The Birth of A Research Project: Desperately Seeking Dolphins

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One of the questions I often get from students and lay people interested in dolphins, whales, and the oceans in general, is: "How do you come up with ideas for your research at sea?" Here is an excerpt from my latest book that can help answer this question...

A California sea lion looks for dolphins in the waters off Los Angeles, California.
Photograph courtesy of Maddalena Bearzi/Ocean Conservation Society.

Dolphins may do amazing things or nothing at all. They may endlessly repeat the same action or disappear under the surface for a minute at a time. They may travel at high speed, socialize with gravity-defying leaps and synchronous jumps, or leisurely move back and forth just meters off the beach "teasing" the surfers. Sometimes they ignore us, other times they ride our bow waves, playing gracefully or rolling sideways for a glance at our human forms, as if they too are studying us. But today, there is no trace of them.

It's been six hours since we left our home port, first running parallel to the coastline in hazy conditions, then skirting along the continental shelf in search of a fin. We turn offshore running face-to-face into a dense wall of fog. Five pairs of eyes grow quickly tired from continuous scanning of the ocean surface in this reduced visibility. It's as if we are lifted on a veil of air; air so heavy one can cut it with a knife.

COMMON DOLPHINS, SEA LIONS AND BIRDS IN A FEEDING FRENZY IN THE WATERS OFF LOS ANGELES, CALIFORNIA. PHOTOGRAPH COURTESY OF MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY.

Our radar guides us toward deeper waters. The fog has a soothing effect, canceling all noise and surrounding us like a blanket. Aboard there is silence, and we wait for that veil to lift, for that layer of impenetrability to bring us back to our familiar water and air. A ray of sun breaks the fog and, moments later, a glorious day opens ahead of us. The water is flat like a pond.

I can see a silvery school of barracuda encircling what seems a shoal of anchovy. The prey have formed into a large, shimmering ball that expands and contracts in futile effort to escape the powerful jaws and razor sharp teeth of these adept predators. The aggressive hunters are only somewhat distracted by what zoologists call the *confusion effect* of their prey, and they dive into the mass of twisting fish, isolating smaller clusters of anchovies, and consuming them.

Another hour passes at sea. Our coffee mugs are empty and so are the two bags of pretzels we brought along, now dubbed the semi-official food of the Los Angeles Dolphin Project. Shana munches on her homemade peanut butter and jelly sandwich.

“One California sea lion head up,” I say, looking at the chocolate brown head that emerges ahead of us.

“Two sea lions head up,” Shana corrects me, pointing to another individual surfacing to starboard.

“Six more sea lions swimming,” Charlie says, motioning toward a group moving steadily in our direction.

CALIFORNIA SEA LIONS LAG BEHIND A GROUP OF DOLPHINS OFF LOS ANGELES, CALIFORNIA. PHOTOGRAPH COURTESY OF MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY.

The six sea lions join the other two animals near our boat and the whole pack swims off together, porpoising north in decisive fashion, as if they are late for some important ocean meeting. Usually, we don't follow pinnipeds, but there are no dolphins around and the pinnipeds are moving along our transect line, so we speed up to stay with our new group of torpedo-shaped friends.

Every few hundred meters, they pause and spyhop at the surface, as if they are searching for something; then they resume their porpoising. After ten minutes, we see a group of approximately 30 short-beaked common dolphins swimming steadily northeast in a tight group. The distance between the two species narrows as the handful of sea lions increases its speed and adjusts direction to match that of the dolphins. If the dolphins want to evade the sea lions, they could easily do so, being capable of speeds in excess of 16 knots. But the cetacean school is not at full power and it moves decisively along at an approachable velocity of about 12 knots.

"Hmmm… purposeful, porpoising porpoises," quips Charlie. Everyone ignores him.

So, here we are, chasing sea lions chasing dolphins, which are probably chasing something else. Suddenly, the dolphins fan out into a rank formation and increase their speed. The distance between them and the sea lions is now increasing, leaving the sea lions (and us) lagging farther behind.

Where did the dolphins go? For a moment the sea lions seem lost; they stop, sticking their heads out of the water for a better view. Then, they adjust their route to follow the dolphin school, speeding up to close the gap.

“We should get this on video,” I tell Charlie.

The dolphins slow down, closing ranks around a large school of fish. This must be what they were all searching for. With elegant nonchalance, the sea lions join the dolphin school, feeding together on the swirling ball of anchovies. A few dolphins lunge upside down after their prey, leaving a sparkling trail of scales where their target fish once was.

A sea lion moves next to a dolphin, almost matching the dolphin’s more graceful movements. But the dolphin pivots effortlessly and dives into the swirling fish ball that now disperses in four different directions, leaving the less agile sea lion a step behind, and alone. The abandoned pinniped spyhops, striving to determine the latest position of the shifting foraging ground. Then, seemingly imitating the behavior of another dolphin next to it, it attempts a high, lateral leap with one flipper slicing the air as would a dolphin’s dorsal fin.

A COMMON DOLPHIN BREACHES NEAR MY RESEARCH BOAT OFF CALIFORNIA. PHOTOGRAPH COURTESY OF MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY.

From my surface perspective, I detect no evidence of hostility between the two species. They seem to know that the resources are plentiful enough to be shared among them. Even a sea lion seeking to steal a fish from the beak of a dolphin doesn't provoke a reaction. I watch until this interspecies feast ends, the last fish scales sink below the surface, and the dolphins and sea lions move off in separate directions.

Over the next months, I'm excited to observe these interspecies encounters with regularity. Where I had previously noted the presence of pinnipeds in our dolphin observations, I now had gained new perspective borne of following sea lions. Repeatedly, I see groups of sea lions seeking dolphins, which brings me to wonder about the nuances of what gathers these different species of marine mammals together.

To shed light on this question, I decide to videotape all these aggregations, which I hope will enable me to analyze the behavioral sequences, and gain insight into the details of this intermingling. I think one viable hypothesis is that sea lions may actually take advantage of the superior ability of dolphins to echolocate food. I decide to make it another priority of my research, especially considering I can find no long-term studies of sea lions and dolphins in company.

At night, if I am not too tired, I review and catalog the videotapes of aggregations we filmed that day. The process involves viewing the videos, often in slow motion to better understand the behavioral interactions, and entering these observations in a video log, which is tied to the time code of the tape. I don't often get seasick on the research boat. Over my years at sea, I've somehow learned to control it. But sitting in front of a video monitor, watching and re-watching these jerky images for weeks, could make anybody sick.

ONE OF MY RESEARCH ASSISTANTS TAKES PICTURES OF A LARGE SCHOOL OF COMMON DOLPHINS FROM OUR RESEARCH BOAT. PHOTOGRAPH COURTESY OF MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY.

After slogging through stacks of sea-sickening videotapes and doing the data analyses on these interspecies associations, I'm finally able to prove my hypothesis. Sea lions do, in fact, seek out dolphins. They spend a significant amount of their time following dolphin schools, often spyhopping or leaping to keep the dolphins in view. Cleverly, sea lions invest time pursuing dolphins, which increases their chances of locating prey in the open ocean, where resources are patchily distributed.

So, let's revisit that initial question: "How do you come up with ideas for research projects?" the answers are simple: 1) spend time in nature, 2) look around you, 3) pay attention. Nature offers endless opportunities for us to learn. It's up to us to grab them.

This article has been partially adapted from the book Dolphin Confidential: Confessions of a Field Biologist (Chicago University Press, 2012; paperback 2016). The outcome of this research project was published in the peer-reviewed paper: Bearzi, M. 2006. California sea lions use dolphins to locate food. Journal of Mammalogy 87(3):606–617.

Maddalena Bearzi *has studied the ecology and conservation of marine mammals for over twenty-five years. She is President and Co-founder of the* Ocean Conservation Society*, and Co-author of* Beautiful Minds: The Parallel Lives of Great Apes and Dolphins *(Harvard University Press, 2008; paperback 2010). She also works as a photo-journalist and blogger for several publications. Her most recent book is* Dolphin Confidential: Confessions of a Field Biologist *(Chicago University Press, 2012; paperback 2016).*

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