Position Announcement – Postdoctoral Research Fellow –
Marine toxin fate and transport assessment based on curated biological collections

Summary:
The California Cooperative Oceanic Fisheries Investigations (CalCOFI) program is seeking a Postdoctoral Researcher with a background in biophysical modeling, spatial statistics, and/or ocean/ecosystem modeling to conduct research and analyses in support a project titled "Tracking the entry and progression of San Pedro Basin barrel field pollutants through the California pelagic food web."

The recent rediscovery of a vast barrel field of DDT-laced sludge off the coast of southern California has captured the attention of the public, and raised concerns regarding impacts to economic, ecosystem and human health. Given that these barrels were dumped ~80 years ago, the mix of harmful compounds they contain have likely entered the ocean food web; however, the extent of toxin progression, impact and persistence remains unknown. Moreover, it is unclear if this barrel field continues to source toxins into the contemporary marine ecosystem. The purpose of the project is to leverage Scripps Institution of Oceanography's unparalleled biological collections from the California Current Ecosystem to reconstruct the scope and scale of toxin progression over the last century, and across the Southern California coastal ocean. In particular, this project aims to address the following questions:

1) What suite of chemical compounds, including ratios of DDT degradation products and ΣDDX/ΣPCBs, are unique to the barrelfield, and are thus useful as a tracer from the deep sediment sources to biological specimens from the California coastal ocean?
2) What are the concentrations of these compounds in the California coastal ocean mesopelagic fish community, across time (hindcast over most of the last century) and space (10s of 1000s of km2) surrounding the barrel field?
3) Assuming these compounds are detected in time and space, how do their concentrations vary as a function of food chain length within the community?
4) Using data on the progression of the compounds stemming from the barrel field in time, space, and as a function of food chain length, what biophysical model of persistent biophilic chemical transport best describes the progression and fate of toxins in the coastal ocean ecosystem?

Responsibilities:
The Postdoctoral Researcher will primarily lead the effort of modeling toxin fate and transport in the ocean ecosystem (both through space and trophic pathways) – the data to parameterize these models will come from toxin analysis of collection tissue samples (from the 1940s onward), and compound specific stable isotope analysis. The specific modeling approach is flexible, and there is considerable latitude for the candidate to take advantage of modeling domains in which they have strength (e.g. regional ocean models, Gaussian random fields, random forests, etc.). The Postdoctoral Researcher will lead project related peer-reviewed publications and present results at scientific meetings. Results from this project will inform

public policy on marine pollution mitigation/management, and allow the Postdoctoral Researcher to interact with government officials and agencies at local, state, and federal levels. The Postdoctoral Researcher will have the opportunity to collaborate with project principal investigators at UC San Diego, San Diego State University, and the Southwest Fisheries Science Center (among others).

Required Qualifications:
The position requires a PhD in marine sciences, oceanography, biophysical modeling, or a related discipline. The ideal applicant has strong quantitative skills, experience working with large/disparate data sets, and strength in spatial analysis and/or oceanographic/ocean-ecosystem modeling. The applicant should have a strong record of publication in peer reviewed journals and demonstrated ability to work collaboratively.

Location:
The postdoctoral researcher will be based at Scripps Institution of Oceanography (SIO). The primary advisors will be Drs. Colleen Petrik and Brice Semmens. Scripps Institution of Oceanography at the University of California San Diego is a world-renowned center for earth, planetary, oceanographic, biological, and atmospheric science, and is committed to academic excellence and diversity within its student body, staff, and approximately 200 principal investigators.

Start and End Dates:
This position is a 100% time appointment, ideally beginning June 1, 2022. The appointment can be up to two years, contingent on performance. Start and end dates are somewhat flexible.

Salary:
Commensurate with experience, and includes benefits.

To Apply:
Applicants should send a CV, contact information for two references, and a cover letter outlining their interest in the position as well as their relevant skills and experience to Colleen Petrik (cpetrik@ucsd.edu) and Brice Semmens (BSemmens@ucsd.edu). Review of applicants will begin immediately until the position is full.

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All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, or status as a protected veteran.