




JULY 2012 NEWSLETTER

OCTAVIO ABURTO: MARINE BIOLOGIST AND UNDERWATER PHOTOGRAPHER



"Tiburón"
©Octavio Aburto


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Editor's Note: Again!

We received a number of notes following the July issue regarding the size and quality of images in the text. Please remember, the *thumbnail images are not intended for final viewing* ; they are simply place holders and "buttons" to display the larger versions stored in an online website. Please click on *this image* as an example.

Your computer will immediately download and display an image approximately five times larger than the thumbnail. We hope it will be easier on your eyes to view, and more satisfying to your taste as a talented and sophisticated photographer!



"Untitled"
©Octavio Aburto

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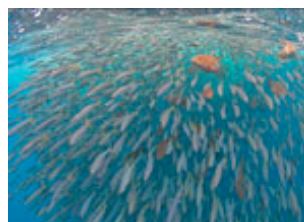
In the Face of the Pack
©Octavio Aburto

Writer John Steinbeck grew up in the Salinas Valley of California. His books are rife with references to life in the valley and in Monterey, then the center of a major fishing industry. "*Cannery Row*," "*Tortilla Flats*," and a number of his novels and short stories find their inspiration at the water's edge of the Pacific Ocean.

Well known for his historical novels, Steinbeck was also an accepted travel writer. [*Travels with Charley*](#)

records Steinbeck's wanderings across the United States, while [*Log from the Sea of Cortez*](#) describes his 1950's journey to the gulf between the mainland of Mexico and the peninsula of Baja California.

In "*Sea of Cortez*" Steinbeck paints a vivid picture of the marine life and oceanography of the gulf. Teeming with fish and crustaceans, the Sea of Cortez provided not only food and income for those living and



"Untitled"
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working along its shores, it was a Cornucopia for its northern neighbor, Alta California.

Every day tons of fish were pulled from its waters, then rushed north to international ports of entry in California and Arizona. The bounty of the Gulf seemed endless.



Playful Dolphins in the Gulf
©Octavio Aburto

Then it happened. The fisheries of the gulf began to collapse from human greed. Unbelievably, the gulf was dying. Gone were the glory days of pulling in nets bursting with Mahi Mahi, Rock Cod, shrimp and squid. Fishermen saw little reward for a hard day's labor.

Something had to be done. Without fish the villages and cities along the gulf had less to feed themselves, and nothing to attract visiting fishermen from the United States to the north.

With an insight reflecting the severity of the situation, some fishing villages decided to stop fishing the Gulf in an attempt to



"Untitled"
©Octavio Aburto

allow their fish populations to recover. If no fish were taken from the reefs of coastal waters perhaps the fish population would come back.

It was a big maybe. Like the fisheries off the North Atlantic coast, large areas of the Gulf of Baja California were in danger of becoming a dead zone where only the smallest and hardiest of ocean life could survive.

Enter Octavio Aburto in 1992, then a student at [Universidad Autonoma de Baja California Sur \(UABCS\)](#) in La Paz, Baja California del Sur. Octavio grew up telling his father he wanted to become a marine biologist. Born and raised far from the ocean among the mountains surrounding Mexico City, Octavio longed for the sea. As a young boy he watched documentaries of French diver-explorer [Jacques](#)



The Chase is On!
©Octavio Aburto

[Cousteau](#), and his Mexican colleague, [Ramón Bravo](#). Cousteau had traveled to the depths of the [Marianas Trench](#), the deepest spot in the Pacific Ocean; Bravo had been instrumental in saving the [Isla Mujeres](#) in Cancun from rampant development, preserving it as a prime area for diving and underwater photography. Aburto wanted to follow in their footsteps.

When Octavio was seventeen his father sent him to UABCS because it was the only Mexican university then offering a major in Marine Biology. Others offered degrees in Oceanography, but while similar in some respects to marine biology, the field of oceanography focuses more on the geology of the ocean as opposed to the marine life.

Aburto's studies at UABCS led to his participation in the [Reef Fauna Project](#), studying the coastal reefs and lagoons of the Gulf of Baja California, aka the Sea of Cortez, in the same areas visited fifty years before by John Steinbeck.



A Hard Fought Meal
©Octavio Aburto

Not long after he joined the Reef Fauna Project Aburto was offered the job of Communications Director, documenting the project on film and video.

With little previous experience in photography or videography it was a big jump to take. Youth knows no fear so Aburto leapt at the chance. As a student he had no funds to buy expensive cameras, but his job as Communications Director gave him the opportunity to use top of the line equipment donated to UABCS by the [Birch Aquarium](#) in La Jolla, California.

Learning to use the equipment and to do underwater photography at the same time participating in the Reef Fauna Project required a



Food Chain in Action
©Octavio Aburto

steep learning curve. Aburto had to learn how to use the cameras, and to train his eye to capture the story of the project. How do you train your eye to capture the story?

By taking lots of photographs and shooting hours of video.



Fish Survey
©Octavio Aburto

Aburto's eye had to be trained to a special purpose. As we all use our photographs to tell stories, Aburto wanted to tell the story of the Reef Fauna Project. Its purpose was to survey and document the condition of coastal reefs and lagoons in the Sea of Cortez.

Fish surveys originally involved sending researchers into the water to observe and count with the naked eye the different species of ocean life. A difficult task at best; akin to counting fleas jumping across an animal's coat. It was subjective and inaccurate. Aburto's job as Communications Director was to demonstrate how a fish survey is done; how you count the number of fish in the sea. Always on the move, often in schools, darting this way and that, the fish were all but impossible to count with the naked eye.



Octopus Among the Coral
©Octavio Aburto

Being able to photograph or videotape a school of fish flashing past brought a new, more accurate way of capturing information about the species present and their numbers.

A single photograph requires little time to take and to capture the information. For the marine biologist the harder part of the job is in post production. Researchers in the Project were less concerned about beauty of the image than being able to identify the fish, and to get an accurate count. Then, by extrapolation, a better estimate of the total numbers became possible. All it took was patiently sitting in front of a monitor or over a magnifying glass counting the fish.

Aburto wanted to do something more. While he wanted to create an accurate record, he also wanted to capture the stunning beauty and variety of life beneath the sea. In 1994 he traveled to Hilo on the big

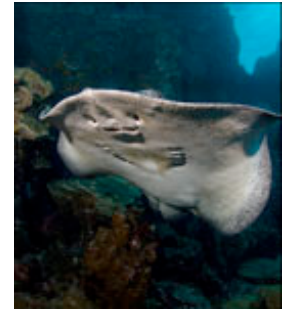


Terns Fly Overhead
©Octavio Aburto

island of Hawaii to take a class in underwater photography and in marine survey techniques. He learned how to deal with dimly lit recesses of the reefs, and how to position himself to most accurately record the numbers and kinds of sea life, and how to demonstrate marine ecology. The goal was to use cameras to record, count, measure and estimate the abundance of reef fish, invertebrates and other marine creatures within the marine environment.

In 1995 the Mexican government declared a small area of the Gulf to be a national marine wildlife park. At the request and insistence of residents of the fishing village of Cabo Pulmo, the government set aside some 71 square kilometers (about 27.5 sq. miles) of Gulf waters

as a "No Take" zone, and prohibited all destructive marine activity within the park.



A Ray Glides Past
©Octavio Aburto

By the time Cabo Pulmo was declared off limits to fishing activity the coastal reef of mangrove trees was in sad condition. Overfishing had left few fish of any size. Each year the fish caught were smaller, and fewer in number. Proposed development of the coastline with increasing numbers of resort hotels was slowly wiping out the forests of mangrove, and with the trees went their underwater forests.

The orthodox view of reef life organization had for many years pictured the reef as a pyramid growing from the broad base at the bottom up to the peak at the top. At the base of the pyramid sea grasses feed herbivores, which feed small fish which in turn feed



Dos Tortugas
©Octavio Aburto

larger fish, with larger fish predators in lessening numbers as their size grew larger and larger. The thought was there's only so much room in the ocean for bigger fish because they are busy gobbling up all the smaller ones. The traditional view had many small fish active in the reef, at the bottom of the food

chain, with only a few large fish such as groupers and sharks at the top as predators.



Untitled
©Octavio Aburto

In 1998 Aburto became the director of the Reef Fauna Project at UABCS, and became the Principal Investigator for several scientific and fishery policies grants funded by Mexican and international organizations.

Aburto visited Cabo Pulmo for the first time in 1994 and returned in 1999 when the Reef Fauna Project documented what could be found, then left. Aburto saw little change in the reef after five years.

Then, in 2006, Aburto went to **La Paz** for a six day fisheries conference at the university. He had heard rumors about Cabo Pulmo, with sightings reported of groupers as long as 2 meters (almost 7 feet), and sharks, with significant numbers of smaller fish within the reef.

Aburto wanted to take a look for himself because when he had visited in 1994 and 1999 there were no sharks, and there were no groupers.



Fish Swimming over Coral
©Octavio Aburto

Cabo Pulmo is about an hour and a half south of La Paz. Aburto decided to give himself two days, enough time for several dives. What he found astounded him. The reef was bursting in recovery

with fish of all sizes and a huge increase in total fish population.

In 2009 at Scripps Institute of Oceanography in La Jolla, California Aburto completed his doctoral thesis, *The Role of Nursery Habitats and Climate Variability in Reef Fish Fisheries in the Gulf of California*.

From his work with the Reef Fauna Project he acknowledged the concept of coastal reefs as nurseries for juvenile species, providing small, immature fish with plenty of food and a safe place to grow. He theorized the continued destruction of coastal reefs, and in particular the mangrove forests along the gulf coast waters was akin to destroying the



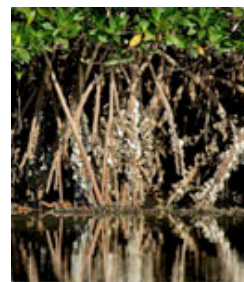
Untitled
©Octavio Aburto

food factories for the young fish population.

He was not alone in realizing fish spawn in open waters of the gulf, then by means not yet fully understood, the fish larvae find their way to safe haven among mangrove root forests and rocky reefs along the coast. Mangrove trees have an extensive root system which viewed from below the surface of the water resembles a thick forest. The root forest provides food and refuge for small marine life.

Taking a photograph to represent what you have been told in class; to demonstrate the collaboration and the sharing of space becomes a challenge. Aburto had to ask, “Where can I find, how do I pho-

tograph what I have been told in class” about the condition of a reef?



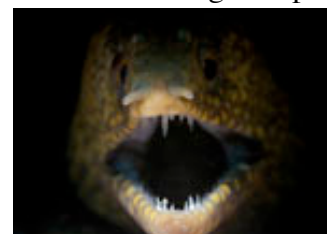
Mangrove Roots
©Octavio Aburto

Photographing in a coastal area is challenging enough. Trying to photograph in the open ocean is another problem entirely. Spaces are bigger; fish are fewer in a given area; the makeup of the marine population is harder to discern.

One ecosystem easy to work with is the mangrove forests along the shoreline

Mangroves grow along the border between the land and the ocean; you can go into bays and estuaries and see evergreen trees that live in the transition between land and ocean.

Marine ecologists dive beneath the water’s surface among the roots of the mangroves. The roots float so the diver can see a forest underwater. The atmosphere is oftentimes spooky and scary. Stay in the mangrove forest and you’ll see the sea animals using the space.



“What Big Teeth You Have!”
©Octavio Aburto

Some colonize among the roots, such as barnacles and anemones. Others swim among the roots, such as **Snooks** and **Snappers**. While many fish live among the roots; others live on top.

Aburto says when when you have lots of roots you have lots of



Biomass on Reef
©Octavio Aburto

animals. It's simple to take photo showing a healthy forest because when you have many roots you have many other things that live there.

Lighting is a big part of the challenge. But with newer cameras and equipment Aburto uses flashes, strobes and digital cameras capable of capturing stunning images in the low light among the root forests. He's also has been triggering the camera using electronic remotes. The camera stays in the forest; the diver goes away, then watches as the animals return to the forest then triggers the camera.

Aburto's thesis explored how healthy forests produce more fish; then years later those fish go to forests offshore. It's important to keep the mangrove forests, he says, because they are the nurseries along



A Healthy Reef in Action
©Octavio Aburto

the coast for the mature fish population further from the shores in the deep water reefs. Once they mature, many of the fish in the nurseries migrate to the offshore areas, where they are caught, and we eat them.

Coastal reefs produce food for the juveniles; so when they grow

and reach certain size, they begin to migrate to the off shore reefs. Without the coastal reefs the larvae cannot complete their life cycle; with healthy reefs we have more fish.

One hectare of coastal reefs on an annual basis produces more than 37,500 dollars of fishery products. The reef is like a factory that is producing goods and products. The Lesson: don't destroy the reefs, don't destroy the factory. Destroy the reefs and you lose forever the goods, the products, the money produced by the reefs

As his photographs show, Octavio Aburto became an expert and excellent underwater photographer. He's a member of the [International](#)



Twisted Desert Cactus
©Octavio Aburto

[League of Conservation Photographers](#), a group dedicated to environmental and cultural conservation through ethical photography. Their photographers work in every kind of environment and around the globe. You can view a map of their projects [here](#). . .

Aburto has his own web page [here](#). . .

In classes Aburto was taught the theory of a pyramid of energy or biomass between one group and another.

This is the classic Food Chain. Example: grass is eaten by herbivores; in turn these are eaten by cannibals fewer in number, and those are eaten by even fewer predators at the top. That concept applied to many reefs; that is exactly what you see.

But this did not prove to be the case the recovering reef in Cabo Pulmo



Algae
©Octavio Aburto

Aburto found in a pristine reef or a reef such as Cabo Pulmo, allowed to recover the natural communities, you get the reverse pyramid. You find more large predators, with decreasing numbers of smaller fish. It's a matter of a turnover of the population.

Aburto gives the example of two gears; a small gear represents food at bottom of the chain, locked into a big gear representing the top predators. The gears are moving; the smaller gear churns very fast, the larger gear turns slowly; herbivores grow and reproduce quickly; the big guys are eating the small guys rapidly, but live longer and grow larger.

When you take a photograph in a reef all you see is the accumulation of large amounts of biomass, with the large predators most obvious because they don't turn



Groupers as long as 2 Meters
©Octavio Aburto

over quickly as the grasses, the small herbivores or small cannibals.

When you see more sharks, more groupers in a reef, and fewer smaller fish, with less grass, that is a pristine reef. It's exactly opposite of what Aburto learned in school. His current papers reflect how

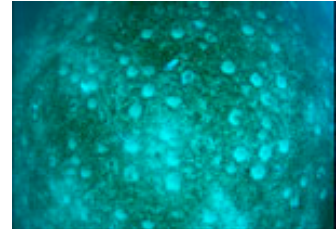
healthy reefs actually function. This is contrary to what his teachers and his generation of marine biologists have been studying: damaged or degraded reefs. They have been trying understand them in terms without evidence to support the argument.



Concentration of Biomass
©Octavio Aburto



Laughing Porpoise
©Octavio Aburto



Jellyfish
©Octavio Aburto

What's the upshot of all this? A change in the way we view reefs, and how we must observe and respect their function. Aburto proposes a reef management concept of preserving coastal reefs and encouraging their growth and recovery with the long term goal of creating more fish in the open sea, and a healthy fishing industry. This in turn produces more wealth, while providing a continued source of sea food for the human population.



Tortugas in the Sand
©Octavio Aburto

NEW**	Week 1	May - June Introductory	Our Introductory Workshop Series Intro-Silver Gelatin B&W-May 18-21 Variable Contrast Print-May 25-28 Silver Gelatin Lith Printing-June 1-4 with Ray Nelson		Week 9	August 5-10 2012	Gum Printing Then and Now with Christina Z Anderson	
		June 10-15 2012	Large Format and The Digital Negative with Steve Anchell			August 12-17 2012	Platinum Printing in the 21 st Century with Tillman Crane	
		June 17-22 2012	iPhone and iPad Art Creative Vision with Theresa Airey			August 19-24 2012	Carbon Transfer with Sandy King	Introduction To Polymer Gravure with Diane Alire
		June 24-29 2012	Infrared and Pigment Transfers with Theresa Airey			August 26-31 2012	Environmental Portraiture: Photographing The Book and It's Cover with Kurt Fishback	
		July 8-13 2012	The Wet Plate Collodion Process with Will Dunningway			September 2- 7, 2012	iPhone Photography with Dan Burkholder	
		July 15-20 2012	Fiber Arts and Bookmaking with Laura Blacklow	Image Transfers and Photo Encaustic with Anna Tomczak		September 9- 14, 2012	Gum Plat Print & Making Digital Negs Using QTR with Kerik Kouklis	
		July 22-27 2012	Traditional Silver-Halide B&W Photography with David Vestal & Russ Hepworth			NEW**	October Introductory	Our Introductory Workshop Series B&W -35MM or Med Format Sept 28- Oct 1 Intro-Silver Gelatin B&W-Oct 5-8 B&W Large Format – Oct 12-15 Silver Gelatin Lith Printing – Oct 19-22 with Ray Nelson
July 29-August 3 2012	Daguerreotype: a Contemporary Approach with Jerry Spagnoli	Alternative Process Crash Course with Tom Persinger	<p>Treat Yourself to a Fabulous Opportunity! Workshop Details and Pricing Info on the website www.workshopsinmt.com Click on the workshop icon or please call 800-922-5255</p>					



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Do you require a vegetarian lunch and dinner? ___ Yes ___ No

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Subject to change		\$100.00 ROUNDTRIP SHUTTLE from Missoula Airport =		
Subject to change		** MEALS Required \$275.00 x	(number of workshops) =	
LAB FEE (Determined by the chemistry used during the week and the amount of students) =				

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___ Visa ___ MasterCard ___ Discover ___ AMEX ___ Check or Money Order enclosed payable in US dollars Exp. Date: _____ Security Code _____ Credit Card No.: _____ I have read the terms applicable to my workshop concerning payment, liability and Cancellations. Signature for deposit _____ Date: _____	7% Lodging Tax** Total Due	
	Less Deposit Enclosed	-\$220.00
Signature for remaining balance: _____	Balance due 30 days Prior to start of workshop	