

News Clips for the Channel Islands National Marine Sanctuary Advisory Council¹ January 2015 through March 2015

1. Channel Islands volunteers recognized for 78,232 hours of work
 2. North Pacific right whales likely spotted off San Miguel Island
 3. NOAA tests drones for ocean research and management
 4. Santa Cruz Island De-Trashed Volunteer Cleanup Crew Removes Half-Ton of Garbage
 5. Protecting blue whales and blue skies: Results from 2014 ship speed reduction trial in Santa Barbara Channel
 6. UCSB Hofmann Lab Examines Effects of Ocean Acidification on Sculpin
 7. Sick, starving sea lion pups wash up in record numbers on California coast
 8. California lawmaker, researchers look to study impact of rising ocean acid
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Channel Islands volunteers recognized for 78,232 hours of work

Ventura County Star

January 29, 2015

http://www.vcstar.com/news/outdoors/channel-islands-volunteers-recognized-for-78232-hours-of-work_49808281

CHANNEL ISLANDS NATIONAL PARK, Calif. - A team of volunteers donated 78,232 hours of their time last year to help Channel Islands National Park and its nearby marine sanctuary, park officials said.

In 2014, the park and Channel Islands National Marine Sanctuary had 1,585 volunteers, and their contributions amounted to more than 37 full-time positions. The park and marine sanctuary will recognize them at an event Thursday night in Ventura.

Officials said four have volunteered for more than 20 years:

— Retired engineer Frank Foster, of Ventura, has worked each Thursday at the park visitor center.

— Milt Rothschild, of Ventura, was one of the original volunteers to help maintain the native plant garden exhibit at the park visitor center.

— Lee Rothschild, of Ventura, has volunteered for the educational program, bookstore operations and archiving of park articles.

¹ Articles shared specifically mention the sanctuary and/or are related to issues of known interest to the sanctuary advisory council. Any external opinions expressed within these articles do not reflect the views of sanctuary staff or NOAA, and sharing these stories does not indicate staff endorsement of views contained therein.

— George Roberts, a retired teacher, has volunteered at several national parks, including Hawaii Volcanoes, Sequoia and Channel Islands, where he has served as a naturalist on San Miguel and Santa Rosa islands.

Five high school teachers — Richard Smith and Michael Yorke from Buena High, Kevin Flint from Oxnard High, Robert Carr from Pacifica High and Bill Weinerth with Rio Mesa High — also will be recognized, for leading efforts to restore native plants on Anacapa Island.

Ken Tatro, an aerospace engineer, is receiving the Blue Whale Award for his work with the Channel Islands Naturalist Corps, providing education during whale watching trips, island hikes and community events.

For more information on volunteering, visit <http://www.nps.gov/chis/supportyourpark/volunteer.htm>.

North Pacific right whales likely spotted off San Miguel Island

By Pete Thomas

Pete Thomas Outdoors/GrindTv

February 18, 2015

<http://www.petethomasoutdoors.com/2015/02/north-pacific-right-whales-likely-spotted-off-san-miguel-island.html>

The probable sighting of North Pacific right whales off California's San Miguel Island during the past several days had researchers scrambling Wednesday to board a boat or plane and try to spot and photograph the endangered mammals.

The estimated population for the Northeast Pacific sub-population of these whales is only about 50 individuals, so sightings are exceedingly rare. (The western sub-population off Japan numbers in the low hundreds.)

According to the Center for Biological Diversity, the North Pacific right whale is the most endangered whale species on earth.

Sightings at San Miguel Island, within the Channel Islands National Marine Sanctuary, occurred on multiple days between February 2 and 14, by a shore-based NOAA researcher studying pinnipeds.

He did not have access to a boat and the whales—initially one whale, then two later in the period—were spotted two miles offshore and appeared to leave little doubt as to their identity.

They were robust and broad, mostly black, with no dorsal fins, and with very large, black tail flukes. (North Pacific right whales typically measure 50 to 60 feet.)

The researcher, perhaps because he was so far away and did not have photographic equipment to document the sightings, did not share his observations until leaving the island on Monday.

The Northeast Pacific sub-population typically summers in the Bering Sea and Gulf of Alaska.

Since 1925, there have been only 13 confirmed sightings off California.

In the pre-whaling era there were believed to be about 20,000 North Pacific right whales.

Boaters who spot what might be North Pacific right whales are asked to try to photograph them, particularly the heads and flukes, for ID purposes, and contact NOAA Fisheries.

NOAA tests drones for ocean research and management

By Carolyn Lucas-Zenk

West Hawaii Today

February 26, 2015

<http://westhawaii.com/news/local-news/noaa-tests-drones-ocean-research-and-management>

National Oceanic and Atmospheric Administration researchers recently tested two different drones in the waters off the Kohala Coast, with the hopes of someday being able to use the combined technologies to locate vessels and marine life in distress, conduct wildlife surveys and access hard-to-reach areas.

“Unmanned aircraft systems represent the next development in marine resources monitoring and are potentially cheaper, greener and safer than manned flights,” said Matt Pickett, aviation operations director for NOAA’s Office of National Marine Sanctuaries. “This successful test and collaboration with Liquid Robotics demonstrates the potential for these two technologies to work together for management and research operations.”

The Hawaiian Islands Humpback Whale National Marine Sanctuary served as the laboratory for the tests, which occurred roughly two weeks ago and off Kawaihae. Researchers used NOAA’s Puma Unmanned Aircraft System, which looks like an oversized model airplane, and two surfboard-like robots propelled by the power of ocean waves and the sun called Wave Gliders, developed by Liquid Robotics Inc.

The Puma UAS is a 13-pound, battery-powered aircraft with a 9-foot wingspan, equipped with real-time video and photo capability. This small, lightweight aircraft can be hand-launched and recovered from any location on land or at sea from a boat. Durable and rugged for deployment to remote marine areas and repeat usage, the aircraft can fly for up to two hours on a charge and cover a range of about 50 square miles, according to NOAA.

Liquid Robotics, which has an engineering and testing facility at Kawaihae Harbor, was the first to develop the hybrid wave- and solar-powered ocean robot that’s making ocean observation, data collection and monitoring easier, safer and cost-effective for businesses, governments and scientists. Its Wave Glider has a propulsion system that uses both wave-powered and stored solar energy to navigate challenging and unpredictable ocean environments. Its innovative design allows it to collect and transmit data gathered during missions lasting up to a year, over

thousands of miles or while remaining in place. Individual or small group glider deployments carry suites of sensors and operate individually or in fleets.

During the tests, two Wave Gliders equipped with acoustic sensors and positioned a few miles apart were able to identify and relay the location of a target vessel that entered their vicinity to the operations center. This information was programmed into the Puma UAS, which was then able to locate and photograph the target.

For Pickett, the best part of the tests was “seeing the two different unmanned technologies working together and being able to envision the way these types of technologies can better manage and monitor our National Marine Sanctuaries.”

Pickett said tests like one with Liquid Robotics are among several collaborations happening across the National Marine Sanctuary System. The Office of National Marine Sanctuaries is currently developing a Center of Excellence for Unmanned Technologies at the Channel Islands National Marine Sanctuary, which is partnering with universities, research agencies and manufacturers to develop, demonstrate, test and evaluate various drones. The office hopes to learn and show how the burgeoning field of drones can be used as potential tools for environmental research and management within the sanctuary system. Among the technologies being tested are UAS, autonomous underwater vehicles and unmanned surface vehicles.

Liquid Robotics President and CEO Gary Gysin said his company has a long-standing relationship with NOAA. Its robots have been used in various research projects, including helping NOAA improve its approach to hurricane forecasting and collecting surface temperature measurements during the ice-free summer in the Beaufort Sea.

Gysin said the recent demonstration helps bring to light a revolution in robotics that is advancing exploration and understanding. Such unnamed robots can aid in monitoring, conservation and protection in a more effective way. For example, Wave Gliders and Puma UAS could be used to patrol Papahānaumokuākea Marine National Monument, one of the largest marine conservation areas in the world, year round. Or, Wave Gliders could be tasked to be the ears of the ocean and record whale songs during the entire season while the Puma UAS is used to detect and photograph them.

The Office of National Marine Sanctuaries has so far found unmanned technologies very beneficial in helping accomplish its mission “safely, more cost effectively and with less resource disturbance.” Last year, the Puma UAS has used to video and photograph green sea turtles, Hawaiian monk seals, seabirds and marine debris at sea in the Northwestern Hawaiian Islands. It was also used to survey coast shoreline and bird nesting habitat.

When it comes to monitoring seabirds and other species of concern, Pickett said this unmanned aircraft, which is much quieter, has proven to be less intrusive, with most of the animals not even realizing its presence and instead continuing on naturally in its environment. In addition to reducing the impact on wildlife, it’s also safer and less expensive than say putting people in helicopters and flying offshore, he added.

But before NOAA's application of unmanned technologies can occur, more evaluation is needed.

"We're seeking a variety of funding opportunities and grants to further refine the procedures and protocols for utilizing unmanned systems to support sanctuary resource protection requirements," Pickett said.

Gysin explained drones have gotten a bad reputation and the word often conjures up images of war or surveillance. He said one of the biggest obstacles to wider use of robotics is the lack of public understanding and awareness about the technology, which is why Liquid Robotics continues to do community outreach and education about its robots and the helpful roles they can play in society.

Pickett said the public can further help NOAA's efforts by being "supportive by understanding the beneficial uses for unmanned technologies for protecting our marine environment."

Santa Cruz Island De-Trashed: Volunteer Cleanup Crew Removes Half-Ton of Garbage

By Richie DeMaria

Santa Barbara Independent

March 3, 2015

<http://www.independent.com/news/2015/mar/03/santa-cruz-island-de-trashed/>

Nearly 40 volunteers traveled to Santa Cruz Island last week to remove over 1,300 pounds of trash, in an effort to restore a two-mile stretch and raise awareness of ocean pollution.

The coalition of clean-uppers gathered three dumpsters worth of trash and recyclable material from the Yellowbanks region on the southeast side of Santa Cruz Island. Derelict fishing gear comprised the majority of garbage, with an estimated one ton's worth left behind for lack of space on the return trip; plastic garbage made for the second most common kind of refuse.

By kayak and Zodiac, volunteers removed debris from the beach to a vessel operated by Island Packers. The mass of trash was then transported to the mainland, where it was disposed of by the National Park Service.

Volunteers also discovered a message in a bottle sent from then 9-year-old Sean Damneier, written in 2003 on a fishing trip with his father.

Participants hope the cleanup event will bring greater attention to the growing amount of trash in the ocean both locally and globally. A recent study co-authored by Roland Geyer, UCSB associate professor of industrial ecology, estimates 8 million metric tons of plastic waste goes into the ocean every year.

“We do what we can, but this is just the tip of the iceberg, and it goes to show you that trash ultimately needs to be eliminated at the source. We need better policies and practices to minimize our waste streams and prevent debris from reaching the ocean in the first place,” said Ben Pitterle of Santa Barbara Channelkeeper in a statement.

The event was organized by Santa Barbara Channelkeeper, Santa Barbara Adventure Company, and Island Packers. Other participants included the Environmental Defense Center, NOAA National Marine Sanctuaries, Aquasports, Channel Islands Outfitters, the Santa Barbara Zoo, the Ty Warner Sea Center, the California Condor Project, and the Four Seasons Hotel.

Protecting blue whales and blue skies: Results from 2014 ship speed reduction trial in Santa Barbara Channel

Santa Barbara Independent

March 3, 2015

<http://www.independent.com/pr/2015/mar/03/protecting-blue-whales-and-blue-skies-results-2014/>

SANTA BARBARA, Calif. – A coalition of government and non-profit groups today announced results from a 2014 vessel speed reduction trial incentive program in the Santa Barbara Channel to slow cargo ships down to reduce air pollution and increase protection of endangered whales.

From July through November 2014, seven global shipping companies – COSCO, Hapag-Lloyd, K-Line, Maersk, Matson, Mitsui O.S.K. Lines and United Arab Shipping Company – slowed speeds of ships for 27 trips through the channel to 12 knots (from previous speeds of 14-18 knots) for an incentive payment of \$2,500 per trip. Slowing ships to 12 knots or less cuts air pollution, and also greatly reduces the chance that a ship strike on a whale will be fatal.

The trial achieved a reduction of 16 tons of nitrogen oxide emissions over the 27 trips, and a reduction of 500 metric tons of greenhouse gas emissions. Both represent a 50 percent reduction from baseline emissions. Nitrogen oxide contributes to the formation of ground-level ozone, a primary component of smog that is harmful to human health. Most of the ship transits occurred from July through October, a time period that coincides with the peak period of ozone air pollution and the peak whale feeding season in the Santa Barbara Channel.

“It is exciting that even a small-scale trial can produce positive results for air quality,” said Dave Van Mullem, director of the Santa Barbara County Air Pollution Control District. “We look forward to building on this achievement.”

“The success of the vessel speed reduction trial is evident in the strong partnership and the shipping industry’s willingness to participate to advance our respective goals of endangered whale conservation, cleaner air and maintaining maritime commerce,” said Chris Mobley, superintendent of Channel Islands National Marine Sanctuary.

The trial program, developed and implemented by the Santa Barbara County Air Pollution Control District, NOAA's Channel Islands National Marine Sanctuary, and the Environmental Defense Center, was modeled after successful speed reduction incentive programs at the Ports of Long Beach and Los Angeles. The trial established a continuous slow-speed zone from the Ports through the Channel.

U.S. Rep. Alan Lowenthal said: "We in Long Beach, and the whole Los Angeles Basin, have been the beneficiaries of cleaner air from the Ports' successful Green Flag speed reduction program for years, and I am thrilled to see the carrier participation in the Santa Barbara Channel. The trial which has an exceptional three-for-one pay-off for slowing vessels in the channel – reduced local air pollutants, reduced greenhouse gas pollutants, and reduced whale fatalities."

Maersk Line representative Dr. Lee Kindberg, director, Environment & Sustainability, North America, noted, "This Santa Barbara Channel trial is the only ship speed reduction incentive program that I know of in the world that is not associated with a port. It's a unique effort and partnership. We are pleased that we could participate."

Pacific Merchant Shipping Association (PMSA) vice president TL Garrett said, "PMSA and our members are committed to seeking science based solutions for reducing both vessel air emissions and the risk of vessels striking whales. This voluntary pilot program is an excellent opportunity for the maritime industry to work cooperatively with key partners on a process to evaluate the potential benefits of this strategy to address both issues. We look forward to working with all the partners to use these preliminary results to further refine and expand our ongoing efforts to reduce air emissions while enhancing the protection of whales."

The speed reduction trial was funded by the Santa Barbara Foundation, the Santa Barbara County Air Pollution Control District, and the Ventura County Air Pollution Control District, with payments administered by the National Marine Sanctuary Foundation.

"We are pleased to be part of this innovative effort to reduce air pollution off our coast and protect public health," said Mike Villegas, air pollution control officer for the Ventura County Air Pollution Control District.

"Moving forward we are looking to build on the trial's success, aiming to establish a full-scale program in the Santa Barbara Channel and up the coast. California greenhouse gas cap and trade auction funding and other air quality funding are being explored as potential revenue sources," said Kristi Birney, the Environmental Defense Center's marine conservation analyst.

The success of the trial has drawn the interest of elected leaders.

"The results from the trial are very exciting and show that we can protect human health and the environment while also supporting and sustaining a healthy local economy," said U.S. Rep. Lois Capps. "Improving air quality and reducing the danger posed by ships to whales around the Channel Islands are both important to the Central Coast. I applaud the efforts by the coalition of agencies and NGOs in this trial, and look forward to working with them to build on this success."

“This trial provides solid evidence that the vessel speed reduction program is working to reduce emissions and improve our air quality while protecting marine life,” said state Senator Hannah-Beth Jackson (D-Santa Barbara). “It is a clear signal that we must continue to build upon this innovative and commonsense program for our coast.”

UCSB Hofmann Lab Examines Effects of Ocean Acidification on Sculpin

By Judy Lau
The Bottom Line
March 4, 2015

<https://thebottomline.as.ucsb.edu/2015/03/ucsb-hoffman-lab-examines-effects-of-ocean-acidification-on-rockfish>

Researchers at the University of California, Santa Barbara, received funding from the National Oceanic and Atmospheric Administration (NOAA) to study the effect of pH variability on the early life stages of the cabezon, a kelp forest sculpin.

Gretchen Hofmann, one of the seven recipients of a California Sea Grant Core Award, is currently researching the impact of ocean acidification on the early life of the cabezon (*Scorpaenichthys marmoratus*), a bottom-dwelling sculpin that lives in California’s kelp forests.

Scientists expect that coastal regions will be vulnerable to ocean acidification in the future as the resident animal and plant life in the kelp forests face inadequate oxygen and low pH. The Hofmann Lab is currently examining the organism-environment interactions of the cabezon eggs and their relationship with the carbon dioxide (CO₂) levels in the blood as well as oxygen levels and temperature in the kelp forest habitat.

“There are currently no studies in California that look at the early stages of fish,” said Umihiko Hoshijima, a second-year graduate student in the Hofmann Lab. “What we want to do is look at the vulnerable early stages of this fish and see how the acidic conditions impact their early development. Through this, we hope to get a better idea of how the community as a whole is impacted by the change in carbon dioxide and oxygen in the ocean.”

Hoshijima and the team will utilize SeaFET sensors that record pH levels and monitor the natural variability that arises from upwelling, which occurs when winds bring cold water up from ocean depths where oxygen has been replaced by CO₂. This technology was developed by Professor Todd Martz, a collaborator at UC San Diego’s Scripps Institution of Oceanography.

“The higher the amount of CO₂ in the water, the lower the pH is,” said Hoshijima. “We are currently not sure of the effect of pH in the early stages of the species. A lot of studies have been done on adult fish, who have time to adjust to the changing pH of the water. However, we want to look at how it affects the early stages of the species in terms of growth and brain development.”

The sensors will document conditions within the kelp at an existing research project site at Mohawk Reef. Subsequently, Hoshijima will collect eggs to bring to the laboratory under varied parameters based on sensor measurements.

“Once we collect the eggs, we will be able to study their growth under microscopes,” said Hoshijima. “The eggs are transparent, so we are able to see how they grow, their energy usage, oxygen consumption, and survival capacity.”

The project will explore the importance of genetics and impacts on gene expression. Hofmann and Hoshijima want to be certain whether the genetic makeup of certain cabezon make them more resistant to pH change.

“I want to be able to understand the impacts and the mechanism on how they affect the cabezon,” said Hoshijima. “I want to see what is happening and why it is happening on a biological level.”

Headquartered at UCSD’s Scripps Institution of Oceanography, the National Sea Grant College Program is a network of 33 university-based programs dedicated to conservation and sustainable use of the nation’s coastal and marine resources.

Sick, starving sea lion pups wash up in record numbers on California coast

By Peter Hecht
Sacramento Bee
March 7, 2015

<http://www.sacbee.com/news/local/environment/article12965981.html>

Sick and starving, the 8-month-old sea lion pup dubbed “French Toast” braved an arduous journey to get here.

Separated from his mother in the Channel Islands in Southern California, he was found stranded on a beach near Carpinteria. Rescue workers moved him 350 miles to a marine hospital in the Marin Headlands above San Francisco. There, veterinarians put him under anesthesia. They injected antibiotics to save his left eye from an ulcer, administered painkillers for virus sores on his flippers and hydrated him with electrolytes.

Along the length of the California coastline, an extraordinary rescue effort is underway. In January and February alone, 1,450 malnourished or dying sea lion pups have washed up on shore – compared with just 68 in the same period last year.

Marine biologists and climate scientists for the National Oceanic and Atmospheric Administration say the culprit is a mass of warm coastal water that’s imperiling breeding and nursing colonies of California sea lions. The so-called “unusual mortality event” – following a

much smaller bubble of sea lion strandings and deaths in 2013 – has triggered questions about the overall health and volatility of the California ocean environment.

Scientists say the warmer waters can prevent sea lion mothers from finding sufficient quantities of anchovies, mackerel, sardines and other fish to provide nutrition for nursing. So they are leaving behind their pups, mostly born each June on four islands in Southern California, to forage for food for extended periods – far beyond their normal two or three days at sea.

As a result, tens of thousands of pups birthed last summer are believed to be dying on the islands as others, fearing their mothers have abandoned them, set out into the ocean and drift or wash ashore sometimes hundreds of miles away.

“These are pups that should be nursing on their mothers,” said Dr. Shawn Johnson, director of the veterinary science department at The Marine Mammal Center in Sausalito. “They’re (arriving) extremely emaciated. They have no energy stores. They’re just skin and bones, wasting away and on the brink of death.”

From Sea World in San Diego to the Northcoast Marine Mammal Center in Del Norte County, seven California marine rescue facilities are tube-feeding fish gruel to skeletal pups, helping them learn to catch and digest whole fish and administering vitamins and medication to ward off pneumonia and skin infections.

“It’s a very intense operation going on right now,” said Sea World spokesman David Koontz.

Trained teams dispatched by The Marine Mammal Center in Sausalito have rescued 340 sea lion pups since Jan. 1 on hundreds of miles of California coast. About 150 of the animals have since died. Twenty veterinary professionals and dozens of volunteers are working doggedly to save the other pups and nourish them back to health. Fifteen were recently released back into the wild.

Sea World rescue vehicles also are pulling 20 sea lions a day off beaches in San Diego County. With a combination of volunteers and veterinary staff from as far away as parks in San Antonio, and Orlando and Tampa, Fla., Sea World has tended to 350 rescued sea lion pups since Jan. 1.

Volunteers for the California Wildlife Center in Los Angeles County are rescuing sea lion pups that have washed into marinas, some desperately trying to climb onto small boats or kayaks. San Pedro’s Marine Mammal Care Center at Fort MacArthur has taken in over 270 malnourished pups from the nearby coast. “It’s all hands on deck,” said marketing manager Raymond Simanavicius.

Never stop rescuing animals

At the hilltop Marine Mammal Center in Sausalito, overlooking the Pacific Ocean, volunteers try to return feeble pups to vitality.

There, Sherry Riley connected a giant syringe – full of a milky solution of ground herring – to a feeding tube. She tried to ease a rubber feeding tube down the throat of a resistant pup named

Perkins. But the female, wrapped in a towel and gently held down by another volunteer, wasn't taking it.

Perkins grit her teeth. Volunteers pried her mouth open and slid the tube down. Perkins began to chew, ingesting the solution.

Riley's regular job involves treating humans as an emergency room nurse in Santa Rosa. But she turned out at 5 a.m. on her day off to help minister to sea animals in distress.

She fed scores of animals until nearly dusk.

"Sometimes, it's really overwhelming," Riley said.

The nonprofit marine rehabilitation center and hospital is feeding 1,300 pounds of fish a day to rescued sea lion pups. The animals are housed in numerous caged enclosures with small ponds. They're given names that are listed on charts, and their foreheads are dabbed with identifying combinations of grease paint.

Veterinarians write feeding and medication instructions for each. In a fenced pen for pups healthy enough to dive and swallow fish, volunteers Michelle Corsi, Sue Mancusi and Debbie Wertheimer tossed fingerlings packed with individualized vitamins and meds to colored-coded animals named Kangaroo, Ice Cube, Magpie and Goldy.

Corsi is an environmental scientist from Vancouver who has volunteered at the Sausalito facility since moving to San Francisco several years ago. Mancusi is a retired nurse from Santa Rosa. Wertheimer is a dental hygienist from San Rafael. Together, they are responding to a California marine emergency.

Corsi said she felt inspired by a quote she had read on the Internet: "Never stop rescuing animals. You might lose your mind. But you'll find your soul."

Away from the pens filled with this year's sick sea lion pups, scientists are working to find answers about current and, potentially, long-term phenomena affecting the health and well-being of the species.

Nate Mantua, a NOAA ecologist and climatologist based in Santa Cruz, said unusually weak winds from the north have prevented colder water from flowing south into breeding and nursing areas. The problem is worsened by stronger warm winds from Mexico.

Mantua said the warming condition is akin to what occurs during a tropical El Niño storm system – without the storm – and "is as strong as anything that is in the historical record." Water temperatures are 2 to 5 degrees above normal; the warm plumes extend 100 feet deep from Baja California to Alaska.

The elevated temperatures are expected to persist in coming months unless there is a strong shift in the wind, Mantua said.

"I don't think there is any indication that will happen," he said.

A changing environment

California's sea lion population, decimated in the late 1800s and early 1900s by hunters harvesting blubber for fuel and fur for coats and hats, now totals 300,000. That's a sixfold increase since Congress promoted rescue and preservation efforts and effectively banned poaching under the 1972 Marine Mammal Protection Act.

Since 2004, the number of sea lion pups washing up on California coasts has mostly fluctuated between 100 and 150 a year. Scientists noted a worrisome anomaly in 2013, when 1,171 famished pups were stranded on shore – including 309 in January and February. Then, scientists blamed the phenomenon on unseasonably cold waters.

“From a sea lion and biology perspective, we're learning that the environment is changing every year and the animals are having to adjust,” said Sharon Melin, a Seattle-based NOAA wildlife biologist. “When they can't, we're seeing high mortalities.”

The bulk of California sea lion pups are conceived and birthed on four islands, San Miguel, San Nicolas, San Clemente and Santa Barbara, part of the Channel Islands in Los Angeles, Ventura and Santa Barbara counties.

Melin, who has been studying sea lion populations on San Miguel and San Nicolas, said scientists are recording devastating effects from the current warm-water event. In September, the average weight of 3-month-old pups on the two islands was 19 percent less than normal. In February, the average weight of 7-month-old pups was 44 percent less than normal. The pups gained little or no additional weight from October through January.

On San Miguel, where 20,000 sea lions are born each June, Melin said researchers believe “probably close to 10,000 are dead, and we expect more to die over coming months.” She said the mortality rate is similar on San Nicolas.

Scientists say only the pups are in peril because sea lion adults and adolescents can swim long distances to feast on fish in more chilly waters to the north.

Melin and others say current ocean conditions could result in fewer sea lion births next June – and a decline in the overall population if other unusual events occur in coming years. Meanwhile, biologists and veterinarians say other ocean factors, including depleted fish populations, may present an ongoing challenge for the animals.

“There is a complex process happening in our ocean,” said Johnson of The Marine Mammal Center in Sausalito. “The ocean is clearly under stress from the warmer water and, potentially, overfishing. These sea lions are telling us we should be very concerned about the health of our oceans.”

As sea lion pups wash ashore, the public is told not to approach or touch the animals because they may be carrying diseases or parasites, and could bite or lash out in fear. Instead, people are instructed to call hotline numbers for the state's marine mammal rehabilitation centers and other trained wildlife rescue groups.

Even at The Marine Mammal Center, where most surviving pups will undergo six weeks of rehabilitation before they are capable of returning to the ocean, volunteers are told not to make eye contact, hand-feed them fish or do anything to alter their normal behavior.

“It’s hard because they’re like the golden retrievers of the ocean,” said center spokeswoman Laura Sherr. “Our crews get very attached to them. But we want to bring them back from a state of sickness so they can go back out into the wild.”

When the sea lion pup French Toast came out of the surgical room, shivering from the effects of the anesthesia, veterinary staff put him on a heated mat in a cage and turned away.

Veterinarian Dr. Cara Field noted that the pup, since arriving at the center in February, had gone from “barely tolerating calories” to having “put on a little weight and his coat looks better.” She said it was too early to know whether they had saved his infected eye. He can function in the wild with just one.

As French Toast raised his head, breathing in the coastal air with his young life on the mend, the satisfied staff pretended not to notice.

California lawmaker, researchers look to study impact of rising ocean acid

By Chris Adams

Fresno Bee

March 9, 2015

http://www.fresnobee.com/2015/03/09/4417296_california-lawmaker-researchers.html?rh=1

WASHINGTON — A California congresswoman is pushing for more funding to explore the potential for increasingly acidic oceans to harm sealife – and the related fisheries – off her coast.

Rep. Lois Capps, a Democrat whose district covers all of San Luis Obispo and Santa Barbara counties, introduced legislation last week that would direct additional federal money for research projects that would help understand the impact acidification may have on the seafood industry.

“They are very fearful of the future,” she said in an interview, talking about seafood producers from her district. “The warning sounds – the alarms – have come from both academia and the industry, and it’s a very powerful combination.”

Capps’ bill would amend existing legislation on ocean acidification research to provide grants to foster collaboration between academic researchers and the seafood industry. It would boost funding by up to \$5 million per year for five years for such projects, which would be designed to assist seafood growers, harvesters, fishermen and others to assess the risks of ocean acidification.

The bill faces very long odds, given the thousands of bills introduced each year as well as the Republican control of Congress.

Ocean acidification is sometimes referred to as “the other carbon dioxide problem,” and it conveys the gradual increase of acid in the world’s waters. It is driven by the burning of fossil fuels and the massive amounts of carbon that releases, some of which is absorbed by the world’s oceans. That makes the waters more acidic, and the additional acid makes it hard for some shell-building species to develop the shells they need to survive.

The issue was significant in the Pacific Northwest between 2005 and 2009, when acidified conditions killed billions of oyster larvae at two of the main hatcheries that provide Pacific oysters to growers. More recently states such as Maine have convened commissions or task forces to understand the problem and detail ways to counteract it.

And most recently, an article in the journal *Nature Climate Change* detailed potential hot spots around the country that could be impacted by rising ocean acid, including California. The study concluded that ocean acidification is a long-term, global problem and that reducing carbon dioxide in the world’s waters “will take decades to accomplish successfully.” Until that happens, local areas will need to undertake measures to adapt to and mitigate the problem.

For the most part, any impact is well in the future.

“We know it’s going to happen in the future, but we don’t yet know the impact,” said Gretchen Hofmann, a professor at the University of California, Santa Barbara, and a member of a West Coast panel on addressing ocean acidification.

Even so, Hofmann – who is studying acidification this year in New Zealand – said in an interview that “what happened in the Pacific Northwest made California wake up and take notice.”

It certainly made sea urchin diver Bruce Steele notice.

Steele, of Santa Barbara, dives for the small, spiny animals that look something like underwater hedgehogs and whose roe is harvested for sale at sushi restaurants. While the California coast hasn’t yet experienced the impact seen in the Pacific Northwest, Steele said, “You can’t really just talk about what current conditions are.”

Waters that have come to the ocean’s surface in recent years reflect carbon dioxide that was pushed into the atmosphere decades ago.

“For the next 35 years it’s guaranteed that we will see increasing acidification along the Pacific Coast,” he said. “It’s important to put our binoculars on and look a couple decades into the future.”