

Flipper, Where Art Thou? Tracking Dolphins Up and Down the Coast

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By Maddalena Bearzi

Have you ever wondered where dolphins go after you get a glimpse of them as they surf a wave or catch a bow-ride off your boat? I surely did.

Bottlenose dolphins off California, one of the marine mammal species I've studied in this stretch of the Pacific Ocean for almost two decades now, are known to occur here in two distinct forms. There are coastal bottlenose, usually frequenting shallow waters less than one mile from the shore, and offshore bottlenose, found primarily in deeper pelagic waters. The coastal bottlenose are among the cetaceans best known worldwide and those most familiar to the general public, thanks in part to the famous *Flipper* that epitomizes this species.

Although I have observed and recorded these animals' behavior in the wild for half of my life, I do realize that we are still just scratching the surface of what we know about these amazing creatures. Take for instance their movements: where do they go after they disappear in the fading sunset at the end of our research survey?

Based on year-round, boat-based monitoring studies conducted with my team off Los Angeles since the late 90s, the coastal bottlenose individuals that I have come to recognize spend a large amount of their time feeding in the Santa Monica Bay. This area seems to be a great dining hotspot for them, likely due to its unique bathymetry. These dolphins, however, are not true *Los Angelinos* in the sense that they tend to stay here only on a seasonal basis, and then wander somewhere else. I learned this by collecting behavioral data on them and taking pictures of their dorsal fins using a process known as photo-identification. The dorsal fins work as human fingerprints due to distinctive notches on their trailing edges and these nicks can tell us the identity of almost every single individual in a pod.

When I started digging deeper into the movements of these dolphins outside my study area, I realized that I wasn't the only inquisitive scientist in the region. There were other researchers along the coast asking many of the same questions that I was. Among them, there was a group off San Diego who had investigated this same population of bottlenose dolphins since the early 80s; they also came to the conclusion that the "San Diego dolphins" lacked any real fidelity to that study area. I was in good company!

This was the beginning of a fruitful collaboration among several scientists along the California and Baja California, Mexico coast that started to shed some light on the travel movements of my not-so-*Los Angelino* dolphin companions.

What have we actually learned tracking these dolphins up and down the coast and comparing years of investigation from five different locations stretching from Ensenada, Mexico to Monterey Bay in California? What have we discovered after almost losing our sight analyzing and matching tens of thousands of images of photo-identified individuals?



BOTTLENOSE DOLPHINS TRAVELING ALONG THE CALIFORNIA COASTLINE.
PHOTOGRAPH BY MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY UNDER
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First of all, these coastal dolphins are true travelers. They move back-and-forth from Ensenada to San Francisco, based on new studies that confirm a range extension of this population in recent years. Take for instance dolphin number 3426, one of our most accomplished “voyagers”. He was recorded in both Ensenada and Monterey Bay, covering a travel distance of almost 1000 kilometers. Or dolphin number 3383 who traveled “back-and-forth” from Ensenada and San Diego to my study area off Los Angeles six times over a four year period. And these dolphins don’t just meander along; they move quite quickly to cover wide-ranging coastal distances. The most rapid travel speed we’ve seen was about 95 km/day for an individual moving from San Diego to Los Angeles in two days.

So, why do our California dolphins have the need for such extensive coastal movement? There are other dolphin populations around the world that are resident to a specific area. What's different here? The answer to this complex question likely has a lot to do with fluctuations in oceanic conditions at local, regional, and perhaps even Pacific-wide levels that affect both prey productivity and availability. Less movement for California dolphins probably means that they have less chance to eat. Not a good thing if you are a hungry dolphin.

Discovering that coastal bottlenose dolphins are capable of rapid travel and are highly mobile is important to better understand the risks they are facing.

Let's not forget that bottlenose dolphins are top predators in the ocean food chain and they are, in many locations worldwide, considered to be indicators and sentinels of the status and health of coastal habitats. Recent studies have shown that these dolphins accumulate more chemical pollutants in their bodies when they move and forage in waters near urbanized areas. Los Angeles represents the largest urbanized area bottlenose dolphins pass through on their southward and northward near shore movements. In Southern California and Mexico, large amounts of pollution enter the coastal ocean environment and high levels of contaminants have been recently found in other high-order carnivores such as sea lions. Human-induced effects on marine mammals are hard to assess, but we know that these animals accumulate contaminants and suffer immunological and reproductive disorders as a result.

Collaborative studies such as this one on the movements of bottlenose dolphins off the Pacific coast are key not only to encouraging scientists to share data – something many are still reluctant to do – but also to better understand how we can manage this and other populations of dolphins before it's too late.



OCEAN CONSERVATION SOCIETY RESEARCHERS ABOARD THE SANTA CRUZ 52 VESSEL DURING A MARINE MAMMAL SURVEY OFF LOS ANGELES CALIFORNIA. PHOTOGRAPH BY MADDALENA BEARZI/OCEAN CONSERVATION SOCIETY.

This article is based on selected research work conducted by the author and the collaborative scientific paper: Hwang, A., RH Defran, M Bearzi, D Maldini, C Saylan, A Lang, K Dudzik, O Guzòn-Zatarain, D Kelly, and DW Weller. 2014. Coastal range and movements of common bottlenose dolphins off California and Baja California, Mexico. Bulletin of the Southern California Academy of Sciences, 113(1):1-13.

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). She also works as a photojournalist and blogger for several publications. Her most recent book is *Dolphin Confidential: Confessions of a Field Biologist* (Chicago University Press, 2012).

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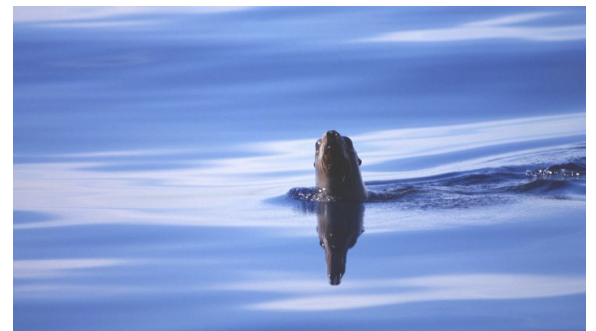
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