SATURDAYS AT THE LAB

May 26–Sept 1, 2018*
*Excluding July 28

Saturdays 10am-12pm
Tour starts in the Lecture Hall

FREE!

USC Wrigley Marine Science Center
in Big Fisherman Cove near Two Harbors, Catalina

Science Presentation
Tours of the Laboratory and Sustainability Park
Touch Tanks
Catalina Hyperbaric Chamber
(unless in use for treatments)

http://wrigley.usc.edu
@USCWrigleyInst

From Two Harbors, feel free to walk (2 miles each way), catch a Shoreboat (departs Two Harbors at 9:45am and returns at 12pm), or come over in your dinghy (tie up on north side of dock).

For more info please call (310) 510-0811.
May 26th

Bingran Chen  
University of Southern California

"Life in the darkness: Microorganisms in marine sediments"

Microorganisms are probably the best living proof that small things matter. These “wee animalcules,” unseen by the naked eyes, play indispensable roles in shaping the environment and making our Earth habitable. Microorganisms thrive virtually in every corner on Earth, and the ones I am particularly interested in live at the ocean floor. They make up about half of the ocean’s microbial biomass and contribute greatly to the biogeochemical cycling of essential elements. They have also evolved eccentric and versatile ways to cope with this unusual habitat: dark, cold and mostly oxygen-free. Come meet these fascinating organisms, and learn about their interactions with the environment, and how they have challenged our understanding of life.

June 2nd

Yubin Raut  
University of Southern California

"Nitrogen fixation associated with living and decomposing macroalgae surrounding Catalina Island"

Nitrogen is an important macronutrient essential to life and can often be limiting in many ecosystems. We have been investigating the role of nitrogen fixing organisms in providing nitrogen to different macroalgae surrounding Catalina Island. Alternatively, there may be a potential for certain macroalgae to provide a niche for nitrogen fixers at various stages of life, specifically when they undergo decomposition.

June 9th

Jason Wang  
University of Southern California

“Sustainable production of food from the sea”

Increased demand for sources of nutrition to support a growing human population will require increased production of food from the sea. Sustainable production of seafood is limited by the low survival of early developmental stages – the “seeds” of the ocean (larvae). Our studies are revealing the complex Nature-and-Nurture strategies that set the limits to growth of marine animals. Scientific understanding of such processes offers the potential to dramatically increase seafood production by aquaculture.

June 16th

Ann Bishop  
Moss Landing Marine Laboratories

Competition between Macroystis pyrifera and Sargassum horneri in a warming ocean

In our changing oceans multiple stressors may change how kelp forest habitat resilience and resistance will respond. The warm waters of the 2015 El Nino, combined with a surge in invasive sargassum has dramatically re-shaped the Catalina Island kelp forest. My research focuses on trying to untangle the potential relationships between temperature, giant brown kelp, and invasive Sargassum horneri.
June 23rd
Claire Johnson
University of Southern California

“Microbial mat-metazoan interactions: An experimental approach”
Microbial mats and the resulting microbialites have undergone significant morphological, abundance and distribution changes in their 3.7 billion-year history, notably in coincidence with metazoan ecological changes including the evolution of bioturbation and mass extinction events. The interplay between the two is curiously concurrent, though mechanisms and direct disturbance of mats by metazoans in the fossil record can be enigmatic and unclear. This project seeks to experimentally produce metazoan bioturbation patterns on living Coleofasciculus chtonoplastes filamentous cyanobacterial mats, to understand the effect a spectrum of bioturbation intensities has on this quickly-growing mat ground.

June 30th
Abby Lunstrum
University of Southern California

“How will California’s beaches be affected by ocean acidification?”
The global ocean is becoming more acidic as a result of increasing carbon dioxide in the atmosphere. Water along the California coast is especially vulnerable to ocean acidification because it is naturally slightly acidic (i.e., low pH), so a small increase in acidity may drive water below healthy biological and geological thresholds. In fact, models predict that most of California’s nearshore water will become undersaturated for carbonate—a mineral that animals like coral use to build their shells—within 25 years. Crossing this threshold implies that carbonate along the California coast will start dissolving within decades. My research measures how quickly carbonate in California beach sands will dissolve in the coming decades, and what affect this dissolution might have on local water chemistry. Understanding how and when ocean acidification will affect California beaches can help us better prepare for the risks associated with global ocean change.

July 7th
Erika Nava
California State University, Northridge

“The effects of marine protected areas on fish foraging behavior”
Marine protected areas (MPAs) are usually established to allow organisms and habitats to recover from anthropogenic impacts such as overfishing. As populations rebuild within marine protected areas, the higher population densities may result in resource limitation. Such competition for resources may cause increased mortality, reduced growth rates, or reduced reproduction. While establishment of MPAs has clearly been shown to benefit targeted species in terms of their size and population biomass, it is not well known how these changes affect diet and feeding behavior, as would be expected if food resources become limited in MPAs. I plan to evaluate whether California sheephead, which is known to have higher biomass in MPAs, is prey limited within them and is shifting its foraging behavior as a result.

July 14th
Jack May
California State University, Long Beach

“Influence of environmental and social factors on aggregation behavior of the leopard shark along the southern California Coast”
Leopard sharks (*Triakis semifasciata*) are commonly seen grouping together in shallow water during the hottest months of the year in southern California. These groups form mostly during the day and disperse in the evening until regrouping the following day. The individuals present in these aggregations consist mostly of mature females. They have been observed increasing their core body temperatures in warm shallow water during the day. I will be using temperature loggers on the seafloor and an Unmanned Aerial Vehicle (UAV/drone) to survey leopard shark aggregation sites at Santa Catalina Island. I will be investigating the role social and environmental factors have on the behavior of leopard sharks in these groups.
July 21st

Babak Hassanzadeh
University of Southern California

"Light-capturing antenna in marine microbes"

Microorganisms in the ocean have evolved fascinating ways to use the sun's energy. For example, they can use sunlight to make food from CO₂, or make oxygen gas from water. In fact, most of the oxygen we breathe is produced by marine microorganisms known as phytoplankton. Additionally, many marine microbes can harvest sunlight using a photosystem that is very similar to what we have in our eyes called rhodopsin. They can use this type of photosystem to gain energy for their metabolism. I will be talking about the different pigments and mechanisms within marine microorganisms that allow them to convert sunlight into biologically useful energy.

August 4th

Andrew Pham
Harvey Mudd College

"Autonomous surface vehicles and quadcopters for shark tracking and imaging"

Many tasks performed by humans are difficult, dangerous, and/or time-consuming. The field of robotics aims to automate some of these processes to relieve the burden on humans. One such task is shark monitoring, where environmental conditions and finite human resources can severely impact the collection of shark behavioral data. Consequently, this project aims to develop an algorithm to have autonomous boats track sharks while autonomous quadcopters film the sharks overhead. This summer, the focus is to design the algorithm to coordinate the motion of the quadcopters to force them to periodically land on the autonomous boats to recharge.

August 11th

Kathryn Scafidi
California State University, Northridge

"The effects of an invasive alga, Sargassum horneri, on the trophic dynamics of temperate rocky reefs"

Invasive species can dramatically alter the physical structure of habitats and the behavior of organisms that inhabit them. Sargassum horneri, an invasive alga native to the northwestern Pacific, has spread through several subtidal regions of southern California. I want to understand how the foraging, growth, and reproduction of some local fishes are affected by the alga. I plan to couple fish foraging observations, growth and reproductive output, and microfaunal abundance with seasonal phenolic concentrations of the alga to gain a better understanding of the effects this alga has on a trophic scale. With my research, I hope to fill the knowledge gap of what impacts S. horneri has on temperate rocky reefs. In understanding the ecological interactions associated with S. horneri, management strategies can have a more directed approach to maintaining and protecting the biodiversity of our southern California reefs.

August 18th

Lauren Smith
University of California, Los Angeles

"Competitive interactions between invasive Sargassum horneri and native algae under varying temperature regimes"

Determining the competitive ability of invasive species in their invaded communities is critical to evaluating their spread and impact. As global temperatures increase, invasive species are predicted to become more successful. I am interested in examining competition between an invasive algal species, Sargassum horneri, and native species under two temperature regimes; ambient California seawater conditions and warm seawater conditions. The overall objective of my study is to further our understanding of how changing ocean temperatures may be facilitating species invasions.
August 25th

George Jarvis
California State University, Northridge

"Evaluating the effects of predation risk on prey reproduction in a temperate reef fish"

I am a second-year graduate student in the Fish Ecology Lab at California State University, Northridge, and my thesis aims to determine how risk effects from predators alter the reproductive output of prey fishes. I am conducting a caging study in Big Fisherman Cove to examine the sublethal effects of predators on fitness and behavior of the bluebanded goby, Lythrypus dalli. This small, sedentary reef fish is highly abundant at Catalina Island, and because females lay their eggs in nests, it is relatively easy to compare reproductive output among different risk treatments. The results from this study will help us understand how predation risk can influence prey fitness, which is an essential step towards developing more effective management strategies for marine fishes.

September 1st

Emily Ryznar
University of California, Los Angeles

"Key habitats for green abalone (Haliotis fulgens)"

Increasing abundance of green abalone at Santa Catalina Island provides a unique opportunity to examine the basic ecology of a species that was once prominent on coastal rocky reefs and important in both commercial and recreation fisheries in California. I am interested in factors that could be affecting the population structure and recovery of the green abalone population at Santa Catalina Island. My research examines these factors by identifying key habitat for green abalone to determine adult density at the island and gaining a better understanding of the movement and aggregation of adults.