



ANNUAL REPORT OF THE UCSB NATURAL RESERVE SYSTEM
TO THE UCSB OFFICE OF RESEARCH

FY 2021-2022

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C. Mission Statement

The mission of the University of California Natural Reserve System (UC NRS) is to contribute to the understanding and wise stewardship of the Earth and its natural systems by supporting university-level teaching, research, and public service at protected natural areas throughout California.

D. Overview

In 1965, the UC Board of Regents established the UC NRS to provide protected environments representing California’s natural habitats for research, education and public service. In the over 50 years since its formation, the UC NRS has grown from seven to 41 Reserves that encompass over 850,000 acres. The UC NRS protects California’s natural heritage for the public trust and provides protected natural areas for research and teaching to contribute to the understanding and wise management of the Earth and its natural systems. The ecosystems and facilities offered by the 41 Reserves are available to scientists, humanists, educators, students, and the public from throughout the world. The Reserves also serve as a gateway to more than a million acres of public lands. The UC NRS is a UC-wide program that serves the overall UC Academic Affairs. The UC-wide UC NRS, based in the UC Office of the President, supports core initiatives across campuses, such as the California Heartbeat Initiative, the Climate Monitoring Network, the California Ecology and Conservation Course, and a UC President’s Catalyst Initiative on climate change (Institute for the Study of Ecology & Evolutionary Climate Impacts, or ISEECI). Each Reserve is assigned to one of nine UC campuses for administration.

UC Santa Barbara (UCSB) manages seven of the 41 UC NRS Reserves. The seven sites within the UCSB NRS offer a unique assemblage of protected wildlands throughout Central and Eastern California. UCSB’s Reserves encompass many of the State’s major ecosystems preserved in as undisturbed a condition as possible to support University-level research and teaching programs. The ecosystems and facilities offered by each Reserve are available to faculty, researchers and students from all UC campuses, and to users from other institutions, public or private, throughout the world. In FY21-22 across all seven of UCSB’s Reserves, there were 7,743 users and 37,182 user days, with use distributed across multiple types including research, university level classes and public service (Figure 1, Left). Relative to FY20-21, the year most impacted by the COVID-19 pandemic, this represents an increase of over 2.25 times the use. This dramatic increase in use is attributed to the departure from the UCSB Research shut down and recovery from the COVID-19 pandemic.

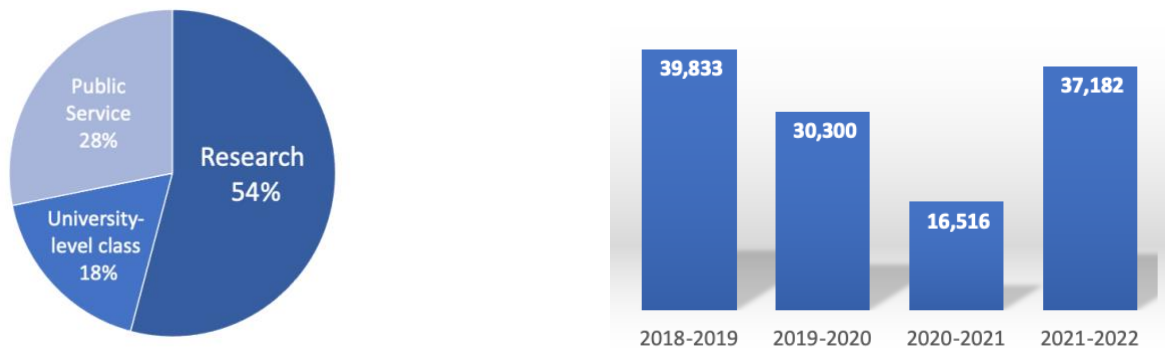


Figure 1. Left: FY 2021-2022 Use of all UCSB Natural Reserve System sites. The categories represented include: (1) Research (Research), (2) Classes (University-Level Classes), (3) Public Service (which includes administrative, government or agency, and other use types; Volunteers (people who support reserve operations and programs); K-12 (Students and instructors), and others. Right: UCSB NRS Total User Days, FY2018-2019 to FY21-22

Most UCSB Reserve sites are managed by a dedicated Reserve Director and associated support staff. An exception is the Valentine Eastern Sierra Reserve, whose Reserve Director with staff manage 2 sites: the Sierra Nevada Aquatic Research Laboratory (SNARL) and the Valentine Camp Reserve. The Reserve Directors live onsite (with the exception of the Carpinteria Salt Marsh, which has no overnight accommodations or residential facilities) and manage the day-to-day operations, to facilitate research, University-level coursework and public service goals of the UC NRS. The tasks of the Reserve Directors are wide ranging, and include but are not limited to: grant writing, fundraising, land management, budget management, employee supervision, database management, restoration, outreach and education, vehicle maintenance, interacting with and facilitating researchers and research use of the facilities, and stakeholder engagement. The Reserve Directors are supported centrally by the UCSB NRS administrative office, located in the Marine Science Research Building on the UCSB campus.

E. Executive Summary

UCSB manages seven of the 41 UC-wide NRS Reserves under the UCSB Office of Research. The administration of the seven Reserves is the responsibility of the UCSB NRS Campus Office. Since 1970, when Coal Oil Point Reserve (COPR), located on UCSB's West Campus, became the first of 7 Reserves managed by UCSB, the UCSB NRS has continued to excel in providing top tier researchers, university level classes and other public and private users a means by which to access California's environmental resources, and utilize facilities and other assets available at Reserve sites.

1. Accomplishments and Impacts

RESERVE USE

- **Number of Users:** Each year, thousands of users from around the world conduct field research in the protected landscapes of UCSB's Reserves. Over the period FY21-22, the 7 sites of the UCSB NRS totaled 7,743 users, which is 35% less than FY18-19, indicating that the number of individuals using the Reserves has not reached those user numbers prior to the onset of the COVID-19 pandemic.
- **Number of User days:** User days, defined as the sum of the number of days spent on Reserves across all users, is another metric of Reserve use that is reported by the UC NRS to UCOP. During FY21-22 the UCSB NRS totaled 37,182 user days, which is 6% less than FY18-19.
- **Faculty Use:** In FY21-22, faculty use at UCSB Reserves surged relative to FY20-21 and totaled 292 unique individuals over 2,579 user days; this is an increase from 113 unique individuals over 1,546 user days in FY20-21. Individual faculty members utilizing UCSB Reserves have originated from multiple institutions, including UCSB, and non-UCSB UC campuses, as well as from California State University, Community Colleges, other California university level institutions, and U.S. or international University level institutions outside of California.
- **Research Projects:** The UCSB NRS Reserves host a wide variety of research projects carried out by individuals originating from a variety of global regions, i.e. ranging from UCSB to international institutions. In FY21-22 there were 222 research projects carried out at UCSB NRS Reserves.
- **Publications:** Each year, a number of publications are based on use or access to amenities and natural resources associated with UCSB Reserves. In 2021 there were a total of 144 publications,

and in 2021 there were a total of 45 publications¹. The represented disciplines included: biology, ecology, physiology, evolution, hydrology, anthropology, archeology, atmospheric science, toxicology, geology, geography, geophysics, endocrinology, microbiology, history, earth science and others.

University Level Instruction: In FY21-22 there were 81 University level instruction (classes) that used the 7 UCSB Reserves. This use included 1,798 users over 6,586 user days. University level instruction has seen the greatest increase relative to this use over the campus shut down: in FY21-22 there were 183 university level class users over 822 User Days. The majority of university level class use of UCSB Reserves was by UCSB and UC students and instructors. The UCSB Reserves also service: other UC Campuses, California State Universities, Community Colleges, other California Colleges/Universities, international Universities or Colleges, and nongovernmental organization (NGO)/Non-Profit Entities and Governmental Agencies in support of University level instruction.

FACILITIES AND CAPITAL IMPROVEMENTS

- In FY21-22 there were a number of ongoing or new capital projects occurring on behalf of UCSB Natural Reserve facilities and infrastructure. These additions were funded through a combination of UCSB NRS donor support, California State Bond Measure funds (Proposition 68), the UC NRS (UCOP), and grants (intramural and extramural). The following is a list of UCSB NRS Capital Projects in FY21-22:
 - Coal Oil Point Reserve – Maintenance of Western Snowy Plover fencing (UCSB NRS funded)
 - Coal Oil Point Reserve – Maintenance and repair of various vandalized fencing, signage (ongoing, UCSB NRS funded)
 - K.S.N. Rancho Marino Reserve – Restoration of roads and buildings after significant winter storm and associated damages in January 2021. Included various infrastructure repairs, mold abatement and other water damage on Director residence, and classroom and overnight accommodations (UCSB NRS funded)
 - Sedgwick Reserve Barn Renovation/Maintenance (Donor Funded)
 - Santa Cruz Island Reserve Infrastructure project – Planning stages (Proposition 68 and UCSB NRS donor funded)
 - Sierra Nevada Aquatic Research Laboratory – Aspen House ADA improvements (Proposition 68, UCSB ACCA Committee, UCOP, and Donor Funded)
 - Valentine Camp Reserve Fuels Reduction and Forest Thinning/Management Project (California Department of Fire and Forestry Funded)

FUNDING

- **Grants** are a major and necessary source of funding for capital improvements, maintenance, land management and programmatic needs at the UCSB Reserves. Typically, each Reserve Director leads an effort to identify and apply for grant funding from external or UCSB sources in order to support the operations and programs at Reserves. Reserve Directors work with the UCSB NRS Executive Director and Director to write and submit grant applications. In FY2021-2022 the UCSB NRS has successfully utilized or newly acquired \$2,296,208 in grant funding from the California Wildlife Conservation Board (Proposition 68), California Department of Forestry, National Science Foundation, and UCSB TGIF and UCSB Associated Students Coastal Fund to carry out: strategic planning efforts, educational programming, and to add research and educational infrastructure to

¹ Publication data for 2022 through 11/1/22

Reserve sites, manage forests and vegetation, and improve energy efficiency and sustainability at Reserves.

- **Gifts and Donor Support:** In FY2021-2022 the UCSB NRS received a total of 215 gifts totaling \$913,593 in donor support as new gifts. This is an increase of 24% relative to FY20-21. Included in this is a gift of \$300,000 to support the maintenance and upkeep of the Sedgwick Reserve Barn, \$100,000 to support the purchase of a fire safety water tender truck at Sedgwick Reserve, and gifts totaling \$75,000 to purchase a passenger van in support of educational programming at the Valentine Eastern Sierra Reserves.

2. Impact of Research Shut Down on the Natural Reserve System

The COVID-19 research shut down has significantly impacted the UCSB Natural Reserve System to achieve the goals of the UC NRS mission in FY19-20. In FY21-22 the UCSB NRS use and activities have approached pre-pandemic conditions. The following bullet points provide a brief summary of this impact and recovery:

- The UCSB Natural Reserve System closed officially to academic and public use, in response to California Governor Newsom’s issue of a Statewide stay at home order, on March 20, 2020 and reopened only to critical and/or time-sensitive research activities on June 24, 2020. University-level class use was permitted at UCSB NRS sites approximately one year after the initial shut-down on March 28, 2021.
- Working with its control point, the UCSB Office of Research, the UCSB NRS developed its own protocols and policies for permitting Reserve use during the UCSB Research Ramp Down and other UC initiatives occurring during the pandemic.
- Relative to FY18-19, **Reserve use** (in terms of number of users and number of user days) in FY21-22 has recovered significantly (Figure 2). The number of individual users in FY21-22 is still decreased relative to FY18-19 (65%), however user days (or the number of days each individual user spends at a Reserve) is near pre-pandemic numbers. This indicates that there remains a smaller pool of individuals using the Reserves, but users are spending more days at Reserves. The smaller pool could potentially owe to COVID risk precautions.
- Subsequently, **recharge income** sourced from Reserve use decreased significantly during the COVID-19 shut down relative to FY18-19: FY20-21 revenues were 49%, compared to pre-pandemic revenue. However, FY21-22 recharge income increased significantly due to the return of Reserve users, but also due to raised use fees associated with an updated UCSB NRS I&R package in FY20-21. FY21-22 revenues were 20% above those from FY18-19.
- **Philanthropic fundraising** has also decreased due to the pandemic. The overall income to the UCSB NRS from philanthropic giving was \$913K in FY21-22 compared to \$625K in FY20-21. Philanthropic fundraising was still below that in FY18-19 (\$1.56M). However, there usually is quite a bit of variability in philanthropic gift totals by fiscal year, due to one-time large gifts, which occur with some irregularity.
- The UCSB NRS lost critical salary support for the Coal Oil Point Reserve Director from the UCSB College of Letters & Science and the Executive Vice Chancellor’s office owing to budget uncertainties associated with COVID-19.
- In FY20-21, the UCSB NRS pivoted to produce its first-ever, UCSB NRS seminar series, which was virtually hosted in Fall 2020. This seminar reached a wide number of audience participants, was widely popular, and was the first of its kind in the UC NRS, systemwide. The series has continued, and the third UCSB Natural Reserve System Virtual Seminar Series began on September 27, 2022. For this season, which is still ongoing, there is currently an average of 250 registrants across the 7 seminar presentation evenings.

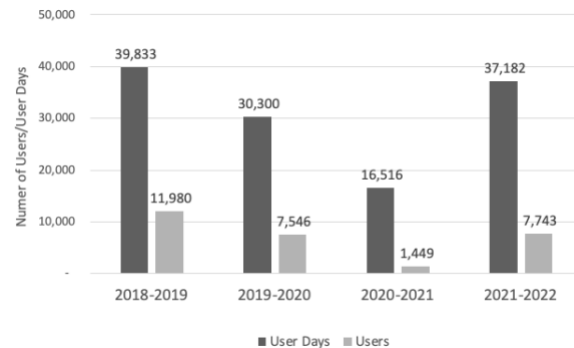


Figure 2. UC Santa Barbara Reserve Use Totals, FY2018-2019 to FY2021-2022

3. 5-Year Projection of Natural Reserve System Plans

The 5-year vision for the UCSB Natural Reserve System is to improve infrastructure and staffing in order to achieve adequate data and network support to facilitate world-class research and university level teaching, and to broaden the impact and utility of the UCSB NRS sites.

Over the next five years there are a number of plans specific to Reserves and also to the unit overall. The following provides a brief description:

- The UCSB Natural Reserve System can achieve its mission with full and permanent funding for critical staff. At present, only Rancho Marino Reserve, which is mostly privately-funded, has satisfied this goal. The UCSB NRS would like to work with the Office of Research to develop a plan for permanent funding for UCSB NRS critical staff to deliver on the core UC NRS mission.
- Philanthropic fundraising provides over 60% of the UCSB NRS operating budget. The UCSB NRS cannot operate at its current level without donor support. Fundraising activities will continue to be a major activity of the UCSB NRS over the next five years, including achievement of the following goals: (1) working to build the Sedgwick Operating endowment to \$7.5M, (2) increasing Valentine Eastern Sierra Reserve Endowments, (3) gaining core staffing and programmatic support for COPR, (4) acquiring research support for CSMR, (5) gaining major infrastructure, operations, research and education support for Santa Cruz Island Reserve (\$16M).
- Improvement of information technology and network and data resources is needed. Technical infrastructure and the expertise to support this is sparse and inadequate for the UCSB NRS. The UCSB NRS seeks to improve this asset over the next five years, with a focus on acquiring funds for and hiring a Director of Information Technology to assist with field communications infrastructure, database management and other environmental observation/research technologies at Reserves.
- With its proximity to campus and also the Santa Barbara community, Coal Oil Point Reserve is the local representation of the UCSB NRS to the UCSB campus and also to the public. Coal Oil Point Reserve is currently under duress of issues typical of highly urbanized zones – trespassing, theft, property damage, environmental stressors and other unwanted impacts of human pressure. Over the next 5 years, the UCSB NRS plans to develop and implement increased protections for COPR.
- The Valentine Eastern Sierra Reserves, SNARL and Valentine Camp, represent the UCSB NRS' two sites with the greatest amount of infrastructure (a total of 26,421 sq ft. and 10,666 sq ft., respectively), K-12 programming, and User Day/User ratios (indicating heavy and impactful use of facilities and staff time), relative to any other UCSB Reserve. Further, the high elevation and extreme snow conditions increases costs and staff time to maintain these facilities and programs. Increased staff support is significantly needed at VESR and fundraising and recruitments to support these needs will be a major objective around those Reserves.
- The Santa Cruz Island Reserve is the major recipient of the Proposition 68, Wildlife Conservation Board-administered, infrastructure funding. Facilities improvements, including two-new staff housing units, will be built at the Island with these funds. Funds have been received on campus, and initial planning stages have been completed, working with UCSB Design and Construction Services and Budget & Planning.

F. Organizational Chart

The UC NRS Systemwide has operated, including during most of this reporting period, under the general leadership of its Executive Director, Dr. Peggy Fiedler, located at the UC Office of the President in Oakland. Dr. Fiedler retired on June 30th, 2021. As of November 4, 2021, Dr. Steven Monfort is appointed as the Executive Director of the UC NRS. The UCSB NRS is led by the UCSB NRS Director, Professor Patricia Holden. Professor Holden is also the Chair of the University-wide NRS Advisory Committee. The Executive Director, Dr. Marion Wittmann, is responsible for the day-to-day operation and management of the 7 UCSB Reserves. The UCSB NRS is managed under the supervision of the UCSB Office of Research (Figure 3).

The UCSB NRS Campus Office is responsible for the management of the financial resources of the UCSB NRS and assists Reserves with administrative functions. The Office acts as the link between the remote reserves and UCSB campus departments. In addition to the UCSB NRS Director, the Office staff includes the Executive Director, Business Officer, and Financial Analyst. The UCSB Office of Development's Directorship of Ecological and Environmental Sciences includes the UCSB NRS in its portfolio. The UCSB NRS Campus Office is located in the Marine Science Research Building.

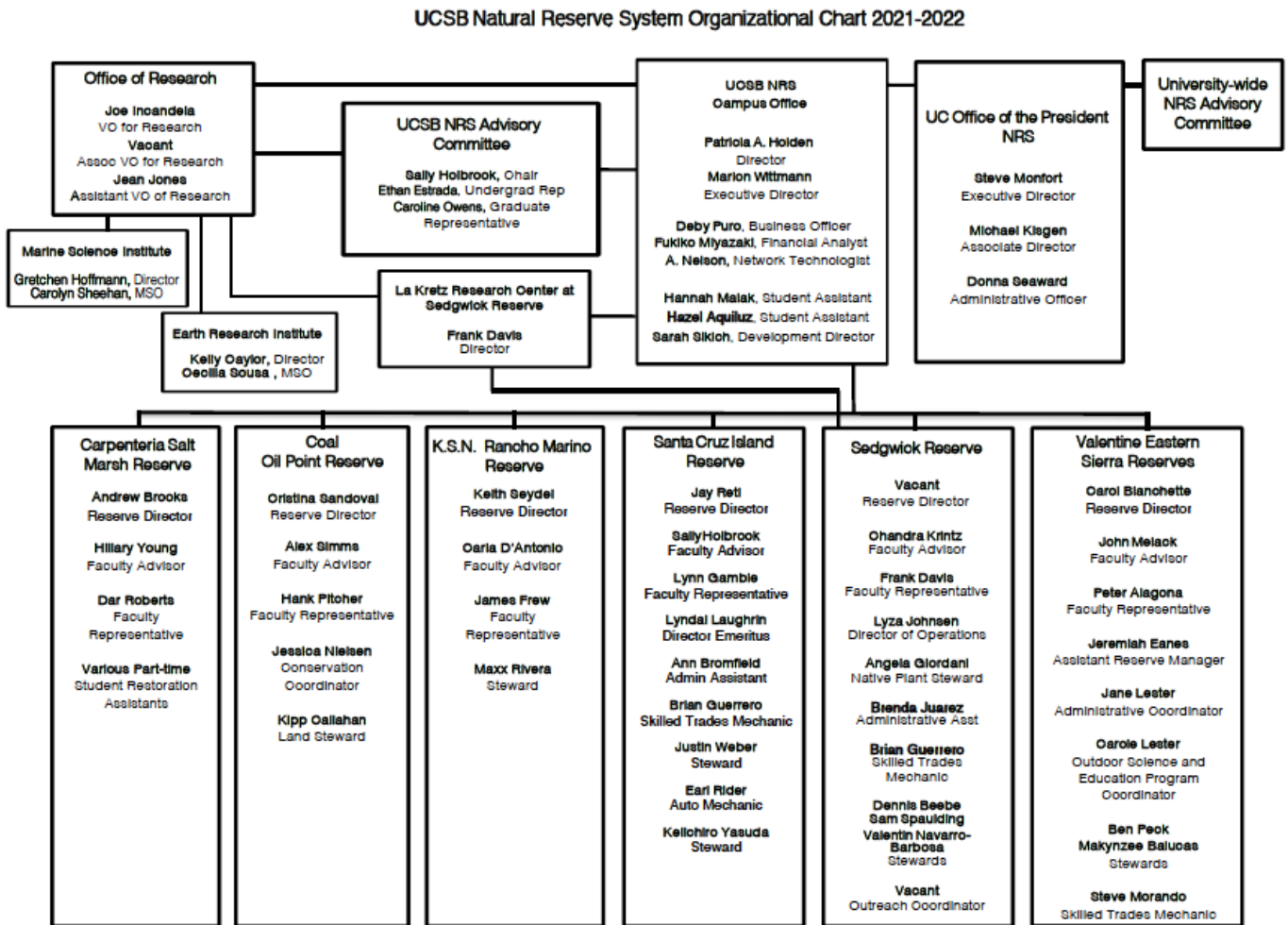


Figure 3. UC Santa Barbara Natural Reserve System Organizational Chart, 2021-2022

G. Advisory Committee, Administrative and Technical Staff

UCSB Natural Reserve System Advisory Committee

The UCSB Natural Reserve System is guided by an Advisory Committee comprised of UCSB faculty, undergraduate and graduate student representatives, and external advisors from non-UCSB organizations. The UCSB NRS Advisory Committee met via Zoom three times during the 2021-2022 academic year. The meetings were well attended, and a number of important issues were discussed. Prior to each meeting, quarterly summary reports from UCSB's seven Reserves were circulated to the committee, and these provided background on progress and activities at each Reserve, as well as a foundation for committee discussions. The FY 2021-2022 UCSB NRS Advisory Committee included:

Sally Holbrook Committee Chair; Ecology, Evolution and Marine Biology
Patricia Holden Director (ex-officio); Bren School of Environmental Science and Management
Marion Wittmann Executive Director (ex-officio); Natural Reserve System

Carpinteria Salt Marsh Reserve

Hillary Young Faculty Advisor (ex-officio); Ecology, Evolution, and Marine Biology
Dar Roberts Faculty Representative; Geography

Coal Oil Point Reserve

Alex Simms Faculty Advisor (ex-officio); Earth Science
Hank Pitcher Faculty Representative; College of Creative Studies

Kenneth S. Norris Rancho Marino Reserve

Carla D'Antonio Faculty Advisor (ex-officio); EEMB, Environmental Studies
James Frew Faculty Representative; Bren School

Santa Cruz Island Reserve

Sally J. Holbrook Faculty Advisor (ex-officio); Ecology, Evolution, and Marine Biology
Lynn Gamble Faculty Representative; Anthropology

Sedgwick Reserve

Chandra Krintz Faculty Advisor (ex-officio); Computer Science
Frank Davis Faculty Representative; Bren School

Valentine Eastern Sierra Reserves

John Melack Faculty Advisor (ex-officio); Ecology, Evolution & Marine Biology, Bren School
Peter Alagona Faculty Representative; History, Environmental Studies

Community Representatives

John Randall Lead Scientist, California Chapter, The Nature Conservancy
Meredith Hendricks Executive Director, Land Trust of Santa Barbara County

UCSB Student Representatives

Ethan Estrada Undergraduate Representative; Associated Students
Caroline Owens Graduate Representative; Graduate Student Association

UCSB NRS Administrative and Technical Staff

- Marion Wittmann, Executive Director
- Laurie Cussalli, Business Officer
- Deby Puro, Financial Services Analyst 3
- Fukiko Miyazaki, Financial Analyst
- Olivia Lee, Work-study, Undergraduate student
- Hannah Malek, Work study, Undergraduate student
- Hazel Aguiluz, Work study, Undergraduate student
- Anthony Nelson, Communications Technician and Specialist

H. Statistical Summary

The following is a summary of the Reserve Use statistics for the 7 UCSB Natural Reserve System sites for FY21-22. The UCSB Natural Reserve System's seven sites offer a unique assemblage of protected wildland sites throughout Central and Eastern California. UCSB's Reserves encompass many of the State's major ecosystems preserved in as undisturbed a condition as possible to support University-level research and teaching programs. The ecosystems and facilities offered by each Reserve are available to faculty, researchers and students from all University of California campuses, and to users from other institutions, public or private, throughout the world. The UCSB NRS is among the most utilized of the 41-site system across the University of California. In FY21 – 22 there were 37,182 user days at all 7 of the UCSB NRS sites with the highest use category being Research (54%) (Figure 1; Table 1).

Data Used in this Report

The UC Natural Reserve System tracks Reserve use with its online Reserve Application Management System (RAMS). Those wishing to visit a Reserve provide information about their role, their reason for visiting, and other data via the online application. Reserve staff grant permission for use that is deemed appropriate. Most Reserves are closed to the public, except for guided public service events. RAMS is a user-driven system, with the majority of data provided by users themselves. Due to differences in Reserve operations and facilities, the methods used to collect and compile the data may vary among Reserves. The metrics collected via RAMS correspond to metrics required by the National Science Foundation infrastructure programs, and they are commonly used across national and international field stations. The metrics presented here are those most commonly collected by Reserves by RAMS, and are the measures that are well suited to demonstrate utilization of UC NRS Reserves.

For nearly all Reserves, permission to use a Reserve is granted on the basis of information provided via RAMS applications. Coal Oil Point Reserve has a unique use category due to its public accessibility in certain areas of the Reserve. Due to the nature of this public access without restrictions or application requirements, there are numerous users who engage in passive recreation at Coal Oil Point Reserve (via beach access, trail use and other access points). These small portions of Coal Oil Point Reserve which have had historic public access remain open to the public, but estimates of that use are not included here. The following statistics describing NRS use and facilities were generated using RAMS data collected during FY21–22, unless otherwise noted. For all Reserves, including Coal Oil Point Reserve, use volume is tracked in two ways:

1. *Users* — the number of unique individuals who visited a Reserve
2. *User days* — the number of days that users spent at a Reserve

The type of Reserve use falls into one of three categories:

1. *Research* – For the purpose of carrying out field or laboratory-based research applications.
2. *University-level class* – For the purposes of university-level instruction.
3. *Public Service* – Other uses, including K–12 classes, docents, volunteers, and agency use.

Users

Users, or the number of unique individuals who visit a Reserve, is an important indicator for the volume of unique exposures to Reserve sites and of the characteristic of the use. “User” is a metric required by the National Science Foundation infrastructure support programs (e.g., the Field Stations and Marine Laboratories, or FSML, program) for proposals and for evaluating the success of programmatic and infrastructure support.

Each year, thousands of users from around the world conduct field research in the protected landscapes of UCSB’s Reserves. The UC NRS, as a whole, averages approximately 60,000 users per year. In FY21-22, the UCSB NRS facilitated 7,743 users (Table 1) – almost an order of magnitude more than FY20-21 (with 1,449 users), again, with the difference due to the COVID-19 pandemic.

The NRS draws investigators for many reasons: the natural landscapes represent a living library of California's diverse ecosystems; Reserve lands are protected for the long term, enabling researchers to conduct experiments without fear of the land or their equipment being disturbed; data archives enable scientists to build on decades of previous research; overnight accommodations, laboratories, reference collections, internet access, and other amenities make field work more comfortable and productive.

More than 75 undergraduate courses from UCSB, across the UC and CSU and Community College systems in California, the U.S., and abroad, visit UCSB NRS Reserves in each typical year. Class subjects range from botany to zoology, archaeology to environmental planning, and public health to the performing and visual arts. In the field, students learn by doing. They readily absorb concepts difficult to teach in a traditional classroom, such as how to identify, quantify and observe biota and physical features in the field using professional standards. Their direct observations enrich lectures and textbook readings.

The NRS is committed to public service on many levels. From elementary school field trips to courses on botanical illustration to scientific lecture series, Reserves host a range of learning opportunities for the general public. As authorities on regional ecosystems, NRS personnel inform and improve wildland planning and management efforts. As stewards of thousands of acres of marine and terrestrial protected areas, Reserves help ensure the continued health of California State ecosystems. Finally, the NRS influences conservation and land management practices well beyond State borders by participating in a broad array of international biodiversity and training programs.

Table 1. UCSB Natural Reserve System Users (the number of unique individuals who visited a Reserve) in FY21-22. CSMR = Carpinteria Salt Marsh Reserve; COPR = Coal Oil Point Reserve, KNRM = Kenneth S. Norris Rancho Marino Reserve, SCIR = Santa Cruz Island Reserve, SEDG = Sedgwick Reserve, SNARL = Sierra Nevada Aquatic Research Laboratory, VALC = Valentine Camp Reserve

Reserve	Research	University-Level Class	Public Service	Total
CSMR	131	312	124	567
COPR	177	322	553	1052
RMR	113	338	98	549
SCIR	212	157	168	537
SEDG	484	327	1241	2052
SNARL	223	327	1228	1778
VALC	105	15	1088	1208
Total	1,445	1,798	4,500	7,743

User Days

User days represents the number of days that the above-reported number of Users were onsite at each Reserve. User days can vary by activity and need for utilizing the site and include any 24 hour or less utilization of a Reserve or its amenities. Each year, there are many thousands of user days at UCSB's Reserves. In FY21-22, the UCSB NRS facilitated 37,182 user days (Table 2).

Table 2. UCSB Natural Reserve System User Days (the number of days users spent at a Reserve) in FY21-22. CSMR = Carpinteria Salt Marsh Reserve; COPR = Coal Oil Point Reserve, KNRM = Kenneth S. Norris Rancho Marino Reserve, SCIR = Santa Cruz Island Reserve, SEDG = Sedgwick Reserve, SNARL = Sierra Nevada Aquatic Research Laboratory, VALC = Valentine Camp Reserve

Reserve	Research	University-Level Class	Public Service	Total
CSMR	917	325	214	1456
COPR	3232	1156	2648	7036
RMR	472	1267	214	1953
SCIR	1225	569	673	2467
SEDG	3485	727	1830	6042
SNARL	10155	2527	2939	15621
VALC	640	15	1952	2607
Total	20,126	6,586	10,470	37,182

Use by Faculty

In FY 21-22, faculty research use at UCSB Reserves totaled 292 unique individuals over 2,579 user days (Table 3). Faculty members utilizing UCSB Reserves have originated from multiple institutions, including UC campuses. Of overall faculty use at UCSB NRS sites, 45% originated from UCSB. Other faculty users originated from California State Universities, Community Colleges, Other California university level institutions, U.S. University level institutions outside of California, international institutions, and others.

Publications

Each year, a number of publications are published based on the ability to access the Reserve’s amenities. Here we report on publications from calendar years 2021 and 2022², in which there were a total of 144 publications in 2021 and 45 in 2022. General topics addressed by the suite of publications included but were not limited to: biology, ecology, physiology, evolution, hydrology, anthropology, archeology, atmospheric science, toxicology, geology, geography, geophysics, endocrinology, microbiology, history, earth science and others. Please see the following for the breakdown of publications by Reserve (Table 4). All Reserve Bibliographies are centrally stored in a publicly accessible [Zotero database](#).

Table 3. Faculty Use of UCSB Reserves. UCSB Natural Reserve System Faculty Users and User Days. These include UC Faculty, UCSB Faculty and Faculty from all institutions of higher learning in FY21-22. CSMR = Carpinteria Salt Marsh Reserve; COPR = Coal Oil Point Reserve, KNRM = Kenneth S. Norris Rancho Marino Reserve, SCIR = Santa Cruz Island Reserve, SEDG = Sedgwick Reserve, SNRL = Sierra Nevada Aquatic Research Laboratory, VALC = Valentine Camp Reserve

Reserve	All Faculty	
	Users	User Days
CSMR	11	30
COPR	81	789
KNRM	39	125
SCIR	26	129
SEDG	81	357
SNRL	45	1079
VALC	9	70
Total	292	2,579

Table 4. Numbers of Publications in Calendar Years 2021 and 2022² which utilized Reserve habitats, facilities or environmental resources made accessible by UCSB Reserve.

Reserve	# of Peer reviewed Publications	
	2021	2022 ²
Carpinteria Salt Marsh Reserve	12	2
Coal Oil Point Reserve	8	0
K.S.N. Rancho Marino Reserve	3	1
Sedgwick Reserve	21	7
Santa Cruz Island Reserve	33	7
Sierra Nevada Aquatic Research Laboratory	51	18
Valentine Camp	16	10
Total	144	45

² 2022 Publication Data provided up to 11/1/21

I. Principal Investigator List

The staff of the UCSB NRS are quite active at submitting and receiving funding from intra- and extramural sources in support of the UCSB Reserves. The following are the PIs of the UCSB NRS staff who have submitted Reserve enhancement or UCSB NRS-related programmatic proposals or who have similar active awards and relevant award information (Table 5):

- Blanchette, Carol A. Director, Valentine Eastern Sierra Reserves, Natural Reserve System
- Brooks, Andrew J., Director, Carpinteria Salt Marsh Reserve, Natural Reserve System
- Laughrin, Lyndal, Director, Santa Cruz Island Reserve, Natural Reserve System
- Wittmann, Marion E., Executive Director, Natural Reserve System
- Sandoval, Cristina, Director, Coal Oil Point Reserve

Table 5. Award information for Natural Reserve System Principal Investigators (PIs), FY21-22

<u>Record #</u>	<u>PI</u>	<u>Agency</u>	<u>Title</u>	<u>Award Begin</u>	<u>Award End</u>	<u>Total Award</u>
20180688	Wittmann, M.E.; Laughrin, L.	National Science Foundation	Developing a Strategic Plan for Santa Cruz Island Reserve	7/1/18	10/30/21	\$24,944
20211118	Wittmann, M. E.; Reti, J. S.	CA Wildlife Conservation Board	Santa Cruz Island Infrastructure Project	6/29/21	10/31/25	\$1,250,000
20211114	Wittmann, M.E.; Blanchette, C.A.	CA Wildlife Conservation Board	Sierra Nevada Aquatic Research Laboratory Facilities Enhancement Project	6/29/21	10/31/25	\$320,000
	Hoffmann, G Blanchette, C.A.	National Science Foundation	FUERTE: Field based Undergraduate Engagement through Research, Teaching and Education	6/29/22	6/30/27	\$2,400,000
Intramural award	Wittmann, Marion; Blanchette, Carol	UCOP	UC NRS Env IT Strategic Planning	10/1/21	6/30/22	\$ 50,000
Foundation	Reti, Jay	Marisla Foundation	Santa Cruz Island Reserve Educational Outreach and Student Teaching Support Program	10/1/21	6/30/22	\$ 25,000
Foundation	Reti, Jay	Anonymous Foundation	Chumash Outreach Program at Santa Cruz Island Reserve	10/1/21	6/30/23	\$ 25,000
Foundation	Reti, Jay	Marisla Foundation	Santa Cruz Island Reserve Educational Outreach and Student Teaching Support Program	10/1/22	6/30/23	\$ 25,000
Intramural award	Blanchette, Carol	Measure U	Valentine Eastern Sierra Reserves Outdoor Science Education Program	7/1/22	6/30/23	\$ 10,000
Intramural award	Sandoval, Cristina	UCSB Coastal Fund	Coal Oil Point Reserve Conservation Education and Restoration	6/30/21	7/1/22	\$58,464
Intramural award	Sandoval, Cristina	UCSB TGIF	COPR Electrification and Expansion Project	4/1/22	6/30/23	\$9,577
Intramural award	Blanchette, Carol	UCSB TGIF	Sustainable Drinking Water Solutions	4/1/22	6/30/23	\$6,138
Intramural award	Reti, Jay	UCSB TGIF	9.72 kW Solar Array for Santa Cruz Island Infrastructure Project	4/1/22	6/30/23	\$20,846

J. Names of Graduate and Undergraduate Students

In FY2021-2022 there were 105 student participants (undergraduate and graduate) at UCSB Reserves (Table 6 and Section L2 in this report). Their experiences ranged from field research, writing internships, docent work, administrative support, graduate student awardees, graduate student researchers and website internships. These do not include all names of student researchers, but rather include students who are either on the NRS payroll or are recipients of NRS awards, including fellowships or internships funded by the UCSB NRS or other UCSB sources such as donor support or the UCSB Coastal Fund.

Table 6. Names of Undergraduate students directly contributing to the NRS who are on the NRS' payroll, participate through assistantships, fellowships or traineeships, or are otherwise involved with the UCSB NRS' work. COPR = Coal Oil Point Reserve.

No	First	Last	Student Level	Reserve	Role	Funding Source	Year
1	Lauren	Jennings	Undergraduate	COPR	Natural History	UCSB Coastal Fund	21-22
2	Sophia	Cameron	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
3	Parker	Abt	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
4	Shelly	Chen	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
5	Andy	Estrada	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
6	Tiberius	Hernandez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
7	Sasha	Holland	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
8	Makena	Hanson	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
9	Ella	Markley	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
10	Cody	Quach	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
11	Ivy	Quach	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
12	Kevin	Tessier	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
13	Jose	Torres Salgado	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
14	Sarah	Wagner	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
15	Kaytlin	Troxler	Undergraduate	COPR	CORE	CORE	21-22
16	Jay	Miranda	Undergraduate	COPR	CORE	CORE	21-22
17	Mina	Boozarpour	Undergraduate	COPR	Snowy Plover Docent	N/A	21-22
18	Michelle	Moreno	Undergraduate	COPR	Data Analysis	CORE	21-22
19	Sophia	Cameron	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
20	Maya	Chen	Undergraduate	COPR	GIS Intern	UCSB Coastal Fund	21-22
21	Madeleine	Sharp	Undergraduate	COPR	iNaturalist Field Guide Writing Intern	UCSB Coastal Fund	21-22
22	Lauren	Jennings	Undergraduate	COPR	iNaturalist Field Guide Writing Intern	UCSB Coastal Fund	21-22
23	Jana	Belsito	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
24	Ben	Early	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
25	Ethan	Jakob	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
26	Joelle	Canto-Adams	Undergraduate	COPR	Natural History Intern	UCSB Coastal Fund	21-22
27	Nic	Noel	Undergraduate	COPR	Plant Photography Intern	UCSB Coastal Fund	21-22
28	Hanna	Weyland	Undergraduate	COPR	Plover Program Support	UCSB Coastal Fund	21-22
29	Madeleine	Sharp	Undergraduate	COPR	Plover Program Support	UCSB Coastal Fund	21-22
30	Holly	Alvarez	Undergraduate	COPR	Plover Program Support	UCSB Coastal Fund	21-22

No	First	Last	Student Level	Reserve	Role	Funding Source	Year
31	Parker	Abt	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
32	Holly	Alvarez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
33	Kiley	Beaart	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
34	Katherine	Brydson	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
35	Shelly	Chen	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
36	Camilla	Dopulos	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
37	Fernanda	Espinosa	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
38	Emlyn	Helmbacher	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
39	Tiberius	Hernandez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
40	Sasha	Holland	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
41	Kristina	Jiang	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
42	Faith	Johnson	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
43	Stacey	Kawabata	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
44	Elise	Phan	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
45	Natalie	Tarbox	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
46	Kiley	Beaart	Undergraduate	COPR	Tour Coordination	UCSB Coastal Fund	21-22
47	Hanna	Weyland	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
48	Max	Roberts	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
49	Maya	Chen	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
50	Maritza	Vasquez	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
51	Ben	Early	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
52	Nicolas	Fager	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
53	Roman	Garzelloni	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
54	Camilla	Dopulos	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
55	Zara	Furtado-Quesenberry	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
56	Madeleine	Sharp	Undergraduate	COPR	Plover Program Support	UCSB Coastal Fund	21-22
57	Holly	Alvarez	Undergraduate	COPR	Plover Program Support	UCSB Coastal Fund	21-22
58	Holly	Alvarez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
59	Kiley	Beaart	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
60	Shelly	Chen	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
61	Fernanda	Espinosa	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
62	Tiberius	Hernandez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
63	Sasha	Holland	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
64	Yalda	Khodadad	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
65	Kevin	Tessier	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
66	Kiley	Beaart	Undergraduate	COPR	Tour Coordination	UCSB Coastal Fund	21-22
67	Hanna	Weyland	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
68	Max	Roberts	Undergraduate	COPR	Camera Trapping Intern	UCSB Coastal Fund	21-22
69	Maya	Chen	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
70	Ronja	Keeley	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22

No	First	Last	Student Level	Reserve	Role	Funding Source	Year
71	Emalia	Partlow	Undergraduate	COPR	Land Steward Intern	UCSB Coastal Fund	21-22
72	Holly	Alvarez	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
73	Kiley	Beaart	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
74	Joelle	Canto-Adams	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
75	Sasha	Holland	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
76	Shaylin	Patil	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
77	Max	Roberts	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
78	Madeleine	Sharp	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
79	Kevin	Tessier	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
80	Hanna	Weyland	Undergraduate	COPR	Plover monitor	UCSB Coastal Fund	21-22
81	Kiley	Beaart	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
82	Dimitri	Katsioularis	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
83	Madeleine	Sharp	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
84	Elizabeth	Cotter	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
85	Yalda	Khodadad	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
86	Vered	Pinhas	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
87	Nick	Fager	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
88	Rachel	Loewy	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
89	Parker	Malhotra	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
90	Kevin	Tessier	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
91	Shaylin	Patil	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
92	Yuki	Ito	Undergraduate	COPR	Snowy Plover Docent	UCSB Coastal Fund	21-22
93	Hannah	Malek	Undergraduate	UCSB NRS	Work Study – UCSB Admin	UCSB NRS Admin Support	21-22
94	Hazel	Aguiluz	Undergraduate	UCSB NRS	Work Study – UCSB Admin	UCSB NRS Admin Support	21-22
95	Olivia	Lee	Undergraduate	UCSB NRS	Work Study – UCSB Admin	UCSB NRS Admin Support	21-22
96	Joelle	Canto-Adams	Undergraduate	UCSB NRS	UCSB NRS Henry W. Offen Intern	UCSB NRS Endowment	21-22

K. External Participation

The following tabular summaries show the uses of all UCSB NRS Reserve External Participation, by Reserve. Of the UCSB’s Natural Reserve System’s 7,743 **Users** in FY21-22, 1,636 (21%) were UCSB faculty, researchers, post-docs and students. Of the 37,182 **User Days**, 12,921 (35%) were UCSB faculty, researchers, postdocs and students. All others, both Users and User Days, were from non-UCSB organizations, including other UC campuses, non-UC universities and colleges, Governments, NGOs, businesses, K-12 groups and others. The following shows a Reserve-by-Reserve breakdown of the use. Note that “UC Home” refers to the UCSB campus users.

RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Carpinteria Salt Marsh Reserve

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Faculty	2	14	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	19
Research Scientist/Post Doc	2	2	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Research Assistant (non-student/faculty/postdoc)	6	377	0	0	9	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	393	
Graduate Student	15	88	3	47	1	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	20	139	
Undergraduate Student	19	71	3	24	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	107	
Professional	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	7	22	147	0	0	3	15	32	178	
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	2	3	3	
Volunteer	3	8	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	7	0	0	0	0	24	58	29	74	
SUBTOTAL	51	569	7	75	15	32	0	0	0	0	2	4	0	0	0	0	5	15	22	147	0	0	29	75	131	917	

UNIVERSITY - LEVEL INSTRUCTION (CLASS)																										
Staff	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13
Faculty	2	2	1	1	1	2	2	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	11
Research Scientist/Post Doc	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Research Assistant (non-student/faculty/postdoc)	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
Graduate Student	36	36	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	41
Undergraduate Student	89	89	12	12	41	41	96	96	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	248	248
Other	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
SUBTOTAL	142	148	14	14	46	47	99	105	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	312	325

OTHER																										
Staff	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Research Scientist/Post Doc	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Graduate Student	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Undergraduate Student	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	2	2	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	19	0	0	19	19
Professional	4	4	0	0	0	0	0	0	0	0	0	0	0	0	6	6	2	2	1	1	0	0	0	0	13	13
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	23	1	73	0	0	55	55	76	151
Docent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	1	6
Volunteer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	8	18	9	19
SUBTOTAL	6	6	0	0	1	1	0	0	1	1	0	0	0	0	7	12	24	27	2	74	20	20	63	73	124	214

TOTALS	199	723	21	89	62	80	99	105	12	12	2	4	0	0	7	12	29	42	24	221	20	20	92	148	567	1456
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RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Coal Oil Point Natural Reserve

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Staff	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	2	4
Faculty	7	346	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	349	
Research Scientist/Post Doc	10	129	0	0	0	0	0	0	0	0	3	8	0	0	9	144	0	0	1	7	0	0	0	0	23	288	
Research Assistant (non-student/faculty/postdoc)	7	11	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	16	
Graduate Student	12	134	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	138	
Undergraduate Student	102	2294	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	96	0	0	0	0	0	0	105	2392	
Professional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	15	0	0	4	25	0	0	0	0	7	40	
Other	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	5	5	
SUBTOTAL	140	2916	12	15	0	0	0	0	0	0	3	8	0	0	13	162	4	99	5	32	0	0	0	0	177	3232	
UNIVERSITY - LEVEL INSTRUCTION (CLASS)																											
Faculty	11	48	0	0	0	0	1	3	0	0	22	187	22	187	0	0	0	0	0	0	0	0	0	0	56	425	
Research Scientist/Post Doc	0	0	1	1	0	0	0	0	0	0	1	19	0	0	0	0	0	0	0	0	0	0	0	0	2	20	
Graduate Student	29	102	1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	117	
Undergraduate Student	159	519	0	0	0	0	75	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234	594	
SUBTOTAL	199	669	2	16	0	0	76	78	0	0	23	206	22	187	0	0	0	0	0	0	0	0	0	0	322	1156	
OTHER																											
Staff	8	8	0	0	0	0	0	0	0	0	0	0	0	0	19	19	7	9	0	0	0	0	0	0	34	36	
Faculty	14	14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	
Research Scientist/Post Doc	8	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	102	
Graduate Student	28	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	33	
Undergraduate Student	56	414	0	0	4	4	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	423	
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	0	20	20	
Professional	12	15	0	0	0	0	1	1	0	0	0	0	0	0	18	24	19	25	6	6	0	0	57	80	113	151	
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	152	432	154	434	
Docent	1	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	594	79	659	
Volunteer	1	365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	34	408	36	774	
SUBTOTAL	128	1016	1	1	4	4	6	6	0	0	0	0	0	0	38	44	28	36	6	6	21	21	321	1514	553	2648	
HOUSING																											
TOTALS	467	4601	15	32	4	4	82	84	0	0	26	214	22	187	51	206	32	135	11	38	21	21	321	1514	1052	7036	

RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Kenneth S. Norris Rancho Marino Reserve

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Faculty	5	17	2	9	2	8	0	0	0	0	2	4	1	13	0	0	0	0	0	0	0	0	0	0	0	12	51
Research Scientist/Post Doc	1	1	4	30	0	0	0	0	0	0	3	17	0	0	0	0	1	8	0	0	0	0	0	0	0	9	56
Research Assistant (non-student/faculty/postdoc)	0	0	16	115	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	123
Graduate Student	4	14	15	42	4	13	0	0	0	0	2	14	0	0	0	0	0	0	0	0	0	0	0	0	0	25	83
Undergraduate Student	2	3	15	63	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	76
Professional	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	3	8
Other	0	0	2	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	22
Volunteer	3	12	4	16	0	0	0	0	1	2	0	0	0	0	0	0	5	5	0	0	0	0	0	7	18	20	53
SUBTOTAL	17	49	58	295	14	39	0	0	1	2	7	35	1	13	1	6	6	13	0	0	0	0	0	8	20	113	472

UNIVERSITY - LEVEL INSTRUCTION (CLASS)																													
Staff	0	0	7	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	73		
Faculty	3	6	8	54	4	10	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	73		
Research Assistant (non-student/faculty/postdoc)	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1		
Graduate Student	0	0	37	137	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	138		
Undergraduate Student	11	33	115	678	131	217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257	928		
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	2		
Other	0	0	5	28	0	0	0	0	0	0	12	24	0	0	0	0	0	0	0	0	0	0	0	0	0	17	52		
SUBTOTAL	14	39	173	971	136	228	2	3	0	0	12	24	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	338	1267

OTHER																												
Staff	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	15	
Faculty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	
Research Scientist/Post Doc	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	
Graduate Student	30	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	90	
Undergraduate Student	24	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	48	
Professional	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	
Other	0	0	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	36	36	53
SUBTOTAL	61	160	17	17	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	19	36	98	214	

HOUSING

TOTALS	92	248	248	1283	150	267	2	3	1	2	19	59	1	13	1	6	7	14	0	0	1	2	27	56	549	1953
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RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
Reserve: Sedgwick Reserve

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total			
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs
UNIVERSITY- LEVEL RESEARCH																												
Staff	2	4	1	7	0	0	0	0	0	0	0	0	0	0	0	20	189	1	5	0	0	0	0	0	0	0	24	205
Faculty	19	91	13	94	1	1	0	0	1	2	5	61	6	10	2	2	0	0	0	0	0	0	0	0	0	47	261	
Research Scientist/Post Doc	7	26	5	51	0	0	0	0	1	3	0	0	1	1	59	302	3	3	2	7	0	0	0	0	0	78	393	
Research Assistant (non-student/faculty/postdoc)	8	59	10	87	0	0	0	0	0	0	5	77	1	3	0	0	2	4	0	0	0	0	0	0	0	26	230	
Graduate Student	70	437	46	193	1	3	0	0	2	5	14	200	0	0	0	0	0	0	0	0	0	0	0	0	0	133	838	
Undergraduate Student	49	155	19	64	2	92	0	0	6	6	4	184	0	0	0	0	0	0	0	0	0	0	0	0	0	80	501	
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	1	8	8	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	31	2	31	31	
Professional	4	8	5	10	0	0	0	0	0	0	0	0	0	0	9	143	7	66	6	12	0	0	2	17	33	256		
Other	7	30	2	7	0	0	0	0	1	1	0	0	0	0	0	0	6	17	0	0	0	0	3	3	19	58		
Docent	12	477	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	477		
Volunteer	7	102	1	1	1	12	0	0	0	0	0	0	0	0	0	0	3	43	0	0	0	0	17	69	29	227		
SUBTOTAL	185	1389	102	514	5	108	0	0	11	17	28	522	8	14	90	636	22	138	8	19	1	8	24	120	484	3485		
UNIVERSITY - LEVEL INSTRUCTION (CLASS)																												
Staff	7	8	3	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	38	
Faculty	13	23	3	22	0	0	4	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	67	
Research Scientist/Post Doc	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	3	3	
Research Assistant (non-student/faculty/postdoc)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Graduate Student	91	137	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	139	
Undergraduate Student	114	114	51	318	0	0	33	43	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	477	
Other	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	
SUBTOTAL	228	286	58	372	0	0	37	65	2	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	327	727		
OTHER																												
Staff	20	60	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	61	
Faculty	8	11	4	12	1	3	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	29	
Research Scientist/Post Doc	1	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	3	6	
Research Assistant (non-student/faculty/postdoc)	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	
Graduate Student	8	10	5	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	25	
Undergraduate Student	46	46	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	58	
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	14	0	0	12	14	14	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	243	249	0	0	0	0	243	249	
Professional	13	205	0	0	1	5	0	0	0	0	0	0	0	0	0	32	46	0	0	0	0	1	1	1	47	257		
Other	8	9	0	0	0	0	0	0	0	0	0	0	0	0	4	5	69	72	0	0	28	35	467	632	576	753		
Docent	180	269	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	23	0	0	10	10	0	0	213	302		
Volunteer	22	39	0	0	2	6	0	0	0	0	0	0	0	0	17	17	4	5	0	0	0	0	3	7	48	74		
SUBTOTAL	307	653	14	40	5	16	0	0	1	3	0	0	0	0	21	22	129	148	0	0	293	308	471	640	1241	1830		
HOUSING																												
TOTALS	720	2328	174	926	10	124	37	65	14	22	28	522	8	14	111	658	153	288	8	19	294	316	495	760	2052	6042		

RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Santa Cruz Island Reserve

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Staff	2	14	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	17
Faculty	3	14	5	31	4	16	0	0	1	5	1	3	1	7	0	0	0	0	0	0	0	0	0	0	15	76	
Research Scientist/Post Doc	4	12	10	57	0	0	0	0	2	6	3	17	0	0	2	12	2	9	0	0	0	0	0	23	113		
Research Assistant (non-student/faculty/postdoc)	2	18	5	33	0	0	0	0	3	9	0	0	0	0	1	4	3	51	1	6	0	0	1	4	16	125	
Graduate Student	7	35	18	128	4	20	0	0	0	0	3	68	0	0	0	0	0	0	0	0	0	0	0	32	251		
Undergraduate Student	19	61	13	49	4	16	0	0	9	18	1	6	0	0	0	0	0	0	0	0	0	0	0	46	150		
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21	0	3	21	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	36	0	0	6	36	
Professional	4	47	2	8	0	0	0	0	0	0	0	0	0	0	5	53	6	115	9	53	1	6	1	2	28	284	
Other	1	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	11	52	0	0	0	0	21	71	35	132	
Volunteer	1	4	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	13	5	20	
SUBTOTAL	43	207	54	309	13	55	0	0	17	45	8	94	1	7	8	69	22	227	10	59	10	63	26	90	212	1225	
UNIVERSITY - LEVEL INSTRUCTION (CLASS)																											
Staff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	17	0	0	0	0	0	0	6	17	
Faculty	2	6	4	15	0	0	2	13	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	9	37		
Graduate Student	0	0	5	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	26		
Undergraduate Student	8	24	79	312	0	0	9	27	12	36	23	69	0	0	0	0	0	0	0	0	0	0	0	131	468		
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9	0	0	3	9	
Professional	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	1	8		
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	2	4		
SUBTOTAL	10	30	88	353	0	0	11	40	13	39	23	69	0	0	0	0	9	29	0	0	3	9	0	0	157	569	
OTHER																											
Staff	1	3	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	9		
Faculty	1	8	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16		
Graduate Student	19	57	4	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	77			
Undergraduate Student	4	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	22			
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	71	0	0	15	71	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	181	0	0	41	181		
Professional	4	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	16			
Other	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	4	44	2	10	67	216	76	281	
SUBTOTAL	30	113	7	34	0	0	0	0	0	0	0	0	0	0	0	0	2	4	4	44	58	262	67	216	168	673	
TOTALS	83	350	149	696	13	55	11	40	30	84	31	163	1	7	8	69	33	260	14	103	71	334	93	306	537	2467	

RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Sierra Nevada Aquatic Research Laboratory

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Staff	0	0	4	108	0	0	0	0	0	0	0	0	0	0	0	0	3	366	0	0	0	0	1	243	8	717	
Faculty	3	376	7	54	0	0	0	0	0	0	4	340	1	6	0	0	0	0	0	0	0	0	0	0	15	776	
Research Scientist/Post Doc	6	1621	6	355	0	0	0	0	0	0	2	5	1	5	2	307	0	0	0	0	0	0	0	0	17	2293	
Research Assistant (non-student/faculty/postdoc)	7	723	8	932	0	0	0	0	1	4	2	56	0	0	1	335	0	0	0	0	0	0	0	0	19	2050	
Graduate Student	12	563	23	823	1	5	0	0	0	0	3	49	2	10	0	0	0	0	0	0	0	0	1	5	42	1455	
Undergraduate Student	10	323	41	999	0	0	0	0	0	0	20	40	1	92	0	0	0	0	0	0	0	0	1	72	73	1526	
K-12 Instructor	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	
Professional	2	182	6	16	0	0	0	0	0	0	0	0	0	0	3	417	2	367	4	22	0	0	0	0	17	1004	
Other	1	22	7	119	0	0	0	0	0	0	0	0	0	0	1	27	0	0	0	0	0	0	1	5	10	173	
Volunteer	14	54	5	95	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	2	21	153	
SUBTOTAL	56	3872	107	3501	1	5	0	0	1	4	32	492	5	113	7	1086	5	733	4	22	0	0	5	327	223	10155	
UNIVERSITY - LEVEL INSTRUCTION (CLASS)																											
Staff	0	0	3	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21	
Faculty	3	17	8	125	0	0	2	8	5	48	6	51	2	22	0	0	0	0	0	0	0	0	0	0	26	271	
Research Scientist/Post Doc	0	0	1	7	0	0	0	0	1	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	38	
Graduate Student	4	24	4	31	0	0	0	0	13	39	5	34	12	132	0	0	0	0	0	0	0	0	0	0	38	260	
Undergraduate Student	11	33	67	736	0	0	0	0	98	550	66	454	13	143	0	0	0	0	0	0	0	0	0	0	255	1916	
Other	0	0	0	0	0	0	0	0	0	0	3	21	0	0	0	0	0	0	0	0	0	0	0	0	3	21	
SUBTOTAL	18	74	83	920	0	0	2	8	117	668	80	560	27	297	0	0	0	0	0	0	0	0	0	327	2527		
OTHER																											
Staff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	68	56	68
Faculty	1	2	1	10	0	0	0	0	0	0	2	20	0	0	0	0	0	0	0	0	0	0	0	0	4	32	
Research Assistant (non-student/faculty/postdoc)	1	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	84	
Graduate Student	7	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	14	
Undergraduate Student	0	0	0	0	0	0	0	0	0	0	10	100	0	0	0	0	0	0	0	0	0	0	0	0	10	100	
K-12 Instructor	3	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	172	200	0	0	175	241
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	851	1850	0	0	851	1850	
Professional	1	47	0	0	0	0	0	0	0	0	0	0	0	1	365	0	0	0	0	0	0	0	0	0	2	412	
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	2	6	1	3	4	12	
Volunteer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	110	118	118	126		
SUBTOTAL	13	188	1	10	0	0	0	0	0	0	12	120	0	0	2	368	0	0	0	0	1033	2064	167	189	1228	2939	
TOTALS	87	4134	191	4431	1	5	2	8	118	672	124	1172	32	410	9	1454	5	733	4	22	1033	2064	172	516	1778	15621	

RESERVE USE DATA Fiscal year: 2021-2022

Campus: University of California, Santa Barbara
 Reserve: Valentine Camp

	UC Home		UC Other		CSU System		CA Comm College		Other CA College		Out of State College		International University		Government		NGO/Non-Profit		Business Entity		K-12 School		Other		Total		
	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	Users	UDs	
UNIVERSITY- LEVEL RESEARCH																											
Staff	0	0	5	20	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30	0	0	0	0	0	0	6	50
Faculty	2	17	5	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	68
Research Scientist/Post Doc	3	11	1	2	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	44	53
Research Assistant (non-student/faculty/postdoc)	2	13	12	90	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	15	107
Graduate Student	0	0	3	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	76
Undergraduate Student	0	0	8	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	132
K-12 Instructor	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
Professional	2	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	27
Other	1	11	1	11	0	0	0	0	0	0	0	0	0	0	0	0	1	11	0	0	0	0	0	5	30	8	63
Volunteer	11	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	54
SUBTOTAL	22	143	35	382	0	0	0	0	0	0	1	4	0	0	40	40	2	41	0	0	0	0	5	30	105	640	
UNIVERSITY - LEVEL INSTRUCTION (CLASS)																											
Faculty	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Graduate Student	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Undergraduate Student	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12
SUBTOTAL	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15
OTHER																											
Staff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	12	3	12
Faculty	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Research Scientist/Post Doc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	2	2
Graduate Student	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
K-12 Instructor	3	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	84	0	0	53	168
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	869	1288	0	0	869	1288
Professional	1	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	32
Other	2	248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	83	83	331	
Volunteer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	96	6	15	68	111
SUBTOTAL	14	371	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	1	981	1468	90	110	1088	1952	
HOUSING																											
TOTALS	36	514	50	397	0	0	0	0	0	0	1	4	0	0	42	42	2	41	1	1	981	1468	95	140	1208	2607	

L. Other Projects and Activities (Instructional Activities Support)

The following includes a Report on the Instructional Activities at UCSB NRS Reserves during AY21-22.

1. Courses Facilitated by the 7 UCSB NRS Reserves during 2021-22

In AY21-22 University Level Instruction (class) use of the 7 UCSB Reserves included 1,798 Users over 6,586 User Days, representing a continued recovery to pre-pandemic use rates by class users compared to AY18-19 (2,729 Users and 7,627 user days). For comparison, university-level instruction use of the Reserves in AY20-21 was 183 users over 822 user days.

Undergraduates comprised the majority of the class use in FY21-22 with 1,337 undergraduate users over 4,643 User days. The majority of university level class use of UCSB Reserves was by UCSB and UC students and instructors, with UCSB use comprising 604 Users and 1246 User Days, and (non-UCSB) UC comprising 426 Users and 2661 User Days. The majority of UC user days were associated with the UC NRS Systemwide Course, “California Ecology and Conservation.” There were 81 courses (graduate and undergraduate) utilizing the UCSB Reserves in AY21-22 – which is a return to pre-pandemic course usage rates (83 in AY18-19, and up from a mere 11 courses using the Reserves in AY20-21). The UCSB Reserves service the following institutions in support of University Level education: other UC Campuses, California State Universities, Community Colleges, other California Colleges/Universities, international Universities or Colleges, and NGO/Non-Profit Entities and Governmental Agencies in support of University Level Teaching (Table 7).

Table 7. Institution types utilizing UC Santa Barbara Natural Reserves for university level instruction in AY21-22

Institution Type	Number of Courses
California Community College	8
California – Other University or College	6
California State University System	6
International University or College	1
Non-Governmental Organization	3
University of California	52
U.S. – University of College Outside of California	4

2. Graduate & Undergraduate Student Support Provided by the UCSB NRS

Graduate Education Support

UCSB Reserves are regularly and frequently used as field experimental and/or collection sites for graduate student research, and also for graduate student pursuits in university-level education, either as students or teaching assistants. Reserve staff facilitate this use by providing access and accommodations, sharing knowledge about the Reserves’ natural resources, assisting with experimental design and ideas, sharing data, helping students connect with other researchers, and providing field support as needed and feasible. Graduate student research and university-level coursework at UCSB Reserves is significant, but has been significantly impacted due to the use restrictions imposed by the COVID-19 pandemic. In FY21-22, graduate student use of all UCSB NRS Reserves was 601 users over 3,950 user days, representing an approximate 4-fold increase compared to FY20-21.

Graduate students utilizing UCSB’s Reserves originate from multiple departments and disciplines, including Ecology, Evolution and Marine Biology, Environmental Science & Management, Physics, Art, Engineering (various departments), Geography, and others. This use by graduate students contributes to master’s theses or doctoral dissertations by students from UCSB and various institutions of higher education. In FY21-22 there have been at least 16 master’s theses or doctoral dissertations produced owing to graduate student use at UCSB NRS Reserves (Table 8).

Table 8. Masters-level theses or doctoral dissertations produced as a result of research carried out at a UCSB NRS Site, FY21-22. CSMR = Carpinteria Salt Marsh Reserve, COPR = Coal Oil Point Reserve, RMR = Rancho Marino Reserve, SCIR = Santa Cruz Island Reserve, SEDG = Sedgwick Reserve, SNARL = Sierra Nevada Aquatic Research Laboratory, VAL = Valentine Camp Reserve.

Reserve	CSMR	COPR	SCIR	SEDG	RMR	SNARL	VAL
<i>Published Theses FY20-21</i>	2	0	3	9	1	0	1

Graduate Student Financial Support Provided by the UCSB Natural Reserve System

In FY21-22 UCSB NRS supported 9 graduate students with \$53,222 in graduate student support, and those funds all originated from philanthropic gifts. The following provides summaries of UCSB NRS graduate student support opportunities. Detailed information on all graduate students who have been provided funding support can be referenced [HERE](#).

- **Sedgwick Reserve Single Step Fellowship in Land Ethics (Donor Sourced):** Established in 2016, this endowment supports qualified graduate student(s) in UC Santa Barbara who are engaged in new or ongoing research at Sedgwick Reserve.
- **Sedgwick Reserve La Kretz Fellowship Endowment (Donor Sourced):** Established in 2017, the purpose of the fund is to support qualified graduate student(s) with a focus in conservation science and environmental issues relevant to the Sedgwick Reserve and the ecosystems that the Sedgwick Reserve represents.
- **Valentine Eastern Sierra Reserves Graduate Student Grants (Donor Sourced):** Through a competitive application process, grants of up to \$1,500 each are awarded to graduate students planning to conduct research at Valentine Camp Reserve, the Sierra Nevada Aquatic Research Laboratory (SNARL), or the surrounding area.
- **Systemwide UC NRS Mildred Matthias Graduate Student Research Awards:** Providing up to \$3,000 each, the Matthias grants encourage students to establish independent research projects at Reserves. Since its inception in 1988, more than 450 UC students have received nearly \$875,000 in Mathias Grant funding. Descriptions of these projects can be found at the [Mathias Research Projects web page](#).

Undergraduate Education Support

Undergraduate education is a major component of UCSB Reserve use and occurs via multiple activity types, including research, university-level coursework, but also through internships, docent and volunteer programs hosted, and student stipends funded by the UCSB NRS, including “work-study” employment and training at the central administrative office.

In FY21-22 there are 1,850 undergraduate student users over 10,179 user days per year participating in research and/or university-course work at UCSB’s 7 Reserves. This represents a 7X increase in users and user days, owing to the return to research and class activity following the COVID-19 shutdown at UCSB.

In FY21-22 and in previous years, the majority of undergraduate students visiting UCSB Reserves are UCSB students. The UCSB NRS sites are also heavily utilized by courses from other UC campuses, CA State Universities, community colleges and other State, national and international universities. Reserves provide significant opportunity for hands-on training in field research, mentorship by instructors and also Reserve staff, and an immersive experience that classroom-based training does not provide. The projects are largely based in the natural sciences, but also span across other disciplines including mechanical engineering, arts, and writing programs.

Course Offerings -- UC NRS Systemwide California Ecology and Conservation Course (ENVS 188)

The UC NRS Field Studies Program is a new systemwide UC program administered out of the UC Office of the President NRS that brings students from across UC's nine general campuses together for immersive learning experiences at NRS Reserves. The first component of the program to launch is California Ecology and Conservation: <https://ucnrs.org/teaching/cec/>. As part of this course, UC undergraduate students spend seven weeks living and studying at different NRS Reserves. While conducting firsthand study of California ecosystems, students gain skills in field research methods, experimental design, data analysis, scientific writing, and public speaking. California Ecology and Conservation emphasizes the skills needed to conduct independent scientific research. In AY 21-22, UCSB NRS Executive Director Wittmann worked with numerous undergraduate advisors in EEMB, ES, CCS and MCDB to widely distribute information about the course. Several UCSB students from various majors have taken this class over the years, earning course credit that fulfills their degree requirements. The UCSB NRS was instrumental early in the offering of this course in connecting UCSB departments with the UC NRS so that the course was advertised and its application to degree programs was established.

Internships and Docent Programs

- **Henry W. Offen Internship (Donor Funded):** The Henry W. Offen UCSB Undergraduate Research Endowment celebrates the life of Professor Henry Offen, Chemistry Professor and Emeritus Professor at UCSB for more than 45 years, and first Director of the UCSB Natural Reserve System (NRS), a position he held for 16 years. The Endowment provides an annual stipend to support an Internship for eligible undergraduate students at UCSB with sophomore, junior or senior standing when they apply. Each year the internship takes place at one of the 7 UCSB Reserves, and provides an opportunity for the student to be mentored by the Reserve Director, to live onsite, and to learn about and support Reserve management activities. A \$1,000 stipend is provided through the endowment and supports the student throughout the internship period. The 2017-18 intern, Jonathan Cloughesy was hosted at Sedgwick Reserve. The 2018-19 intern, Cyrus Cayhan, was hosted at the Santa Cruz Island Reserve. The 2019-20 internship was set to occur at Coal Oil Point Reserve; however, due to COVID-19, this internship was postponed until FY21-22. Joelle Canto-Adams of the UCSB Environmental Studies Department, was the Henry W. Offen intern this academic year, at the Coal Oil point Reserve.
- **Coal Oil Point Reserve Internships (Grant Funded) and Volunteer Docent Program:** Each year, COPR Director Sandoval and Coal Oil Point Reserve staff seek grant funds to provide paid internships for UC Santa Barbara undergraduate students. The Reserve staff supervise the interns, and also manage the budget and final reporting for the grants that support the interns. The internship programs offer different internship categories to provide opportunities to a variety of student interests. Each internship pays \$375 to a student for 50 hours of hands-on activities supervised by the Reserve staff. A list of the undergraduate students who received internships since 2005 is available at this [link](#).

M. Required Supplementary Materials

Fiscal information

To be provided by UC Santa Barbara Office of Research.

Space

The UCSB NRS maintains extensive infrastructure to support the research and educational mission of the UC Natural Reserve System. In addition to the management of extensive natural lands, roads, and trails, there are a total of 73 buildings comprising nearly 80,000 square feet at Reserve sites (Table 9). For a full list of all UCSB NRS buildings, [please visit this link](#).

RESERVE	# OF BUILDINGS	TOTAL SQUARE FOOTAGE
COPR	10	8,188
CSMR	4	138
RMR	5	3,276
SCIR	11	9,474
SEDG	13	20,909
SNARL	20	27,021
VAL	10	10,665
TOTAL	73	79,671

Table 9. Number of Buildings and Area (in sq footage) of Reserve capital infrastructure

Center Reviews

During FY21-22, The UCSB Natural Reserve System completed its first-ever external review. This section includes the External review report, as provided by 3 reviewers selected by the UC Santa Barbara Office of Research, and the UCSB NRS response to the review report.

(1) UCSB NRS Review Report

University of California, Santa Barbara [UCSB] NRS Review
8 and 12 November 2021

Alison Power, Cornell University
David Skelly, Yale School of the Environment
Kathleen Weathers, Cary Institute of Ecosystem Studies

Professor Joseph Incandela, UC Santa Barbara Vice Chancellor of Research, formed a committee to assess the state of the UCSB Natural Reserve System (NRS), with specific reference to charge questions (Appendix I). Over two days, 8 and 12 November 2021, Drs. Alison Power, David Skelly, and Kathleen Weathers (the Committee) met virtually with NRS leadership, administration, and stakeholders (see Agenda, Appendix II). During those meetings, the Committee heard about current and future challenges and opportunities to the NRS. The report that follows draws primarily on our conversations with NRS affiliates; it is also informed by our personal knowledge, and an NRC published review (“Enhancing the value and sustainability of field station and marine laboratories in the 21st century”).

The UCSB Natural Reserve System is widely considered to be one of the crown jewels of field stations. The seven sites represent a remarkable diversity of ecosystems from ocean to mountain and urban to rural. The Committee was impressed by the engagement by a diversity of faculty, scientists, NGOs, agencies, and for some of the reserves, local communities. While the research, outreach, and education product output from each of the sites is exemplary, as is the use, the Committee believes that the whole—the System—could be greater than the sum of its parts. For example, there are unprecedented opportunities for carrying out experiments and manipulations across the system, especially with respect to climate change impacts, resilience, and adaptation. Below we outline specific challenges and opportunities for the UCSB NRS.

CHALLENGES

There are several challenges that the UCSB NRS faces. This Committee came into the review well aware of the remarkable research being done at several of the Reserves overseen by UCSB. The productivity and contributions of reserve-associated faculty, students and staff are well documented and impressive. However, a primary challenge is that the UCSB Reserves seem to operate as independent entities—as a balkanized system whereby decisions and support are made Reserve by Reserve. The Committee strongly suggests that, at least for the challenges outlined below, UCSB embrace a Natural Reserve Systems approach to address them.

Data and Specimens: Reserves have the potential, and we would argue, the obligation to contribute scientifically at another level through the archiving and sharing of data and specimens from research conducted at sites over periods of decades. Such data are absolutely critical for understanding and communicating the occurrence and consequences of global change. These phenomena take place over timespans greater than a single career and

therefore require the presence of institutional support and organization. Both archiving and data sharing are taking place currently, but the occurrence of such activities is spotty, heterogeneous, and there is no systematic coordination, oversight, support or funding. Central organization and stable, sustained support will be crucial to accomplish this goal. Achieving the goal is essential—for relevancy, for science, education, and outreach as well as for burgeoning data science initiatives. Wherever possible, we encourage the use of existing platforms and cyberinfrastructure for this effort (vs. home-grown or one-off solutions) such as the Environmental Data Initiative (EDI) for publishing data and metadata.

Internet/Cyber Capacity: Lack of up-to-date internet/cyber capacity hampers several of the Reserves, and must be remedied in order to stay relevant. As is outlined in a National Academies report on field stations, “Each field station’s infrastructure should align with its vision and mission and the needs of users” (NRS 2014). We encourage UCSB to take advantage of the current government push toward broadband for all. The timing may be advantageous for bringing the entire Reserve System’s cyber capacity up-to-speed and interconnected.

Physical Infrastructure: The status of Reserve buildings and infrastructure is unique in the Committee’s experience. Being subject to the restrictions, costs and expectations of a university’s facilities group when it comes to design and maintenance, but not having access to university support for the same facilities, is bizarre. This situation leads to harmful distortions in the allocation of effort and funding by Reserve staff and to deferred maintenance at many sites. The Committee realizes that this situation predates the current administrators involved and appears to be similar system-wide. But the ongoing effect of these policies will continue to limit the Reserves and the system they comprise from reaching their full potential.

Communication, Development, and Resources with UC: It was not entirely clear to the Committee what the opportunities are for support, development, or resources from the Mothership (UC office/system), but communication appears to be a challenge.

OPPORTUNITIES

We note that most of the challenges outlined above are shared among most field stations in the US (NRC 2014). However, there are some opportunities embedded within, some of which may be unique to UCSB’s NRS.

Leverage the NRS as a System (vs Individual Reserves): As we noted above, the Committee encourages UCSB administrators, and especially Reserve Directors and the Advisory Committee, to consider the Reserve System as an entirety. It can be a scientific, development, educational, data science, management, or infrastructure hook. Further, the concept could be used to compel the activities and strategizing for both the Advisory Group and the Reserve Directors/Managers Groups. In that regard, we encourage the UCSB NRS to begin with revising its mission and vision to embrace the remarkable assets and opportunities of the System. We note that the current strategic direction is too narrow (focused on infrastructure) and not truly visionary (achieving an “acceptable...”).

For New Scientific Initiatives: The Committee thinks there is great potential for system-wide, new research initiatives, especially surrounding climate change, resilience, mitigation, and adaptation. These new initiatives could include experiments and/or scientific, infrastructure, and educational initiatives that could be developed across the Reserve System. We encourage UCSB to keep a finger on the pulse of new funding opportunities in line with current priorities, especially those surrounding climate change and infrastructure improvements.

For Development: the Committee encourages UCSB Development for the NRS as well as the Reserve System leadership to consider case statements and new opportunities for supporting the System. Further, our inspiring conversation with the Pages, quintessential supporters of one Reserve, suggests that there are opportunities to build a community of supporters, perhaps led by peers such as the Pages, around the System.

For System-Wide Protocols: Whether safety or data archiving, we strongly encourage the UCSB to adopt consistent, system-wide protocols.

The UCSB Natural Reserve System is a remarkable, unparalleled resource—for UCSB, California, and indeed the country and the world, as are the faculty, students, personnel, and community users of the System. We were inspired and deeply impressed with the accomplishments about which we read, and heard. As we move into unprecedented times, we are convinced that the resources—the ecosystem, infrastructure, long-term data and specimens, and most important, human resources—of the UCSB NRS will become even more essential.

APPENDIX I: RESPONSE TO CHARGE QUESTIONS

1. Is the UCSB NRS carrying out its stated mission? Is that mission well matched to the greatest opportunities for UCSB?

The stated mission of the UCSB NRS is to “contribute to the understanding and wise stewardship of the Earth and its natural systems by supporting university-level teaching, research, and public service.” The seven reserves that make up the UCSB NRS are clearly supporting excellent research, offering valuable options for courses and individual students, and delivering effective public outreach in ecology and environmental science. The mix of teaching, research, and outreach varies according to the locations of the reserves and the available facilities. For example, Reserves located near campus, such as Coal Point, host more students and courses than do more distant Reserves, unless overnight facilities are available. This is highly appropriate and provides a diverse set of opportunities for engagement by faculty, students, school groups and the public. While individual Reserves are making important contributions, we believe that there is potential to create a system that is more than the sum of its parts. This is true of the UCSB Reserves as well as the NRS system as a whole. Our impression is that the UCSB Reserve Directors have begun to address this issue by beginning to meet weekly to discuss shared challenges, as well as successes. We applaud this development.

2. Is the quality and quantity of research supported at UCSB NRS sites at the levels expected for a world-leading network of university-led field stations? What are the current areas of greatest strength and the areas with the most potential for growth?

Overall, we are impressed with the quality and quantity of research that is taking place at the Reserves. One of the significant strengths of the NRS for researchers is the potential to do manipulative experiments on the Reserves – unlike preserved areas within many National Parks and other reserve systems. Many researchers, both faculty and students, are taking advantage of this opportunity. However, funding for basic maintenance to support research activities is a challenge at several Reserves. In addition, greater synergy across Reserves could enhance the research portfolio. An area that requires urgent attention is data management and data archiving across all Reserves. There may be opportunities to partner with the Bren School’s Data Science Initiative, and we strongly recommend that the UCSB NRS partner with the Bren School where possible, to improve capacity at the Reserves. Longitudinal and spatially diverse data are being collected at many Reserves, but without robust data archiving and publishing, the potential value of these data will not be realized. Going forward, lack of attention to data infrastructure will be a serious deficit.

3. Are the directions of the UCSB NRS well chosen to keep the unit at the forefront of articulating its mission? What is your evaluation of the unit's plans for the future?

Overall, we concur with the plans articulated in the self-assessment. Improvement of information technology, networks, and data resources, along with the technical expertise to support them, are absolutely essential to achieve the mission of the UCSB NRS. We also agree that energetic philanthropic fundraising to support the Reserves is important going forward. Taking advantage of opportunities for state and federal funding will also be essential to build future Reserve capacity. Since we were not able to visit the Reserves during this review, it is more difficult to fully evaluate the plans of individual Reserves, however we do agree that Coal Oil Point Reserve needs special attention to preserve its resources due to significant pressure from public visitation.

4. In which ways are the administrative staff effective and efficient and where is there room for improvement? Is there good technical support for the UCSB NRS? Does the management structure serve the UCSB NRS well?

Leadership and management of the UCSB NRS was seen as a strong point. The talent and dedication of the system-wide and Reserve-specific administrators is abundantly evident. The primary areas for improvement are around coordination. The Reserves have a history of operating largely independently from one another. Ironically, the pandemic, which is isolating in so many ways, has prompted the development of meetings that coordinate responses to the evolving challenges of running academic facilities in our current world. Administrators were unanimous in recounting to us their positive reaction to greater interaction and coordination among Reserves. The momentum from these interactions should be seen as an opportunity for further strategic planning for the NRS.

5. Are the UCSB NRS facilities suited to support it in articulating its mission? Are the existing resources, particularly funding and space, used well?

Our assessment of the NRS facilities is limited primarily to what we could learn through a remote review process (along with some prior in-person experience by some of the Review Committee members). With that caveat, we find that Reserves vary greatly in their facilities infrastructure, and several Reserve Directors noted that facilities placed limits on the nature of the activities that could be supported. But overall, we saw evidence that facilities were being used effectively to advance the NRS mission. While a number of sites seem to have aging facilities that are in need of upkeep or even replacement, there was some evidence of investment in new facilities, particularly at the SNARL site where philanthropic support was used to create a new facility that does not simply add space to the facilities there but changes the kind of work and activities that can be supported.

6. Does the UCSB NRS have the ability to support the rapidly advancing field of environmental data science?

The short answer has to be no. A data science initiative for the UCSB NRS would require centralized coordination and oversight by dedicated staff. A mission and a central set of goals would need to be articulated to sit alongside the Reserve-specific system and project based goals that will be the hallmark of Reserve-based science. We saw a great deal of evidence of interest in data science among Reserve administrators and scientists, and we saw some evidence of investment. But these efforts are patchy and largely unconnected to each other. There may be an opportunity to develop an initiative through the involvement of National Center for Ecological Analysis and Synthesis (NCEAS) leadership and expertise. Such an effort would leverage the best of two currently independent UCSB resources to the potential benefit of both. Elsewhere we suggest that the NRS, as a network, has the potential to provide much more to the state of California in understanding climate change as well as predicting and avoiding its consequences. Investment in data science for NRS would be foundational to realizing such a vision.

7. In the Committee's view, how does UCSB NRS compare to peer networks of university-managed field stations nationwide? Are there steps the institution can take to enhance the UCSB NRS' standing vis-à-vis its peers?

Almost 75% of field stations in the US are university managed (NRC 2014), and among those, the UC NRS is considered in the top tier—in part because of its extensive use and system of recording use/users (cited in the NRS report)—and in part because of the broad continuum of ecosystem types it encompasses. One crucial way that the UCSB NRS could become a standout among its peers is to adopt—and publicize—a system-wide data and specimen archiving/publishing protocol. As noted above, it is crucial for the relevancy and sustainability of the NRS.

8. Can the UCSB administration do anything more to promote excellence within the UCSB NRS, besides increasing its funding?

There is a core group of talented and NRS-enthusiastic faculty, across units and departments, who utilize the resources and assets of the NRS. One way to promote (further) excellence is to engage more faculty and students beyond the usual suspects. Is it possible to expand the network of users through a bottom-up approach, meaning via departments that might use their internal support of students and faculty to do research, education, and/or outreach at NRS sites? Another approach is to foster more intra- and inter- system networking to leverage existing human and physical infrastructure resources (see, for example, recommendations in the 2014 National Academies report).

9. Do you recommend that UCSB approve continuing the UCSB NRS as a unit under the Office of Research umbrella?

We recommend that UCSB step back and ask questions about whether the NRS is situated under the right umbrella within UCSB to make it visible to a broad range of programs (e.g., data science) and people within UCSB that the NRS might serve, beyond research. Not being privy to the intricacies of the UCSB administration, the Committee did not feel it could make a recommendation to continue, or discontinue operating under the Office of Research umbrella.

References:

National Research Council. 2014. Enhancing the Value and Sustainability of Field Stations and Marine Laboratories in the 21st Century. Washington, DC. National Academies Press.
<https://doi.org/10.17226/18806>.

(2) UCSB NRS Review Response

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Deby Puro, Business Officer, UCSB NRS

Date: March 24, 2022

RE: Response to UCSB NRS External Review

The UCSB NRS received its first ever external review, in the vein of a Program Review Panel (PRP) normally used for departments, in the Fall of 2021. This memo represents responses to the panelists' Report which was submitted to the Office of Research. The responses herein were solicited by the Vice Chancellor of Research (VCR), UCSB Office of Research (OR).

The order of these responses follows the order of the Panel's report. Where indicated, there are remarks in agreement; likewise, it is indicated where the UCSB NRS was sufficiently understood, and if there were apparent gaps or inaccuracies in the review.

Overall, the UCSB NRS finds the report to be succinct, and valuable. The Panel provided comments that reinforce directions currently underway by the UCSB NRS, which is validating. In a few instances, the Panel provides some ideas that are useful and reflective of the value of this review process towards stimulating thinking.

Report Category of "CHALLENGES"

Beginning with the 1st page of the Panel’s report, the Panel conveys some misunderstanding of the nature of the UCSB NRS in its mandate to work completely as a “system” and for the UCSB NRS to be “carrying out experiments” “across the system”, as related to climate change. While the spirit of these remarks resonates with the UCSB NRS in that there is agreement that the UCSB NRS and all NRS Reserves stand to articulate their value towards climate resilience concertedly, functionally the Panel may not fully understand that the UCSB NRS operates as a division, led by the UCSB campus, of the entire UC NRS—the latter of which is described as a “system” or “network” and for which coordination across the UC NRS occurs. An example of the latter that is highly relevant to climate change research is the network of weather stations across the 41 NRS Reserves; these, with their continuously streaming weather and climate data, demonstrate how the Reserves collectively are delivering real time and openly accessible data resources on climate and weather for the benefit of analysis by all interested in managing natural systems towards climate resilience. Regardless, the section on “OPPORTUNITIES” herein contains a fuller description of myriad ways in which the UCSB NRS operates as a system or coordinated network.

Where the Panel does correctly remark around shared and global needs across the UCSB NRS regards environmental data and its management, under their header of “**Data and Specimens**”. The UCSB NRS agrees that data management and sharing are high priorities across the UCSB NRS—which are also important to the UC NRS as a whole—and that resources are needed to accomplish the “what” and “how” including leveraging investments by other environmental data science efforts. For example, the UCSB NRS regards the two (SBC and MCR) LTER sites at UCSB as valuable resources in gaining perspective on how to develop a UCSB NRS data management initiative, and what level of funding, expertise and infrastructure this might require. The UCSB NRS notes that most LTER sites in the US network have basically a full-time data manager. However, currently, the UCSB NRS is sorely understaffed and -resourced in EnvIT and, for example, is redirecting scant maintenance funds toward the support of a 10% FTE field technician to support basic remote EnvIT needs at Reserves. Additional support is provided through the ORU relationship with ERI, but that too is insufficient and minimized, in order to avoid taxing ERI. The lack of a dedicated budget line item for this critical information technology need, and the consequent redirection of funds from other needs, such as deferred maintenance, demonstrates the necessity, and at the same time, resource scarcity, with respect to the UCSB NRS EnvIT infrastructure support. As such, the UCSB NRS is engaging in several efforts including: 1) prioritizing around securing resources for a Director of Environmental Information Technology (EnvIT) in the UCSB NRS, a full time position that would propagate resource recruitment through grant writing but also harmonization of EnvIT with the UC NRS, infrastructure modernization, consolidation of data, and formation of leveraging partnerships, 2) leading (on behalf of the UC NRS) a dedicated adaptive PRP process for the overall UC NRS EnvIT division, as funded by the UC Office of the President (UCOP) such that opportunities for leveraging are fully discovered and critically vetted. Regarding the latter: the process planning is currently underway within the EnvIT Subcommittee of the Universitywide Advisory Committee to the UC NRS (UWide Committee) including leadership by the UWide (also Subcommittee) Chair Holden, and with the work of PRP planning and oversight led by Drs. Wittmann and Blanchette (UCSB NRS Executive Director, and UCSB NRS VESR Reserve Director, respectively). Regarding the former, as above, the UCSB NRS can regard the local UCSB LTER projects as models for the necessity and value of full-time data science staff.

Similarly, the UCSB NRS appreciates the Panel’s remarks on **Internet and Cyber Capacity**, agreeing with the essentiality of these aspects, and appreciates the Panel’s suggestions for federal government

support—a path that the UCSB NRS is indeed pursuing but could expand upon, as per this suggestion of the Panel.

We appreciate the Panel’s recognition of the failing of the university system to focus resources regularly on **Physical infrastructure** such that Reserves are equivalently appointed and safe. The Panel used the word “bizarre” to describe the mismatch between investment by the UC and expectations of a fully functioning Reserve system. We concur with the alarm of the Panel.

With regards to the **Communication, Development, and Resources** within the UC, the UCSB NRS sees new opportunities with the appointment of Dr. Steve Monfort, the new Executive Director of the UC NRS. Already, Dr. Monfort is in close regularized communication with UWide Chair Holden and with UCSB NRS Executive Director Dr. Marion Wittmann, and thus channels are established for myriad purposes relevant to resource allocation and other issues that the UCSB NRS forwards. The UCSB NRS thus concurs with the Panel’s brevity on this point, since new leadership in the UC NRS means a time of transition and opportunity to which the UCSB NRS is attending.

Report Category of “OPPORTUNITIES”

As noted in the above responses to the “CHALLENGES”, the concept that the UCSB NRS should **Leverage the NRS as a System (vs. Individual Reserves)** completely resonates in the area of EnvIT. As such the UCSB NRS is already focused, at the level of the Director’s office and through the UCSB NRS at each Reserve as well as working with UCSB’s Office of Government Relations Office of Research, and Office of Development on public and private resource recruitment strategies, which could apply towards establishing a full time Director of EnvIT whose mandate would include coordination, harmonization and modernization within the UCSB NRS and with the UC NRS. There are many other examples of how the UCSB NRS operates as a “system”, including:

- Weekly meetings of the UCSB NRS leadership including Reserve Directors to coordinate on: strategic planning across the Reserves; new initiatives in field safety and user communications onsite for safe use; EnvIT issues and many other areas.
- Development of a UCSB NRS undergraduate field course, in partnership with faculty at the UCSB campus (underway).
- Development and twice-offered (2020 and 2021) virtual Fall Seminar Series across the UCSB NRS to all stakeholders, resulting in tremendous exposure, engagement continuation, and fundraising, and with the new plan for offering this as an enrollable course for UCSB students, for UCSB academic credit.

The UCSB NRS concurs with the Panel that it envision, plan for, incentivize, and to an extent co-lead **For New Scientific Initiatives** in climate change adaptation and mitigation. Examples in which the UCSB NRS is already doing this include:

- Establishment of the donor-funded, endowed, La Kretz Center for Research at Sedgwick Reserve which was originally conceived—even before its establishment—as a hub for research in climate change and biodiversity, and which is now fully established as a center for wildfire management, climate and biodiversity research.

- Establishing an interstate consortium consisting of academic institutions from Nevada (Desert Research Institute) and Idaho (Boise State University) and leveraging a 20+ year collaboration with the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL). This consortium includes the establishment of two agreements with the U.S. Army concerning education and research partnership. The research agenda of this multi-state (CA, ID, NV) collaborative team of snow and climate scientists combines new remote sensing techniques, modeling, forecasting, and ground observations, to provide near real-time, accurate spatial estimates of water stored in California's largest freshwater reservoir: the mountain snowpack. The consortium is supported by UCSB NRS infrastructure and land use agreements of Valentine Eastern Sierra Reserves in the Eastern Sierra and funded through U.S. Army/CRREL program lines. A consortium planning and visioning workshop was held at the UCSB NRS Sierra Nevada Aquatic Research Laboratory in Summer 2021 to establish the long-term scope for this consortium. Federal appropriations funds are being pursued at UCSB to support this endeavor.
- Working Toward Racial Equity and FUERTE - The UCSB NRS is investing heavily in a systems approach toward diversity, equity and inclusion (DEI) objectives. First, the UCSB NRS represents as a primary investigator and program support through site provisioning in an NSF-funded FUERTE — or Field-based Undergraduate Engagement through Research, Teaching and Education — a new initiative to increase diversity and inclusion in conservation and environmental science at UCSB. The program has been awarded a \$2 million grant from the National Science Foundation (NSF). FUERTE bolsters undergraduate STEM education at Hispanic-Serving Institutions, and is designed to bring both research and field work experience to Latinx undergrads at UCSB. Second, the UCSB NRS is participating in a two-year research study and immersive training workshop hosted by the Lawrence Hall of Science and by Justice Outside focused on Working Toward Racial Equity. Specifically, this study aims to examine the factors and conditions that contribute to racial equity and organizational systems change in outdoor science and environmental education. The research and workshop leaders seek to understand the ways in which organizations enact equity, inclusion and cultural relevance in the work environment, and how these endeavors shape the experiences and leadership pathways of Professionals of Color. In this study, the UCSB NRS is participating as an organizational system to assess and center the experiences of Professionals of Color in gaining a critical and nuanced understanding of how outdoor science programs, and the field-at-large, can advance racial equity as a means towards organizational systems change.
- Establishment of a long-term (20+ year) experimental prescribed burn program in California Oak foothill ecosystems, including at Sedgwick Reserve, and partnering with private and public stakeholders including state, federal and regional fire management agencies (California Department of Forestry and Fire Protection

(CalFire); SB County Fire Department; US Forest Service) as well as UC ANR/Cooperative Extension and the Santa Ynez Band of Chumash Indians.

- Initiating a relationship with the burgeoning UC Disaster Resilience Network (UC DRN)—which UCSB NRS Director Holden overall promoted towards establishment in the Bren School, including nominating the inaugural UC DRN Faculty Director and spearheading initial donor recruitment from within the sunsetted UC NRS capital campaign steering committee—to leverage UCSB NRS sites for an inaugural UC DRN themed research program in “wildfire”. Dr. Wittmann (UCSB NRS) and UC DRN Faculty Director Prof. Sarah Anderson have coordinated a proposal to the Moore Foundation on behalf of multiple UC faculty and primary investigators (including La Kretz Center for Research at Sedgwick Reserve Director Professor Frank Davis) to continue and enhance use of Sedgwick Reserve and Santa Cruz Island Reserve in associated wildfire and climate research.
- As above, endeavoring across the UC NRS and within the UCSB NRS to promote EnvIT capacity-building to support climate monitoring and data dissemination to climate scientists from within the UCSB NRS Reserves and in conjunction with the UC NRS.

We appreciate the Panel’s new ideas **For Development**, and agree that the UCSB NRS can do more to systematize how Development is approached across the UCSB NRS Reserves and in conjunction with the UC NRS.

We agree with the Panel’s suggestion of opportunities **For System-Wide Protocols** in the areas of field safety and EnvIT (data sharing and management). As stated thus far in these responses, the UCSB NRS, in collaboration with the UC NRS, is already endeavoring in exactly these areas.

Appendix I: “Response to Charge Questions”

The responses herein to the Panel’s report are limited to where needed, and in augmentation of the prior sections of this response.

The UCSB NRS is grateful for the Panel’s positive remarks and endorsement of the UCSB NRS, reflecting the recognition of the value and successes of the UCSB NRS in how it operates and works within the UC campus and the UC NRS as a whole.

Regarding the suggestion of the UCSB NRS partnering with the Bren School’s “Data Science Initiative”: this suggestion is interpreted to mean the relatively new Masters of Environmental Data Science (MEDS) degree program in Bren. Indeed—just as the UCSB NRS has leveraged the “Group Project” process in the Bren School’s MESM program—the UCSB NRS can make application to the Bren School MEDS Capstone project process. However, based on experience with the Group Project process, this is not a vehicle for the UCSB NRS to substantially advance its EnvIT in the comprehensive ways advocated for by the PRP. It is unclear how partnering with the Bren School around EnvIT can be of value, as currently the UCSB NRS receives highly valuable IT support from the UCSB Earth Research Institute, just as does the Bren School. Still, the UCSB NRS will continue to explore options across the UCSB campus, including within the Bren

School, for collaboratively addressing UCSB NRS EnvIT needs into the future, as reinforced above and herein. The UCSB concurs with the later Panel remark that NCEAS constitutes a potential resource for coalescing data science and planning for the future. Such resourcing is already in planning stages within the EnvIT “PRP-like” process that the UCSB NRS is overseeing, with partners from the UC NRS Universitywide Advisory Committee and the UC NRS leadership, for visioning and prioritizing the future of the UC NRS EnvIT, systemwide.

The UCSB NRS appreciates the wisdom of the Panel in suggesting a protocol for specimen and data sharing. The latter is within the purview of the currently ongoing EnvIT PRP-type process as described above. The former has partly recently been addressed for the Santa Cruz Island Reserve in conjunction with the Cheadle Center for Biodiversity at UCSB, but this has not been formalized to a protocol for broader adoption. The UCSB NRS will consider the potential avenues for prioritizing and funding this, while soliciting input on this issue from the UCSB NRS Advisory Committee in a future meeting.

In response to the final remarks of the Panel, the UCSB NRS regards its current plans and endeavors for developing a UCSB NRS-wide course across its Reserves to be demonstrative of its efforts to “engage more faculty and students beyond the usual suspects”. This is particularly so, as the course will address disciplinary learning as diverse as art and science, across the humanities to engineering. The UCSB NRS is highly supported under the UCSB Office of Research and does not see its control point in need of change. Rather, as summarized herein, the UCSB NRS intends to grow and evolve strategically in the areas of: EnvIT and data science, formalized and harmonized field safety programming and leadership, climate and biodiversity research incentivizing, donor group development and stewardship, expanding the UCSB NRS funding portfolio to include more federal avenues, increasing partnerships for all areas of programming and fundraising, and cross-Reserve course offerings including in the field and through course rostering of the Fall seminar series. These priorities appear to be well-aligned with the sentiment of the Panel’s report.