Winter/Spring 2017

Point Blue Quarterly

Conservation science for a healthy planet.

Celebrating Women in Conservation Science

Left: Ellie M. Cohen. **Photo:** Miki Goralsky.

Ellie M. Cohen,
PRESIDENT AND CEO OF POINT BLUE CONSERVATION SCIENCE

Visit Ellie's blog at pointblue.org/blog/sciencenews

Science not Silence

Recent efforts to silence government scientists and decimate research budgets, particularly around climate change, are deeply disturbing. These attacks raise serious questions about the role of scientists in a democracy. Should scientists advocate for science? Or by doing so, do they add fuel to the fire of partisan politics and weaken public support for science?

There is a growing movement for scientists to speak out. A recent march in Boston drew thousands with placards including Science not Silence, Science Does Not Discriminate, and Facts Matter.

The next focal point is the "March for Science" in Washington, DC, and across the country, on Earth Day, Saturday, April 22. It is endorsed by the American Association for the Advancement of Science and the Ecological Society of America, among others.

Science is inherently non-partisan, built on systematic, transparent, and peer-reviewed inquiry and observation. In that light, I believe scientists should advocate for science and scientific findings. However, there is an enormous divide between how most scientists view the world versus the general public. Scientists need to significantly improve how we communicate what we do and the value of our work to society.

Just as science builds bridges across cultural divides in ways that few other disciplines can, the March for Science offers an opportunity for cross-boundary community-building. It is a chance to tell our stories about how science drives human understanding, economic innovation, and our collective well-being.

The March also provides a platform to communicate the foundational nature of science to a healthy, vibrant democracy. We need to share how science helps humanity discover and illuminate truths upon which policy makers can act to better the lives of the people they serve.

Advocating for science is especially urgent today in the face of accelerating climate change and the loss of ecosystem services, which threaten life as we know it.

Along the lines of Rabbi Hillel's sage words from 2,000 years ago, if scientists don't stand up for science, who will? And what better time than now?

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Contents

4 CELEBRATING WOMEN IN CONSERVATION SCIENCE

5 Forging the Path Forward

10 A Quarterly Quiz!

20 A Lasting Gift For Nature

IN THIS ISSUE

On The Cover:

Postdoctoral Researcher Annie Schmidt conducts Adélie Penguin fieldwork near the Ross Sea, Antarctica. **Photo:** courtesy Annie Schmidt/ Point Blue.

Above left: Waterbird Ecologist Kriss Neuman. **Photo:** courtesy Kriss Neuman.

Left: Terry Root, PhD, Senior Fellow, Emerita, Stanford Woods Institute for the Environment. **Photo:** courtesy Terry Root.

Center: Senior Ecologist Libby Porzig. **Photo:** Ryan DiGaudio/ Point Blue.

Right: Peregrine Falcon *(Falco peregrinus)*. **Photo:** eli77.

CELEBRATING WOMEN IN CONSERVATION SCIENCE

I was lucky—I never once felt a woman couldn't be a scientist. But I've learned over the years how my experience is not shared. I was astonished to learn that the common perception of what a scientist is among high school students nationwide has not changed in 60 years, according to the Draw a Scientist Test. Students continue to draw a scientist as a white male, with facial hair and glasses, wearing a white lab coat. Follow-up studies have demonstrated that meeting just one scientist can change a student's perception.

Point Blue provides a different picture of what a scientist is, and it's part of what makes the education we provide unique. In the classroom and in the field, while mentoring interns or when presenting to audiences across the world, we show people that scientists are people too, relatable and passionate women and men, working outside, getting their hands dirty, publishing high-caliber research, and leading major conservation initiatives. Turn the pages of this issue to be inspired and impressed by some of the many women who contribute to Point Blue's conservation science leadership.

Melissa Pitkin
Director, Education and Outreach Group

Terry L. Root, PhD

Truth ultimately trumps fiction because of courageous people who refuse to give up. Terry Root is one of those brave, bold scientists and leaders, who was often the only woman in the room addressing climate change and loss of biodiversity. We are delighted to feature her story in this special issue.

—Ellie Cohen

Courage. A quantitative mind. Curiosity. Love for the living world. These traits and more are combined in a scientist who studies literally the biggest environmental challenge facing the world.

Dr. Terry L. Root examines the ways that wild animal and plant populations are changing along with climate change. This focus is drawn from her lifelong love of birds, combined with the skills and inclination to probe vast troves of data. And an unblinking gaze: Terry studies the possible mass extinction of species due to rapidly changing climate.

Such research places a scientist firmly into conversation with the public. According to Terry, "As people comprehend the real-world problems we are facing, researchers have to ask extra questions—real-world questions. Science has an obligation to help provide information to policy-makers and the general public, in order to try and make the world a better place."

And she exemplifies this ethos. Terry has been a leader on the Intergovernmental Panel for Climate Change (IPCC), for which she shared the 2007 Nobel Peace Prize. She is an emerita faculty member at Stanford University where she held a post at the Stanford Woods Institute for the Environment.

Terry has been a mentor to Point Blue's staff scientists as a Board and Science Advisory Committee member. She was also awarded Point Blue's 2016 Lifetime Achievement in Ecology Award for the enormous contributions she has made to conserving birds and ecosystems in our rapidly changing world. She is passionate about Point Blue's mission and capabilities, for the strongest of reasons.

"Because of the rapid warming of our planet due to humans using our atmosphere as a no-cost dump site for our greenhouse gas emissions, our planet is facing a mass extinction event that has already started. The best scientists around the world who work on climate change have explained that we could easily lose as many as half the known species on our planet. That would be the extinction of around one million species caused by one species—us! The scientists at Point Blue are literally on the frontlines of this battle to save species by working to slow down the rate of extinction of many imperiled species."

An important pathway in this urgent science was forged through Terry's

continued

Opposite page: Point Blue rangeland conservation team members. **Photo:** Ryan DiGaudio/Point Blue.

Above: Terry L. Root, Senior Fellow, Emerita, Stanford Woods Institute for the Environment. **Photo:** courtesy Terry Root.

own research. Her first profession was computer programming, developing scientific software. Then came a turning point. "When I was based at the University of Colorado and working for the Jet Propulsion Lab, just for fun I decided to take an ecology class." Before long "just for fun" turned into a core life direction.

It was during that 1977 ecology class that Terry unearthed a wealth of data from Audubon Society Christmas Bird Counts—stored on magnetic tapes that people were not sure how to use. But Terry, with her advanced programming skills, began to process the information. Enthralled with what she could learn, she went on to earn her master's degree in biology and her doctorate in biogeography and physiological ecology.

At a time when most bird studies focused on relatively small areas, Terry's analyses embraced an entire continent. She was among the first scientists to show that birds' ranges are affected by shifting environmental factors, especially temperature. Among her discoveries: "Birds are coming north earlier in the spring, and some are leaving later in the fall. They're also moving their ranges up in elevation (higher in mountains) and up in latitude (toward the poles)."

This seminal insight prompted Terry to develop increasingly sophisticated computer models to explain bird responses to changes in temperatures. She combined information from models of climate and models about how species have changed. This enabled her to tease apart the effects of natural causes (e.g., volcanoes and sunspots) from human-caused warming.

Her pioneering work resulted in President George H. Bush honoring her with the prestigious Presidential Young Investigator Award from the National Science Foundation in 1990, among many other awards.

"As I look out my window right now I wonder, will the planet look the same if I were to be sitting here in a hundred years? No. It's not even going to be close," she surmises.

And yet she stays invested in our collective future—through teaching. "The students I meet bring such energy and optimism. When so many students say, 'I want to make a difference in the world,' that gives a person great hope!"

Shaping Point Blue's Path

Lynne Stenzel
Senior Wetland Ecologist

In 1971, Lynne was among the students whom biologist Gary Page recruited to help in an ambitious ecological study of Bolinas Lagoon's shorebirds. Lynne, whose passion at the time was marine invertebrates, says "Using my emerging skills to identify the remains of mud-dwellers in shorebird diets was an opportunity I couldn't pass up!"

Soon shorebirds and the dynamics of coastal ecosystems claimed her primary interest, and so did the life of the Snowy Plover. Lynne helped lead the Pacific Flyway Project, which documented the importance of western wetlands to shorebirds. She is also a key participant in the interagency team studying and protecting Western Snowy Plovers.

Lynne adds, "At Point Blue I've had the privilege of working with and learning from hundreds of citizen scientists. It's gratifying to see how first-hand experience in the field and exposure to the scientific method inspire people to become informed advocates for the natural world."

Stacy Small-Lorenz, PhD
Wildlife Ecologist

Stacy's early involvement at Point Blue helped shape her future path and that of Point Blue. Soon after her start here, as an intern field biologist studying songbirds in 1995, Stacy became a leader in our early work on the Sacramento River. She helped demonstrate how studying birds could provide insights about stream restoration.

Stacy reflects, "Point Blue created a place for me to explore my research passions. I wanted to immerse myself in the natural world to study how birds responded to river dynamics and floodplain restoration, and then use those results to benefit conservation and restoration practice."

Stacy earned her PhD from the University of Missouri, Columbia, and now serves as a Climate Change and Resilience Specialist with the National Wildlife Federation. Stacy is also an instructor at the National Conservation Training Center, focused on climate-smart conservation planning.

She says, "So much of my daily work is deeply influenced by those formative experiences and relationships we created at Point Blue."

Opposite page: Common Murre colony, Farallon Islands. **Photo:** David Gardner.
Terry's research was among the first to reveal impacts of climate change on birds. Point Blue's studies have also shown an impact. For example, the Common Murre (Uria aalge) *is breeding earlier than it did in the 1970s along with spring changes in upwelling.*

This page, left: Lynne Stenzel. **Photo:** courtesy Lynne Stenzel.

This page, right: Stacy Small-Lorenz. **Photo:** courtesy Stacy Small-Lorenz.

EMERGING CONSERVATION LEADERS

Two Point Blue Ecologists—In Their Own Words

Kelly Garbach, PhD, *a senior ecologist in the Rangeland Watershed Initiative, works with local land stewards from the Modoc Plateau to the San Joaquin Valley and the Central Coast to the Sierra foothills.*
Photo courtesy Kelly Garbach.

Some of our collaborating ranchers are fascinated by birds and what they're doing on the landscape. This can create an opening for interesting conversations about ecology and conservation.

We were recently out on a ranch in Butte County and the landowner, who is a passionate advocate for wildlife habitat, mentioned that he doesn't like scrub jays because they're nest predators. Together with Geoff Geupel (Group Director) and Carrie Wendt (Rangeland Partner Biologist), we discussed the important role that scrub jays play in oak regeneration by caching acorns. The landowner loves the oak woodlands on his property and was excited to discuss the role that jays can play in their conservation.

I am fascinated by how our land management decisions shape and are shaped by natural resources—and by the benefits our landscapes can provide for society.

People are captivated by Snowy Plovers and how such little birds survive and breed on our Monterey Bay area beaches. I've realized that the strongest way to bring people into contact with plovers and their fragile habitat is to tell them first about my own life as a biologist. I start work before sunrise every day and spend half of each year in the field. With my team I'm intimate with individual plovers, including the most successful bird on record, a male who produced 30 offspring! In 20 years I've witnessed the region's plover population exceed goals for its recovery.

I've witnessed the growing appreciation for Point Blue among our partners. Recently I met with a regional land trust to talk about the ecology of coastal dunes. I expected to talk with one or two people, but a number of their conservation staff turned out, eager to hear about Point Blue's climate-smart conservation priorities. Conversations like this are increasing!

Today, I continue my research on Snowy Plovers and shorebird ecology. Our huge data stream about plovers in the beach and coastal dune ecosystem helps people ask what's needed in order to best manage for birds and biodiversity in the face of rising seas and more extreme weather.

Kriss Neuman *is a waterbird ecologist who leads Point Blue's team working collaboratively in the Monterey Bay area on the recovery project for federally threatened Snowy Plovers and conserving coastal dune ecosystems.*

Photo courtesy Kriss Neuman.

Opposite page: Rangeland in bloom. **Photo:** Ryan DiGaudio/Point Blue.

This page: Monterey Bay coast and birds. **Photo:** Dave Parsons.

A Quarterly Quiz!

What do the three stories below have in common? And, can you match each story with the Point Blue scientist who tells it?

1 We're now well into our third full season of soil sampling, and this year we are visiting more than 60 ranches across California! At each one we measure soils, plants, and birds. We can then use the data to help ranchers understand how their management practices influence the essential ecological function of rangelands.

My connection with Point Blue began when I was an intern banding songbirds, first in the Eastern Sierra and then at the Palomarin Field Station. This fed my fascination with ecology and birds, leading me to pursue a PhD in ecology at U.C. Davis. My dissertation focused on responses of landbirds at Palomarin to rapid successional changes in the vegetation community.

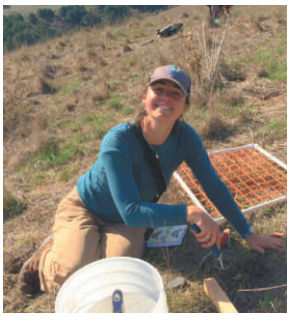
To work today in applied conservation is a dream come true. I'm constantly inspired by the knowledge, passion, and curiosity that my colleagues share with me about the natural world.

2 After several years of hard work, I'm thrilled to have helped determine the detailed steps needed to conserve birds and their habitats in the Central Valley. The results were shared with conservationists and scientists in a special issue of *San Francisco Estuary and Watershed Science* in March.[1] The project lays out the scientific basis for particular conservation objectives for groups of Central Valley birds and their key habitats. Completing this project was a huge collaborative effort on the part of Point Blue staff and our Central Valley Joint Venture partners. It ultimately provides a scientifically sound, long-term vision for Central Valley bird conservation—and also reveals where more information is needed to protect birds in the Central Valley.

I'm continually inspired at Point Blue and impressed by our willingness and ability to grow into new areas of research and collaboration.

3 My work at Point Blue is focused on discovering ways to enhance and create more habitat for waterbirds in the agricultural landscape of California's Central Valley. I lead the Wildlife-Friendly Working Lands Initiative as part of the Migratory Bird Conservation Partnership, involving Point Blue and our amazing partners at Audubon California and The Nature Conservancy. We work through programs that incentivize or share the cost of alternate ways to manage agriculture to produce food and benefit birds. And we conduct the science that supports those practices.

Along with the leadership opportunities I've been given at Point Blue, it's thrilling to be part of a dedicated group of people making a real difference both for shorebirds and for rice growers.



From left: Kristy Dybala, PhD, Senior Research Ecologist; Kristin Sesser, Avian Ecologist; Libby Porzig, PhD, Senior Ecologist

[1]You can read it here: http://escholarship.org/uc/jmie_sfews

ANSWERS

What do the stories have in common? If you guessed (a) a passion for conservation; (b) a deep commitment to working collaboratively; (c) bird conservation expertise…then you were right on all counts! The stories belong to: 1) Libby Porzig 2) Kristy Dybala 3) Kristin Sesser. These three women represent dozens of conservation scientists on Point Blue's staff, inspired to make a difference in today's world!

Drakes Bay shoreline, Point Reyes. **Photo:** Rick Lewis.

What inspires Point Blue's ecologists and educators in their work to secure a healthy blue planet?

Annie Schmidt, PhD, Postdoctoral Researcher

Sometimes inspiration comes from the little things—an albatross walking, the blue eye of a cormorant, a rotund seal. Although I see evidence every day of the stress we are putting on natural systems, I also see individuals surviving, thriving, and contributing to the future. Adélie Penguins, like the earth, are incredibly tough. I've seen penguins on their nests completely buried in snow, not giving up. I've seen penguins with gruesome wounds from a leopard seal attack, not giving up. I've seen penguins, nests flooded from melting glaciers, not giving up. If they won't give up, neither will I!

Vanessa Wyant, Project Manager, STRAW

I remember taking nature walks with my mom, and she would tell me the names of the plants and their uses and "personalities." I carried this love and fascination of plants with me to college, where I had the chance to share my awe and teach others about plants. I loved that just as much as the plants themselves! I like to think that the experiences I help create today with the students, teachers, parents, and landowners involved in restoring streams are small seeds of hope that will continue to grow, just like the trees that we plant. And it's always better when we're working together!

Maya Hayden, PhD, Coastal Adaptation Program Leader

I strive to be a bridge between science and decision-making. I help coastal resource managers and decision-makers understand ecological systems to improve how they are restored and managed, in the context of climate change. It's inspiring to work with such a diverse and forward-looking group of people. My team includes the scientists committed to producing actionable data and the managers making challenging decisions for adapting to sea level rise and other stressors along our coast.

Nurturing Conservation Values

Point Blue touches the lives of thousands of girls and young women every year. Through real-world conservation learning experiences, we provide K–12 schoolchildren, conservation science interns, and graduate students with the tools they need to understand and protect our natural world.

Meet some of Point Blue's educators and trainers who are inspiring young minds to connect with nature.

Laurette Rogers, STRAW Founder

Please give us a brief description of what you do in your job.

I'm the Founder and Ambassador of STRAW—Students and Teachers Restoring A Watershed. I work with the STRAW Team as a relationship liaison with partners, donors, interns, and staff to ensure a thriving network of connections and resources. Fourth-graders in my class began this project in 1992, and I've been privileged to work with others on STRAW for the past 25 years.

How do you mentor and inspire the next generation of women conservationists through your work?

I love the part of my job where I get to converse with our interns, who happen to all be women this year. I learn so much—they inspire me, and it's fun to help them find connections and resources that they can use along their life paths. In addition, the strong women scientists on our staff working with students are powerful role models. Probably most important is how we talk with students, male and female, treating them as competent people with something to say and give. One student said of STRAW, "Now I feel like I can do anything!"

Laurette Rogers.
Photo: Point Blue.

Why does involving more girls in conservation matter to you?

Everyone should have a chance to do the work they want to do, are meant to do. STRAW has always had a healthy mix of girls and boys, women and men, planning and leading the program. We know that through the decades, STRAW female restorationists and biologists have inspired young girls to seek environmental science degrees and careers. STRAW allows girls and boys to actually *do* science, with scientists, and that makes a crucial difference as they envision their own future careers.

Lishka Arata, Communications Coordinator

Please give us a brief description of what you do in your job.

In my job as Communications Coordinator, I work with all of our staff to engage various audiences in our conservation work.

What inspired your conservation career?

I grew up mostly in the North Bay (San Francisco and Sebastopol), and I spent a lot of time at the beach and along creeks and rivers with my family and friends. That early immersion in nature nurtured a love of animals and plants in me and eventually led me to Humboldt State to pursue a degree in biology. There, I was exposed to more amazing nature and extremely passionate scientists. I had one particularly memorable botany lab teacher: Sunny. She was just so excited about plant science and was really good at engaging us in the subject matter through her enthusiasm and wonderful nerdiness. She had the class take a walk from campus into town and stop and look at plants along the way—everyday plants that were along the sidewalks. Sunny taught me a defining aspect about science: that great learning can happen anywhere from anyone, and that it should!

Why does involving more girls in conservation matter to you?

It matters so much. We need more women in high-level leadership positions in conservation. We've made progress, but there is still work to be done. Being a woman, I need women role models in order to grow, and I want to be one for younger generations. I'm determined to help keep the momentum going, to support women to be equal players at whatever table they choose to be at. My passion happens to be conservation, so I'll start there.

Renée Cormier, Avian Ecologist

Please give us a brief description of what you do in your job.

I'm an Avian Ecologist with the Pacific Coast and Central Valley Group. My primary roles at Point Blue are to train interns at the Palomarin Field Station, and to oversee the Spotted Owl project at Point Blue, which also has one intern each year.

Renee Cormier (right) and intern at the Palomarin bird banding lab. **Photo:** Kim Kayano.

How do you see your individual role supporting Point Blue's vision of a healthy blue planet?

I see my work training interns as helping to prepare the next generation of conservation scientists. I think they probably inspire me more than the other way around, but I hope that I can mentor interns by setting a good example for what it means to conduct research with scientific integrity, to work hard while keeping the big picture in mind, and to appreciate the wild things we study. With a good foundation in research methods and natural history, and an understanding of topics in conservation biology and climate-smart conservation, we help prepare them to be successful in their next endeavors and career paths.

What keeps you energized and hopeful in light of the big challenges of today?

I am constantly energized by the interns. They arrive with enthusiasm and a real passion for learning about conservation and how they can make a difference in the face of climate change. This can be a daunting challenge, and so they are ready to learn everything they can. I am always proud of how much they learn from the start to the end of their internships—and I am even prouder when I learn where they go from here, continuing to make a difference using their newfound skills.

Diana Humple, Avian Ecologist and Banding Coordinator

Please give us a brief description of what you do in your job.

I am the program lead for the Palomarin Field Station, where I have the pleasure of working with a great team of scientists on our long-term bird ecology studies, migratory connectivity research, intern training program, and education of schoolchildren and the public. I also run a few other regional long-term landbird monitoring projects, coordinate bird banding data and permits for the organization, and lead our oil spill preparedness and response program in coordination with the state.

How do you mentor and inspire the next generation of women conservationists through your work?

I love collaborating with the graduate students on our research, opening eyes of kids by showing them their first wild animal—a songbird in the hand!—up close and personal, and especially mentoring the incredible burgeoning biologists who come through our intern training program at Palomarin. Many are women or girls who are drawn to this field because of the outdoor lifestyle, the stimulating scientific process, and the inherent goals of conservation science.

Why does involving more girls in conservation matter to you?

I want girls and young women to see all pathways as open to them, and want girls who feel passionate about science, natural history, and conservation to not be derailed from that track because of a lack of women role models or discouragement because they are female. In the efforts ahead of us in this field, we need all hands on deck and can't afford to artificially reduce the population of people working for conservation.

Opposite page: Sonoma Baylands STRAW restoration. **Photo:** Leia Giambastiani/Point Blue.

The Next Generation

Point Blue's hands-on science and treasure trove of data provide unique opportunities for students to help us discover conservation solutions while pursuing careers and advanced degrees in conservation.

Graduate Students Anna Studwell and Fadwa Bouheddea

Anna Studwell recently published a chapter of her Master's thesis in the prestigious journal PLOS ONE, identifying seabird foodweb hotspots off California for protection. She says, "Our work showed that the continental shelf break, and particularly the ocean surrounding Cordell Bank (west of Bodega Bay), is critical habitat for the conservation of seabirds that visit the Central California coast from as far as Chile or New Zealand." This has the potential to guide future offshore development such as wind energy infrastructure.

Fadwa Bouheddea is just beginning her study with Point Blue, which will address climate change effects in the ocean. Fadwa will examine potential impacts of ocean acidification on pteropods. These tiny shelled sea snails, also called "sea butterflies," are considered the canary in the coal mine with regard to ocean acidification, which can reduce the ability of marine invertebrates to form their shells.

STRAW Intern Erica Meier

After she graduated from college, Erica began seeking experiences that would allow her to gain the skills she'd need to help solve what she believes is currently humankind's largest puzzle: how to come together to create livable futures in the face of climate change. "I want to work with people of all ages on land-based solutions," she says. "This includes researching plant palettes that can have higher success rates in the face of climate change, which is a big part of what excites me about the type of restoration STRAW does."

Palomarin Intern Kim Savides

"Not only am I learning how to band birds and run a banding station," says Kim, "but I'm getting to see how the data I collect every day contributes to the long-term understanding of bird populations and helps scientists ask new questions." Forming hypotheses, contributing to data collection, and performing analyses through her internship at the Palomarin Field Station are experiences that put Kim on track for graduate school and a future career in biology, managing and conserving birds.

MEET THE TEAM

Chelsea Carey, PhD

Senior Soil Ecologist,
Pacific Coast and Central Valley Group

You might know that about 650 species of birds have been recorded in the state of California. You might not know that a single teaspoon of California soil may contain anywhere from 2,000 to 830,000 species of bacteria. Like Point Blue's avian ecologists, who use birds to learn about the environment, soil ecologists study life beneath the surface of the earth to learn what those organisms can tell us about soil, plants, and even the air we breathe.

This January, Dr. Chelsea Carey joined our team as Point Blue's first soil ecologist. With generous funding from the TomKat Foundation, Chelsea will be expanding on our work with TomKat Ranch, the Rangeland Monitoring Network, and the Rangeland Watershed Initiative. Specifically, she will work to understand how management influences the soil microbes that build healthy soil and reduce greenhouse gas emissions.

Chelsea was raised in Chicago and attended DePaul University as an undergraduate. While there she developed a strong appreciation for the wonderful world of soil through her research on the invasive plant, common buckthorn *(Rhamnus cathartica)*. She received her PhD from UC Merced, where her research focused on how exotic plant invasion, vegetation removal, and nutrients affect microbial communities in California grasslands.

"In my work I've tried to increase our understanding of how soil microbial communities change across space and time, and to identify the subsequent implications for ecosystem processes in an era of hyper-change" explains Chelsea. But it's not just about California. Over the last few years Chelsea has worked with a team of researchers to learn more about how dust generated in Asia impacts soils in the Sierra Nevada.

Unlike our bird ecologists, who can rely on sight and sound to identify birds, Chelsea studies organisms that are too small to see with the naked eye. Her studies rely on genetic testing and other lab techniques to quantify the types of microbes in a soil sample. "Chelsea's work is a great example of how new technologies and data informatics are revolutionizing the science that we do," explains Dr. Nat Seavy, Research Director of Point Blue's Pacific Coast and Central Valley Group. "With today's tools, she is able to generate and analyze an amount of genetic data that was difficult or impossible to analyze only a few years ago."

To describe what she is looking forward to over the next year, Chelsea explains "The climate-smart principles that guide Point Blue really resonate with me and I am excited to work with Point Blue and TomKat Ranch staff to integrate soil ecology into climate-smart conservation and regenerative agriculture."

Opposite page: California Brown Pelicans diving. **Photo:** Chuck Schug.

This page: Chelsea Carey, PhD. **Photo:** courtesy Chelsea Cary.

STUDY SITES

Upper Pajaro River Watershed

Working hand-in-hand with STRAW students to restore critical wildlife habitat

The valley is a checkerboard of fields with meticulously lined row crops and expanses of brilliant, yellow mustard plants. A deep breath reveals a variety of fresh smells wafting through air: garlic, a mushroom farm, and water-soaked earth. A cacophony rises from flocks of Red-winged Blackbirds and Western Meadowlarks signaling a new season to stake out breeding territories.

I pull on my rubber boots and make my way through the field toward the small stream that bisects the property. The thick clay pulls on my boots, but it also displays the footprints of critters that have passed through this floodplain before me. I smile and dream of a day when mature trees and shrubs will line the stream and provide valuable habitat for birds, mammals, and other wildlife.

That small stream is the Upper Pajaro River and it crosses through Gonzales Ranch, a property located a few miles southeast of Gilroy on the southern Santa Clara and northern San Benito County line. Gonzales Ranch is one of several community-based habitat restoration projects being implemented by the Students and Teachers Restoring A Watershed (STRAW) Program at Point Blue.

Local students from Gilroy, Hollister, and Pajaro school districts have spent the last two years at Gonzales Ranch planting native California trees and shrubs to restore a section of riparian corridor that will connect two million acres of critical habitat. After this year's planting days, they will have restored a full mile of habitat that will provide food and shelter for wildlife traveling through the floodplain. This vegetation will also improve water quality, water infiltration, and carbon sequestration.

Of course, community-based habitat restoration doesn't just happen in a vacuum. In addition to local school involvement, organizations like The Nature Conservancy (TNC),

Above: STRAW students planting at the Pajaro site. **Photo:** Ethan Inlander/ The Nature Conservancy.

Opposite page: Jenni Benson, center, leads restoration demonstrations for students on planting day. **Photo:** Ethan Inlander/ The Nature Conservancy.

CA Landscape Conservation Cooperative, Wildlife Conservation Board, Santa Clara Valley Habitat Agency, and the U.S. Fish and Wildlife Service have teamed together with Point Blue to make this project a success. TNC's Gonzales Ranch, leased by a local cattleman, represents a unique opportunity to demonstrate how working landscapes and conservation efforts can be mutually effective.

Extreme weather and uncertain future climate conditions present a challenge in revegetation efforts. This project has seen it all in terms of prolonged drought, flooding rains, and record-breaking heat. Through climate-smart restoration planning, we can effectively design projects to be resilient in the face of climate uncertainty. One way to build adaptability into revegetation designs is to plant a diversity of species that do well under varying climate conditions. For example, we chose plants like cottonwood and sycamore trees that do well in both wet and dry conditions. To ensure wildlife food resources year-round, we planted mulefat and toyon that provide forage and fruit well into the winter months.

This project is not like any other project for me. In fact, this project represents a community-based movement in a new region for STRAW. Over the last three years, I have had the privilege of reaching new schools, students, and partners and developing a deep connection to the Pajaro River Watershed. My favorite days in the field are spent planting with students and sharing in their awe, excitement, and curiosity for the natural world. Inspired through hands-on experiential learning, perhaps one day these very students will be the world's next environmental stewards and advocates.

Jennifer Benson
Restoration Project Manager, STRAW
Photo: Lonnie A. Bowling.

Jenni coordinates, implements, and manages professional habitat restoration projects on public and private lands in various parts of the Bay Area.

PARTNERSHIP

Maria Brown, Superintendent, Greater Farallones National Marine Sanctuary

Just off the northern California coast lies one of the most biodiverse and bountiful marine ecosystems on the planet, the Greater Farallones National Marine Sanctuary (GFNMS).

Its position within the nutrient-rich California Current makes the 3,295 square mile sanctuary the site of an exceptionally productive food web. A variety of habitats—intertidal mudflats, estuaries, rocky shorelines, and deeper subtidal areas—host abundant wildlife. GFNMS is home to at least 25 endangered or threatened species, 36 marine mammal species (including 29 species of whales and dolphins), 390 species of fish, and more than 330 species of invertebrates. Additionally, it provides feeding grounds for one of the world's largest white shark populations, and it surrounds the Farallon National Wildlife Refuge, which hosts the largest seabird breeding colony in the continental United States.

The sanctuary is one of 14 marine protected areas managed by the NOAA

Below: Maria Brown surveys the Greater Farallones National Marine Sanctuary from Bowling Ball Beach. **Photo:** Matt McIntosh, NOAA NMS.

Opposite page: The Greater Farallones National Marine Sanctuary is home to more than 330 species of invertebrates like the bat star *(Patiria miniata)* and red abalone *(Haliotis rufescens)*. **Photo:** Steve Lonhart/NOAA MBNMS.

(National Oceanic and Atmospheric Administration) Office of National Marine Sanctuaries. And the considerable task of caring for and protecting this spectacularly diverse ocean region falls to GFNMS Superintendent, Maria Brown.

Maria knew from an early age that she wanted to spend her life working to protect animals and their habitats. She had an innate sense of curiosity about natural systems and was drawn to the challenge of solving complex problems. While pursuing studies in conservation and environmental management, she realized that the best way to safeguard the natural world she loved would be to use scientific information to develop and change public policies.

Now as GFNMS Superintendent, Maria's job is to oversee the science, education, and policy programs at the sanctuary, all with the goal to keep its marine waters healthy. "One of the things I love about my job is the diversity of activities I am involved in," she says, "but, I can't do it alone!" Maria works with educators, local communities, and a variety of stakeholders—from the shipping industry and commercial fishermen to whale, seabird, and shark watching boats—to protect the ocean wilderness.

Maria also works very closely with Point Blue on multiple issues and programs, including reducing whale strikes and conducting at-sea research on ocean health. "I value the scientific integrity and quality of work produced by Point Blue," Maria says. "I rely on the data collected by Point Blue's science teams to inform sanctuary decisions." Likewise, Maria has been a critical ally in Point Blue's work in other parts of the California Current, on the Farallon Islands, and along the California coast. As Maria puts it, "We share a common goal of discovering how the sanctuary's ecosystem functions, to better understand how to protect the diversity and abundance of wildlife."

"One of my biggest concerns is how climate change is going to affect the ocean environment," Maria continues. Point Blue began working with the sanctuary a decade ago to understand the possible impacts. Together with NOAA and the U.S. Geological Survey, Point Blue developed Our Coast Our Future, a sea-level rise planning tool. "Our partnership has evolved from predicting changes to recording observed changes and communicating those changes to the public and other decision-makers," Maria notes. "Now managers and planners have the information they need when designing coastal restoration projects or siting future infrastructure such as coastal highways and offshore wind."

In spite of the big challenges GFNMS and other complex ecosystems face, Maria finds energy and motivation in the sea and the diverse life contained within. "What excites me the most," she says, "is experiencing the ocean—whether seeing a whale breach or taking a remotely operated camera 1,000 feet down to the bottom. The awe and beauty of the ocean and the animals that live in its watery realm inspire me to learn more and to do my best to protect this ocean planet."

Maria is confident that collaborative conservation can secure the future health of our planet. "I see a beautiful future with thriving wildlife," she says, "and I work every day to make that future a reality." Her advice on how to make a difference? "Each and every one of us has that power to influence the future. Take that first step and then keep moving!"

A Lasting Gift for Nature

Mark Mushkat's Story

Mark Mushkat wanted to make a lasting difference for the natural world he loves. He chose to make Point Blue a partner in his conservation legacy with a gift in his estate plans.

Enduring Inspiration

My eyes were opened to the incredible complexity and beauty of nature when I visited the hawk watch at Derby Hill, New York, in the 1970s. Ornithologists I met there helped me understand the intricacies of raptor migration, flight dynamics, meteorology, et cetera, and also pointed out the fragile existence of magnificent animals like Bald Eagles and Peregrine Falcons.

Today, the efforts of scientists and policy leaders at Point Blue are literally changing the world for the better on a daily basis. A great example of this is the work I saw underway at Point Blue's TomKat Ranch field station, where conservation and farming meet in creative and powerful ways. I've seen first-hand as well the marine work that has led to improved methods of saving the lives of Earth's largest animals—whales. And I've been most impressed by Point Blue's combination of hard science and thoughtful, valuable coordination with other key stakeholders in academia, diverse NGOs, and governmental groups.

The work of today's environmental scientists, like those I met nearly 40 years ago, inspires me every day. I'm indebted to them all.

The Importance of Taking Action Now

It's never been clearer to me that all things are interdependent. Addressing conservation issues today also impacts quality of life for all species and our own survival—it especially speaks to human contentment. The widespread questioning of solid science is deeply disturbing and must be met with not only facts but great communication skills as well.

Creating a Conservation Legacy

I see my estate plan as an extension of my life's interests. It seems natural to want to continue the support I'm providing now—through financial contributions and volunteer work—by including a substantial gift to Point Blue when I've passed away.

I am hopeful that my financial contributions help in meaningful and diverse ways, and second, my actions in the environmental community might encourage others to give however they can.

Please consider bolstering your financial support with volunteer efforts and community engagement. These actions go hand-in-hand to secure the successes of Point Blue and other non-profits. Ultimately, they affect the betterment of our globe.

Like Mark, you can make a lasting difference for birds, other wildlife, and human communities by making a bequest to Point Blue in your will or trust. When you lets us know about your gift, you'll become a member of the Tern Society, our community of visionary legacy donors who are committed to securing a healthy blue planet for future generations.

To learn more, please contact Nancy Gamble, Director of Philanthropy, at 707.781.2555, ext. 324 or at legacy@pointblue.org.

Mark Mushkat.
Photo: courtesy Mark Mushkat.

news bites

Burrowing Owl. **Photo:** Ryan DiGaudio.

NEW PUBLICATIONS

Point Blue scientists working on the Farallon Islands uncovered a complex relationship between the non-native house mouse, the native Ashy Storm-Petrel, and the native-migrant Burrowing Owl. To better understand the impact of owl predation on the Storm-Petrel population at the National Wildlife Refuge, researchers collected and assessed owl pellets—the regurgitated, indigestible remains of the bird's prey. Their findings suggest that removal of the invasive mouse species would likely reduce the number of Burrowing Owls wintering on the island. Fewer owls would have a positive impact on Storm-Petrel numbers.[1]

In another recent study, Point Blue scientists used data collected through our partnership with NOAA National Marine Sanctuaries to identify foraging seabird "hotspots" along the continental shelf. The research methods can be used elsewhere to help identify critical habitat for conservation as human activity increasingly threatens marine environments (see graduate student column, page 14).[2]

SCIENCE PRESENTATIONS: RECENT HIGHLIGHTS

Several Point Blue staff presented at the 64th Annual Meeting of The Western Section of The Wildlife Society, in February. A team led by Geoff Geupel discussed Point Blue's work to enhance wildlife conservation and stewardship on private lands. Other presenters included Principal Scientist/Quantitative Ecologist Matt Reiter, PhD, who reviewed Point Blue's automated water resources tracking system for wetland water managers dealing with drought and flood.

President and CEO Ellie Cohen was a keynote speaker at the California Council of Land Trusts' 2017 conference in early March, speaking on the role of land trusts in accelerating nature's ability to sequester carbon, replenish groundwater, sustain biodiversity, and enhance our communities through climate-smart conservation strategies.

Wendell Gilgert and Corey Shake of Point Blue's Rangeland Watershed Initiative helped host field visits for the California Climate and Agriculture Network's recent summit, to tour innovative farms using integrated practices that improve soil health, increase biodiversity, and provide climate benefits.

Chief Technology Officer Michael Fitzgibbon and Coastal Adaptation Program Leader Dr. Maya Hayden presented to 160 community leaders and planners working to address impacts from rising seas and storm extremes in the Los Angeles region in partnership with AdaptLA and in San Diego.

Tom Gardali, Group Director, led a webinar on climate-smart restoration practices in partnership with the CA Landscape Conservation Cooperative. It was attended by almost 200 viewers from across the state and beyond.

SCIENCE EVENTS

INTERNATIONAL ASSOCIATION FOR LANDSCAPE ECOLOGY CONFERENCE
APRIL 9-14
BALTIMORE, MD

Avian Forest Ecologist Jay Roberts, PhD, will be discussing widespread conifer death, caused by drought and climate-related beetle outbreak, and its effects on birds and their habitats.

NATIONAL ADAPTATION FORUM
MAY 9-11
SAINT PAUL, MN

Maya Hayden, PhD, Coastal Adaptation Program Leader, will present at this gathering of the climate adaptation community.

1. Chandler, S.L., J.R. Tietz, R.W. Bradley, and L. Trulio. 2016. "Burrowing Owl Diet at a Migratory Stopover Site and Wintering Ground on Southeast Farallon Island, California," *Journal of Raptor Research* 50:391-403.

2. Studwell AJ, Hines E, Elliott ML, Howar J, Holzman B, Nur N, J. Jahncke (2017) "Modeling Nonresident Seabird Foraging Distributions to Inform Ocean Zoning in Central California," *PLoS ONE* 12(1): e0169517.doi:10.1371/journal.pone.0169517

focus

WRENTITS OF THE WORLD

Curious Wrentit *(Chamaea fasciata).* **Photo:** Tim Zurowski.

There was a time in the late 1970s and 1980s when it seemed that every month a new coffee-table book of birds would appear. Each was devoted to a planet group: "Parrots of the World," "Rails of the World," "Herons of the World" and the like. They were big, colorful, thick, and expensive.

I remember kidding then about publishing my own treatise—"Wrentits of the World." It too would be big—maybe 14 by 20 inches—and beautiful, with a blackberry/coyote bush/poison oak patch embossed over the entire cover and a cryptic Wrentit glaring sassily from within the tangle. The difference would be that "Wrentits of the World" (there is only one) would be really thin—maybe eight pages including contents, frontispiece, and index.

Wrentits *(Chamaea fasciata)* themselves are thin, with bodies made for lacing through thorny scrub, and they have long, narrow, stand-up tails that pump out their bouncing ping-pong ball songs. They stay inside cover, and unless you can trick them into thinking you are a Wrentit invading their turf, are hard to see. A good imitation of Wrentit song is usually enough to bring both male and female into view, the teed-up male answering defiantly. After much practice and study, I have become fluent in Wrentit and, when crouched and frozen next to or under the briar patch, have sometimes had the little beauties land on my shoulder or outreached fingers.

With a world range from coastal Oregon to northwestern Baja California, the Wrentit is mostly a California bird, but its taxonomy (placement on the avian family tree) has always been in question. The name itself suggests confusion—is this a wren or a chickadee?—and no absolute genetic lineage has been proven. Suggestions have been made that Wrentits have descended from such diverse groups as neotropical tanagers and old-world babblers. Nobody knows, thus Wrentits remain a monotypic family *(Chamaeaidae).*

Nonmigratory, some Wrentits range no further than one-half mile from their fledging nest during their entire lives. Their spread wing is the shape of a silver dollar, not long and pointy like long-distance migrants'. Pair groups are solid: couples stay within conversational distance of each other throughout the year for as many years as both stay alive. Besides foraging together and preening each other's feathers, they roost together, leaning against each other on a limb near the crown of a bush, with feathers interlaced and inner legs drawn up, appearing as one ball of feathers.

There are six recognized subspecies, with the one inhabiting the California fogbelt north of the Golden Gate channel, *Chamaea fasciata rufula,* being most colorful. These have gray caps, unstreaked mouse brown bodies, and throats of pale peach. The Wrentit's iris is milky white (not yellow as some books say), giving this bird a defiant expression that is its alone.

Much of what is known about the Wrentit's life history strategy and breeding biology has been learned through ongoing studies at Point Blue's Palomarin Field Station.

Equal Opportunity Singer

Wrentits are unusual among songbirds in that both sexes (not just the males) sing. The male's song is a series of one-pitch "bouncing ball" notes running into a trill. The female's song is shorter and omits the trill. Wrentits can be heard year-round since they remain in their home territory. In addition to singing, both sexes defend the territory, incubate, and brood the young on the nest.

Wrentit nestling on data sheet. **Photo:** Diana Humple/Point Blue.

Rich Stallcup (1944–2012) was a Point Blue co-founder and our naturalist extraordinaire. His knowledge continues to deepen our appreciation of all things wild. Read this essay in full and the entire *Focus* archive online at **pointblue.org.**

Point Blue Board and Staff

Point Blue is deeply grateful to Point Reyes National Seashore, the Farallon National Wildlife Refuge, Cordell Bank and Greater Farallones National Marine Sanctuaries, and Tomkat Ranch Educational Foundation for providing facilities and field stations where we work.

We gratefully acknowledge all our generous donors on our website. Please see **pointblue.org/supporters**. Thank you!

FARALLON PATROL Our Farallon Islands Program relies upon the skills and generosity of volunteer skippers in the Farallon Patrol for year-round transportation between the mainland and our research station at the Farallon National Wildlife Refuge. We acknowledge all Patrol skippers in our Annual Report.

Staff members at Point Blue headquarters on Shollenberger Park. **Photo:** Annie Schmidt/Point Blue.

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Conservation science
for a healthy planet.

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POINT BLUE CALENDAR

MEMBER EVENTS

Visit our field sites to learn more about our cutting-edge studies. Explore online at **pointblue.org/walks**. To sign up, contact Sarah Glidewell, Manager of Community Engagement, at sglidewell@pointblue.org or 707.781.2555 ext. 320.

ANNUAL SALT POND MUD STOMP
APRIL 8, 2017
MOSS LANDING WILDLIFE AREA
MOSS LANDING, CA

Put on your rubber boots and help enhance habitat for federally threatened Snowy Plovers at this fun and purposeful event. Space is limited and attendees must register in advance with the Elkhorn Slough Foundation.

CONSERVATION ON WORKING LANDS
MAY 7, 2017
SONOMA MOUNTAIN RANCH PRESERVE
PETALUMA, CA

Explore beautiful oak savanna habitat and learn how Point Blue ecologists are improving wildlife habitat on working lands. You'll enjoy stunning views, great birds, and innovative partnership science!

ANNUAL MEMBERSHIP MEETING
JUNE 7, 2017
7-8:30 PM
HOSPICE BY THE BAY
LARKSPUR, CA

All members are invited to conduct member business and learn from Tom Gardali, Director of Pacific Coast and Central Valley Group, who will speak on "The Role of Ecological Restoration in a Changing World."

Protect what matters to you!

Help safeguard the health of birds, other wildlife, and our planet by making a bequest to Point Blue.

To learn more, please contact
Nancy Gamble, Director of Philanthropy,
at 707.781.2555, ext. 324
or at legacy@pointblue.org

Snowy Plover and chick. **Photo:** Jenny Erbes/Point Blue.

Point Blue • Advancing nature-based solutions to climate change, habitat loss, and other environmental threats through bird and ecosystem science, partnerships, and outreach.