Mus'm of Natural History	6-Jun-19	WEIGT,LEE	USDA	Research	$17,600	10.001
National Zoological Park	29-Apr-19	WILDT,DAVID	USDA Forest Service	Expanding the Namibian Capacity Building Initiative	$3,249	00.IAA
SI Environmental Research Ctr	16-Apr-19	LA PIERRE,KIMBERLY	USDA/CREES/NIFA	Safeguarding Soybeans Against Climate Change	$500,000	10.31

Attachment 3 - New Member Applications and Support Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Southern Nevada Fish and Wildlife Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130

May 19, 2020
Sent by email only

Dr. Nicholas Mills
Director, Californian Cooperative Ecosystems Studies Unit
Rausser College of Natural Resources
University of California, Berkeley
760 University Hall MC # 3100
Berkeley, California 94720-3100

Subject: Smithsonian Institution's Application to Join the Californian Cooperative Ecosystems Studies Unit (Californian CESU)

Dear Dr. Mills:

I write in support of the Smithsonian Institution's application to become a member of the Californian CESU program. The U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office collaborated with research staff at the Smithsonian Institution for several years. In particular, participation by Smithsonian Institution researchers contributed significantly to the successful revision of the Mojave desert tortoise recovery plan and to various other desert tortoise-related projects.

Inclusion of the Smithsonian Institution in the Californian CESU will make it that much easier for the Smithsonian Institution to assist member organizations in their research efforts and to independently pursue research projects for which ~~the~~ it has unique expertise. Therefore, I strongly support the application of the Smithsonian Institution to join the Californian CESU.

Please contact Roy Averill-Murray at 775-861-6362 or via email at Roy_Averill-Murray@fws.gov if you have questions.

Sincerely,
GLEN KNOWLES
Digitally signed by GLEN KNOWLES
Date: 2020.05.19 10:23:24 -07'00'
Glen W. Knowles
Field Supervisor

1. Expression of desire to enroll in the CESU as a new partner institution/organization.

It is with great enthusiasm that Sierra Streams Institute (SSI) wishes to express its desire to enroll in the CESU as a new partner organization. Being a partner will deepen our relationship with existing CESU organizations, such as Beale Air Force Base, the BLM and others. Furthermore, partnership will provide many opportunities for new relationships and projects and strengthen our impact at the intersection of our respective missions and goals.

2. Confirmation that the institution/organization has read the CESU agreement and agrees to support the CESU mission and goals and fulfill the roles and responsibilities of a nonfederal partner, as described in the CESU agreement.

SSI confirms that the CESU CoOperative and Joint Venture Agreement 2018-2023 document has been read and is agreed to, with particular attention to page 11, "Each Partner Institution agrees to" and page 12, "All Federal Agencies, the Host University and Partner Institutions agree to". SSI agrees to support the CESU mission and goals and to fulfill the roles and responsibilities of a nonfederal partner.

3. Description of the institution/organization, its mission, and the primary focus of collaborative activities to be supported through the CESU in the context of the CESU mission.

Sierra Streams Institute is a watershed monitoring, research, education and restoration group based in Nevada City, California, in the Sierra Nevada foothills. Our mission is to link water, science and people for the benefit of human and environmental health. Sierra Streams Institute (SSI) was founded as Friends of Deer Creek in 1995 to monitor and protect Deer Creek on behalf of Nevada City during construction of a road bridge. Deer Creek is a major tributary of the Yuba River, which drains via the Feather River to the Sacramento River and San Francisco Bay.

With a strong emphasis on community participation which remains our foundation to this day, we quickly expanded our programs and range to include restoration, monitoring and outreach throughout the 34-mile Deer Creek watershed.

In 2011, we officially became Sierra Streams Institute, reflecting our growing regional vision. We are engaged in many diverse citizen science projects including community-based participatory research projects that focus on exploring the relationship between legacy mining contaminants, human, and environmental health. We also plan and implement habitat restoration projects throughout our region's watersheds including actively working to clean up historic toxic mine sites to prevent human exposure and reduce environmental contamination, improving the health of salmon spawning habitat and increasing fire resiliency in our forests. Our Education Program provides hands-on, place based environmental learning that promotes critical thinking and creative problem solving.

SSI's emphasis on rigorous science and consistent data collection provides the basis for all of the restoration decisions that are made on behalf of the region's watersheds, and makes us an especially valuable partner for local and state government agencies who lack the funding and capacity to gather their own data. As a vitally important voice in the regional scientific community, we work with local, state and federal agencies, universities, and community groups, to find solutions to the problems and

challenges that impact watersheds throughout the Sierra Nevada Foothills region.

SSI believes that there is a strong connection between our mission and the mission of CESU, and that a relationship between the two organizations will result in opportunities to add depth and breadth to the impacts and outcomes of projects.

We learned about CESU from scientists at Beale AFB who were working with us on the creation and implementation of the recent Bear River Restoration Plan, which develops and prioritizes restoration projects in the Bear River Watershed. Currently, SSI is positioned to collaborate with CESU member Beale AFB and provide our expertise in one or more of the programmatic areas described above: restoration, research and education. An example of collaborative activities to be supported through the CESU and in the context of the CESU mission is the Dry Creek project to restore and enhance portions of the creek for special status salmon spawning, as well as future projects focused on the implementation of the goals of the Beale AFB Integrated Natural Resources Management Plan (INRMP).

In conjunction with the USAF-funded removal of Beale Lake Dam, the goals for management of the Dry Creek area are to restore access to 15 miles of historic riverine migratory corridor for fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and the federally threatened Central Valley steelhead (*Oncorhynchus mykiss*). Assuming that SSI is able to successfully compete for the Dry Creek funding, Beale AFB will act as advisor on the project.

While the work on the Dry Creek Dam Removal site is not dependent on CESU membership, we present this project as an example of the confidence that Beale AFB has in our expertise to carry out activities that will improve habitat conditions for the Central Valley steelhead, Chinook salmon and other sensitive species. Beale has also expressed their confidence in us to carry out similar activities on future projects that are dependent upon CESU membership, in direct partnership with them, as described in their letter of support. Such activities are in direct alignment with the mission of CESU to provide research, technical assistance, and education to federal land management, environmental, and research agencies and their partners. In the case of Beale AFB there is particular emphasis on providing technical assistance in the execution of their INRMP.

Future collaboration opportunities with Beale AFB are focused on the implementation of the goals in the INRMP. These goals: to improve, preserve, restore and enhance wetlands, particularly for special-status species, and SSI's inclusion in their implementation, demonstrate a strong intersection of the missions of all three organizations--SSI, Beale AFB and CESU. This future collaboration with Beale AFB and other partners also aligns with the CESU objective to provide usable knowledge to support informed decision making among partners with respect to managing federal resources effectively.

4. Description or list of the primary programs, departments, or other institutional divisions of relevance to federal land management, environmental, and research agencies that will likely be engaged in CESU activities. Include website addresses for further information, as appropriate.

Sierra Streams Institute engages in a number of pursuits in fulfillment of our mission. These pursuits are relevant to federal land management, and involve environmental and research agencies that will partner with us to pursue CESU activities. Below you will find a list of our primary activities. More detail can be found on our website: https://sierrastreamsinstitute.org/

RESTORATION (https://sierrastreamsinstitute.org/restoration/). Sierra Streams' restoration programs are aimed at improving and preserving watershed health. Efforts include the following: abandoned mine and private contaminated land remediation, habitat restoration, invasive non-native species removal, restoration of salmon spawning areas, and integration of traditional native practices.

MONITORING (https://sierrastreamsinstitute.org/monitoring/). Sierra Streams, with help from citizen scientists, monitors a variety of watershed elements including water quality parameters, benthic macroinvertebrate populations, algae biomass, E.coli, physical habitat and geomorphological characteristics. Additionally SSI monitors mammal, amphibian, fish and bird populations, including endangered species.

RESEARCH (https://sierrastreamsinstitute.org/research/). Sierra Streams undertakes studies, publishes papers, presents at conferences, and shares data with universities and agencies in an effort to expand our understanding of how to improve and protect watershed health and the health of the people who live in our regional watersheds. Current examples include developing a climate change model to inform future restoration and protection of Deer Creek and other watersheds, studying whether historical mining contaminants influence or cause the high rates of breast cancer in Gold Country,, and studying fire-scarred areas to learn how to improve forest health and fire resiliency.

SCIENCE EDUCATION (https://sierrastreamsinstitute.org/education/). Sierra Streams K-12 Education Program offers an unparalleled educational experience where students engage in hands-on and place-based learning while gaining critical thinking and creative problem solving skills. Common Core Standards and Next Generation Science Standards are woven into all of our curriculum.

Adult education is offered in several forms, one good example being our California Naturalist course (https://sierrastreamsinstitute.org/calnat/). The California Naturalist course offers an excellent opportunity to expand our community's local natural history and ecological knowledge , as well as to build partnerships and citizen science opportunities between community members and local environmental organizations.

LABORATORY (https://sierrastreamsinstitute.org/labandtesting/). The Sierra Streams water quality lab analyzes nutrients, bacteria and other water quality parameters to assess stream health. Duplicate sampling by local and state government laboratories in the course of several collaborative studies has confirmed the validity and consistent reliability of our laboratory data. The Sierra Streams biology lab includes the assessment of stream health through the identification of benthic macroinvertebrates and algae in addition to fieldwork for the identification of mammals, birds, and amphibians.

5. A list of and brief description of the staff or faculty with expertise in disciplines and subject areas of relevance to federal land management, environmental, and research agencies (do not submit CVs).

Sierra Streams Institute's strength lies in its ability to attract and retain highly skilled staff members, led by Executive Director Joanne Hild. Joanne came to the organization in 2000 as staff biologist with 20 years of college teaching experience and extensive experience working on local environmental issues. Combined, the 10 SSI scientists have over 120 years of experience in environmental science, and 67 years of experience as SSI employees.

Joanne Hild
EXECUTIVE DIRECTOR, BIOLOGIST

As Executive Director and Biologist at Sierra Streams Institute for the past 20 years, Joanne has had many opportunities at Sierra Streams and in prior years to do exciting work with citizen scientists, agencies, and other organizations. After obtaining her MS in Zoology from the University of Massachusetts, Amherst, she worked as a research scientist doing various studies including on kangaroo adaptations, pigeon navigation, mountain lion ecology and the effects of oil on coral reefs. She was a biology professor at Sierra College for 15 years and involved her students in many local, hands-on environmental projects. She has helped to create and develop the citizen science-based programs at Sierra Streams and uses stakeholder collaboration to develop creative solutions to restore and protect the health of our community.

Annika Alexander-Ozinskas
CO-EDUCATION PROGRAM DIRECTOR

Annika earned a BS/MS in Earth Systems and an MS in Environmental Earth System Science from Stanford University. She taught courses at Chewonski Semester School and was a TA and section leader for undergraduate and graduate students at Stanford University from 2011-2015. Topics she covered included global environmental issues, soil science, and local and sustainable agriculture. Annika has also researched the distribution and sources of hexavalent chromium in California's groundwater.

Chloe Tremper
WATER QUALITY LAB AND VOLUNTEER MANAGER

Chloe graduated from the University of Vermont in 2015 with a BS in Wildlife Biology and Natural Resources Ecology. Chloe has several years of ecological fieldwork and environmental education experience and has worked with creatures ranging from deer mice to California Condors to ringtails and with students from kindergarten to adult. In 2016, Chloe served as the Education Coordinator/River Scientist AmeriCorps member at SSI. Following her term, she took a few months to adventure and then worked for the California Department of Fish & Wildlife before returning to SSI.

Justin Wood
RIVER SCIENTIST

Justin graduated from Indiana University in 2007 with a BA in Geography with a concentration in atmospheric science and hydrology and a minor in environmental management. He worked for two years as an undergraduate researcher for the Geography Department in rainfall surface hydrology and, on graduating, took a job at Eastern Illinois University as a stream technician doing habitat assessments and fish surveys. He moved to Nevada City in 2008 to work as an Americorps member with SSI. After completing two years of AmeriCorps service, Justin became a staff River Scientist at SSI. Justin is the lead scientist on two salmon and steelhead habitat restoration projects (gravel augmentation and spawning bed enhancement), the Deer Creek Stream Flow Study, the Lake Wildwood Drawdown Release Project and the Lake Wildwood E.coli research and remediation project. Justin has been with SSI for 12 years.

Kyle Leach
GEOLOGIST

Kyle Leach is a California Professional Geologist with 26 years of experience in the environmental sciences and geology fields. For the past 17 years, he has worked in the Sierra foothills region investigating and cleaning up abandoned gold mines. He worked 12 years as a consultant with the local engineering firm, Holdrege and Kull, addressing mines on private property. He has worked with Sierra Streams Institute for the past 14 years managing grant-funded projects assessing and cleaning up abandoned mines on public property.

Sol Henson
EDUCATION PROGRAM DIRECTOR

Sol Henson works as a coordinator for the education program. He has many years of experience monitoring water quality and stream health in addition to a teaching background in public schools ranging from the central valley to the foothills. He obtained a master's degree in hydrology at the University of California Davis and has worked on projects both locally and internationally regarding water resources and water resource management. Sol brings a strong science background to an education program that focuses on the Sierra foothill ecosystem he knows and loves. Sol has been with SSI for 13 years.

Shannon Henke
RESTORATION ECOLOGIST

Shannon joined the SSI team because she wants to conserve, restore, and monitor California natural resources through collaboration, research, citizen science and community engagement. She has a B.S. in biological sciences with an emphasis on botany from CSU, Chico and is currently pursuing a Master of Natural Resource Stewardship with a focus in Ecological Restoration through Colorado State University's distance learning program. She has over ten years of botanically-related work experience including conducting vegetation sampling and monitoring, ecological restoration plan development and implementation, invasive plant management, special status species surveys, data management, GIS, project management, and preparing CEQA/NEPA technical reports.

Taylor Schobel
RURAL HEALTH COORDINATOR

Taylor Schobel works as our Rural Health Coordinator on the CHIME-3 (Community Health Impacts from Mining Exposure) study. She received a BS from University of California, Berkeley in molecular environmental biology with a concentration in animal health and behavior, alongside completing her pre-med requisites. At Berkeley, she spent years researching reproductive neuroendocrinology in bats and zebra finches focused on the broad theme of reproductive/immune trade-offs. Other field work has led her to the north coast of California, observing mating behaviors of northern elephant seals, swimming the south fork of the Eel River for a three-month intensive fish study, and water quality monitoring in several watersheds.

Carrie Ammerman
FINANCE AND OPERATIONS DIRECTOR

Carrie studied Physical Geography at both CSU Sacramento and Humboldt State University. She worked in the backcountry of our National Parks, taught outdoor science school geomorphology, worked in corporate environmental consulting diligently watching over endangered species and helped lead remediation and restoration projects on the central CA coast. Carrie has worked in Finance and Administration for several educational and environmental non-profits and is happy to now be living in the Sierra foothills, working for SSI.

Alexandra Carey
AMERICORPS MEMBER

Alex graduated from UC Berkeley in May 2020 with a major in Environmental Science. She has extensive fieldwork and laboratory experience from her studies during college.

6. For academic institutions, include a description of student demographics and the institution's status as a minority-serving institution (e.g., as defined by the U.S. Department of Education).

Not applicable to Sierra Streams Institute.

7. Description or list of facilities, equipment, centers, or institutes that would provide support to the research, technical assistance, or educational activities of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

SSI uses a wide array of tools with which we carry out our mission. The list below is a sample of some of our equipment and resources, provided to indicate our capacity and the nature of our activities. This list is not comprehensive:

- in house biology laboratory with equipment to sample and identify benthic macroinvertebrates (BMI) with 10 BMI identification stations (including compound and stereo microscopes) for use by citizen scientists. Also includes equipment for sampling and identifying algae samples. In-house wildlife survey capacity includes game cameras, salmon and mammal traps, processing equipment, and radio tracking equipment
- in-house water quality laboratory including capacity and equipment for water quality, E. coli, total coliform, nitrate, and phosphate testing. Includes handheld monitoring equipment sets for water quality including pH, dissolved oxygen, conductivity, turbidity, and temperature.
- in-house mercury analyzer (soil and tissue samples) and equipment to sample soil and water for mining contaminants
- incubator, muffle furnace, oven, for processing various sample types
- dendrochronology tools and capacity (increment borer, core holders, stereo microscope) for tree ring analysis as well as vegetation sampling equipment
- citizen science center for volunteer scientists and students to help with scientific studies in various ways. Also includes educational materials.
- GPS equipment
- Computers with GIS capability

SSI has many formal and informal relationships with schools, centers, foundations, and institutes that partner with us in the pursuit of our mission. These same relationships can be leveraged in support of

research, technical assistance or educational activities that are relevant to federal agencies engaged in CESU activities:

University of California Davis Center for Community and Citizen Science. Based on a foundation of research excellence, the Center helps scientists, communities, and citizens collaborate on science to address environmental problems as a part of civic life. SSI has partnered with the UC CCCS to deliver the California Naturalist course to adults in Nevada County.

University of California San Francisco. Dept of Epidemiology. SSI has partnered with UCSF Dept. of Epidemiology on two different projects. The Community Health Impacts from Mining Exposure (CHIME) project analyzes tap water in the Gold Country to study a possible correlation between contaminants and breast cancer. The GardenRoots project evaluates environmental quality and the potential exposure to contaminants of concern (COC) near active or legacy resource extraction and hazardous waste sites.
University of California Merced Sierra Nevada Research Institute. The mission of the Sierra Nevada Research Institute is "to discover and disseminate new knowledge that contributes to sustaining natural resources and promoting social health and well-being in the San Joaquin Valley and the Sierra Nevada regions of California, and related regions worldwide, through integrated research in natural science, social and engineering sciences."
University of Arizona Department of Environmental Studies. SSI partnered with the UoA Dept. of Environmental Studies for the Community Health Impacts from Mining Exposure (CHIME) project, as well as GardenRoots, the aim of which was to evaluate environmental quality and the potential exposure to contaminants of concern (COC) near active or legacy resource extraction and hazardous waste sites.

Yuba Watershed Institute. The Yuba Watershed Institute is a group of citizens who are concerned with the sustainable use of natural resources and the protection of long-term biological diversity within the Yuba River watershed. The study, maintenance, use and preservation of the watershed is undertaken in partnership with public land management agencies, professional associations, private landowners, other non-profit organizations, and community organizations. The Institute also serves as an educational resource, providing an ongoing series of talks, seminars, publications and walks on all aspects of the watershed. We are partnering with the YWI, the Bear Yuba Land Trust, and the BLM to develop a forest management plan on Little Deer Creek off Banner Mountain.

Sierra Nevada Conservancy. SNC is a state agency that leads California's efforts to restore and enhance the extraordinary natural resources and communities of the Sierra Nevada while protecting them from wildfire and a changing climate.

Bear Yuba Land Trust. We are partnering with Bear Yuba Land Trust at their Garden Bar property to do some restoration work in the riparian and open areas of the property.

Woolman Center. The mission of Woolman is to steward diverse learning communities and educational programs that weave together spirituality, peace, sustainability, and social action. Woolman programs reflect a vision of peace and justice through learning and service for people of all ages—children, youth, adults and families. SSI has partnered with Woolman to deliver educational programming.

SSI has partnerships with local, state and federal organizations for projects involving research, technical assistance and educational activities in environmental science. Federal organizations are listed in numbers 8 and 9 below.

8. Description or list of past research, technical assistance, and educational services supported through federal financial assistance awards that are of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

Sierra Streams Institute has received numerous federal awards that are of relevance to federal land management, environmental and research agencies. The following list describes our past and ongoing experience in this regard.

US EPA Brownfields. EPA's Brownfields Program provides grants and technical assistance to communities, states, tribes, and others to assess, safely clean up and sustainably reuse contaminated properties.

- 2008 USEPA Brownfields Community Assessment Grant, Grantee: City of Nevada City, Subaward SSI
- 2011 USEPA Brownfields Cleanup Grant Stiles Mill Site: Grantee City of Nevada City, Subaward SSI
- 2011 USEPA Brownfields Cleanup Grant Providence Mine Features Area: Grantee City of Nevada City, Subaward SSI
- 2011 USEPA Brownfields Cleanup Grant Providence Mine Waste Rock Area: Grantee City of Nevada City, Subaward SSI
- 2016 USEPA Brownfields Cleanup Grant Providence Quartz Mill: Grantee City of Nevada City, Subaward SSI
- 2017 USEPA Brownfields Community Assessment Grant: Grantee Plumas County, Subaward Sierra Institute, SSI
- 2017 USEPA Brownfields Community Assessment Grant, Gold Country Coalition: Grantee: City of Grass Valley, City of Nevada City, Nevada County, Subcontractors NV5, SSI
- 2018 USEPA Brownfields Cleanup Grant Crescent Mills Industrial Site: Grantee, Sierra Institute, Subaward SSI

Summary of tasks performed in US EPA Brownfields grants listed above:

Assessment Grants: Assisted grantee in site selection, grant management and Reporting. Performed initial site surveys, Phase 1, and Phase 2 Environmental Site Assessments.

Cleanup Grants: Assisted Grantee with grant management and reporting. Prepared Site Characterization Reports and Removal Action Workplans. Managed site cleanups including regulatory compliance, permitting, cleanup planning and implementation, contractor bidding and selection, field construction management and reporting.

US EPA TAP study– 2019- 2021. SSI and EPA are working as partners in the California Breast Cancer Research Project funded statewide TAP study to research whether there are unregulated contaminants found in California resident's tap water. SSI scientists are leading the study in the Gold Country.

US EPA Environmental Education grant funding: 2017-2019. In partnership with the Nevada County Superintendent of Schools, SSI developed teacher training and environmental education curriculum for students in Nevada City, CA schools to reflect local environmental and historical concerns including long-term impacts of mining and extractive industries, the ecological importance and restoration needs of the local watershed, and the history of survival and adaptation of Native American tribes in the area.

FEMA funding: 2012. SSI scientists worked with the Nevada County FireSafe Council to restore land surrounding the Tribute Trail, an 8 mile trail starting near Nevada City.

US Geological Survey: 2019 -2021. SSI is partnering with USGS on a California Breast Cancer Research Project funded project TAP which is looking at the unregulated contaminants in the state's drinking water. SSI is the leader of the sampling in the Gold Country region and has been working with USGS on sampling protocols and training participants to take samples.

US Bureau of Reclamation WaterSmart Grant funding

2014: Sierra Streams Institute received funds to develop a watershed group for the Bear River in the western Sierra Nevada. A watershed coordinator recruited stakeholders, formalized the group (including adoption of a mission statement), developed project concepts, and led the development of a watershed-wide restoration plan in order to address the watershed's many pressing demands. These demands included coordination of land management, cleanup of legacy mining contamination, and improvements to flow regime and water quality. This project is supported by and coordinated with Placer Land Trust and Bear Yuba Land Trust, who have done extensive land conservation work in the Bear River watershed through the Northern Foothills Partnership and the Pacific Forest and Watershed Lands Stewardship Council .

2017: Project summary: A second round of funding to work with stakeholders in the Bear River watershed to prioritize projects in the Restoration plan developed in our previous grant and create ways to fund and implement them.

National Science Foundation DRK 12 funding 2019 – 2023 Title of research: "Collaborative Research: Designing for science learning in schools by leveraging participation and the power of place through community and citizen science" involves a four-year research-practice partnership which examines elementary students' understanding of and agency with science content knowledge and practices during a community-engaged, place- based environmental science research and monitoring program. Involving 3rd-5th graders in locally-important monitoring of forest health, our findings will inform replicable models for science standards, as well as school-based community and citizen science (CCS) which encompasses many different approaches to engaging the public in authentic scientific research.

9. Description or list of current formal agreements and informal relationships with federal agencies that are of relevance to federal land management, environmental, and research agencies that will be engaged in CESU activities.

Beale Air Force Base: We have discussed with Beale scientists about future salmon restoration work in Dry Creek and other restoration work in areas on and near the base.

Bureau of Land Management –2020: Yuba Watershed Institute/Banner Mountain Project with funding through Sierra Nevada Conservancy to improve forest health and fire resiliency on BLM land, and neighboring private and Land Trust lands.

Bureau of Land Management Tribute Trail project. 2012 SSI partnered with BLM scientists to do restoration and trail creation on BLM land. We also worked together with the stakeholders to develop a Trail Management working group.

Bureau of Land Management 2019 – 2021. SSI is partnering with BLM to develop forest health/fire resiliency plans in the Upper Deer watershed and in the Bear River watershed at Steephollow Creek. Funded by Sierra Nevada Conservancy.

US Forest Service: SSI scientists meet yearly with the Tahoe National Forest Ranger and USFS science team to develop restoration projects on Forest Service land in the Deer Creek watershed.

United States Geological Society: We have consulted with USGS geologist Charlie Alpers on a number of our EPA Brownfields and other regional projects over the last 20 years.

National Marine Fisheries Service: We have consulted with NMFS over the past 20 years with our restoration work on salmon spawning habitat in lower Deer Creek.

US Fish and Wildlife Service: We have had many conversations over the last 20 years with scientists at USFWS about restoration projects in our local watersheds.

10. Confirmation of the institution's/organization's willingness to accept a limited overhead rate of 17.5% and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance, and educational services (this overhead rate applies to the entire institution/organization for CESU activities).

SSI hereby confirms our willingness to accept a limited overhead rate of 17.5% and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance, and educational services.

11. Designation of a technical representative (with full contact information – name, title, full address, phone, fax, email) to serve on the CESU steering committee, participate in CESU annual/semi-annual partner meetings, and facilitate internal and external communication, promotion, and response to CESU correspondence and administrative actions (e.g., announcements, new member applications, processing agreements/amendments, five-year reviews).

SSI designates Joanne Hild as technical representative, to serve on the CESU steering committee, fulfilling the role and all obligations that pertain to the technical representative position.

Joanne Hild
Executive Director
13075 Woolman Lane
Nevada City, CA 95959
joanne@sierrastreams.org
(530)477-7132

12. Agreement to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other institutional/organizational members (e.g., faculty, students).

SSI agrees to relay agency-specific research, technical assistance, and educational need and associated funding opportunities to other institutional/organizational members as appropriate.

13. Signature (or endorsement) from an appropriate official, with authority to commit institutional resources in a binding multi-year federal cooperative and joint venture agreement (e.g., president, executive director, chief financial officer, vice president for research, director of sponsored programs).

The undersigned is an appropriate official of SSI (Executive Director), with authority to commit institutional resources in a binding multi-year federal cooperative and joint venture agreement.

Joanne Hild
Sierra Streams - Executive Director

14. Letter(s) of support from one or more CESU federal agency partners sponsoring the new partner's application, including a description of successful past collaborative work supported through federal financial assistance awards.

Please reference the attached sponsorship letter from Beale Air Force Base in support of SSI's enrollment in the CESU.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 9TH RECONNAISSANCE WING (ACC)
BEALE AIR FORCE BASE, CALIFORNIA

NOV 1 9 2020

MEMORANDUM FOR UNIVERSITY OF CALIFORNIA, BERKELEY
College of Natural Resources
Nicholas Mills, Co-Director, Executive Associate Dean
Maria Kies, Co-Director, Budget Director
101 Giannini Hall MC # 3100
Berkeley, CA 94720-3100

FROM: 9 CES/CD
6425 B Street, Bldg. 25390
Beale AFB, CA 95903-1708

SUBJECT: Beale Air Force Base Endorsement for Sierra Streams Institute Application to the California Cooperative Ecosystem Study Unit Program

1. Beale Air Force Base (AFB) on behalf of the U.S. Air Force (USAF) fully supports inclusion of Sierra Streams Institute (SSI) into the California Cooperative Ecosystem Studies Unit (CESU) program.

2. SSI has a great depth of experience working with federal, state, and local agencies.

a. At the federal level, SSI is currently working with Plumas County to complete a U.S. Environmental Protection Agency (EPA) Brownfields funded project and has completed several EPA Brownfields grants to assess and remediate contaminated properties in Nevada County.

b. SSI, in partnership with University of California, Davis, has also been awarded a $1.3 million, multi-year grant from the National Science Foundation to develop a hands-on environmental data collection curriculum for Nevada County schools.

3. Beale AFB is quite familiar with the expertise and professionalism that SSI brings to watershed projects in the region. Funded by a U. S. Bureau of Reclamation WaterSmart grant, Beale AFB and SSI have worked together on the Bear River Restoration Plan, which creates and prioritizes restoration projects in the Bear River watershed.

4. At the state level, SSI has been awarded more than 10 Sierra Nevada Conservancy (SNC) grants over the past 15 years, showing state-level experience.

a. Currently SSI is working on a SNC grant, in partnership with the U.S. Bureau of Land Management, to assess and remediate damaged portions of Steephollow Creek in the Bear

River watershed, and in Upper Deer Creek and Little Deer Creek in the Deer Creek watershed.

b. SSI has also worked with the California Department of Water Resources on a remediation project in Nevada City's only park.

5. SSI has a well-earned reputation for quality scientific and restoration work, and we hope they will be included in the CESU to allow them to compete for funding to continue projects at Beale AFB to restore and enhance portions of Dry Creek for special-status salmon spawning. In conjunction with the USAF-funded removal of Beale Lake Dam, the goals for management of this area are to restore access to 15 miles of historic riverine migratory corridor for fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and the federally-threatened Central Valley steelhead (*Oncorhynchus mykiss*). Beale AFB would like for SSI to have the opportunity to compete for future work to maintain, enhance, restore and expand the riparian zone at the Dry Creek Dam Removal site through watering, weeding, and planting. These activities will improve habitat conditions for the Central Valley steelhead, Chinook salmon and other sensitive species. Specifically, the goals of this project, in the Base's Integrated Natural Resources Management Plan (INRMP), are to 1) improve habitat conditions for special-status species and, 2) preserve, restore, and enhance existing wetland-associated vegetation communities.

6. SSI's membership with the California CESU program will present more opportunities for partnership. These opportunities will fully support the USAF's dedication to the full implementation of the INRMP, as well as support the management of critical species in the waterways for which Beale AFB is responsible.

7. Beale AFB wishes to express our full confidence and support of SSI for the California CESU program.

8. Please address all questions and comments to Ms. Tamara Gallentine, Natural Resources Manager, at (530) 634-2738, tamara.gallentine.2@us.af.mil, 9 CES/CEIEC, 6425 B Street, Bldg. 25390, Beale AFB, CA 95903-1708.

CALVIN G. HENDRIX. GS-14, USAF
Deputy Base Civil Engineer

Southern California Marine Institute

University of California Californian Cooperative Ecosystem Studies Unit
University of California, Berkeley
101 Giannini Hall
Berkeley, CA 94720-3100
Attention Ruxin Liu

RE: Southern California Marine Institute Interest in CA-CESU Membership

August 4, 2020

Dear Ruxin Liu,

The purpose of this letter is to formally express interest in membership for the Southern California Marine Institute (SCMI) into the California Cooperative Ecosystem Studies (CA-CESU) Unit. We believe that both SCMI and CA-CESU would benefit from an ongoing collaboration.

We have reviewed the general CESU descriptive materials and the CA-CESU Cooperative and Joint Venture Agreement, and we agree to abide by all the responsibilities and expectations of partner institutions.

The Southern California Marine Institute (SCMI) is a non-profit 501c3 consortium representing a strategic alliance of 23 major universities, colleges, and foundations in Southern California. This includes nine universities from the California State University system representing the Ocean Studies Institute: Channel Islands, Dominguez Hills, Fullerton, Long Beach, Los Angeles, Northridge, Pomona, San Bernardino, and San Marcos. SCMI also comprises the combined marine resources of the University of Southern California, Wrigley Institute for Environmental Studies, University of California Los Angeles, Occidental College, Los Angeles Community College District, The Bay Foundation, and NOAA National Marine Fisheries Service West Coast Region. Eight of our consortium members are CA-CESU members. SCMI mission to foster marine research is aligned with the CESU mission to provide nationwide research support and collaboration.

The mission of the Southern California Marine Institute (SCMI) is to foster marine research and education, focusing on urban impacts of the greater Los Angeles region on the coastal ocean. We seek to improve scientific understanding and the development of solutions that will enable coastal waters and watersheds to thrive, adapt and become resilient to ongoing environmental stressors.

The consortium structure of SCMI allows us to engage in specialized marine research that would not otherwise be possible through independent organizations, and to maximize the use of resources as well as collaborate on projects. SCMI provides vessel support, equipment, and expertise to a variety of researchers from member and non-member campuses, local, federal, and state agencies, and other organizations. Our facility is a full functioning marine research institute equipped with offices, laboratories, classrooms, a seawater filtration system, machine and wood shops, and a warehouse. There is ample docking space for small boats from various universities and organizations, as well as the research vessel R/V Yellowfin. To

facilitate research efforts SCMI provides equipment, vessels, and personnel to perform the tasks necessary to achieve the highest and most efficacious level of research.

SCMI has demonstrated its value to the Port of Los Angeles through over ten years of water quality monitoring support. This support comprises of in-kind services to the Port including use of the R/V Yellowfin vessel and crew for monthly water quality monitoring in 32 locations in the Port. The Port of Los Angeles monthly water monitoring cruises on the R/V Yellowfin accounts for 15% of the overall vessel usage each year. SCMI has also provided access to scientific equipment and expertise to support ongoing monitoring project. One such project is Real-time Water Quality Monitoring program that records and maintains water quality sensors in two locations in the Port. Monthly water quality reports are provided to the Port and data is available for research. All these programs are included in SCMI's in-kind service to the Port of Los Angeles.

On a local community scale SCMI annually provides valuable hands-on learning opportunities to over 1800 local college, and university students. For a lot of these students SCMI programs are their first introduction to the Port of Los Angeles. SCMI is also the gateway to the USC Marine Lab on Catalina Island and Mountain Sea Adventures and sees over 7000 visitors per year come through the facility. These visitors include k-12 students, faculty members, researchers, and the general public. SCMI also participates in several public outreach event including collaborations with AltaSea at City Dock 1. Theses public events are a wonderful opportunity to introduce SCMI's programing and research to the general public. SCMI's also offers college and high school internships to local students interested in the marine science field. For the last 4 years SCMI's has offered MOTC, motorboat operation training courses to members and other public institutions. SCMI's MOTC boating safety program now leads the Southern California research, academic and resource agencies in this endeavor. Along these lines, our scientific diving program is continuing to increase enabling us to facilitate a diverse array of research programs in a safe and practical manner.

On a larger southern California scale SCMI is a valuable resource that supports marine research conducted off the southern California coastline. SCMI is committed to support research that follows our mission to focus on urban impacts of the greater Los Angeles region on the coastal ocean. And seek to improve scientific understanding and the development of solutions that will enable coastal waters and watersheds to thrive, adapt and become resilient to ongoing environmental stressors. Within the last few years SCMI had supported research on the restoration of our fisheries and nearshore habitats. These restoration projects include: 1) protected Giant Sea Bass, we conducted the first successful spawning and rearing of baby giants, 2) endangered White Abalone, the first release of White Abalone on the PV Shelf, 3) Red Abalone, we are actively facilitating the reintroduction of this valuable fishery species, and 4 is the lease holder for the construction of the first offshore restoration rocky reef in California's history. The Palos Verdes Restoration Reef being constructed next summer is a $9,00,000 restoration project supported by NOAA and the California Coastal Conservancy is the first of its kind in California. SCMI is the lease holder and completed all the permitting for this restoration reef. This project has embedded into it replicated design elements that will allow decades of critical research to be conducted as well as restoring an enormous amount of lost habitat.

Multiple investigators have already shown interest in this project and this is another example of how SCMI fosters collaboration across campuses and agencies.

SCMI's Board of Directors and Ocean Studies Institute Board of Governors comprises representatives for each member institution who are experts in their field.

SCMI Board of Directors (2019 – 2020):

John Heidelberg Ph.D. – SCMI Board President; Associate Director and Professor of Biological Sciences, Wrigley Institute for Environmental Studies, USC

Tom Ford – SCMI Board Vice President; Executive Director, The Bay Foundation, Affiliate Member

Douglas E. Hammond Ph.D.- SCMI Board Secretary-Treasurer; Professor, USC

Christopher G. Lowe Ph.D.- Professor of Biological Sciences, CSULB

Curtis Bennett Ph.D. – Dean, Natural Science and Mathematics, CSULB

Daniel J. Pondella II Ph.D. – SCMI Director; Associate Professor of Biology and Director, Vantuna Research Group, Moore Laboratory of Zoology, Occidental College

Larry G. Allen Ph.D. – OSI Director, Professor of Biological Sciences, CSUN

Tina Treude Ph.D. – Director of the Marine Center at IoES and Professor for Marine Geomicrobiology, UCLA

Steve Murray Ph.D. – OSI Chancellor's Office Liaison, Emeritus CSUF

George Leddy Ph.D. – Curriculum Coordinator, Los Angeles Community College District, Affiliate Member

Penny Ruvelas – Long Beach Office Branch; Chief, NOAA Fisheries West Coast Region, Affiliate Member

James Moffett Ph.D. – Professor of Biological Sciences, University of Southern California (USC Alternate)

Ocean Studies Institute (OSI) Board of Governors (2019 – 2020):

Larry G. Allen Ph.D. – OSI Director, Professor of Biological Sciences, CSUN

Steve Murray Ph.D. – OSI Chancellor's Office Liaison, OSI Vice Chair, Emeritus CSUF

Sean Anderson Ph. D. – OSI Member at Large, Professor of Environmental Studies, CSUCI

Charlene McCord Ph.D. – Professor of Biological Sciences, CSUDH

Philip LaPolt Ph.D. – Dean, Natural and Behavioral Sciences, CSUDH

Danielle Zacherl Ph.D. – Professor of Biological Sciences, CSUF

Marie Johnson Ph.D. – Dean, College of Natural Sciences and Mathematics, CSUF

Christopher Lowe Ph.D. – Professor of Biological Sciences, CSULB

Curtis Bennett Ph.D. – Dean, College of Natural Sciences and Mathematics, CSULB

Elizabeth Torres Ph.D. –– Professor of Biological Sciences, CSULA

Pamela E. Scott-Johnson Ph.D. – Dean, College of Natural and Social Sciences, CSULA

Jerry Stinner Ph.D. – Dean, College of Science and Mathematics, CSUN

Jeremy Claisse Ph.D. – Professor of Biological Sciences, CPP

Britt Leatham Ph.D. – Professor of Geological Sciences, CSUSB

James Janovich Ph.D. – Professor of Biological Sciences, CSUSM

P. Wesley Schultz Ph.D. – Dean of Graduate Studies and Research, CSUSM

SCMI Staff

Daniel Pondella Ph. D., SCMI Director, Vantuna Research Group Director, Professor of Biological Sciences, Occidental College. Dan's research focuses on the ecology of California marine fishes, with an emphasis on the Southern California Bight, the evolution of marine fishes in the tropical eastern Pacific, and the life history of fishes, including species from the Gulf of California.

Dan's research has been funded by the Sea Grant, California Department of Fish and Wildlife, the U.S. Navy, the Port of Los Angeles, National Science Foundation, and several other agencies and foundations. He has authored or co-authored over one hundred technical reports and peer-reviewed publications while at Occidental in journals such as the *Bulletin of Marine Science*, the *ICES Journal of Marine Science*, and *Molecular Phylogenetics and Evolution*. He also recently published a book titled *The Ecology of Marine Fishes: California and Adjacent Waters*. His current work in the region includes projects on the Palos Verdes shelf including assessing kelp restoration success, designing, permitting and implementing a 70-acre rocky-reef restoration project at Bunker Point and the baseline assessment of the newly created Marine Protected Areas (MPAs).

Carrie Wolfe, SCMI Research & Education & Operations Coordinator, has worked at SCMI since 1995, starting as a Demonstration Technician on the research vessels, and now works as the Research and Vessel Operations Coordinator at SCMI. During that time there have been a great many relevant projects including work with the Los Angeles Regional Water Quality Control Board to train volunteer monitors, the City of Los Angeles 6 year Seasonal Bacteria Study in the Los Angeles/ Long Beach Harbor Area, and the Port of Los Angeles Real-time Water Quality Monitoring Program.

She has also worked as a technician on oceanographic projects in the Pacific and Southern Oceans since 1998. These projects included climate studies, carbon dioxide studies, temperature studies, carbon cycle greenhouse gas studies with agencies with Scripps Institute of Oceanography, Woods Hole Oceanographic Institute, NOAA Atlantic Oceanographic Marine Lab, NOAA Pacific Marine Environmental Lab, and NOAA OAR Climate Modeling & Diagnostics Laboratory.

Carrie has experience working with oceanographic water quality equipment such as SeaBird CTD's, YSI CTD's, Hydrolab CTD's, Licor pCO2 systems, wet chemistry kits, eXpendable BathyThermographs (XBTs), Biosonic Hydroacoustic systems, as well as geological & biological sampling equipment such as mud samplers, Cambel grabs, biological dredges, bottom trawls, plankton nets and many more.

Adriana Stowell, SCMI Budget and Research Coordinator, has over 10 years of experience working in the marine sciences. She has worked at SCMI since 2012, starting out as a Demonstration Technician on the research vessel R/V Yellowfin, and now she is the Research and Budget Coordinator conducting and assisting researchers on various water quality projects, bio survey projects, and field instruction for college and university level students.

Adriana has extensive CTD experience and over 1000 hours of sea time working with sampling equipment such as Plankton nets, Otter trawls, I-K nets, Neuston nets, Phleger Corers, Sediment sorters, Refractometers, Nisken bottles, Biological dredges, and Van Veen Sediment grabs.

Adriana is currently coordinating the Port of Los Angeles Real-Time Water Quality Monitoring Program. She is also a Marine Wildlife Observer for the Palos Verdes Reef construction. Adriana has also assisted in the Port of Los Angeles and Long Beach Bio Surveys eDNA Testing collecting samples aboard SCMI's research vessel R/V Yellow using Nisken bottles. Adriana has also worked on the Food Web Sampling-Collection Program processing and analyzing over 100 fish otoliths in the laboratory.

SCMI Assisted Research

Port of Los Angeles California Least Tern Foraging Study 2019

Port of Los Angeles and Long Beach Bio Surveys eDNA Testing

Food Web Sampling-Collection Program, Port of Los Angeles, and Long Beach

Los Angeles and Long Beach Harbor Fish Tracking Study

One Year Survey of Marine Wood Borers and Fouling Polychaetes in Los Angeles Harbor

Southern California Bight Rocky Reef Monitoring Study

Palos Verdes Reef Restoration, NOAA

Giant Sea Bass Acoustic Study, CSUN

San Pedro Ocean Time Series SPOT, USC

Characterization of the Rocky Reefs in the Southern California Bight, SCCWRPs Bight '08 and Bight '13

Characterization of rocky intertidal, kelp forest and deep rocky and sandy ecosystems at San Clemente Island, U.S. Navy

A Biological Model of Fish Production on Manmade Structures off Southern California, Bureau of Ocean Energy and Management

Fisheries Inventory and Utilization Study in San Diego Bay, Port of San Diego

The ecosystem impacts of kelp forest habitat restoration, including important fisher species. USC Sea Grant. And Sea Urchin Gonad Index a Key to Understanding Secondary Production in the Restoration of Giant Kelp Forests off Palos Verdes. California Sea Grant. And Pre-kelp bed restoration monitoring and assessment of urchin barrens on the Palos Verdes Peninsula, NOAA

Receiving Water Monitoring and Reporting Program Chevron Products Company, El Segundo Refinery

South coast kelp and shallow rock ecosystems: baseline data collection and long-term trends using historical data. California Sea Grant

Green abalone restoration in Southern California: developing tools for genetic and disease risk management, NOAA

Bunker Point Reef Restoration and Baseline Monitoring. NOAA

NOAA Ship of Opportunity Program (SOOP)

Temperature Influence on Ecology and Distribution of Intertidal Species, Claremont Colleges

SCMI Facilities and Equipment

The Southern California Marine Institute is a full functioning marine research facility with idea workspaces for students, faculty, and researchers. SCMI has the following resources available for research and educational projects.

- Scientific Equipment
  - Nisken Bottles
  - Dissecting Microscope
  - 1 Meter Plankton Net (0.505 mm)
  - ½ Meter Plankton Net (0.505 mm, 0.263 mm)
  - I-K Midwater Trawl Net (6', 10')
  - Neuston Net

  - Biological Dredge
  - Van Veen Grab
  - Handheld Vertical Plankton Nets
  - Avon w/ Outboard
  - Plankton Collector
  - Bucket Thermometer
  - Refractometer
  - Seabird 25 CTD (measures pH, temp, DO, Salinity, conductivity, PAR, fluoresces, Turbidity)
  - YSI Pro-DSS CTD (pH, temp, DO, salinity, conductivity, Turbidity, depth)
  - Otter Trawls
  - Phytoplankton nets (handheld)
  - Secchi Disks
  - Forel-Ule color scales
  - Sediment Sorters
  - Compound Microscopes
  - Fishing poles
  - Diving Platform
- Research Vessel: R/V Yellowfin
  - Length 76 feet
  - Beam 24 feet
  - Draft 7 feet
  - Cruising Speed 10 knots
  - Normal Range 2000 NM
  - Gross Tonnage 109
  - Fuel Capacity 4600 gallons
  - Endurance 8 – 10 Days
  - Compliment 3 – 5 crew
  - Student/Scientist 40 day/8 night
  - Freezer For sample storage
  - Engines Twin 405 HP (QSL9 Cummins) 720S.H.P.
  - Hydraulic Winches
  - Side crane
  - A-Frame
- Building
  - Labs (4, 254 square feet equipped with sinks, fume hood, DI water filter, and chemical closet)
  - Classroom (accommodates 40 students and equipped with microscopes, projector, and TV)
  - Wet Labs (4 labs ~ 1700 square feet)
  - Conference Room (holds 8 people)
  - Offices (10 office ~160 square feet)
- Closed Sea Water Filtration System
  - Tanks in operation
    - Large Round – 2349 gal

        - 2 round tanks with windows - 1503 gal
        - Small round -294 gal
        - Small round – 367 gal
        - Small round – 423 gal
    - Additional Tanks available for set up
        - 2 large round – 8000 gal
        - 4 round tanks- 1500 gal
    - Filtration system includes chillers, Protein skimmers, Sand filters and Sumps.
- Machine Shop for fabrications and repairs
- Dive Locker
    - Air and Nitrox Compressor
    - Drying Racks
    - Tanks
    - Tank racks
    - Gear storage
    - Onsite DSO/BSO
- Warehouse storage
- Laydown Yard: vessel and trailer storage, vessel maintenance.
- On-site small vessel and trailer service
- F350 Truck with trailering abilities
- Whalers: 2 small vessels for nearshore research and programs
    - 16ft Boston whalers
- Crane & Forklift
    - Forklift capacity: 4,500 lbs
    - Crane capacity: 3,000 lbs
- 10,000 square feet of deep harbor space with three docks and a wharf

SCMI Services

CSU Marine Biology Semester on Catalina
This semester-long program provides an intensive undergraduate exposure to marine biology and is designed for students with a serious commitment to environmental and marine science. The program is based at the Wrigley Marine Science Center (WMSC) situated on Santa Catalina Island. WMSC is owned and operated by the University of Southern California (USC), and the program is being offered through the California State Universities, affiliated with the Ocean Studies Institute (OSI) and the Southern California Marine Institute (SCMI).
Students will spend 15 weeks on Santa Catalina Island and will be based in the newly renovated dormitory and laboratory facilities. Residency at this marine laboratory provides ready access to an invigorating educational environment that provides both state-of-the-art laboratory facilities and ready access to a diversity of marine habitats. Throughout the semester, students are introduced to a sequence of courses (Marine Biology, Marine Invertebrate Zoology, and Marine Phycology) that prepare them to complete a directed research study in a topic of their choice. All courses provide a strong element of hands-on field experience, which provides the comprehensive training that can help in career choices and graduate decisions.

Ocean Studies Institute (OSI) AAUS Scientific Dive Program

The Ocean Studies Institute (OSI) Scientific Diving Certification Program conforms to the American Academy of Underwater Sciences (AAUS) Standards for Scientific Diving for academic, research, or conservation diving. Anyone who is engaged in diving as part of their work must be an active member of a scientific diving program or be subject to US Federal OSHA standards for diving.
The OSI AAUS Program is an intensive 14-day course focused on teaching research diving techniques. During the course divers will learn about diving theory, physics, physiology, dive planning and emergency accident management. In-water training will include numerous dives to practice essential data-gathering methodologies, and further develop general diving skills such as beach, navigation, deep, night, and rescue. The course also includes the DAN Diving First Aid for Professional Divers certification training, suitable for First Responders working in remote locations.
The course is open to CSU/OSI students/staff/faculty and SCMI consortium members. Unaffiliated candidates, actively engaged in scientific diving (as a student, researcher, or volunteer) with an AAUS Organizational Member.

Motorboat Operator Training Course (MOTC)

The Scientific Boating Safety Association's (SBSA) Motorboat Operator Training Course (MOTC) is entry-level training recommended for persons who will be acting as small vessel operator or crew for SBSA member institutions or other organizations. CSU/OSI (an SBSA Organizational Member) has adopted this course as the foundation for our small boat training program. The MOTC provides fundamental training in boating knowledge and skills.

SCMI has provided administrative support to all our consortium members assisting with research contracts and subcontract agreement.

SCMI agrees to the CESU overhead rate of 17.5% for research and educational services.

SCMI Contact Person:

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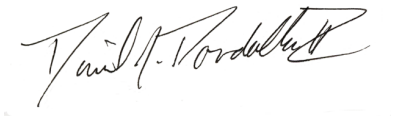
(323) 533-3869
(310) 519-1054 (fax)

Southern California Marine Institute

Thank you for your consideration for SCMI for CA-CESU Membership.

Sincerely,



Daniel Pondella

Director

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United States Department of the Interior
BUREAU OF OCEAN ENERGY MANAGEMENT
Pacific OCS Region
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Camarillo, CA 93010-6064

Dr. Steve Lindow
Executive Associate Dean, Research and Education
College of Natural Resources
University of California, Berkeley
101 Giannini Hall MC#3 IOO
Berkeley, CA 94704-3100

August 4, 2020

Re: Addition of Southern California Marine Institute to the Californian CESU

Dear Dr. Lindow:

The Bureau of Ocean Energy Management (BOEM) recommends the addition of the Southern California Marine Institute (SCMI) to the Californian Cooperative Ecosystems Studies Unit (CESU).

BOEM has an ongoing need for marine research to inform science-based decisions about offshore energy and marine minerals. BOEM oversees the leasing and environmental assessment of conventional energy sources (offshore oil and gas), emerging renewable energy technologies (offshore wind, wave, and current), and marine minerals (sand, deep sea minerals) on the Outer Continental Shelf. BOEM 's Environmental Studies Program procures research in a variety of marine disciplines in order to carry out its mission and may require the types of research conducted by SCMI researchers and students.

As the nexus for eleven outstanding academic institutions in southern California, SCMI supports a remarkable array of academic programs in biology, geology, oceanography, and conducts applied research of direct interest to BOEM. Topics of particular interest to BOEM include environmental impact assessment and evaluation of potential mitigation strategies, and those that deal with ocean acidification, geomorphology, sedimentology, harmful algal blooms, invasive species, contaminants, and fish biology. SCMI is conveniently located next to areas of ongoing and potential future offshore energy projects and thus is ideally situated for field work of interest to BOEM. The high-quality work produced by reesarchers associated with SCMI is well known nationally and internationally.

We look forward to increased opportunities to work with SCMI and believe they will be an asset to the Californian CESU partnership.

Sincerely,

Donna Schroeder
BOEM Pacific Environmental Sciences Section
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Phone: 805-384-6382