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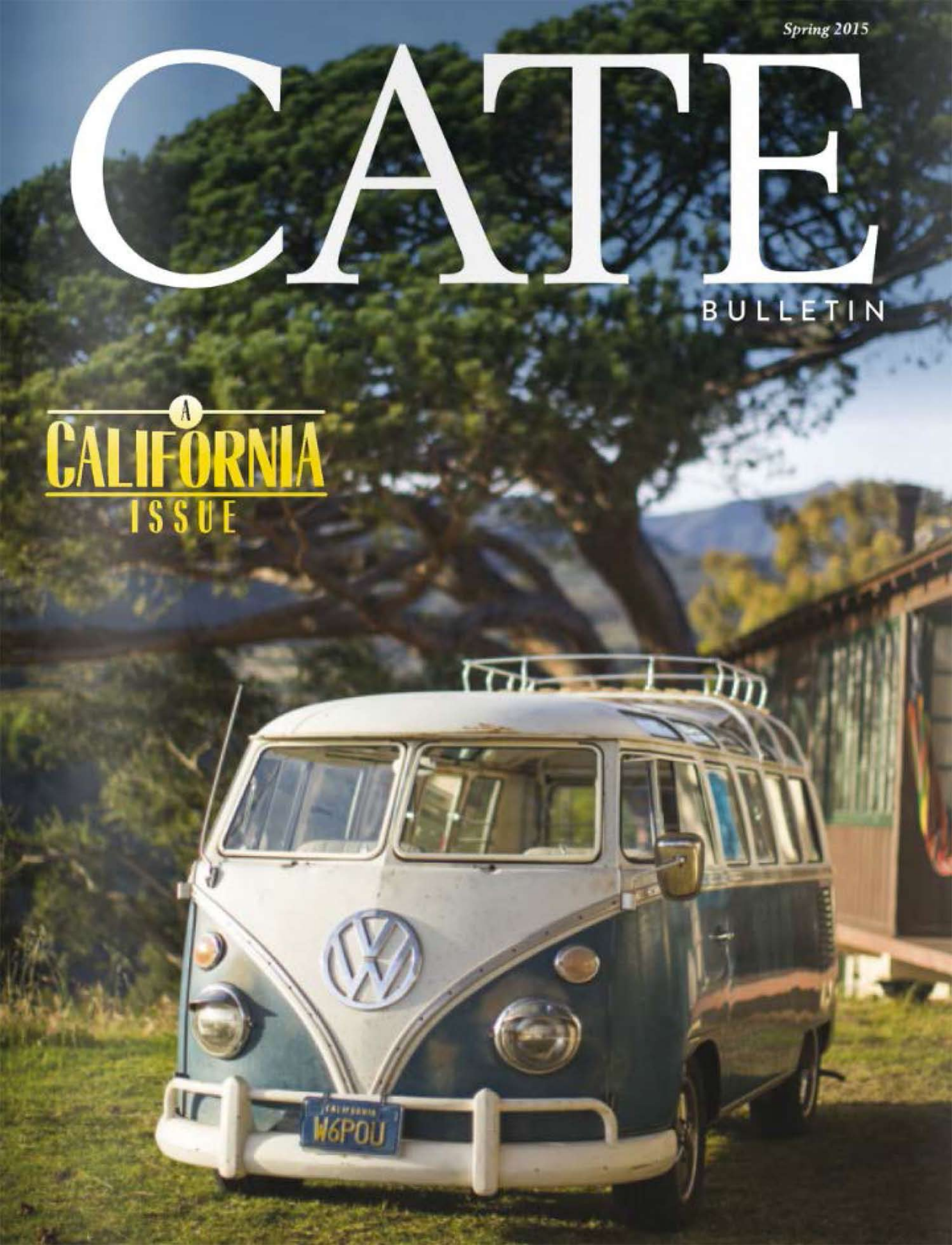
CATE

BULLETIN

A CALIFORNIA ISSUE



s to L.A.'s youth.

video and text content for USA Today and The Huffington Post.

"There's a lot to do," he says, "but it's rewarding and I really enjoy it." *-RR*

SHAUNA CALLERY '01

Before drawing up a climate action plan for her latest big-city project, Shauna Callery '01 does something entirely low-tech – she takes a walk down a local bike path and asks herself some questions. What's the traffic like? Where is the congestion? Are there healthier modes of transport that can be used? Eventually the many steps she takes lead to a few big leaps for the city in its effort to reduce emissions and improve the daily life of residents.

"Climate change is a change in the average weather patterns over a long period of time, as opposed to change only in temperature or precipitation," says Callery, as she begins to do what all climate-change experts have come to do well: explain global warming in simple terms. "It occurs as a result of increased greenhouse gas emissions, in particular carbon," she adds. Burning fuel in vehicles and powering houses with electronics are two of the primary sources of emissions in the state of California, a state that is also leading the charge against climate disruption.

Callery learns from her location before drafting climate action plans for California cities.

As a graduate teaching assistant at Cal Poly San Luis Obispo, Callery helped a group of students conduct a climate-change study and create an action plan to mitigate it there. Only after completing a degree in international relations and psychology did she become interested in environmental planning; she subsequently enrolled in graduate school at Cal Poly to complete a dual master's in city and regional planning and transportation engineering. It was during Callery's time there that two professors asked her to become a teaching assistant. "That's when I really learned about climate action planning," she says.

A climate action plan, explains Callery, follows state-recommended protocols that take into account all potential sources of emissions within a city, county, or government's jurisdictional control. Typically the sources of greenhouse gas emissions examined are transportation, energy consumption, commercial land use, water use, and agriculture. "We conduct an emissions inventory to determine how much is emitted from the burning of fossil fuels, known as the 'emissions factor.' That's essentially a unit of clean or dirty activity," explains Callery.

"Much of our work is visionary and long term, but what I really love doing is creating something that's user-friendly and easy to implement, something that fits into existing practices and that's not only beneficial but also very practical," says Callery. This involves creating something that not only includes policy changes but implementation plans and the incorporation of monitoring tools so that progress can be tracked over time, making it really easy for busy city staff to carry out.

"California is absolutely leading the way in designing climate action plans for cities," says Callery. "This is thanks to state law Assembly Bill 32, which initiated all of the local plans."

Where did Callery's passion for climate change mitigation come from? "I would credit my AP Bio and AP Environmental Studies classes with Cheryl Powers for igniting my interest in this field, along with the Outdoor Program at Cate," says Callery. "And the rest just kind of happened." *-IV*

SMALL FISH, BIG SCIENCE

Text and photography by Ian Vorster.

Nothing fishy about this day's catch – it was all for science.

With some apprehension and a good dose of excitement, eleven members of the honors biology class led by faculty member Wendi Butler boarded a boat in Channel Islands Harbor early on a March morning. They were headed out to Anacapa Island to participate in the International Barcoding Life's Matrix program with Dr. Ralph Imondi and Dr. Linda Santschi, the scientific co-directors of Coastal Marine Biolabs.

"Have you ever fished?" asked Imondi of the group. Nobody had, but after just two hours the students had landed a record haul – 41 fish and eight species. And all were handling their rockfish with aplomb, which is only the first of many benefits of fishing with scientists.

Barcoding Life's Matrix program provides high school science teachers with the procedural and pedagogical training, comprehensive multimedia instructional materials, and equipment needed to engage their students in the International Barcode of Life (iBOL) project in their own science classrooms and labs. Butler describes it as an "international effort to generate the sequences and catalogue the DNA of all of the animals on the planet." Imondi notes that this effort was motivated by the rapid loss of species in recent years. Butler adds, "These scientists have provided the equipment, taken the laboratory procedures and written protocols, and prepared curricula for high school teachers to do the lab work to generate the sequences in high school classrooms."

The interdisciplinary program bridges academic boundaries to provide an exciting learning experience. It promotes the cross-fertilization of ideas through the integration of STEM content across subject areas.

"This is more than citizen science," says Imondi. "We like to call it crowdsourced science. We had a paucity of specimens for this element of the program, and Cate, among others, stepped in to help."

The students are trained in six different procedures and learn to work very carefully with the extracted gill sample from each fish. "The result is that the students are able to contribute to an international effort in which they are authoring scientific data," emphasizes Butler. "They'll be able to use these skills at the university level."

And of course it doesn't hurt when you learn to catch your dinner.

Fins, gills, scales – and plenty to study.