

A PLAYGROUND FOR WHALES

But for how long?

by Roger Payne

The author, a research zoologist with the New York Zoological Society's Center for Field Biology and Conservation, recently spent eighteen months in southern Argentina. This was Dr. Payne's third Society expedition to Patagonia (the two most recent studies were made with the additional support of the National Geographic Society). The subject of his research is the right whale, one of the largest—and rarest—animals on earth.

The southern right whale (*Eubalaena australis*) was given its common name because it was the "right" one to hunt. A slow swimmer, it could not escape the oar-propelled boats of early whaling days, and it floated once it had been killed. Mercilessly overhunted, the right whale began to vanish from the seas by the end of the seventeenth century. Today, in a belated attempt to halt the decline of the species, the International Whaling Commission lists right whales in the off-limits category. Regrettably, all whaling nations do not belong to the IWC, and even some members disregard its recommendations.

Katy Payne



I am writing from Argentina's Peninsula Valdez. It is about halfway between Buenos Aires and Tierra del Fuego in that windswept, almost uninhabited strip of the South American continent east of the Andes and south of the pampas that is called Patagonia—or more properly, “the Patagonia.”

My research associates, including my wife Katy, and I have been camped in the southeast corner by a deserted bay, Golfo San Jose, the northernmost of two bays in Peninsula Valdez. It is about the size of Cape Cod Bay and at the same latitude south of the equator that Cape Cod is north. But whereas Cape Cod Bay has a large human population, including several major towns along its shores, we are virtually the only humans here. Our nearest neighbors are a man and his wife who tend an isolated sheep station, and they are ten miles away. The whole peninsula, which is a bit smaller than Connecticut, has a human population of 180. When our group of researchers reached its highest number last spring, we constituted ten percent of the peninsula's population.

The most remarkable quality of this place, and the reason we have come here, is that a few dozen right whales—a large number when discussing this critically endangered species—are resident here for about six months each year, from late May to early December. During this time they live close to shore, at times so close that a receding breaker may momentarily leave a whale's tail high and dry on the pebbles. The most incredible place of all on Peninsula Valdez is a spot a few miles south of Punta Norte (the northeast point of

the peninsula), where whales can be seen at any hour of the day or night barely more than 300 yards from shore. To study whales at this spot is second only to having a herd in captivity, with the important exception that here their behavior is entirely natural. The local people now call this area *Playa de las Ballenas*, or Whale Beach.

The discovery that right whales passed near these shores was first made in 1970 by Ray Gilmore on board *Hero*, the Antarctic supply and research vessel operated by the National Science Foundation's Office of Antarctic Programs. Although Mr. Gilmore encountered two small herds of whales, no one realized that this area was a major breeding and calving ground. However, our research, which started three months later and which has continued ever since, has indicated clearly that it is.

Rare sights, sounds—and studies

My wife and I first came to Peninsula Valdez for one month in September 1970, with a longtime friend and associate, Oliver Brazier. During this trip we obtained the first underwater recordings ever made of southern right whales.

The following season we returned for three months of more elaborate investigations. We made periodic aerial censuses of all whales in the area, and resumed the recording of their “voices” in an attempt to correlate these sounds with behavior. In addition, we developed a technique for measuring whales by aerial photography, so that a correlation between length and

A school of porpoises swims ahead of a young albino right whale. The interactions between these two marine mammal

species led Dr. Payne and his researchers to conclude that such behavior must be considered play.

Lysa Leland





Roger Payne, NYZS

Jane Frick, a member of the research team, was able to habituate one of the whales, "Dulce," to divers in the water.

Individual animals are recognizable by the distinctive barnacle-like growths, known as callosities, on their heads.

age could be accurately determined for this species.

Our most recent stay began in 1972 and has lasted eighteen months. During this time we continued to collect data useful in forming local population estimates and trends, and we have been able to study many aspects of herd structure, courtship, mating, rearing of young, play, and feeding.

It is usually stated that whales eat rarely—if ever—except when in their summer feeding grounds, amidst the abundant breeding swarms of plankton. However, we have frequently observed right whales feeding at Peninsula Valdez. We were able to collect some of the small crustaceans on which the whales prey by towing a net immediately behind them. In one case we collected a small sample virtually right out of a whale's mouth, as our net caught the edge of a cloud of plankton that had spilled from the jaws of the whale as it surfaced.

The right whale, a member of the group known as baleen whales, has one of the most unusual feeding apparatuses known in the animal kingdom. Baleen consists of long, triangular sheets of keratin (the same material as our fingernails) that grow from the roof of

the whale's mouth. While the front edges are smooth, the trailing edges fray out in fringes that interweave to form a strainer. The right whale uses this baleen "net" to strain its food from the water.

We have seen various feeding strategies employed by right whales, but slow, subsurface feeding is especially intriguing. The whale holds its mouth open while swimming forward just beneath, or right at, the surface. Its path is erratic, with many quick twists and turns. This would seem to indicate that the whale is steering its mouth toward things it senses. Whether this sensing is by means of vision, sonar, or touch is something we have not yet determined. Whatever the reason for these maneuvers, they never result in any prolonged pursuit. Rather, they are only swerves in an otherwise inexorably forward course. The end of a course is indicated when the whale closes its mouth, often while taking a sharp turn. It then halts for a few seconds to open and close its mouth. Presumably by this last exercise, the whale collects with its tongue whatever food has been caught in the baleen. The whale now swims forward once more, often returning along its original course.

Under circumstances other than feeding, one whale never passes within less than a body-length of another without the two turning back to linger alongside one another for a few moments. A whale in pursuit of food is another matter. Feeding whales may miss each other by no more than a yard, almost meeting head-on, yet they continue without any change of course or obvious greeting.

A sporting life

It is a widely believed that porpoises spend much of their time and energy at play, but it has only been casually suggested that large whales may also have such a life-style. This feature of their lives was not immediately obvious to us, because motions made by whales are very slow. Often only in retrospect did it occur to us that what we had been observing was, by any definition, play—slow-motion play, perhaps, but play nevertheless.

For some time after the birth of her calf, a female whale is notably inactive and, unless she is avoiding interaction with other whales, makes very few movements. The one exception to this occurs when the mother plays with her infant. Then she rolls onto her back and takes the calf across her chest, where she supports it with a flipper and pats it occasionally. Such behavior may sometimes function to avoid repeated nursing attempts by the infant. We suspect that nursing normally takes place with the mother on an even keel, the infant holding its breath and diving beneath her. When the mother is belly-up and holding the infant on her chest, nursing is impossible.

The infant, in contrast to its quiescent mother, is quite active, spending hours swimming around her in slow circles and playing in various ways. The baby will nudge its mother. It will slide off her tail and occasionally wriggle and squirm across her back. A frolicking youngster may slap the water with its flipper or tail, perform slow rolls or head-stands, and rise up vertically, almost out of the water before toppling over with a splash. A calf is even able to breach—that is, to jump almost clear of the water—when only a few weeks old.

As the calf grows older, the mother resumes a more active role and begins to play vigorously with her baby. The two of them indulge in joint sessions of breaching, flipper-slapping, and tail-slamming.

We also found that sea lions and porpoises will play with whales for long periods, sometimes several hours at a time. In fact, our observations suggest that a young sea lion is nearly incapable of passing a female whale with a calf without turning back to play, if only for a short while. This play usually follows one basic pattern. It seldom involves the calf (at least not when the calf is young) but only the mother—or perhaps more accurately, the mother's tail.

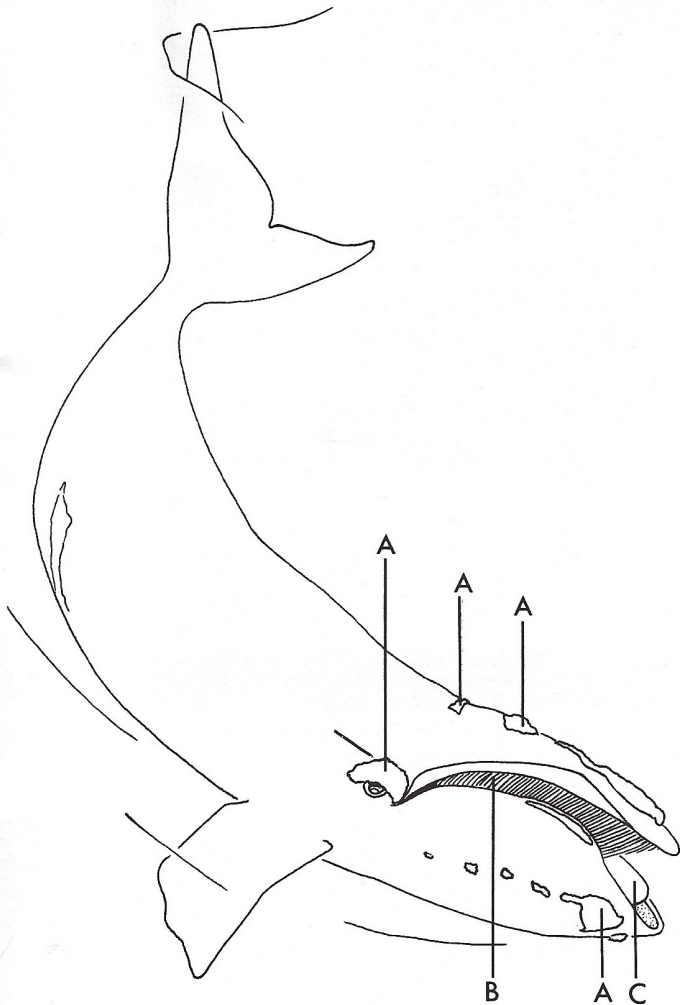


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With a swish of its tail, a feeding whale executes a sharp turn to swim back along its original course. This photograph, taken from an airplane, reveals how the right whale spreads its baleen "net" to capture tiny prey.

The game consists of the sea lion swimming with rapid turns, flips, and rolls behind the mother whale, which assumes, for the most part, a passive role. The sea lion moves closer and closer in pass after pass, but it seldom, if ever, touches the mother's tail. With each pass, its swimming pace increases, and its rolls and flips become faster and faster until it is in a "frenzy." Finally the sea lion rockets into the air, and after landing, bobs in the water like a spar buoy, with its head beneath the surface and its hind feet in the air, entwining its toes and rubbing the soles of its feet together vigorously. The whole sequence may be repeated again and again, until the mother and calf slowly move away.

On one occasion I watched a young sea lion at play behind a whale that was motionless in the water. The sport started in the usual way, but eventually upwellings indicated that the whale was slowly raising and lowering its tail under the water. At this moment



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The drawing above identifies the "facial" features of the whale shown in the photograph at left: A—callosities; B—baleen; and C—tongue. Note the large eyebrow-like callosity over the eye that distinguishes this particular whale.

the sea lion's gyrations were the wildest I have yet seen, but the whale was not moving forward or backward at all. This continued for several minutes until it became too dark for me to see. Perhaps the whale was creating currents in the water for the benefit of the sea lion. We speculate that it is the water currents naturally flowing off a whale's tail that attract the sea lions. In this instance the whale's apparent cooperation only increased the sea lion's playfulness.

Play with porpoises takes a different form. Schools of porpoises will surround the whales and cause them to circle and turn slowly. Usually the porpoises seem to move just ahead of the whales as they swim. Dr. Kenneth Norris has suggested that the porpoises' ability to ride a ship's bow-wave may be a natural extension of skills developed through riding the bow-waves of whales. Our observations certainly support that theory.

Whales take an active role in play with porpoises.

At times a whale will breach practically into their midst, returning many times to repeat the action. Initially we questioned our accuracy in describing this activity as play and not simply as an attempt by the whales to rid themselves of the porpoises. However, most of the other actions of the whales would seem to indicate they were indeed playing. For example, we have seen a subadult whale breach away from porpoises in several successive leaps, but then swim slowly back toward them. Once in their midst again, it stopped to roll about in the water, while "flipping" and displaying various other forms of underwater playfulness frequently observed between mothers and young.

Another aspect of whale-play occurs with objects found in the bay, such as floating seaweed—or our equipment. Even though as scientists we try to be objective, it is difficult to remain calm when, for the twentieth time, a whale demolishes our tide gauges (long stakes marked with numbers to indicate the depth of the water). Often such behavior is obviously accidental: a right whale fleeing from killer whales knocks over a tide gauge, for example. But at other times it is equally obvious that the action is deliberate: after lying still in front of a stake for fifteen minutes, a mother and calf start to circle it cautiously, lean on it, and swipe at it with a tail, until, as it cracks and falls, they flee.

Since tide gauges and sonobuoys (another popular plaything) are relatively new in the whales' world, we did not expect, nor did we find, any particular pattern in the ways they played with our equipment. The whales' play with seaweed, however, does indicate something of a game plan.

Seaweed and whales have coexisted as long as there have been whales, and it is interesting to note that one form of play with kelp—a kind of seaweed—is stereotyped. The whales drape kelp over their heads and, for a long time, hold it aloft over their blowholes, or nostrils. They then let the kelp slide back toward their tails so that it strokes their backs and flanks. Recovering it with their tails and swishing it back between their flippers, the whales will pat it many times, release it, and then swim up under it, so that once again the kelp is draped over their heads.

The part of this performance that most interests me is the long pause in the progress down a whale's body once the kelp is located over its blowhole. The area surrounding the blowhole is richly supplied with nerve endings, which presumably help a whale plot the course of a wave breaking over its head. When inhaling, the whale can close its blowhole just before the water reaches it. We wonder whether the flexible, smooth seaweed produces a curious, even desirable, sensation to a whale. Perhaps that is the reason behind this strange form of play.



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A whale calf swims close to its mother in the shallow water near Whale Beach. This area in Patagonia provided the

Society's scientists with a unique opportunity to study these mysterious mammals of the sea at close range.

An uncertain future

The peace that has resided here at Peninsula Valdez for the last twenty million years has provided a sanctuary for right whales. The many fossil whale remains we have found on these shores indicate that whales of many species have long been sheltered here. But all that is now changing.

A large aluminum plant is being built in Puerto Madryn, the main town in the area, located on the shores of Golfo Nuevo, the southern bay in the peninsula. This factory already dwarfs the town. The comings and goings of shipping and the building of a long wharf have already resulted in oil spills. The town has also contracted for twenty other industries, including five fish-flour plants, that will multiply tenfold the current shipping traffic. There will soon be no room for whales.

Fortunately the smaller bay in the peninsula, San Jose, shelters a great number of whales. There are strong indications that it is being considered by the government as a sanctuary, so that even if the whales are forced to leave Golfo Nuevo, there will still be some left in Golfo San Jose.

But there is an even gloomier prospect. The Argentine government-run oil industry has reached Peninsula Valdez, and we have been told that all seismic indications point to a major oil field underlying most of the peninsula. It may run far out onto the continental shelf. A rude web of roads is daily being enlarged, and oil-drilling rigs are everywhere. One of the oil exploration camps is located within a hundred yards of the very place where whales come so close to shore and about one mile from Whale Beach. A second exploration area is practically in our camp.

Sunday is everyone's day off here, but most oil workers have no transportation over the seventy-five miles of dirt roads into town. It may only be a matter of time before some thoughtless person has nothing better to do than shoot at whales just fifty feet from him in the surf along the vast and unpatrolled beaches. Even if such reckless killing did not destroy the population outright, it would seem likely to drive the whales farther from shore, thus eliminating forever this unique chance to study one of the largest, rarest, and most mysterious mammals on earth.

In the few other places on earth where whales have been seen near shore, one hears that they are frightened away by observers moving too close. The fact that the right whales at Valdez have not been bothered thus far by the presence of humans may have something to do with the elephant seals that dot the beach. When a sea elephant bull rears up, its silhouette looks at least superficially like the silhouette of a man standing erect. Perhaps man is tolerated by the whales because they are used to the sight of rearing elephant seals. Whatever the reason, it is a miracle that the whales remain so close—and a further indication of the uniqueness of Peninsula Valdez as a place for observing whales.

Where else can we go to a beach at any hour during six months of the year and stroll alongside a whale feeding or playing with its calf in the surf? Probably nowhere. When the whales' sanctuary is whittled down to one place and it too disappears, we will have lost something priceless. Nothing will remain but an empty ocean crashing majestically against an empty beach with a curious name whose origin will be forgotten—*Playa de las Ballenas*. ■