

The Sea of Cortez

edited by

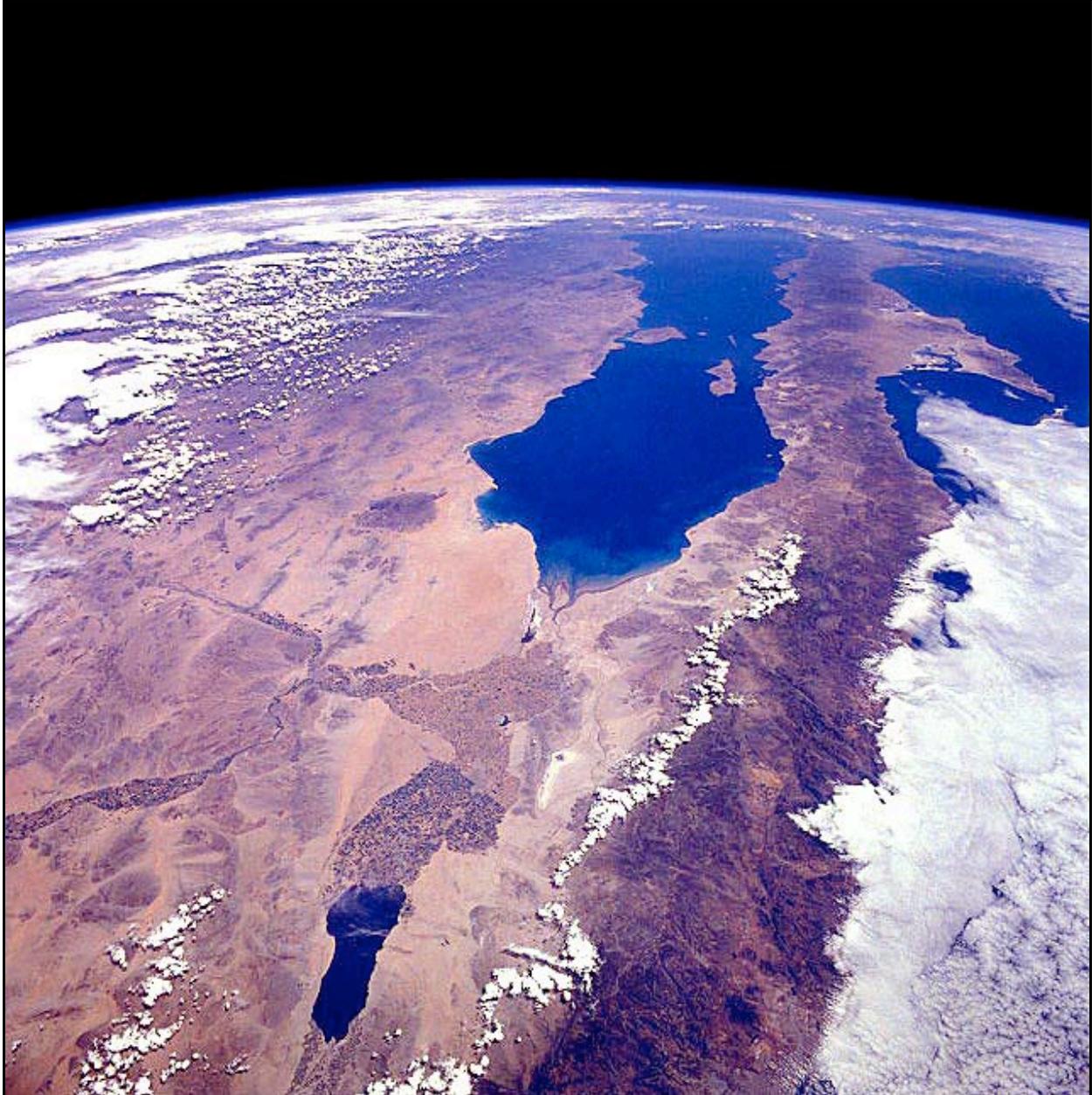
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Note: In PDF format most of the images in this web paper
can be enlarged for greater detail.



The Colorado River flowing to the Sea of Cortez

The Gulf of California is also called El Mar de Cortés in Spanish or the Sea of Cortez. In this image, looking toward the south, clockwise from the bottom are southern California, southwest Arizona, the state of Sonora in Mexico, the Gulf of California, and the Baja peninsula. Bottom left of center is the Salton Sea and Imperial Valley in the U.S.. Just above them in Mexico is the Mexicali Valley, and the delta of the Colorado River at the north end of the Sea of Cortez.

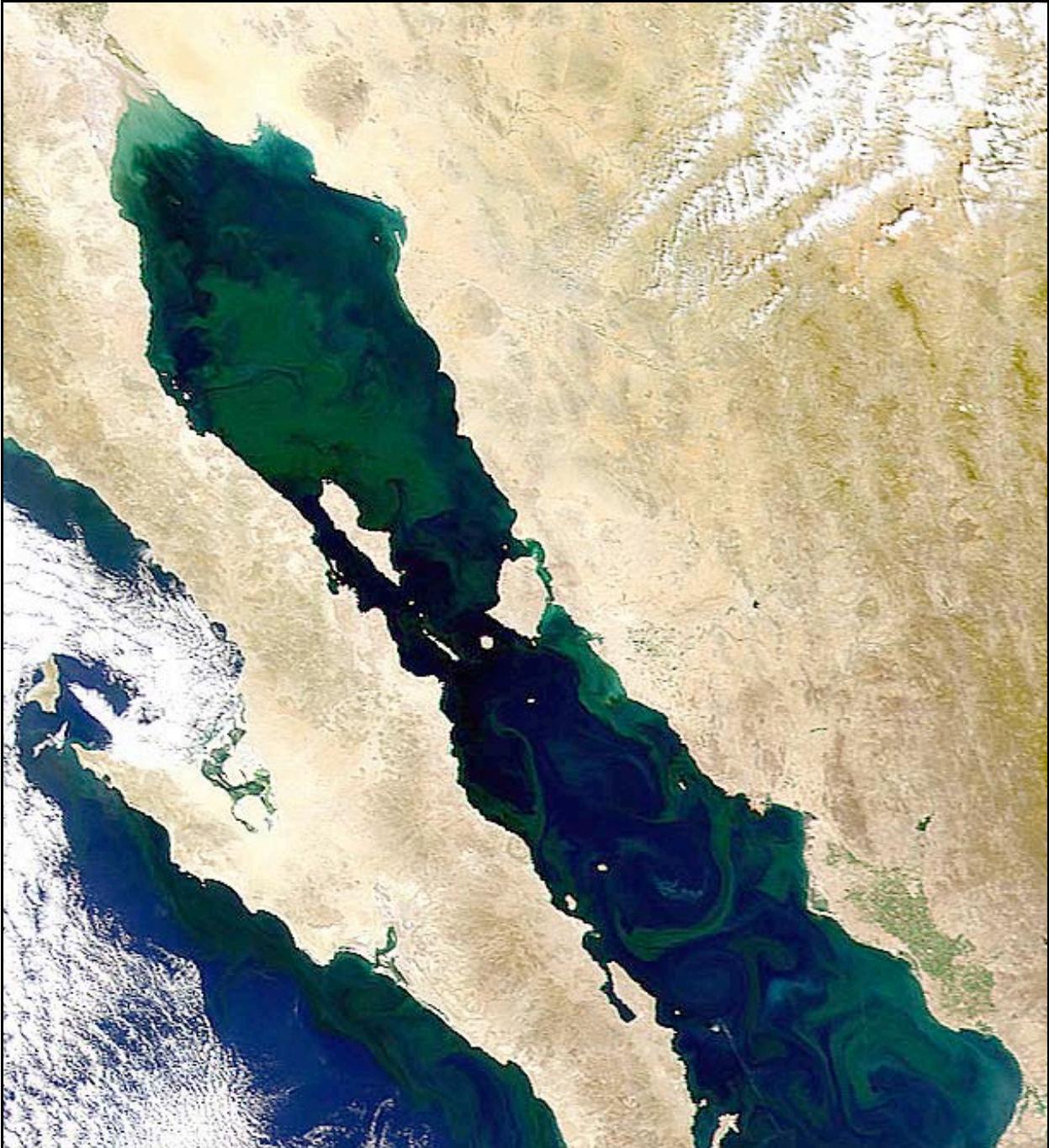
(Space Shuttle photograph courtesy of NASA)

Introduction

From the delta of the Colorado River, the Gulf of California stretches over 900 miles (1,600 kilometers) southward to Cabo San Lucas. The gulf covers an area the size of Ecuador-or about 109,000 square miles (282,000 square kilometers). In the image above, the Midriff Archipelago in the Sea of Cortez can be clearly seen, with the two largest islands, Isla Tiburon on the left, and Isla Angel de la Guarda on the right. The mile-deep Midriff channels average only about 15 miles wide. With a tidal range in the northern gulf approaching 20 feet, these channels produce both vertical and horizontal mixing in the strong tidal currents, bringing nutrients from deep water to the surface.

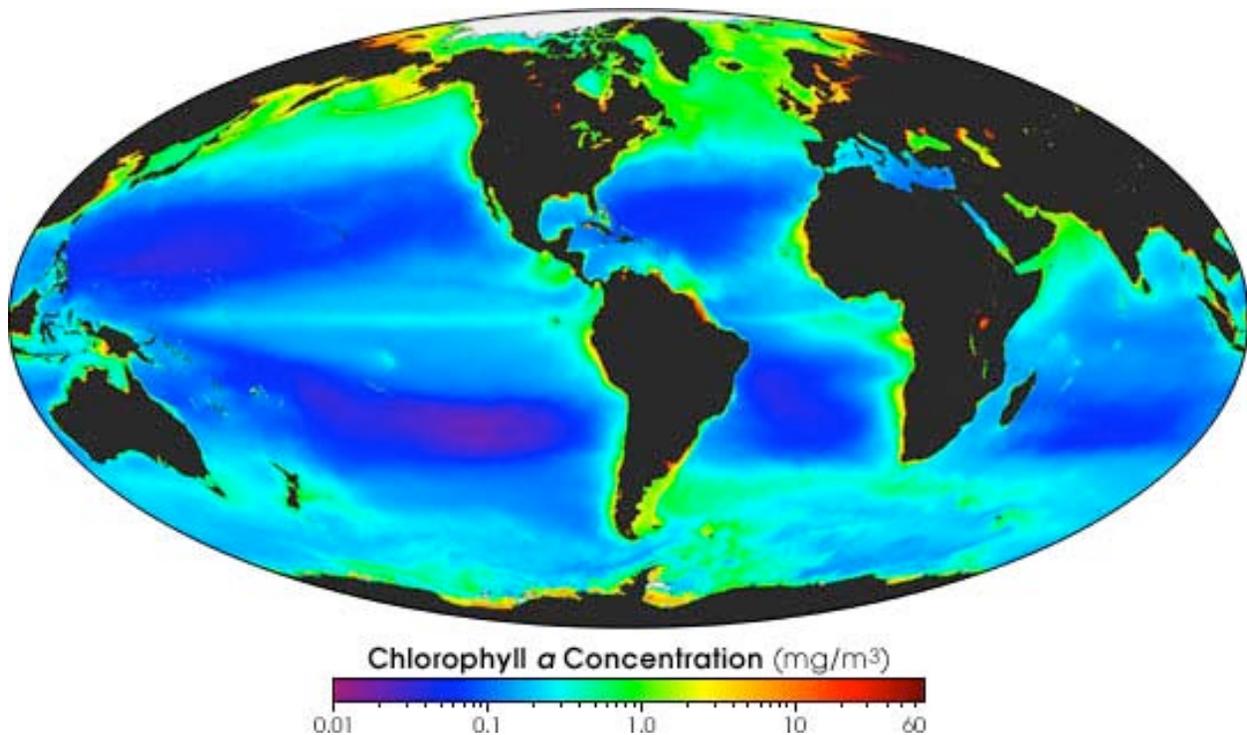
Although waters in the northern portion of the gulf are seldom deeper than 600 feet (180 meters), the southern part can reach depths of 10,000 feet (3,000 meters). Upwelling of water from these depths stirs the sea into a mix of nutrients sustaining immense concentrations of phytoplankton. This immense primary productivity, in turn, can support enormous populations of fish, dolphins, whales, and seabirds.

One of the world's most biologically rich subtropical seas, the Gulf of California is a critical feeding, breeding, and nursery ground for some of the world's rarest marine animals, including 32 species of marine mammals, 170 species of sea birds, 3,000 species of invertebrates, and 875 species of fish. The 900 or more islands and islets in the gulf serve as important nesting sites for migratory and residential birds and breeding grounds for sea lions. The coral and rocky reefs that dot its shallow waters are home to a wide variety of endemic species, including corals that do not exist in any other sea. In a recent study (Roberts, 2002), the Gulf of California ranked 6th in the world's top ten marine biodiversity hot spots for tropical reefs.



The Sea of Cortez appears in full bloom in this true color SeaWiFS satellite image acquired on **March 22, 2001**. The distribution of phytoplankton blooms (greenish pixels above) reveals the turbulent nature of the currents in the gulf. The Gulf of California is classified as a Class I, highly productive ecosystem based on global SeaWiFS primary productivity estimates.

(SeaWiFS image courtesy of NASA)



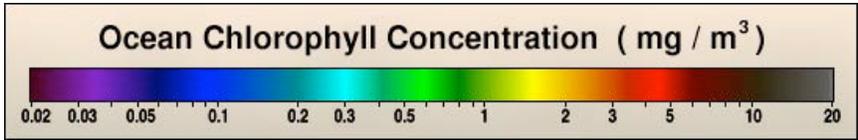
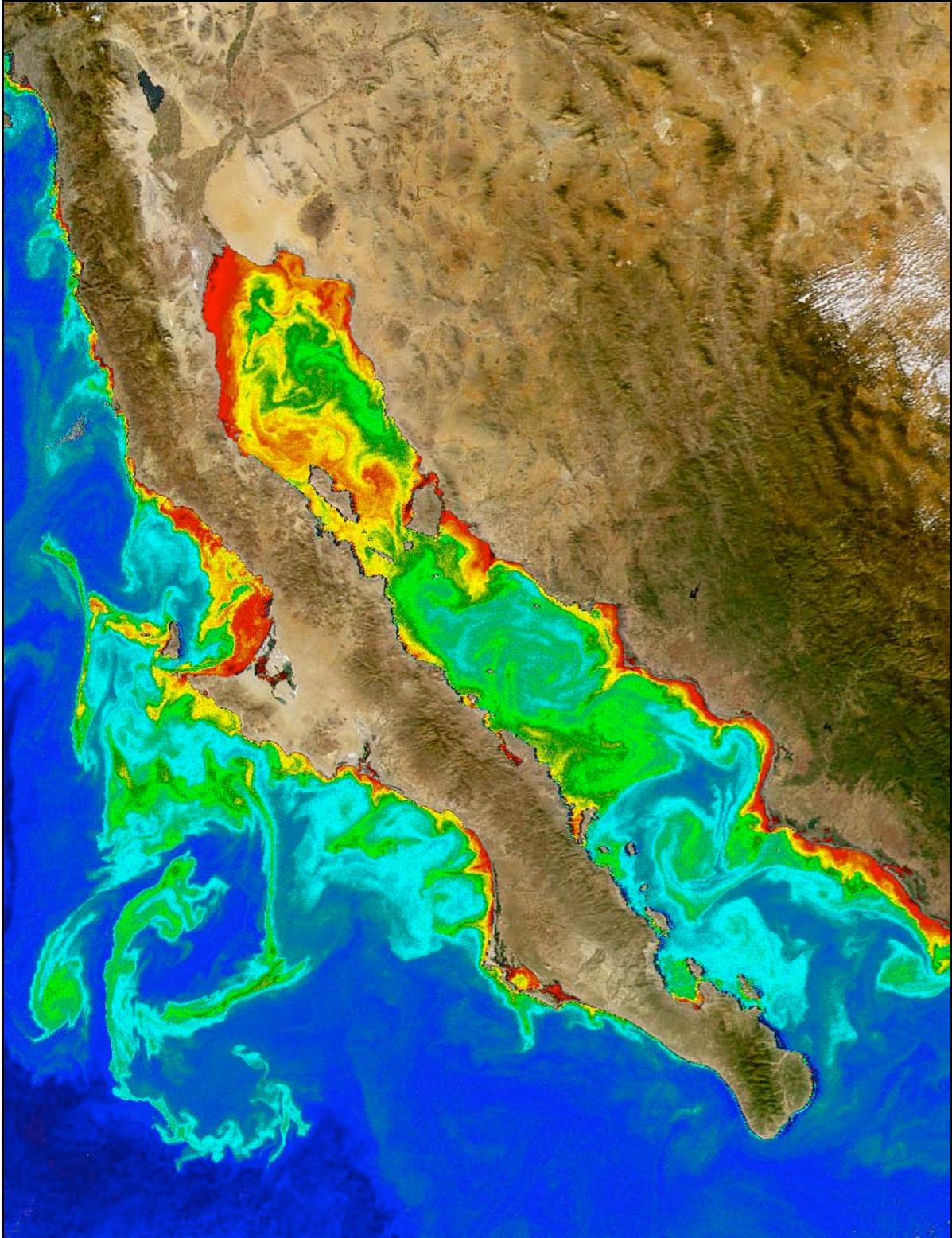
Launched on August 1, 1997, the Sea-viewing Wide Field-of-View Sensor (SeaWiFS) began collecting global data operationally in mid-September of that year and has been gathering observations of ocean color for the past six years. The image above is the average ocean chlorophyll concentration measured by SeaWiFS since launch. Scientists can infer how much phytoplankton the ocean waters contain by measuring how much chlorophyll is present. The image reveals the close relationship between physical and chemical ocean processes—like temperature differences and nutrient upwelling from the deep ocean that happens near coastlines—and ocean plant life. Chlorophyll, and therefore phytoplankton, concentrations are higher in coastal areas than they are in the open ocean. They also are higher in planet's northern oceans than the southern.

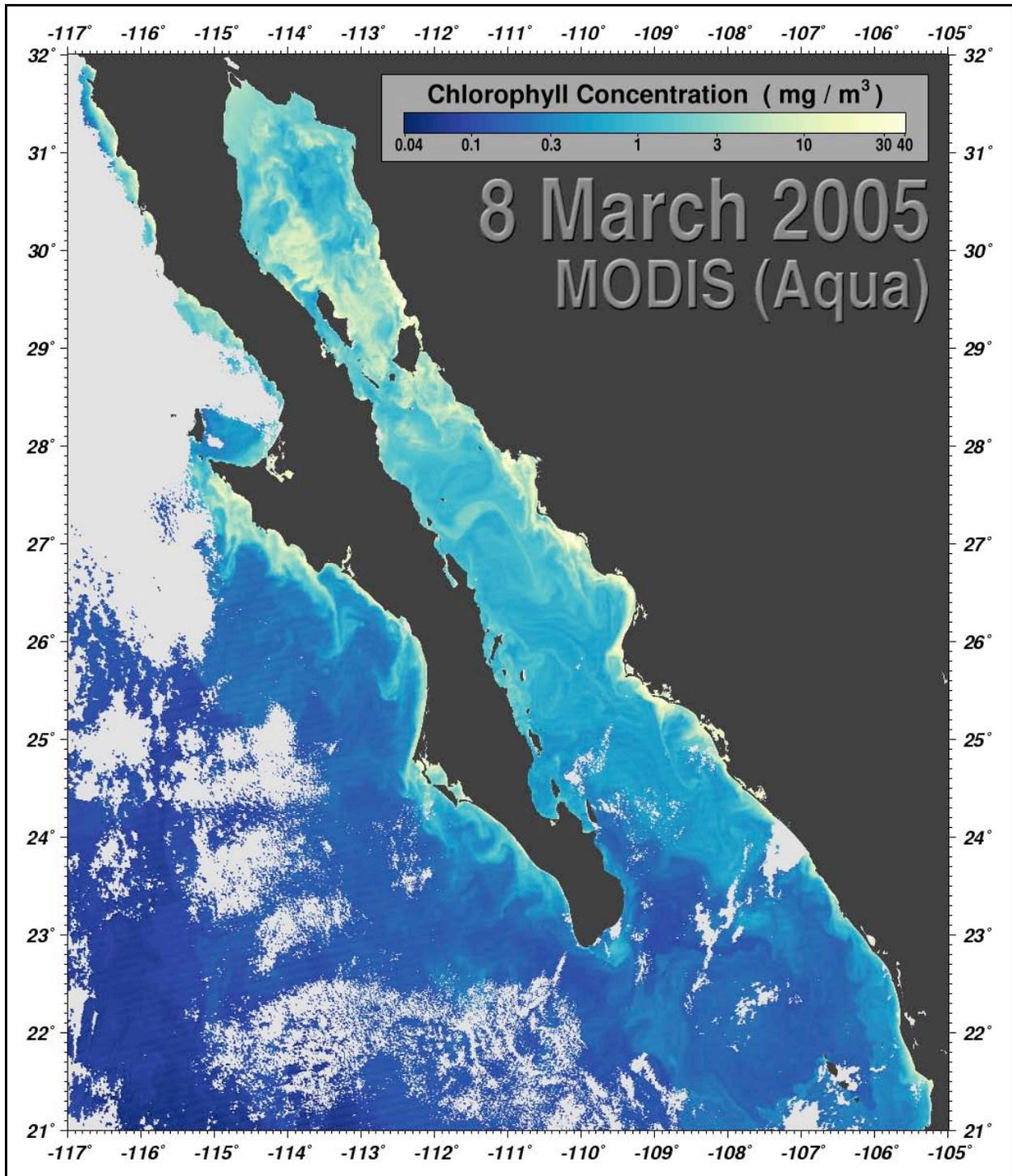
On the next page is a SeaWiFS image that shows the concentration of phytoplankton in the Gulf of California on **November 2, 2004**. On the following page is a MODIS/Aqua image showing chlorophyll concentration in the gulf on **March 8, 2005**.

Web References

<http://earthobservatory.nasa.gov/IOTD/view.php?id=4097>

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(MODIS/Aqua Image from **March 8, 2005** courtesy of NASA)



Blue Whale in Loreto Bay, Gulf of California

Because of the gulf's high productivity, the world's two largest whales, the blue whale and the fin whale, are regularly seen in these waters. The blue whale is the largest animal known to science. An average blue whale is between 75 and 80 feet (23 to 24.5 m) long, and weighs about 110 tons (99,800 kg). Females are larger than males of the same age, the largest perhaps weighing as much as 150 tons (136,000 kg). As more studies are done on blue whales in the gulf, it's becoming clear that there is a core group of female blue whales that return year after year to use the Sea of Cortez as a nursery.

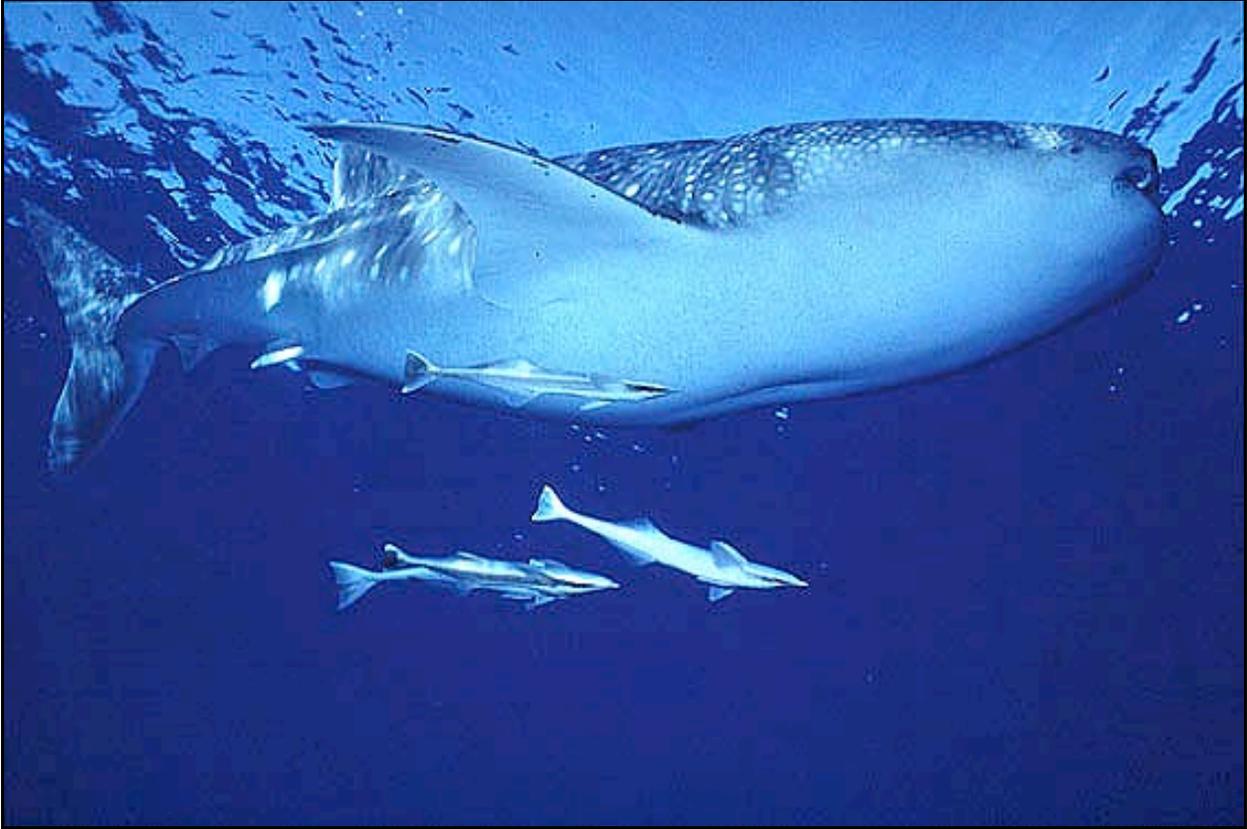
(Photograph by Juan Carlos Salinas,
courtesy of the California Academy of Sciences)



Fin Whales near Loreto Bay

The fin, or finback whale is second only to the blue whale in size and weight. Among the fastest of the great whales, it is capable of bursts of speed of up to 23 mph (37 km/hr). Adult males measure up to 78 feet (24 m) in the northern hemisphere. Females are slightly larger than males. Weight for both sexes is between 50-70 tons (45,360-63,500 kg). Although regularly seen, the status of fin whales in the gulf is still under study.

(Photograph courtesy of Mingan Island Cetacean Study)



Whale Shark in the Sea of Cortez

Less commonly seen is the whale shark (pictured above with attendant remoras). The world's largest fish species, the whale shark is a filter feeder that is attracted to the gulf's abundant plankton. Whale sharks reach up to 46 feet (14 m) in size and weigh up to 15 tons (15,240 kg).

(Photograph by Jeremy Stafford-Deitsch)



Common Dolphins

Common dolphin, pictured above, are one of the most abundant marine mammals in the Gulf of California. However, incidental mortality in fishing gear, such as purse seines and gill nets, has taken a severe toll on their numbers over the last forty years. Common dolphins can reach lengths of 8 feet (2.4 m) and weigh as much as 300 pounds (136 kg).

(Photograph courtesy of Exzooberance)



Spotted Dolphins

Spotted dolphin (above), although less abundant than common dolphin, are another marine mammal regularly seen in the gulf. They too have been killed incidentally in fishing gear since the late 1950s. It was then that fishermen discovered that yellowfin tuna aggregated beneath schools of dolphin. Since then the spotted and other dolphins have been the target of tuna purse-seiners that use the dolphins' location to find tuna.

The spotted dolphin is considered the species most affected by tuna purse-seining. In Mexican waters the population of coastal spotted dolphins, a sub-species, is estimated to be only 42 percent of its former size, while offshore spotted dolphins are estimated to be only a fourth of their pre-exploitation numbers.

Spotted dolphins measure up to 7 feet (2.1 m) in length, and weigh as much as 250 pounds (115 kg), making them relatively small compared to other dolphins, such as the bottlenose dolphin that can reach 12 feet (3.6 m) and weight over a 1000 pounds (450 kg).

(Photograph by Bob Spiers)



Yellowfin Tuna

Tuna, like the yellowfin tuna above, have been over fished in the gulf for decades, first by America ships, then Japanese, and over the last decade by Mexican ships.

(Photograph by Richard Herrmann)



Striped Marlin

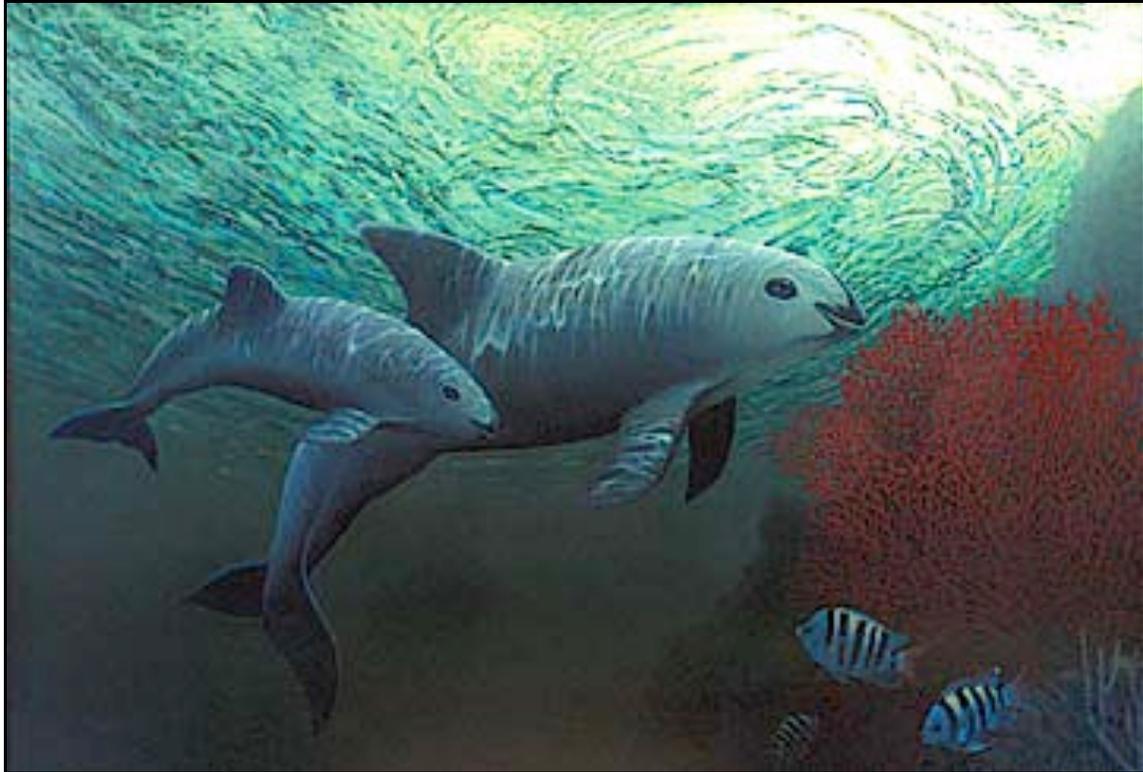
Commercial fisherman using gill nets have taken so many sport fish such as sailfish, and marlins, like the Striped Marlin above, that it has had a negative impact on the sport fishing industry in the gulf.

(Photograph by Richard Herrmann)



Gill nets are also responsible for a high mortality in the gulf's Sea Lions.

(Photograph by Richard Herrmann)



The Vaquita

The vaquita, one of the world's rarest and most endangered marine mammals, is found only in the upper Gulf of California. This extremely shy harbor porpoise is the smallest of the world's cetaceans (whales, dolphins and porpoises). Adult vaquita measure from 4 to 5 feet (1.2 to 1.5 m) in length and weigh approximately 120 pounds (55 kg), making them half the size of the relatively small spotted dolphin. In appearance the dark gray upper body of this porpoise fades to a lighter gray on the sides and is contrasted with striking dark patches around the eyes and lips.

Phocoena sinus, the Gulf of California harbor porpoise or vaquita, was first described in 1958 from three skulls found on beaches near San Felipe, Baja California. Three vaquita were recover at Puerto Peñasco in 1979, increasing the number of specimens of this new species to 6. In 1985, an additional 13 animals were entangled in fishing nets set at El Golfo de Santa Clara—7 in experimental nets set for the large fish called totoaba, which is also endangered, and 6 others in nets set by fishermen for shark and/or illegal totoaba.

(Painting of vaquita by William Sheperd,
courtesy of Unidos Para la Conservacion, A.C.)



Throughout the 80s and 90s it was established that vaquita live solely in the northernmost part of the Gulf of California, thus having the most limited distribution of any cetacean.

The best approximation of vaquita abundance is from a comprehensive survey done in 1997, which estimated the population at 500 to 600 hundred individuals. This population estimate places the vaquita in the top twenty-five of the rarest mammals in the world. Vaquita are currently listed in the IUCN Red List of Threatened Species as *Critically Endangered*.



The photographs above and on the following page are of the vaquita killed in gill nets set at El Golfo de Santa Clara in the upper Gulf of California in 1985.

(Photographs by Alejandro Robles, Conservation International, Mexico)



Such incidental mortality in fishing gear poses the greatest threat to the survival of the vaquita.

(Photograph by Alejandro Robles, Conservation International, Mexico)



The world's youngest sea, the Sea of Cortez was created when the East Pacific Rise split the Baja Peninsula from Mexico starting ~5 million years ago. It is home to 875 species of fish and 32 species of marine mammals, all of which have been killed indiscriminately for years.

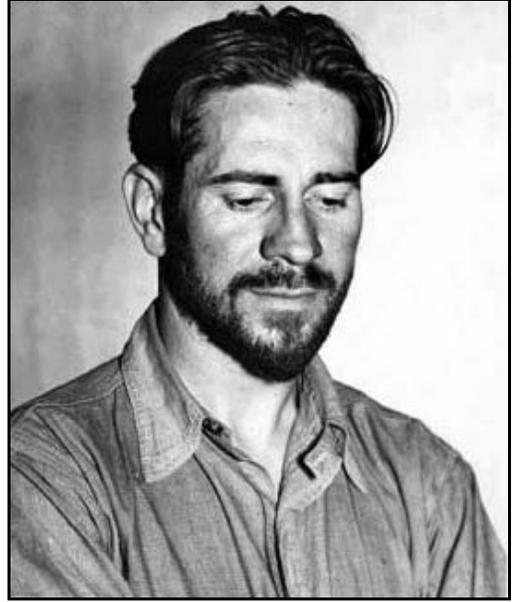
(SeaWiFS image courtesy of NASA)

Web Reference

<http://www.seawatch.org/index.php>



John Steinbeck (1902-1968)



Ed Ricketts (1897-1948)

What is the status of the gulf today?

The first major survey of the fauna of the Sea of Cortez was done by marine biologist, Ed Ricketts, and Nobel prize winning author, John Steinbeck, who cruised the Sea of Cortez aboard the *Western Flyer*, a sardine boat from Monterey, California, from March 17 to April 13, 1940. They made extensive collections of marine invertebrates as well as making observations of the sea's marine life and its human inhabitants.

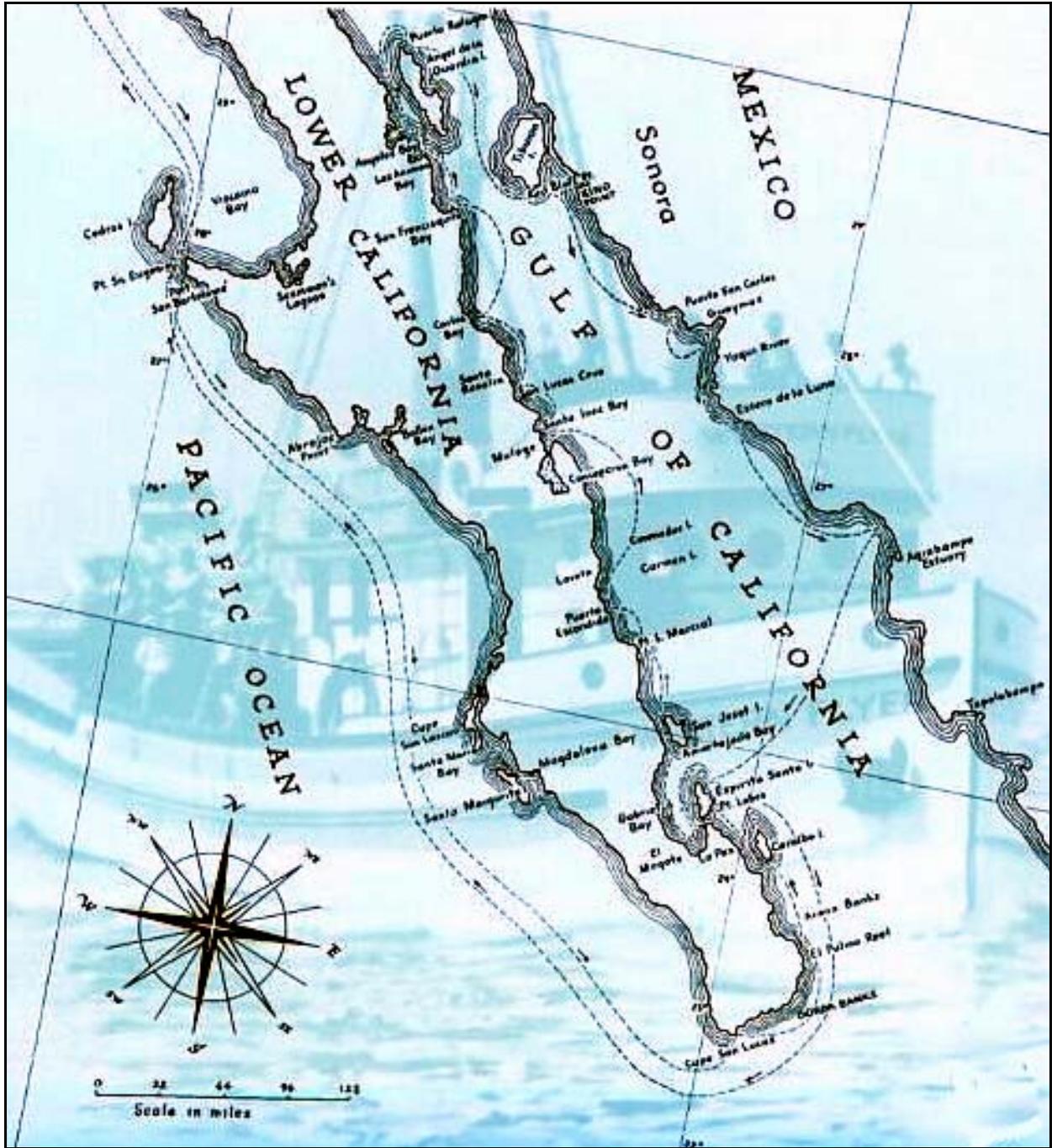
Combining science, philosophy and adventure their story was published in the classic book *The Sea of Cortez* (1941). The narrative portion of the book was published as *The Log from the Sea of Cortez* in 1951, and is still in print today. Even in 1940, they wrote that over fishing was:

“destroying the ecological balance of the whole region...”

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The Western Flyer and its course through the Sea of Cortez

Excerpts from: **In Mexico, Greed Kills Fish by the Seaful**

by Tim Weiner (2002)

BAHÍA DE LOBOS, Mexico, April 5 — The fishermen set out before dawn from this dirt-poor town to the Gulf of California. They returned with seven crabs and a baby shark. “There just aren’t any fish anymore,” said Teresa López, 39, a villager. “Less and less every year for many years. Now we haven’t enough to eat.” Greed and corruption are draining the gulf, also known as the Sea of Cortés. It is not dead yet, but it is exhausted.

American and Japanese ships were the first to exploit it. Now fleets of Mexican fishermen, mostly unlicensed and ungoverned, are taking whatever they can, as fast as they can, for American and Asian markets. Every important species of fish in the sea is in sharp decline, fishermen and marine scientists say. “Too many fishermen and not enough fish,” said Pedro Álvarez, pulling tiny mullet from his net near the city of Guaymas.

Over fishing is a global problem. People are taking marine life faster than it can reproduce. The world’s catch peaked at 86 million tons in 1989, up fourfold in 50 years. But many governments, including the United States, Mexico, the European Union, Japan and China, kept on pouring subsidies into commercial fishing fleets to keep them afloat. Crucial fisheries have collapsed worldwide. “We have an endowment in the bank, and we’re spending it all instead of living off the interest,” said Juan Manuel García Caudillo, a Guaymas conservationist trying to protect the Gulf of California.

“The philosophy is: get it now; grab it — if I don’t, the next guy will,” said Juan Pablo Gallo, a marine biologist in Guaymas who has recorded steep declines in sea lion populations and has found DDT residues among dolphins in the gulf. Some say the trouble began when the United States started damming and diverting the Colorado River in the 1930’s. The river that carved the Grand Canyon became a bare trickle at its Mexican mouth, turning the gulf’s biggest estuary, a bountiful breeding ground, into a dried-up delta.

Before and after World War II, American ships took every school of tuna and every swarm of sardines they could, along with sea lions for pet food and sharks to use the livers to remedy iron-poor “tired blood.” The Japanese came too, “destroying the ecological balance of the whole region,” John Steinbeck wrote in 1940. The foreign boats, many buying permits and government concessions with bribes, worked the gulf hard until the catch started plummeting about a decade ago.

Then the great divide between Mexico’s laws and its law enforcement began taking its toll. In 1992, President Carlos Salinas, fighting for the free-trade agreement with the United States, essentially deregulated Mexican commercial fishing without creating an effective system of licensing and permits. “The political mistakes of past governments had a terrible effect,” said Otto Clausen, the federal environmental protection officer for the state of Sonora, which is bordered on the west by the gulf.

“The economic development strategy was wrong. It broke all authority over fishing.” Jerónimo Ramos, the national fisheries commissioner, is based in Mexico City. He said about 1,200 permits existed for boats in the Gulf of California and the Pacific

Ocean, estimating that 20 to 30 percent of the catch was being taken illegally. León Tissot of Mexico's National Fishing Industry Council says that "there is an illegal traffic in permits." Fishermen say permits are bought under the table, sold and resold, ignored with impunity. "The laws are totally clear, and their application is totally cloudy," said Felipe Rodríguez, a scientist working with the fishermen of the Seri Indian tribe. Fishermen, businessmen, scientists and even some federal officials say at least 12,000 unregulated fishing boats, probably more, now are at large in the gulf, a number that doubled in the last decade. "It's the law of the jungle out there," said Luis Bourillón, a marine biologist in Guaymas. "You can do anything you want."

The unregulated boats, whose crews include thousands of men who came to the coast in the 1990's looking for a living, set gill nets, nylon webs banned by many nations as a barbaric and indiscriminate form of fishing, but not in Mexico. More than 1,000 miles of gill nets were sold in Sonora last year. Gill nets trap everything: endangered sea turtles, sea lions, even the vaquita, a rare porpoise on the edge of extinction. They take so many sailfish, tuna and marlins that the rich American sports fishermen who considered the gulf a paradise are staying home — another drain on the local economy.

A gill net fleet backed by unknown financiers appeared seven years ago in Sonora. Fishermen and scientists say it slaughters thousands of sharks solely for their fins, which when dried sell for as much as \$300 a pound in Asian markets. The fishing boats also play out long lines, each with hundreds of baited hooks, reaching for miles. The long-liners land as much as 20 tons a day of dorado, sold as mahi-mahi, in the port of Guaymas alone, along with unrecorded illegal catches like sea turtles, which can sell for as much as \$200 apiece in Mexican black markets. The high price of turtle meat and shark fins, founded on male folklore long predating Viagra, spurs the fleet.

The shrimp fleet wreaks its own separate havoc. Shrimping throughout the world uses bottom-scraping dragnets that haul up 10 pounds of life — often young fish too small to sell — for every pound of shrimp, like gathering wild mushrooms with a bulldozer. Underwater, "one day there's all kinds of fish, crab, octopus, maybe a turtle, and the next day it's empty, nothing but rocks and a sandy bottom," said Feliza Ríos, a scuba diving instructor in San Carlos who has seen the effect at first hand. "It takes years, many years, to come back." Discarded shrimp nets do more damage: one strangled three whales last week.

A pound of Mexican shrimp sells for \$16 or more in American markets, and though Mexico no longer directly subsidizes shrimp boats, it underwrites the fleet through a quasi-governmental, California-based corporation called Ocean Gardens, which buys half of its catch. So the shrimpers work the sea floor as hard as they can.

Recognition is now dawning that if nothing changes, "in a few years, you could end up without any fish in the sea," said Víctor Lichtinger, Mexico's environmental minister.



"The two most commonly caught "jumbo" shrimp of the Mexican fishery are the brown shrimp, *Penaeus californiensis* (shown above), and the blue shrimp, *Penaeus stylirostris*. Shrimp are caught by otter trawls that are dragged over the sea floor for miles scraping up sea life in their path. It is the most destructive method of commercial fishing in the world since the trawls kill and waste millions of tons of marine animals, including the juveniles of several species of commercial fishes, especially the endangered totoaba."
Dr. Donald A. Thomson

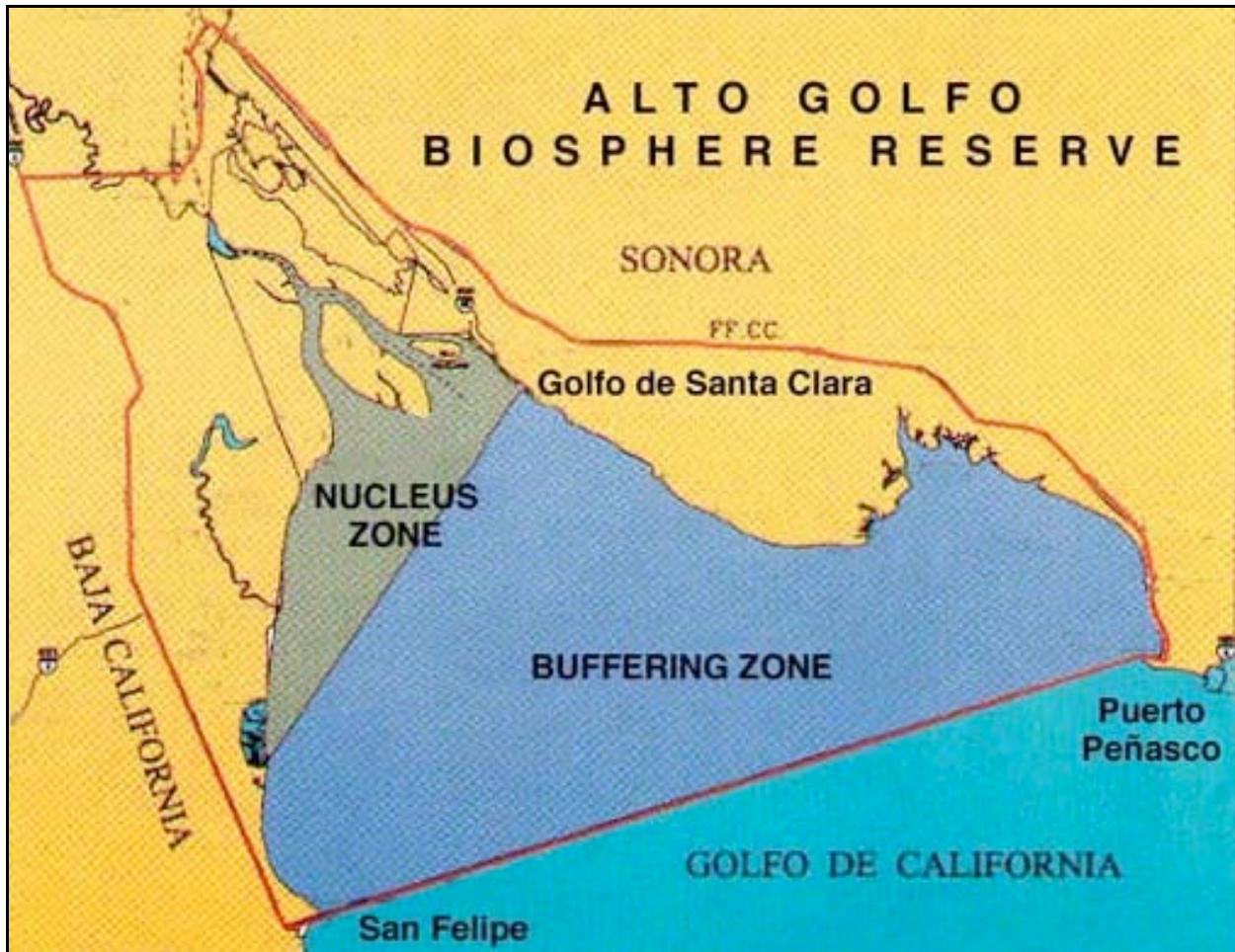
Excerpts from: **Law at Alto Golfo**

By Gene Kira, November 4, 2002, as originally published in *Western Outdoor News*

"Who owns Mexico's fish?" That fundamental question may be decided for future generations in a watershed battle unfolding in the Alto Golfo Biosphere Reserve at the extreme north end of the Sea of Cortez. Historically, Mexico's sea life has been treated as the de facto property of commercial fishing interests, as sanctioned by the Department of Fisheries (CONAPESCA), and as represented in the Alto Golfo by a large fleet of shrimp boats averaging about 700 pangas (outboard fishing boats) and about 350 trawlers. Locally, these boats are based at San Felipe, El Golfo de Santa Clara, and Puerto Peñasco (Rocky Point), and further down the coast, they are found mainly at Guaymas, Yavaros, Topolobampo, and Mazatlan.

For generations, these fleets have trawled and netted for shrimp in the shallow waters surrounding the Colorado River Delta, and even inside the Alto Golfo Biosphere Reserve which was protected in 1993. Despite the presence of two endemic endangered species (the vaquita or Gulf of California harbor porpoise, *Phocoena sinus*, and the totoaba, *Cynoscion macdonaldi*, a big sea bass), and laws protecting the area of the Biosphere Reserve dating back as far as 1955, the shrimp industry gradually lost control of itself. The unrestrained, go-for-broke attitude of the Department of Fisheries resulted in disastrous over fishing, disruption of the fragile sea bottom, and an incidental "by-catch" rate of about 95 percent. The entire Alto Golfo fishery, even including the fantastic original shrimp population, became an economic and biological wasteland.

Only two years after the election of President Fox—and his choice of Victor Lichtinger as his Secretary of Natural Resources—a new vision is emerging that sees Mexico's fish as a national patrimony, owned not by the fishermen, but by the population at large. For the first time, fishing is being seen not as an inherent right, but as a privilege granted by all the people of Mexico, to be exercised only on the condition that the resource is respected and preserved for future generations.



The Alto Golfo Biosphere Reserve at the north end of the Sea of Cortez

Citing environmental concerns, Secretary Lichtinger's Department of Natural Resources published an emergency regulation on September 23, 2002 that immediately shut down the entire trawler fleet inside the Alto Golfo Biosphere Reserve. This unprecedented, and not entirely justifiable, action was backed up with massive force: 40 inspectors sent by PROFEPA's Attorney General Jose Campillo, four Navy ships, two Navy interceptor boats, a Navy helicopter, a twin-engine Navy hydroplane, eight PROFEPA 400-horsepower super pangas, and the whole thing led personally by Mexico's top marine enforcement official, the extremely tough Luis Fueyo from Mexico City.



One of the Mexican Navy's armed patrol boats—the 110-foot Colima

Stunned and confused, the commercial shrimping industry, led by its national trade organization, CANAINPESCA, sent a letter of protest, and mounted a rather feckless 30-hour road blockade at Puerto Peñasco on October 19-20. With suspicious speed and ease, the road blockaders were rewarded on October 20 with an instant agreement from Secretary Lichtinger that allowed trawlers--but only local trawlers--to resume fishing inside the Buffering Zone of the Biosphere Reserve.

The Secretary's clever strategy became apparent. By imposing a draconian total closure of the entire Biosphere Reserve, even though some local boats were legally entitled to fish in parts of it, he had split the CANAINPESCA lobby into halves and broken its power. To save their own bacon, the local trawlers from San Felipe and Puerto Peñasco broke free from CANAINPESCA and agreed to Secretary Lichtinger's terms. The extremely powerful southern bloc, centered in Guaymas and Mazatlan, was left twisting in the wind. For the first time ever, law came to the Alto Golfo.

What did Secretary Lichtinger win?

In a series of historic working agreements actually reached over a period of time, here are some key elements of the new status quo:

All boats not belonging to local residents of San Felipe, El Golfo de Santa Clara, or Puerto Peñasco are banned. Pangas are reduced in number from about 700 to about 350. Trawlers are reduced from about 350 to 130. The shrimp season is limited to the months of October, November, and December. By-catch is limited to 50 percent of catch. The by-catch tolerance for endangered species is zero. All pangas have agreed to shorten nets from as long as 2,000 meters to no more than 700 meters. Only one net is allowed, not two. Motors are limited to 75 horsepower. No shrimp fishing will occur within three miles of shore, or within three miles of Roca Consag. All trawler nets are reduced to 100 feet in width, and are required to have a turtle excluder, and a juvenile fish excluder, all certified as effective by PROFEPA. And most critically, all remaining fleets have agreed that either PROFEPA inspectors or honest on-board observers will be allowed to monitor their activities.

In many ways, the Alto Golfo experience may be viewed as a microcosm of Mexico's fisheries problems in general, and PROFEPA's recent actions as a blueprint for what needs to be done everywhere. During the past year, Mexico has made startlingly swift, revolutionary progress on sustainable fisheries management. With longlines recently banned by the U.S. to its north, sailfish about to be totally protected by Guatemala to its south, a butt-kicking Secretary of Natural Resources, and a new attitude about who owns the fish, Mexico's moment in the sun seems to be arriving at last.

But it was not to be.

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DON JULIO'S COMPLAINT

By Gene Kira, October 13, 2003, as originally published in *Western Outdoor News*

Of the many conservationists working to protect Mexico's sea life, none is more outspoken or more respected than Don Julio Berdegué of Mazatlán. Don Julio was born in Madrid on April 14, 1931, and his father was a physician in the Spanish Civil War. After his family moved to Mexico City, Don Julio began a fantastic career as a businessman, hotelier, and marine biologist that included working with Dr. Boyd W. Walker of UCLA to produce the first taxonomic study of the endangered totoaba in the early 1950s.

By 1962, Don Julio had built and sold Mexico's largest commercial shrimp fleet, and by 1994, he had built the marble-lined El Cid Mega Resort in Mazatlán, Mexico's largest independent resort, with its own marina, 1,200 rooms, four hotels, two golf courses, a sea turtle nursery, a 1,000-home housing development, and the Aries Fleet sport fishing operation. He is a true Renaissance Man, with a biting satirical sense of humor and an intellect broad enough to discuss the subtler points of Japanese etiquette, or to appreciate the writings of Gabriel García Márquez in English or Spanish. (In his spare time, he is now busying himself with building another resort complex in Cancún.)

Because of his heavy-duty, insider knowledge of biology, commercial fishing, and large scale tourism, Julio Berdegué is one conservationist who cannot be swept under the carpet, and because of his very strong personal character, he is willing to speak forcefully when others falter. Recently, Don Julio published a personal statement of disgust with Mexico's marine conservational policies that was startlingly frank, even for him.

This statement by one of the most respected men in Mexico is notable for its honesty, it's direct and patent criticism of the government's policies, and most of all the courage of Don Julio Berdegué to speak out while many others are more concerned with covering their backsides. Here is Don Julio's complaint, unedited and in its entirety:

"We have begun to see the results of the firing by President Fox two weeks ago of Mr. Lichtinger, Secretary of SEMARNAT, as well as Under Secretary Raul Arriaga Becerra and Director of PROFEPA, Lic. Jose I. Campillo. The fight between Lichtinger, who tried hard to protect the whales and the forests, the reefs, the reserved zones of the Biosphere in Mexico, etc., against the Secretary of Agriculture, Forest and Fisheries, Javier Usabiaga, resulted in an absolute loss for Mr. Lichtinger.

We knew Lichtinger was bound for disaster. Usabiaga is probably the closest friend in the Cabinet of Mr. Fox. Now, tell me ¿What is new in Mexico! and I can tell you: Absolutely nothing. Friends and Contributors of the Politicians regardless of their ineptitude, are still preferred to a well known scientist trying to do a good job.

Today, the Fishery Commission opened the shrimp season allowing the capture of shrimp with trawlers in the open seas. They included the area in the Alto Golfo of the Mar de Cortes, that was closed to fishing last year in an effort to protect the remaining vaquita. Big win for the Armadores of the Camara Pesquera, especially those of Sonora, Peñasco, Guaymas and San Felipe, and Baja California. A very sad day for all of us who have tried so hard to prevent fishing in this and other protected areas. Now, they can again fish until the vaquita, the totoaba, and several other endemic species are extinct. And soon, the Alto Golfo protected area will be followed by the Revillagigedo Archipelago and all the other protected areas.

Shame on Mr. Usabiaga. He probably will now go to the FAO, International Tuna Commissions, and other Scientific bodies claiming the tremendous efforts of Mexico to protect our whales, billfishes, and pelagic migratory species, and other similar lies." -- *Julio Berdegue*.

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At least six vaquita have died this year (2004) after being accidentally caught in fishing nets. (Photograph by Alejandro Robles courtesy of the journal *Nature*)

Excerpts from: **Net Losses Pose Extinction Risk for Porpoise**

One of the world's most endangered marine mammals is dying in fishing nets at an alarming rate in the Gulf of California off Mexico, prompting fears that the species could soon be extinct. Mexican scientists have confirmed that at least six of the porpoises, called vaquita (*Phocoena sinus*), have died in nets in the past six months. This level of reported deaths by fishermen is unprecedented, scientists say—and many more may actually be dying. “At this rate, the species will not survive very long,” says marine mammalogist Lorenzo Rojas Bracho, coordinator of Mexico's National Marine Mammal Programme in Ensenada.

The vaquita is now only found in the Gulf of California. Its population has dwindled to less than 600 animals after years of being accidentally snagged in the nets of large trawlers and small boats called pangas as they fish for shrimp and fish. The porpoises have been considered critically endangered by Mexican and international agencies for a decade.

In 1993 the Mexican government established a reserve area, including a no-fishing zone, in the upper gulf, where fresh water trickling into the gulf from the Colorado River is thought to provide ideal conditions for fish that the vaquita feeds on. But Mexican officials and scientists say that commercial shrimp trawlers and pangas are continuing to fish the reserve illegally.

Fishing-industry officials and some members of the Mexican government blame the disappearance of the vaquita on U.S. owned dams along the Colorado River, which limits the amount of fresh water flowing into the estuary and may cut down the vaquita's food supply. But marine scientists who monitor the vaquita are unanimous that fishing nets are the main culprit. "Fishing clearly is the greatest threat," says Jay Barlow, a marine mammalogist at the Southwest Fisheries Science Center in La Jolla and a member of the recovery team.

Environmental groups including The Nature Conservancy, the WWF and Conservation International have devised a viable plan to save the porpoises, says Exequiel Ezcurra, president of Mexico's National Institute of Ecology in Mexico City. They propose that the Mexican government divert the \$50 million U.S., currently used to subsidize fuel prices for the shrimp trawling industry, and instead purchase the trawlers and decommission them. This would leave more fish for the panga fishermen, who would be encouraged to use fish traps and other methods that do not endanger the vaquita as gill nets do. Ezcurra says the plan has not been implemented because the trawling industry won't give up its ships or make long-term commitments to halt fishing in the area. Industry groups did not respond to interview requests from *Nature*. "I personally feel that the plan is the only ray of hope for the vaquita," says Ezcurra. "I am pushing for it very strongly." (Dalton, 2004)



Under President Vicente Fox the Mexican government did try to improve the regulation of fisheries in the Gulf of California, but in the end it failed. The fate of the Sea of Cortez and its once abundant life now lies in the hands of a new Mexican government. But there is little indication that this will lead to positive change in the years ahead.

Photograph of the Sea of Cortez by Tony Reyes Jr.,
San Felipe, Baja California, Mexico

http://www.sanfelipe.com.mx/business/tony_reyes/index.html

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