State of the California Central Coast Media Coverage

Summary

"Fred Keeley: The state of our coast -- Checking in on the Central Coast marine protected areas," Santa Cruz Sentinel, 2/23/13

(This piece also appeared in California Majority Report)

"California's new no-fishing zones appear to be working, scientists say," Paul Rogers, Mercury News, 2/27/13

(Article also appeared in the Santa Cruz Sentinel, Contra Costa Times, Pasadena Sun Times, Inland Daily Bulletin, Woodland Daily Democrat, Eureka Times-Standard and Willits News)

"Ocean stakeholders take stock, look ahead at marine protected areas," Jessica Shugart, Monterey County Herald, 2/27/13

(Article also appeared in the Santa Cruz Sentinel)

"California's Underwater Parks Get 5 Year Checkup," Lori Abbott, California News Service, 2/27/13

"Study: California Ocean protection zones helping fish," Jason Dearen, Associated Press, 2/28/13

(Article appeared in the Sacramento Bee, San Francisco Chronicle, San Luis Obispo Tribune, Orange County Register and the Oklahoman)

(Story appeared in Scoop San Diego. Full Usage Report will be provided when it is available)

"California Ocean Reserves Show Promising Results for Marine Life," Lauren Sommer, KQED, 2/28/13

"Marine protection areas paying off on California coast," Take Two, KPCC-FM, 3/1/13

"Ocean experts: Saving the seas will depend on partnerships," Jessica Shugart, Monterey County Herald, 3/1/13

Santa Cruz Sentinel
PART OF THE BAY AREA NEWS GROUP

February 23, 2013

Fred Keeley: The state of our coast – Checking in on the Central Coast marine protected areas

Five years ago, in response to decades of declining ocean health, the Central Coast became the first region in the state where a network of marine protected areas was established. Now we have the chance to learn how these 29 protected areas are working, and the early signs are very encouraging.

When California became a state in 1850, the coastal waters were teeming with marine life of all kinds: sardines, rockfish, sea otters, abalone, elephant seals, whales and more. The coastline was wild, sparsely populated, and the coastal streams and rivers were jumping with salmon and steelhead trout. The challenge then was how to manage abundance, and the response was not to manage much at all.

By the late 1990s, many fisheries were in serious decline. Sea otters were fighting for existence, and the runs of salmon and steelhead returning to many streams and rivers had become pitifully small. The challenge for all Californians, and particularly the Department of Fish and Wildlife, had become how manage scarcity in the marine environment, rather than abundance.
In response, concerned parties of all stripes -- sport and commercial fishers, marine scientists, coastal-dependent farmers, coastal-dependent business folks, and public policy makers -- came together to craft and, ultimately, support the passage and enactment of the Marine Life Protection Act.

The MLPA mandated the establishment of a statewide network -- the first in the nation -- of underwater refuges for fish populations and other marine life to be able to reproduce. In other words, it aimed to designate highly targeted areas in our coastal waters where marine life can grow and thrive. This statewide network is now in place.

To track whether the MPAs are having the desired effect, California Ocean Science Trust's MPA Monitoring Enterprise is working with university and citizen scientists (including fishermen, students and divers) to monitor the protected areas and surrounding waters.

It has been five years since this monitoring began in the Central Coast between Pigeon Point and Point Conception. These projects monitored kelp forest communities, nearshore fishes, rocky intertidal zones,

deep-water marine life and human activities.

From Feb. 27 to March 1, Monterey will host the state of the California Central Coast symposium to share results from these first five years of monitoring. Our area's own John Laird, Gov. Brown' excellent secretary of the natural resources agency, will make the kick-off presentation, to be followed by outstanding presentations by wonderful scientists, marine experts of all kinds, and state and national thinkers regarding ocean policy.

This event is drawing a wide range of people, from scientists and resource managers to fishermen and environmentalists. It is an opportunity for participants to share what they've learned, setting a benchmark against which future MPA performance can be measured. By connecting science with decision makers and stakeholders, we can ensure everyone has access to timely and useful information to support MPA management decisions.

In addition, the scientific data collected through the monitoring effort can help inform fisheries management and research into the other pressing marine issues of our time, such as ocean acidification.

The bottom line from the monitoring results: the Central Coast MPAs are on track. Sea life is bigger and more abundant inside the 40-year-old Point Lobos MPA, and we are seeing correlating responses in the younger protected areas created under the MLPA.

The findings from the first five years of Central Coast MPAs show that our state is leading the nation in adoption and implementation of sustainable ocean policies. We truly are turning the corner to a healthier, cleaner, more abundant ocean.

As we look to the future, we will all need to be mindful that our oceans provide food, a carbon sink to clean our air, a coastline to restore our souls, and an unmatchable meeting of land and sea to inspire us and our children. We must safeguard this vision for a thriving coastline, for all generations to come.

More information about the symposium can be found at www.stateofthecacoast.org.

Fred Keeley is the elected treasurer of the county of Santa Cruz. He served in the California Legislature from 1996 to the end of 2002. He authored the Marine Life Management Act, the California Ocean Science Trust Act, and was principal co-author of the Marine Life Protection Act. He serves of the California Ocean Science Trust Board and is a trustee of the National Marine Sanctuary Foundation in Washington, D.C.

Silicon Valley MercuryNews.com

February 27, 2013

California's new no-fishing zones appear to be working, scientists say

By Paul Rogers

Six years after California put in place the nation's most expansive network of marine reserves -- a controversial experiment aimed at bringing back crashing populations of fish and other ocean species by creating dozens of "no-fishing zones" along the coast -- the effort appears to be working.

In the first major study of its kind, scientists have found that populations and sizes of several key species of fish, along with starfish, urchins, crabs and other sea life, have increased more in the protected areas established in 2007 between San Mateo and Santa Barbara counties than in unprotected ocean areas nearby.

Researchers cautioned that years of additional study are needed, noting that in some areas there was little or no difference. But overall, they said, the trends are encouraging -- a key finding because California's marine protected areas are being closely watched by other states and countries as a possible solution to improving the health of the world's oceans.

"So far, so good," said Mark Carr, a professor of marine biology at UC Santa Cruz.

The 29 zones ban fishing over roughly 94 square miles and limit it in 110 additional square miles -- a combined area more than four times as large as San Francisco -- between Pigeon Point, south of Half Moon Bay, and Point Conception, near Lompoc.

The areas make up about 18 percent of state waters out to three miles. Most fishermen opposed them, turning out in large numbers at public

"It is fair for people to feel encouraged and optimistic," said Fred Keeley, a former Monterey Bay state assemblyman who co-authored the 1999 law that required the zones to be set up. "It is a more holistic, ecosystem-wide strategy to protect species. Species don't exist in vacuums. They exist in ecosystems."

The report, written by prominent California marine scientists, was released Wednesday to coincide with a three-day conference of marine biologists, fishermen and policy makers in Monterey called the "State of the Coast Symposium." Open to the public, the event is hosted by the state Department of Fish and Wildlife, California Ocean Science Trust and others.

The idea behind marine reserves, which are supported by organizations such as the Monterey Bay Aquarium, is to create national forests of the ocean. Rather than simply having the government set catch limits and seasons for salmon, Dungeness crab, rockfish and other species, as has been the policy

for decades, the concept is to draw boundaries where little or no fishing is allowed so fish, plants, crabs, starfish and other species can recover over decades, then seed larger areas of the ocean with their young.

After the state Fish and Game Commission held hearings and approved the rules for the Central Coast in 2007, it wrote similar rules for the rest of California's 1,100-mile coastline. The most recent ones, which took effect in December, extend from Mendocino to the Oregon border.

Fishing groups say they are still uncomfortable with the reserves.

"There have been economic losses to fishermen," said Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations in San Francisco. "A lot of these were unnecessary. They could have been done more carefully."

Grader said that while many fishermen have moved to different waters, some -- particularly those who focus on smaller fisheries like spot prawns -- have gone out of business because of the fishing limits.

The new study showed a 70 percent decline in the number of commercial fishermen off California's central coast from 1992 to 2011.

Some of that drop is attributed to specific crashes in fish populations, including the sharp decline in salmon that led federal and state officials to prohibit all salmon fishing off California in 2008 and 2009. Despite that 70 percent decline, however, the total amount of fish commercially caught in the area has increased by roughly 50 percent since 1992, a trend driven by increases in the catch of squid and several other species.

California's central coast is one of the world's most spectacular ocean areas. Famed for its kelp forests, rocky tide pools, sea otters, great white sharks and plunging marine canyons, the area is home to 26 species of marine mammals, 94 species of seabirds, four species of sea turtles and 340 types of fish.

Researchers who worked on this week's report spent years scuba diving, taking video from unmanned and manned submarines, walking miles of tide pool areas, and using high-tech imaging devices to make detailed images of the ocean bottom. They also worked with volunteer groups.

Scientists who participated came from UC Santa Cruz, Moss Landing Marine Labs, Cal Poly, the National Oceanic and Atmospheric Administration, CSU Monterey Bay, the state Department of Fish and Wildlife and the Monterey Bay Aquarium Research Institute.

Among their findings:

In kelp forests, a range of economically important fish species, including cabezon, lingcod and black rockfish, increased in abundance in marine protected areas compared with similar locations outside the areas from 2007 to 2012. Black rockfish, grass rockfish, cabezon and lingcod showed the largest increases.

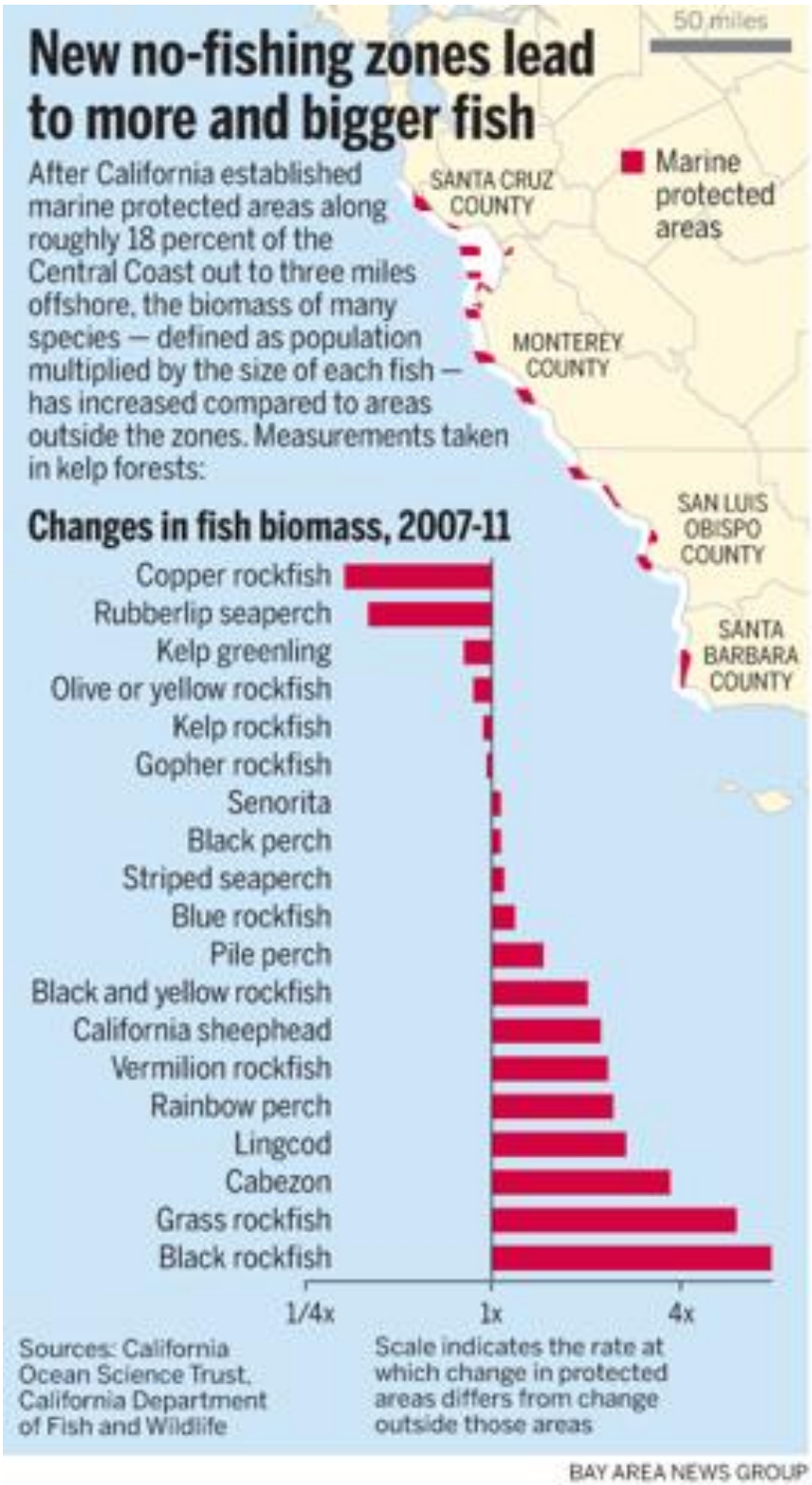
Copper rockfish, rubberlip sea perch and yellowtail sea perch did worse in marine protected areas, however, than the unprotected areas.

Seven of 10 species of rockfish studied at Año Nuevo, Point Lobos, Piedras Blancas and Point Buchon were found to be larger in size inside the protected areas than outside. Larger fish tend to be older and have more larvae.

On rocky shores, numbers and sizes of black abalone and owl limpets increased inside protected areas, as did hermit crabs, purple urchins and starfish.

Point Lobos, south of Carmel, which has been protected for 40 years, has higher numbers and larger rockfish fish than newly protected marine areas in nearby Carmel Bay.

"You are no longer taking the biggest individuals out of the population," Carr said. "However, a lot of the species that are being fished grow slowly, so the changes take a while to detect.


New no-fishing zones lead to more and bigger fish
After California established marine protected areas along roughly 18 percent of the Central Coast out to three miles offshore, the biomass of many species — defined as population multiplied by the size of each fish — has increased compared to areas outside the zones. Measurements taken in kelp forests:
50 miles
Marine protected areas
SANTA CRUZ COUNTY
MONTEREY COUNTY
SAN LUIS OBISPO COUNTY
SANTA BARBARA COUNTY
Changes in fish biomass, 2007-11
Copper rockfish
Rubberlip seaperch
Kelp greenling
Olive or yellow rockfish
Kelp rockfish
Gopher rockfish
Senorita
Black perch
Striped seaperch
Blue rockfish
Pile perch
Black and yellow rockfish
California sheephead
Vermilion rockfish
Rainbow perch
Lingcod
Cabezon
Grass rockfish
Black rockfish
1/4x
1x
4x
Sources: California Ocean Science Trust, California Department of Fish and Wildlife
Scale indicates the rate at which change in protected areas differs from change outside those areas
BAY AREA NEWS GROUP

Monterey County The Herald

February 27, 2013

Ocean stakeholders take stock, look ahead at marine protected areas

By JESSICA SHUGART

Efforts to protect local waters from the destruction of overfishing, pollution and climate change are paying off, but there is always room for improvement, according to scientists monitoring the Central Coast's marine protected areas.

Established six years ago, the Central Coast's MPA program — a patchwork of coastal protected areas from Pigeon Point to Point Conception — was the first in the state.

Now, at the "State of the California Central Coast" meeting in Monterey, hundreds of resource managers, scientists and policymakers are coming together to assess how well the program has worked and to make plans for changes in the future. The conference, which started Wednesday and runs through Friday, is open to the public.

Michael Sutton, president of the California Fish and Game Commission, kicked off Wednesday's events by addressing a packed conference room at the Monterey Marriott.

"No matter what you think of MPAs, no matter what side you're on in the debate over whether or not to create them, we all want the answers to the same fundamental questions: Are these places working? And if they're not, what do we need to do to make them work better?" he said.

The Central Coast MPA program consists of 29 protected areas, ranging from tide pools on the shorelines to deep oceanic canyons miles off the coast. Point Lobos, Natural Bridges and Elkhorn Slough are some of the protected areas on the shore, and deep ocean sites, in the outer reaches of Monterey Bay, include Portuguese Ledge and Soquel Canyon.

Overall, the MPAs along the Central Coast cover 207 square miles, encompassing roughly 18 percent of the region's state waters that extend three miles from the shoreline.

The formation of MPAs was opposed by much of the fishing industry, as some of the areas are designated "no take" zones. Of the Central Coast MPAs in effect today, 80.5 square miles are off limits to fishing, but the rest offer some combination of recreational and fishing activities.

Shying away from management of declining coastal ecosystems "is a prescription in the marine environment for a serial killing of species by species until we have nothing left," said Santa Cruz County Treasurer Fred Keeley.

Keeley, who was introduced as the "Godfather of MPAs" because of his longstanding support of the program, stressed the importance of paying as much attention to the environment in the ocean as we do for the land.

"We always get the terrestrial side first. We live in it, we see it, and it's much easier to measure," he said. "When you look out at the ocean, unless you are a marine scientist and you literally dive in, it (always) looks the same."

To get an accurate assessment of the state of the Central Coast's protected areas, marine biologists did literally dive in. Since the designation of the MPAs in 2007, professional and volunteer citizen scientists have been documenting changes in the ecosystems, assessing everything from algae to corals to fish targeted by fisheries.

"We swim around and count things," said UC Santa Cruz marine biologist Mark Carr, who presented findings from kelp forests.

Given the sheer size of the area of the MPAs, this monitoring is no small task.

To increase the scope of the monitoring efforts, Jan Friewald, of Reef Check, trained 150 scuba divers as citizen scientists. On their dives, the volunteers watch out for 74 different species deemed indicators of ecosystem health. For the most part, the data collected by these newly trained amateurs matched well with data collected by marine biologists.

Deepwater regions ranging from 300 to 1200 feet deep — where more mature fish often migrate after enjoying a childhood among the shallower kelp forests — were monitored by manned submersibles in surveys led by Rick Starr of Moss Landing Marine Labs and Mary Yoklavich of NOAA. Unmanned ROVs (remotely operated vehicles) equipped with cameras were put to use by the California Department of Fish and Wildlife in taking stock of the deeper ocean inhabitants.

While the scientists did find variation between species and regions, the overall trend of ecosystem recovery in response to MPAs has been a positive one. Between 2007 and 2011, a range of species, including cabezon, lingcod and black rockfish, increased in relative abundance inside of the MPAs as compared to unprotected areas. Black abalone and owl limpets increased in size inside the MPAs as well, suggesting a recovery from overfishing.

Elizabeth Whiteman, director of the MPA Monitoring Enterprise program in the California Ocean Science Trust, is optimistic that these early signs of progress hint at larger gains. She uses Point Lobos State

Natural Reserve, which has been in place for more than 30 years, as an example of good things to come for the more recently added MPAs.

"What we see at Point Lobos is more fish and bigger fish," Whiteman said. "So these early changes that we're seeing in the other MPAs are correlated with what you might see in the future."

Whiteman also points to socioeconomic changes brought on by MPAs.

"What we've seen in the last five years are fluctuations in commercial and recreational fishing industries, but also a resilience and an adaptation," Whiteman said. She said a shift to non-consumptive activities, like whale-watching tours within MPAs, demonstrates the adaptability of industry.

By the end of this week's symposium, scientists, policymakers and resource managers hope to emerge with a clearer sense of how the MPA program has succeeded — and with ideas about how to make it more effective.

"The problem is, not everybody shares the same reality," said Sonke Mastrup, executive director of the California Fish and Game Commission. "The good news is that science builds the door to reality. It creates a framework with which you can start finding a common reality."

public news service
NEWS IN THE PUBLIC INTEREST

February 27, 2013

California's Underwater Parks Get 5 Year Checkup

Central California's first underwater parks are getting their first five-year checkup.

Hundreds of scientists, policymakers and others are gathering in Monterey today to hear the results of monitoring efforts of the state's first marine protected areas (MPAs). California Secretary for Natural Resources John Laird said it's too soon to expect big changes, but the results will let us know where we should be at this point.

"I think there's the expectation that if you have things off limits, populations of fish just come back," he said, "but there are certain species of fish that are much more fertile and their eggs are of better quality much later in life."

Early monitoring of the region's 29 MPAs suggests that the protected areas are on track, with some fish species increasing in size and numbers in marine reserves compared with waters outside the boundaries. The MPAs were created under the Marine Life Protection Act in 2007 to protect and restore the ocean health and wildlife.

The MPA monitoring program has involved a collective effort of divers and fishermen teaming up with scientists to create a baseline of ecological health for the region's coastal waters against which future MPA performance can be measured. Laird said the state has been working closely with MPA monitoring programs.

"It's very important to have science because that really gives you an objective, fact-based basis for the success of the reserves," he said. "Also, if there are different things we should be doing, what is the scientific adjustment we should make over time?"

The 29 MPAs on the Central Coast were the first of five regions to be established. The entire statewide network of 124 underwater parks was completed in December.

More information is online at stateofthecoast.org.

Feb. 28, 2013

Study: Calif ocean protection zones helping fish

By JASON DEAREN Associated Press

SAN FRANCISCO -- A five-year scientific assessment of California's first marine protection zones established off the Central Coast has found that some struggling fish species are showing early signs of recovery, officials said on Thursday.

Joined by scientists and state wildlife officials, California Secretary for Natural Resources John Laird called the research promising, saying the data appear to show Marine Protected Areas are furthering conservation and benefiting the fishing industry's long-term outlook.

California implemented a patchwork of zones stretching from Mexico to the Oregon border where fishing is banned or restricted. The first collection established in 2007 stretches from San Mateo to Santa Barbara counties, and was the target of this in-depth study.

The areas are located next to fishing grounds, and are meant to give species an off-limits fishing zone where they can recover and reproduce to help replenish sea life.

The study found increases in economically important fish species that live in kelp forests, like lingcod and black rockfish, in the protected zones as compared with similar areas outside of them.

The report also found that protected black abalone found on rocky shores within the protected areas increased in size and numbers.

"We hope we don't just make success here, but that other people across the nation and the world (will follow suit)," Laird said.

The scientific data collected for this first report will also be used to help compare conditions now with those found in the future, a key component of gauging the success of the zones over the long-term.

Still, the researchers charged with monitoring the effects of the so-called MPAs say this is only an early snapshot of what's to come, and that many more years of research are needed before they can be sure.

"(The state has) achieved a notable goal," Mark Carr, a marine biology professor at the University of California, Santa Cruz, said. "But there's a responsibility of also identifying just how effective this network is in meeting conservation goals and augmenting sustainable coastal fisheries."

The protection zones are a response to three decades of precipitous declines seen in many California fisheries, said Michael Sutton, president of the California Fish and Game Commission.

"There are more than 30 years in declines in landings and revenues, and those trends were a result of chronic overfishing," Sutton said.

The collapse of fisheries led to widespread economic problems in coastal communities, and some fishermen thought these new no-fishing zones would only make matters worse by restricting their abilities to work.

And, while there are fewer fishers working today off the California coast, officials say there is sign of a turnaround in part due to the new zones.

"The data here suggest the fishing industry is becoming healthier on the Central Coast," Sutton said. "The total and average individual fishing revenues have increased since the (protection zones) took affect here in 2007."

KQED PUBLIC MEDIA FOR NORTHERN CALIFORNIA npr PBS

February 28, 2013

California Ocean Reserves Show Promising Results for Marine Life

by Lauren Sommer

A groundbreaking network of marine reserves off the California coast are showing promising results, according to scientists meeting in Monterey this week. The results come five years after the state set up the first group of “marine protected areas”—zones where fishing is either limited or banned all together.

Lingcod are one of the fish species showing improvement in California's marine protected areas. (Photo: Steve Lonhart / Monterey Bay National Marine Sanctuary)

Several fish species seem to be rebounding in the 29 marine protected areas that stretch from Santa Cruz to Santa Barbara, including black rockfish, grass rockfish, perch and lingcod. Threatened black abalone are also appearing in higher numbers.

The protected areas mark a new conservation approach for the state, moving away from traditional species-by-species fishing limits. The areas were designed to protect the ecosystem as a whole, allowing fish and marine life to reproduce and recover. Scientists believe as populations increase inside the zones, they’ll spread into surrounding areas, acting as “marine savings accounts” for the entire coast.

“It’s the largest network of ecologically-based protected areas across the globe,” says Mark Carr, professor of marine biology at the University of California, Santa Cruz.

The areas, now covering 16 percent of state waters along the entire coast, inspired a heated battle between conservationists and fishing groups. The law that set them up, the 1999 Marine Life Protection Act, was passed just as rockfish populations crashed and the fishery was in economic crisis. Scientists made the case that the effort could eventually improve fishing outside the marine reserves.

Researchers catalog marine life in a kelp forest off Monterey in 2008. (Photo: KQED QUEST)

The results released this week are the first step in proving that case. In a multi-year monitoring effort, researchers have catalogued marine life both inside and outside the marine reserves using scuba drivers, recreational fishermen, citizen scientists, and even deep-sea remotely operated vehicles. The surveys went from the rocky shoreline to 1,200 feet below the surface.

“We did not anticipate seeing such rapid changes for some of these species and it’s been remarkable,” says Carr. Many rockfish species live for decades and reproduce slowly, so scientists expected a larger delay. Some fish species didn’t show improvement, though and the results varied greatly between marine protected areas.

Carr says it’s still early to tease why they’re seeing the improvements. “You see the patterns in the fished species and in species that aren’t being fished,” he says. “It will take a while to get more information and see those trends and then use that information to understand the system.”

Enforcing hundreds of miles of no-fishing zones has been a challenge for wardens with California’s Department of Fish and Wildlife. Agency director Chuck Bonham says the improving state budget situation has helped. The agency issued 47 violations in the marine protected areas in the last five years, including one poacher who took 60 black abalone in 2009.

“We’ve got our warden force as high as it’s been since 2000, which means good dialogue with our communities, good sharing of information and better compliance,” Bonham says. “We can always use more, but we’re doing as good as we can with what we have.”

Officials say the conservation network could be an example worldwide. “You can’t have a solid fishing industry without it being sustainable,” says John Laird, California’s Secretary of Natural Resources. “So if we’re successful here, then I think there’s a reason to think that other states will say ‘well, how can we be sustainable and use this as a model.’”

The commercial fishing industry has mixed feelings about the reserves. According to one survey, 83 percent of commercial fishermen reported being directly impacted by them. Spot prawn fisherman largely disappeared at the Moss Landing harbor because their main fishing grounds were closed.

Fishing revenue has been on the rise in the last five years, but state economist Terry Tillman says a relatively small group saw those gains. Overall, the number of fishermen is on the decline, which could be caused by a number of things, including the collapse of the salmon fishery in 2008.

While scientists are encouraged by the results and how they could help the fishing industry, there are concerns about how future scientific monitoring efforts will be funded. After two years of state funding, much of the investment has come from private foundations.

Scientist Mark Carr says the data they’re collecting could inform a broad range of future policy decisions. “By monitoring, you’re collecting information that addresses a large number of environmental issues like global climate change, fisheries management, impacts caused by runoff,” he says. “California has become the global leader in the development of protected areas. Now, we have the responsibility to become a leader in evaluating how effective this tool really is.”

KPCC 89.3

Southern California Public Radio

March 1, 2013

Marine protection areas paying off on Calif. coast

The fish and sea life that call California's oceans home have been in trouble for the past few decades. Overfishing and pollution have threatened fish populations and diversity.

David McNew/Getty Images

California's marine protected areas limit fishing along the coast in order to save diminishing fish populations.

Six years ago, the legislature took a drastic step and blocked out certain areas of our coastline as "marine protected areas" that banned fishing. New research shows that their efforts may be paying off.

Dr Liz Whiteman of the California Ocean Science Trust, which led the monitoring effort in California, joins the show to discuss the progress that has been made.

Download the audio here.

Monterey County The Herald

March 1, 2013

Ocean experts: Saving the seas will depend on partnerships

By JESSICA SHUGART

Building and keeping partnerships between diverse ocean stakeholders is the key to maintaining our local marine protected areas.

That was the thrust of Friday's gathering of prominent marine biologists, resource managers and government officials at the "State of the California Central Coast" meeting's closing talks at the Monterey Marriott.

While the first two days of the meeting featured presentations from scientists about the progress seen in protected marine ecosystems, Friday's talks addressed the challenges of moving forward with complex conservation goals.

Panelists at Friday's session included state, federal, tribal and local government representatives, nongovernmental organizations and regional organizations. All of them share the goal of implementing the Marine Life Protection Act, which was signed into law in 1999 with the purpose of protecting California's coastal waters from overfishing, pollution and overuse. To reach this end, the state designated marine protected areas, or MPAs, along California's coast, 29 of which were added to the Central Coast region six years ago.

Reef Check, a nonprofit organization involved in monitoring the MPAs, trains scuba divers to look for signs of ecosystem health on their dives. Last year, Reef Check trained 250 divers in ecosystem monitoring and collected data on 85 sites along the coast.

Students and teachers make for good citizen scientists, said Amy Dean, who manages the LiMPET program (Long-term Monitoring Program and Experiential Training of Students). Sometimes unwillingly at first, students in the program comb the beaches and take stock of marine life. Ultimately, Dean said, they come to enjoy the experience of protecting the ocean.
"This part of the community — teachers and students — are the best citizen scientists out there," said Dean.

As challenging as Dean's work with teenagers may be, dealing with fishermen is even tougher, said Peter

Nelson, executive director of Collaborative Fisheries Research West.

"This isn't a matter of chartering some guy's fishing boat to drive you out to your research site," Nelson said. "It's a matter of bringing them in as bona fide partners. It's absolutely imperative that you involve the fishing community" in managing MPAs, he said.

Involving community volunteers brings benefits that go beyond mere data. Claire O'Reilly, a project manager at California Ocean Protection Council, stressed that volunteers spread the word about conservation.

"Those people then go out into their communities and talk to their friends and families about how valuable these places are and why they should care," she said.

Members of tribal organizations voiced their desire to be included as active stewards of MPAs. Hawk Rosales, executive director of the Intertribal Sinkyone Wilderness Council, spoke with optimism about collaborations with the state.

"We believe that there is the need and there will be the opportunity for us to develop collaborations between western science and traditional ecological knowledge," Rosales said. "The (California Fish and Wildlife) Department's newly emerging definition of stewardship is consistent with this. What we do now is going to determine what is left for the future generations of all life forms, not just humans. "

The Department of Fish and Wildlife presides over a state full of ecological riches, which director Charlton Bonham detailed at the beginning of his talk.

"Our mission is to take care of all of that for both its ecological value, and its use and enjoyment. It's not a mutually exclusive proposition," Bonham said.

"Our department and our marine work is at a pivot point between our history and traditions — which we will always honor and respect — and our ideals for where we want to head in the 21st century," Bonham said. "It's a delicate moment for us, but it's also an incredibly challenging and exciting moment."