

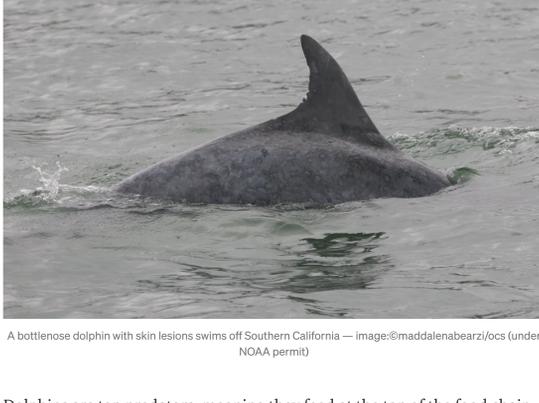
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Wild Dolphins Aren't Always Smiling

Maddalena Bearzi Nov 20, 2020 · 6 min read

Did you know that dolphins have skin lesions and physical deformities?



A bottlenose dolphin with skin lesions swims off Southern California — image:©maddalenabearzi/ocs (under NOAA permit)

Dolphins are top predators, meaning they feed at the top of the food chain. When chemical pollutants settle into seafloor sediments, they are absorbed by a variety of small organisms. Some of these animals end up in the stomachs of bottom feeders, which, in turn, accumulate higher concentrations of the same contaminants in their body tissues. Every time the contaminants move up the food chain into a new predator, the concentration intensifies in a process called bio-magnification.

By the time the contaminants reach the adult dolphin population at the top of the food chain, the concentrations are severe — so much so that stranded dead dolphins are regularly handled and disposed of as hazardous waste. Pollutants also pass from one generation to the next. Through their milk, dolphin mothers transfer sub-lethal doses of harmful chemicals to newborns during a lactation period that may last up to two years.

In my study area off Los Angeles, California, it's not news when my research team spots dolphins (and sea lions) swimming in a mixture of trash and the oily remnants of urban runoff. Even in the face of increased environmental regulation and improved source control systems, dolphins still swim in the polluted water that washes down the city's storm drains, including all sorts of heavy metals and toxic compounds.

People tend to project human attributes on dolphins. We see them as carefree and joyful creatures that spend their lives cavorting in the waves, perhaps because of what we perceive to be a dolphin's ever-present smile. But I can't begin to count the times I've logged hours collecting data on coastal bottlenose dolphins feeding near a storm drain outflow, in water the color of dirt. And while they superficially appeared 'happy' and well to me, it didn't mean they were not somehow suffering the effects of exposure to pollutants.



A group of coastal bottlenose dolphins with skin lesions observed by our research team just off the Los Angeles — image:©maddalenabearzi/ocs (under NOAA permit)

This was something I couldn't see at the inception of my research here in California over two decades ago. Only time and baseline data would reveal the truth. The more time I spent following dolphins in the wild, then scrolling through thousands of images of dolphin dorsal fins and bodies, the more I began to recognize that the animals I was studying weren't doing so well after all. I noticed signs of poor health in the form of lesions, spots and open sores on their bodies. I saw physical deformities like hunched backs, grotesque protuberances and spinal malformations. Nearly eighty percent of photo-identified individuals exhibited at least one type of dermal lesion and many had multiple types. Sea temperature and salinity have something to do with the presence of these lesions, and bacterial, viral and fungal infections are also at the top of the list, possibly correlated to bad water quality or contaminated prey.

There hadn't been many studies on skin diseases and physical deformities in dolphins, and nothing at all had been done on the topic on the West Coast of the United States prior to my work. The investigations conducted elsewhere suggested that these issues could be human-induced, likely in relation to poor water quality.

Surfing at Venice Beach or Malibu for an hour after a recent rainfall could literally make you sick. And dolphins are apex predators, roving all day long in these very same waters. In addition, we have frequent red tides, some of which are considered harmful algal blooms. These involve a species of phytoplankton which can be toxic to shellfish and other sea creatures and may cause severe respiratory problems in humans. We still don't know whether these harmful blooms are a natural occurrence, but in some areas there is increasing evidence of a link between their frequency and high nutrient loading caused by human activities.



Different types of skin lesions on a bottlenose dolphin off California — image:©maddalenabearzi/ocs (under NOAA permit)

One may care less about dolphins or want nothing to do with nature, like Woody Allen, who described his aversion to the outdoors by saying "Nature and I are two." I understand that there are different points of view on this subject, and I'm aware that biophilia (the innate love of nature) and biophobia (the fear of nature) both exist. But it really doesn't matter what any of us think. Dolphins are barometers of how our oceans are doing; if dolphins are sick, it means the ecosystem is probably sick, and we may get sick too.

Some time ago, after publishing my [work on skin lesions and physical deformities on dolphins off California](#) and hearing from many other scientists about how widespread and prevalent this issue was worldwide, I traveled with my husband to Florida to visit a colleague at the Duerr Laboratory for Marine Conservation. We chatted about our respective research, but the conversation quickly shifted to a discussion of persistent organic pollutants and endocrine disruptors, compounds that defy degradation and tend to bioaccumulate in dolphins. The latter are agricultural and industrial compounds like PCBs that, once ingested by an animal, behave like hormones in their endocrine system, damaging regular physiological functions. Scientists have become increasingly concerned about the effects of these chemicals in recent years, particularly in dolphins, where these substances are known to disrupt fertility, sexual development and behavior.

"Do you know about the dolphins in the Indian River Lagoon?" my friend asked.

"I've heard about them," I replied, "but I've never seen them."

I had read that a goodly percentage of bottlenose dolphins in the lagoon were affected by lobomycosis, a mycotic infection also found in humans, and by oral and genital tumors, of which I'd seen some grotesque images of online. Further, many dolphins had pneumonia, hepatitis, meningitis, and disorders of the nervous system. But I had no clue how dire the problem had become in the last few years.

While I was there, I decided to go and check the dolphins in the lagoon for myself.

The next morning, I slid my kayak into the murky waters of the Indian River Lagoon. My dog positioned himself comfortably on my husband Charlie's boat, as he had done many times before. We started paddling and there was no question from the smell and appearance that these were polluted waters. Freshwater discharges degrade water quality on an everyday basis, and the place was fertile ground for harmful algal blooms. As we paddled through the unmoving waters of this shallow estuarine ecosystem I tried, unsuccessfully, to imagine how this place might have been before industrialized agriculture came along and ruined it.



Dolphin with skin diseases in the Indian River Lagoon — sketch by the author from her book [Dolphin Confidential: Confessions of a Field Biologist](#)

We met a couple of bottlenose, after kayaking almost three hours under a blistering sun, and I couldn't believe what I saw. The larger of the two dolphins surfaced next to me as the other moved away and disappeared. It was dreadful. It was as though this animal emerged from a ulcerated body. Grayish-white abnormal growths covered almost half of its ulcerated body. Its skin had the consistency of cauliflower. The disfigured dolphin glanced at me, paused for a moment, then dove. And that was all I saw of it...

A better understanding of the possible causes underlying these skin lesions in dolphins is key not only to estimate the prevalence and extent of these diseases in wild populations but also to monitor marine pathogens that might have potentially harmful effects on us all.

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The original peer-reviewed scientific paper by the author cited in this article can be found [here](#).

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The author doing research in her study area off Southern California — image:©2020charles-saylan/ocs

Maddalena Bearzi has studied the ecology and conservation of marine mammals for over twenty-five years. She is the author and Co-author of [Beautiful Minds: The Ocean Conservation Society](#), and Co-author of [Beautiful Minds: The Parallel Lives of Great Apes and Dolphins](#) (Harvard University Press). She also works as a photo-journalist and blogger for several publications, including the [National Geographic](#). Her latest book is [Dolphin Confidential: Confessions of a Field Biologist](#) (University of Chicago Press).

187

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