



Smilodon

The newsletter of the Southern California
Academy of Sciences

November 2023



Copepods in copula under Scanning Electron Microscope imaging, page 3.

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Table of Contents

President's Letter.....	2
From the Editor.....	2
New Copepod.....	3
Ocean Science Decade	3
SCAS Board Members.....	4
Bulletin News.....	4
Membership.....	5
Notes from the Field.....	5
SCAS Board Retreat.....	5
Graduate Student Corner.....	5
Spotlight on Desert Research Institute.....	6
SCAS Events.....	7
SCAS Research Training Program	7
Upcoming Conferences.....	8

President's Letter

Dear Members and Friends of
the Southern California
Academy of Sciences,

I hope this message finds
you all well and filled with
anticipation for what promises
to be an enlightening and
memorable year for the
Southern California Academy of
Sciences (SCAS).

I am elated to announce
that Chapman University will

host our upcoming Annual
Meeting on May 4, 2024. Each
year, our gathering represents
an unparalleled opportunity for
exchanging knowledge,
collaboration, and furthering
scientific inquiry. This year will
be no exception as we already
have a great lineup of symposia
and plenary speakers for the
meeting. Chapman University's
state-of-the-art facilities will
offer an inspiring backdrop to
what is already gearing up to be
one of our most engaging
meetings.

In addition to the
gathering, I'd like to highlight
two cornerstone programs of
SCAS, both of which underscore
our commitment to the growth
and nurturing of scientific
minds.

1. The College Grant Program:
We are deeply proud of this
program's strides in supporting
undergraduate and graduate
research endeavors. We
continue to witness the
profound impact of these grants,
not only in providing financial
support but also in validating
our student community's hard
work and innovation. I
encourage all eligible students
to take advantage of this
opportunity and for our wider
SCAS community to spread the
word.

2. Research Training Program
for High School Students: As
part of our pledge to cultivate
the next generation of scientists,
this program is close to our
hearts. By providing high school
students with mentorship and
hands-on research experience,
we are shaping their scientific

journey and making a long-term
investment in the future of
science in Southern California
and beyond.

I want to extend my
deepest gratitude to all
members, Board Members,
volunteers, and patrons of
SCAS. Our collective passion
and dedication are what drive
this organization forward. As we
approach the annual meeting,
let us recommit to our shared
vision of advancing science in
our region and inspiring the
many bright minds that come
our way.

Looking forward to
seeing you all on May 4th at
Chapman University.
Warm regards,



From the Editor

I'm Craig Gelpi, the new
chair of the publications (read
Smilodon) committee of SCAS.
Over the next year, I hope to bring
you an informative, interesting and
timely Smilodon. However, I will
need considerable input from the
membership and beyond to achieve
these goals. Fundamentally, I need
information and preferably,
information in article form with
pictures. The information can be
simple, important facts, such as
conference and meeting dates,
especially those meetings that a
remote-sensing physical
oceanographer would not normally
be aware of. More substantive
articles are great and could
describe ongoing experiments or
field work. There is no need ►

Smilodon

to include results; those are best left to the peer-reviewed *Bulletin*. However, the scientific objective, the people involved, the location and methods used (along with pictures, especially of people) of commencing, ongoing or finishing projects, written for general audiences, are desired. We'll provide editing for articles consisting of several hundred to a thousand words. We hope to have two to three such articles per issue. I'll start this with our "Notes from the Field" column in this issue.

Other regular features we anticipate is "RTP Corner" describing recent or upcoming activities of the Research Training Program; "Institution Spotlight", describing a SoCal institution involved in research science; and, *Bulletin* news, related to the technical journal. Any help you can contribute to any of these topics is most appreciated. If you want to assist but are not sure how, write to us at smilodon@scas.nhm.org. ■

NEW SPECIES OF COMMENSAL COPEPOD

Jade Hiraki Morris

My research focuses on an undescribed species of commensal copepod found living in the shells of pagurid hermit crabs in southern California. This copepod falls within the Family Porcellidiidae, one of the 17 families of symbiotic harpacticoids. This copepod does not key to any known species or genus within the family (Huys 2016). This is also the first record of this family of copepods in California, where all other representatives from this group are distributed in the Indo-Pacific.

I have been working on this group of copepods since 2016. In previous years, I presented on the prevalence and intensity of this species as it relates to its hermit crab host. Over the course of three years, I collected hermit crab hosts during 13 sampling events at 14 different localities. Within these hosts, the population of copepods was highly localized along the Palos Verdes Peninsula localities. We also found that there is a strong significant relationship between this copepod and the presence of a limpet co-symbiont (*Crepidula williamsi*).

At present, I am currently focused on a formal description of the species. This effort was supported by a SCAS student grant award in 2022-2023 where the funds were used to purchase a microscope drawing tube. This



Jade using drawing tube apparatus to illustrate copepod morphology.

piece of equipment was vital to properly illustrate the fine anatomical details of the specimens. During the field collections of 2016-2019, I amassed thousands of specimens, which I kept in vials of 70% ethanol for long-term storage. These specimens were then cleared using lactic acid and stained using

lignin pink. Multiple illustrations of males and females, juveniles and adults, and habitus drawings were made. A draft manuscript is currently underway, and I expect to submit it for publication by Fall 2023. Completing these illustrations would not have been possible were it not for the generous support of the Southern California Academy of Sciences. ■

The Ocean Science Decade

Southern California is ocean country. From recreation to fisheries, offshore oil production and maritime commerce to a commencing burgeoning marine aquaculture, we are constantly reminded of our dependence on and love for our local ocean. Ocean research is a substantial part of SCAS members' activities so we want to know what the [United Nations Decade of Ocean Science for Sustainable Development \(2021-2030\)](https://www.unesco.org/en/decade-ocean-science-sustainable-development-2021-2030) ([unesco.org](https://www.unesco.org)) can mean to SoCal and how can SoCal scientists participate.

The decade was declared by UNESCO (United Nations Education, Science and Cultural Organization) in realization that ocean science must be further advanced to provide tools needed to sustainably develop ocean resources required to support the earth's population. The Decade's mantra is "The science we need for the ocean we want". ►

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The ocean we want, according to UNESCO, includes the following six desires:

- **A clean Ocean** whereby sources of pollution are identified, quantified and reduced;
- **A healthy and resilient Ocean** whereby marine ecosystems are mapped and protected, and their services maintained;
- **A predicted Ocean** whereby society has the capacity to understand current and future ocean conditions, forecast their change and impact on human wellbeing and livelihoods;
- **A safe Ocean** whereby human communities are protected from ocean hazards and where safety of operations at sea and on the coast is ensured;
- **A sustainably harvested and productive Ocean** ensuring the provision of food supply and alternative livelihoods; and,
- **A transparent and accessible Ocean** whereby all nations, stakeholders and citizens have access to Ocean data and information, technologies, and have the capacities to inform their decisions.

To achieve these goals, research and development priorities are: 1) producing a comprehensive digital atlas of the ocean; 2) Developing a comprehensive ocean observing system for all major basins; 3) Achieving a quantitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation; 4) Providing a data and information portal; as well as 5) an integrated multi-hazard warning system; 6) Research and prediction for Ocean in earth-system observations, supported by social and human sciences and economic valuation; 7) Capacity-building and accelerated technology transfer, training and education with Ocean literacy; and finally, 8) Providing ocean science, data and information to inform policies for a well-functioning ocean in support of all sustainable development goals of for the year 2030. Paying for this research and development is not addressed but the utility of having goals and a research pathway stated to achieve them is a good start to earning the ocean we want.

Many of the goals are readily relevant to SoCal. Port pollution and DDT-dumping cleanup, fisheries management, climate change adaptation and hazard warning (Hurricane Hilary and other recent storms), and safety at sea (the Conception fire) are topics that are currently in the local news.

How could these goals influence research and science within the SoCal regions? Perhaps through the design of research programs, including the formatting and dissemination of data for the digital ocean as well as data portals, e.g., SCCOOS,

SCAS Board Members

Kimo Morris, 2021-2024
Shelly Moore, 2021-2024
Ann Bull, 2021-2024
Tiffany Pereira, 2021-2024
Greg Pauly, 2021-2024
Mia Adreani, 2022-2025
Julianne Passarelli, 2022-2025
Edith Read, 2022-2025
Richelle Tanner, 2022-2025
Milinda Thompson, 2022-2025
Andres Carrillo, 2023-2026
Janele Galaz, 2023-2026
Craig Gelpi, 2023-2026
Max Murray, 2023-2026
Douglas Pace, 2023-2026
Clarissa Rodriguez, 2023-2026

[Southern California Coastal Ocean Observing System \(sccoos.org\)](https://sccoos.org/) suggested by the Decade. ■

BULLETIN News

The scientific journal of SCAS, the Bulletin, is going digital! That is correct – no more hardcopies.

Also, publication fees for papers published by SCAS members will be paid for by SCAS. This is an excellent

Smilodon

opportunity to get your research distributed without page charges.

The latest volume can be found here:

[Volume 122 Issue 2 | Bulletin of the Southern California Academy of Sciences \(allenpress.com\)](#) ■

Membership

Membership is open to scholars and students in the natural and social sciences, and to any person interested in the advancement of science.

[Become a Member \(nhm.org\)](#). ■

Notes from the Field: Seabed Station Launched

The Catalina Marine Society has launched its Jim Updike Seabed Station at Two Harbors, Santa Catalina Island. One of the requirements for the seabed station is that it supports non-magnetic cleats and attachment points for underwater sensors. Another is that divers can deploy sensors on it wearing typical SCUBA gloves, which often hamper a diver's dexterity. The station is essentially a concrete block with attachments of the appropriate materials and forms. It rests at a depth of 28.7 m (94 ft), 10 m from a mooring that occasionally becomes the Dirk Burcham Scientific Mooring. A line connects the base of the mooring to the seabed station, enabling divers to

quickly find the station when they descend the mooring chain.

The seabed station is intended to support instruments that would not operate properly on a moving chain, e.g., current meters and water level loggers, and which may include magnetic compasses. The initial sensor suite includes a vector current meter, a water-level logger and a pH logger. There are locations for additional instrumentation, which will be filled as sensor suites become available.

The Society's first research priority is to understand the relation between tides and currents at Two Harbors. Two Harbors has been a long-time site for oceanographic measurements of internal waves at Catalina, as well as many other studies conducted from the Wrigley Marine Science Center located nearby.

The Society invites other investigators to use the station if it supports their

research objectives. Inquiries can be addressed to information@catalinamarinesociety.org/. ■

SCAS Board Retreat

The SCAS board of directors attended a half day retreat at Chapman University on Saturday, September 16, 2023. During the retreat, the new Board members were introduced, and the work and status of the Academy was summarized. Much time was spent viewing possible venues on campus to hold the Annual Meeting of the Academy in 2024. Committee positions were described and assigned to desirous members. ■

Graduate Student Corner

Clarissa S. Rodriguez

SCAS has a long-standing commitment to supporting students, which is evident from the variety of support avenues available, such as the Research Training Program (RTP) and student research grants. In line with this mission, the SCAS board includes a graduate student member to advocate for student success. I joined SCAS in the spring of 2023 as the new graduate student board member while I was finishing up my Ph.D., and am continuing in this role as I transition into my postdoc. My focus in this role is to promote student engagement, professional ► *pg 7 Grad Corner*.



Jim Updike Seabed Station gathering data at Two Harbors, Santa Catalin Island.

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Spotlight on Desert Research Institute

Tiffany Pereira

Stark, subtle and sublime. These are the words I use to describe the Mojave Desert. Although often mistaken as a barren, desolate landscape, the Mojave is actually a vibrant and thriving ecosystem favoring those willing to take a closer look and those willing to be patient. As an Associate Research Scientist at the Desert Research Institute (DRI), it is my job to study the flora and fauna of this mysterious system. However, my work at DRI spans many disciplines. I am honored to work in a space that allows me to merge both science, as a desert ecologist, and art, as a scientific illustrator. And, due to the structure of DRI, I can always rely on my colleagues for support and wisdom in nearly any field. With that let me introduce you to DRI.

DRI is a recognized world leader in basic and applied environmental research. Committed to scientific excellence and integrity, DRI faculty, students who work alongside them, and staff have developed scientific knowledge and innovative technologies in research projects around the globe. Since 1959, DRI's research has advanced scientific knowledge on topics ranging from humans' impact on the environment to the environment's impact on

humans. DRI's impactful science and inspiring solutions support Nevada's diverse economy, provide science-based educational opportunities, and inform policymakers, business leaders, and community members. With campuses in Las Vegas, where I work, and Reno, DRI serves as the non-profit research arm of the Nevada System of Higher Education. Faculty members at DRI are nontenured and responsible for their own salaries through external grants and contracts. Although this can be a daunting challenge, it has allowed me to diversify the partners I work with (including state, local, private, and federal) and explore many new research locations from California to Utah and Arizona. Through this blend of academic rigor and private-sector pragmatism, DRI has earned a reputation for delivering high-quality scientific information in an efficient, transparent, and accountable fashion.

DRI's reputation is built on 60 years of air, water, land, and ecosystem research. The institute is committed to continued research excellence in these areas and invigorating them with investigations into today's most pressing environmental challenges. The following are just some of the

many research areas of expertise.

- **ATMOSPHERIC SCIENCES:** Conducting fundamental and applied research into natural



Desert Research Institute work. Tiffany Pereira and Integrated Resource Manager, Erin Eichenberg, pressing one of the bearpoppy species at Tule Springs Fossil Beds National Monument.

atmospheric processes and air quality issues of regional, national, and planetary interest.

- **EARTH & ECOSYSTEM SCIENCES:** Investigating the complex interactions of geological processes, organisms, biological communities, and human societies.

- **HYDROLOGIC SCIENCES:** Advancing society's understanding of hydrological systems and encouraging more effective management of water resources.

- **CLIMATE & DATA SERVICES:** Collecting and disseminating high quality climate data and information and conducting applied environmental research related to climate issues. ►

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- **FIRE SCIENCES:** Combining broad expertise in fire emissions, ecology, and hydrology to gain a holistic understanding of fire causes, processes, and effects on the environment and our communities.

- **WATER RESOURCE SUSTAINABILITY:**

Addressing research and capacity gaps that persist in developing countries and assisting with the design of sustainable water, sanitation, and hygiene programs in order to improve community health.

- **PUBLIC HEALTH & THE ENVIRONMENT:** Pioneering new ways to investigate the intersections between the environment and human health in order to improve care for Nevadans and people around the world.

- **ADVANCED AUTONOMOUS SYSTEMS:** Developing innovative applications for new autonomous aerial systems technologies to monitor air quality and enhance snowfall.

We envision a world in which trust between scientists and the public forms the basis for a more sustainable and resilient environment for all people to live, grow, and prosper. Our faculty are always looking to collaborate, learn, grow, and thrive. Whether it's the Mojave Desert, the Great Basin, the Sierra Nevada, or the Pacific Coast, there is so much more science left to be done! [Home Page - DRI](#) ■

Grad Corner ► development, and networking opportunities for individuals working across marine and terrestrial Southern California Ecosystems.

To achieve this, I plan to organize quarterly virtual workshops (e.g., CV development, applying to graduate school, Science Communication, etc.) for students and early-career professionals. These workshops will allow attendees to broaden their knowledge and skills while networking with peers and experts in their field. Aside from virtual engagement, at this year's SCAS annual meeting at Chapman University, we will host a career lunch networking meeting to provide students the opportunity to learn more about the myriad of avenues available in science and connect with peers. Please reach out to me with any requests or questions. Let's work together towards your success. ■

SCAS Research Training Program

The SCAS Research Training Program (RTP) is one of the celebrated programs supported by our membership. This unique program pairs curious high school students with mentors in the research community to undertake original research projects over the course of an academic year. The 2023-2024 cohort of students is a truly remarkable bunch! With interests in medical applications, plastics in the environment, aerodynamics, fisheries, deep

SCAS Calendar

November 2023 board meeting
Nov 17, 6:30 PST (8:30 CST)

SCAS Annual Meeting 4 May 2024

learning and artificial intelligence, nanotechnology, and exoplanets (just to name a few), these students are embarking on an exciting year of deep engagement and discovery. In upcoming issues of the Smilodon, we will feature some of our students to give the membership a preview of some of the projects on which they are working.

The SCAS RTP is overseen by a committee of SCAS board members who, through the year, meets to review applications, evaluate student papers and poster presentations, and plan face-to-face events for student participants. The committee also decides which students will represent SCAS as delegates to the national meeting of the American Junior Academy of Sciences. If you are interested in serving on the SCAS RTP committee, or if you would like to mentor a highly motivated high school student in the RTP, please contact the committee chairperson, Kimo Morris, rtp@scasnhm.org. ■

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Upcoming Scientific Meetings

10th California Island Symposium, 6-10 November 2023, Ventura, CA.
[Home — California Islands](#)

104th Western Society of Naturalists Annual Meeting, 9-12 November 2023, Monterey, CA. <https://www.wsn-online.org/annual-meeting/>

American Geophysical Union AGU23, 11-15 December 2023, San Francisco, CA. [AGU Annual Meeting 2023 | AGU](#)

American Association for the Advancement of Science (AAAS) Annual Meeting, 15-17 February 2024, Denver, CO. <https://meetings.aaas.org/>

Ocean Sciences Meeting 2024, 18-23 February 2024, New Orleans, LA.
[Ocean Sciences Meeting 2024 \(agu.org\)](#)

Southern California Academy of Sciences Annual Meeting, 4 May 2024, Chapman University, Orange, CA.

CalCOFI, 14-16 May 2024, San Diego, CA. [Meeting 2024 – CalCOFI](#)