

Rays in Reflection



Written by
Jennifer Wallace &
Jann Rosen-Queralt

Photographs by
Jann Rosen-Queralt

IF YOU WANT TO GET CLOSE TO A FISH WITH A BRAN LIKE YOURS—large, highly sensory, highly social and highly curious—you must travel to Cabo San Lucas, Mexico, board a 145-foot dive vessel and then travel out to sea for twenty-eight additional hours, the distance from Washington, DC to New York (245 miles). After squeezing into a thick rubber wetsuit, you'll board an inflatable Zodiac boat for another ride to any one of a number of dive sites. You'll latch a twenty-pound belt around your waist, and strap on your tanks, underwater light and camera, after which you'll jump into the cold water, where every breath depends on a fine-tuned contraption of tanks, tubes, and gauges. You'll descend the anchor line slowly. Maximum depth could be 130 feet—the equivalent of descending thirteen stories. Then you wait.

Or you can travel halfway around the world to Indonesia's Coral Triangle, stay on an island in Raja Ampat, take a fifteen-minute boat ride, and repeat the same routine. Except here, you must use a three-pronged reef hook and line to clip yourself to dead coral so that the ocean's current doesn't drag you into the reef. And, again, you wait. If your "hooking in" maneuver is successful, you will be flying like a kite.

Then, as the silhouette of an underwater aircraft with a beating heart approaches from the invisible distance, you will be—in artist Jann Rosen-Queralt's words—"mantacized." That it's not a mirage is confirmed when a creature the size of a small living room flies close enough for you to scratch its belly. Jann recalls her first time seeing these large rays:

"I was in Papua New Guinea. I had to pinch myself—these gentle giants were swimming overhead, circling around an outcropping of coral and being cleaned by fish while I sat on the ocean bottom. I was momentarily in shadow, as if covered by a cloak or blanket, and then the light returned when they moved on. Upon breathing all the air in my tank, I reluctantly ascended. The whole dive lasted for forty-five minutes and felt like five."

The encounters with mantas I have had make me feel unsure who was more curious about whom. I observed them swimming, perpetually beating their fins in upwelling currents, feeding on drifting plankton, and hovering at cleaning stations. This continuous shape shifting of their wings, undulating, or maybe it is actually oscillating, happens because the cartilage skeleton is hinged at thousands of points. They were not disturbed by my presence; seemingly unafraid, they stared at me intently, or so I thought. They swam overhead allowing my air bubbles to come in contact with their underbelly. This appeared to be something they enjoyed because they repeated this behavior more than once and could have avoided contact entirely. I have

mused that they come to a cleaning station for a spa scrub from the Wrasse and Angel cleaner-fish and to my bubbles for a gentle massage."

Manta rays have graced earth's waters for five million years.¹ Yet, only in the past ten has there been dedicated research into their behavior and physiology. We now know that mantas' brains are the largest of all fish (compared to their size). The enlarged regions of manta's brains—the telencephalon and the cerebellum—are responsible for many higher functions such as sensation and socialization. Both, when present in mammals, are associated with intelligence. And, like mammals, mantas' braincases are surrounded by blood vessels that are presumed to keep their brains warm and functioning effectively regardless of cold temperatures. This ability to thermoregulate is one reason for the adaptive success of both mammals and rays. All these factors point to the possibility that mantas might have a high level of intelligence.²

This January, the rays were listed as

Oceanic manta rays are solitary swimmers, usually found near the surface of the ocean, though they have also been reported at depths of 394 feet. San Benedicto Island, Revillagigedo Archipelago, Mexico.

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Symbiotic remoras attach to manta rays, feeding on parasites and sloughing dead skin tissue. San Benedicto Island, Revillagigedo Archipelago, Mexico.

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Socorro Islands, part of the Revillagigedo Archipelago, located in the Sea of Cortez, west of Mexico's Baja California.

Average water temperature: 75°F, average dive depth: 60 feet, maximum depth: 124 feet. May, 2015.



Raja Ampat, Indonesia.


Average water temperature: 79°F, average dive depth: 50 feet, maximum depth: 90 feet. January, 2014.



threatened under the Endangered Species Act.³ Although their tough flesh is not a food source for people, the market for rays tripled from 2010 to 2013.⁴ The creatures are caught by accident in commercial long-lining and gill-net fishing. While in the nets, they are entangled, wounded, and smothered by the inability to properly pump oxygen-rich water. Then, unwanted by commercial fisheries, they are thrown back.

In contrast, the rays are wanted by fisheries responding to the demand for their gill rakers by traditional Chinese medicine practitioners.⁵ They claim the rakers, when cooked in soup, can boost the immune system and treat a host of ailments, from cancer to chickenpox, to rashes.⁶ A single, mature giant manta ray can yield up to fifteen pounds of these dried gill plates. According to WildAid, this trade is valued at \$11 million annually.⁷ However, none of these purported medical claims are supported by science, nor are they supported by traditional Chinese medicine texts.

Climate change is another imminent threat to the rays. Plankton supplies, a primary food source for mantas, are diminished by changing ecological processes.

A full-page underwater photograph showing two manta rays swimming over a vibrant coral reef. The ray in the foreground is white with a black stripe along its back and a black head, swimming towards the right. The ray in the background is dark, swimming towards the left. The reef is covered in various corals and small fish. The water is a deep blue.

Though among the oceans's largest animals, mantas don't have teeth. Curled fins near their mouths uncurl to funnel microscopic plankton, small fish, and crustaceans into their mouths where rows of tiny plates (gill rakers) sieve the food from the water. Raja Ampat, Indonesia.

Coral reefs, where smaller fish rid the rays of parasites, are dying. Their disappearance affects the symbiotic process that benefits both the mantas and the fish. The rays' vulnerability is especially acute because females do not reach sexual maturity until they are eight to ten years old and give birth to only one pup every two to five years. An ecosystem disturbance that seems small to us is potentially catastrophic for the rays.⁸

Science writer David Quammen suggests that “[s]pecies go extinct because their populations have fallen to low numbers, for one reason or another, and then something bad happens.”⁹ Though we know about the challenges that face the world's oceans and that are affecting manta ray populations, there is more that we don't know: What is the “something bad?” When, and for how long, might it “happen?” What difference does it make if a species of magnificent, sentient being disappears?

The trouble with ecosystem crises is that they happen out of view and involve many moving parts. Right now, for example, scientists are asking whether acidification is of greater danger to oceanic species than climate change or overfishing.¹⁰ Humans, at least policy-making humans, need proof before taking action. Proof is political and expensive, and trouble is hard to see before it arrives. It builds in the deep with two mantas mating. It builds from the economic promise of industrial fishing innovations. It builds as opportunistic humans amputate gill rakers from pregnant rays. It builds in bleached coral reefs and altered distributions of microscopic plankton.

Jann Rosen-Queralt loves the ocean and its creatures. She has spent many hours diving with manta rays, cavorting with them, encountering them, documenting them. Thanks to her commitment, to her alertness and skill, we get to encounter them, too. Larged-brained manta rays have habits like ours. They are interested in us and we in them. What we do matters to them.

These photographs present us with a decision: Are we willing to be awed by, and respectful of, strangeness and beauty? What are the consequences if we are not?

For more information about manta rays, visit <http://www.mantatrust.org/> ■

The rays' boneless skeleton enables flex and lift. San Benedicto Island, Revillagigedo Archipelago, Mexico.
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MEDITATION ON A PHOTOGRAPH OF A MANTA RAY

Look at you here: unmoving, unnatural in my hands.
The photograph gives you voice—

We speak one word: *“looking-at-you-looking-at-me.”*

I want to drop my landed pretenses and slide into the frame,
into your salty, cobalt skies, where I might be decreased under your
flexing wing.

We speak the same word: *“looking-at-you-looking-at-me.”*

How close you come with your bold, quiet eye—
I shudder to think what you think of me.

What secrets do you shelter? Please, something other than
your awful gasping in the nets. What ancient learning will you share?

We speak the same word: *“looking-at-you-looking-at-me.”*

Bird-fish, fish-bird—cloak me that I may be freed,
from my parasitic ambitions, my naïve beliefs that I might create
a better sea.

When I turn this page, return me to myself,
made softer, restless for the newness of our peace.

We speak the same word: *“seeing-you-seeing-me.”*