

# Among Whales

*In the fall, southern right whales return to the waters off Patagonia to mate and raise their young*

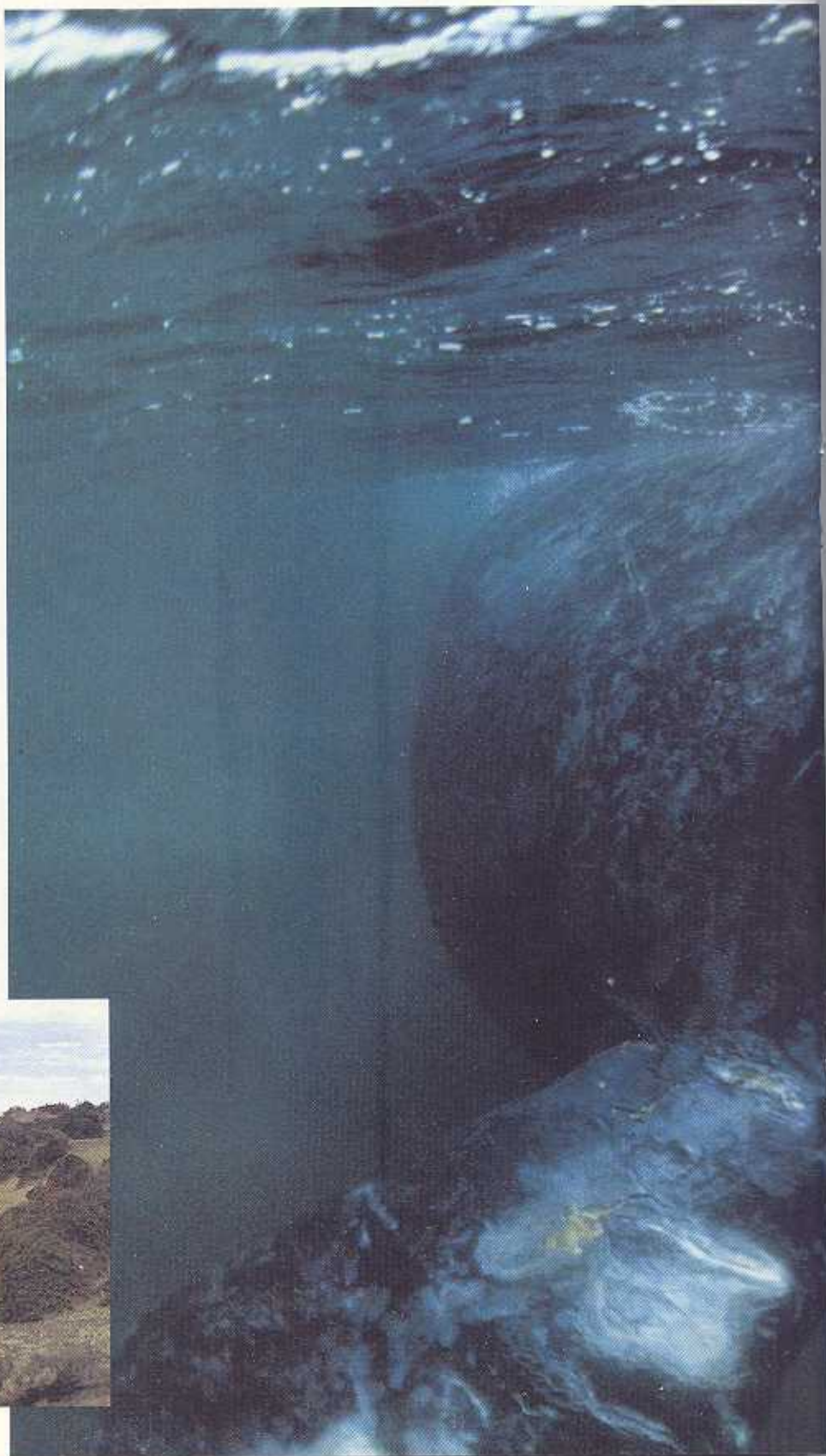
by Roger Payne

In 1970 I read about a sighting of twenty right whales along a little-traveled section of Argentine coastline called Peninsula Valdés (about halfway between Buenos Aires and Cape Horn). Because right whales were almost extinct before receiving protection in 1937, seeing several at once was a rare event.

I had never heard of Peninsula Valdés but noticed it was at the same latitude south of the equator that Cape Cod is in the north. I knew that right whales came to Cape Cod every year, even though they are rare. Peninsula Valdés's two nearly landlocked bays, Golfo San José on the north and Golfo Nuevo on the south, bear a striking similarity to Cape Cod Bay and Nantucket Sound; and the combined landforms of Cape Cod, Martha's Vineyard, and Nantucket are so like Peninsula Valdés that I wondered whether right whales might also be coming there each year. The New York Zoological Society, where I then worked, provided the funds to go investigate, and so, in late September 1970, I went to Argentina with an old friend, Oliver Brazier, and my then wife, Katharine Payne.

We drove from Buenos Aires to Rio Negro, the northern boundary of Patagonia, on what is now a paved highway (at the time it was a dirt track in places). Four days later we stood on the beach at Punta Norte, the northeast point of Peninsula Valdés. Three right whales were playing in the surf less than fifty feet offshore.

Lynn Leland

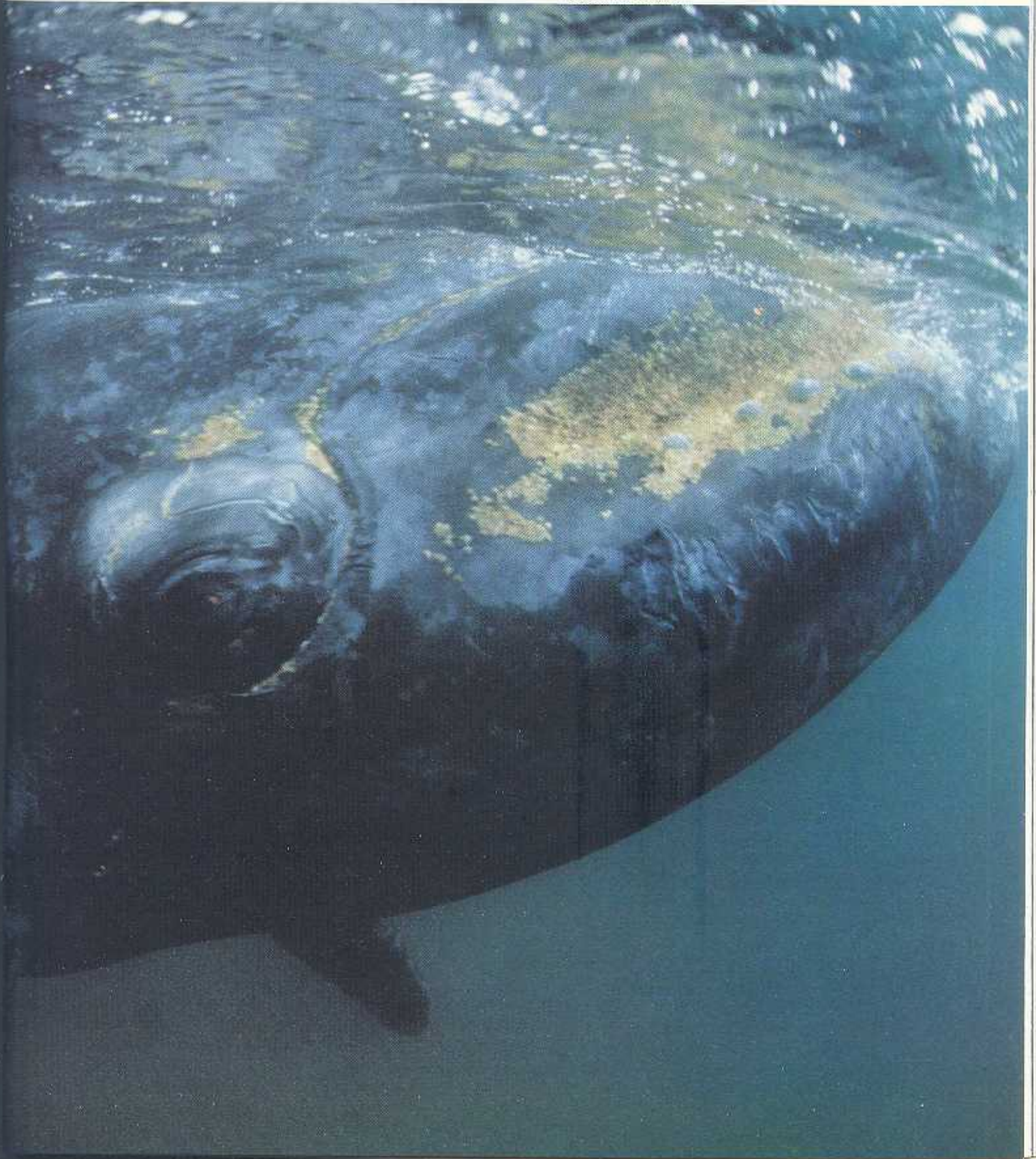




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*A subadult right whale, below, about twelve feet long, swims in the bay off Peninsula Valdés. Adult southern right whales can grow to fifty feet in length. Inset: The cliff hut observation point.*

Flip Nicklin, Minden Pictures







In the days that followed, we found the peninsula to be one of the world's greatest comings-together of land, sea, and wild-life. The currents in the bays, which can reach six knots, are generated by tides that rise and fall as much as thirty feet—a tidal amplitude, the locals claim, second only to that in the Bay of Fundy. Albatrosses, petrels, shearwaters, fulmars, terns, and gulls ride the winds of the roaring forties, while penguins shuffle up beaches. We saw sea lion rookeries and elephant seal harems that stretched for thirty miles along the shore to where they dissolved in the distant heat shimmer. Elephant seals reared up as we approached, making loud, intimidating belches—an after-dinner noise of such exquisite vulgarity that even the most jaded eight-year-old boy could not have failed to be stunned with delight by them.

One morning one of our hosts—we

were guests of the local tourist office—showed Katy a deserted beach in Golfo San José from which he had often seen whales. Later that afternoon we all visited the place. It was less than a mile long and flanked by tall cliffs that stretched along the coast to the north and west. I climbed the western cliffs and walked to a nearby headland, where we later established an observation hut. The wind had died, and the sun was setting in a spectacular display of colors. As the peace and stillness seeped into me, a whale started breaching far out in the bay, followed in the next few minutes by two others closer to shore. In all I counted thirty-two right whales.

I realized that we had discovered the ultimate place from which to study whales, a place where they came so close to shore that we could work from land and not disturb them. Neither would we have to raise

enormous funds to support the costs of operating seagoing boats. Here we could even bring our four young children, and they would be safe, safe among whales.

The next year, with funds from the New York Zoological Society, we established a camp on the beach and later a permanent research station. Katy and I lived there for almost four years with our children, the most formative of their lives and our happiest as a family. It was the longest I have ever lived continuously in the wild, and this stretch of Patagonian coast became my heart's home.

Since we founded Whale Camp twenty-three years ago, I have returned to Peninsula Valdés every year between August and mid-November (with the exception of three seasons when others were present to do the work)—the longest continuous study of a whale species based on recog-



*The right whale's baleen, left, allows it to filter copepods and krill from the sea. Here the whale is probably not feeding but skimming along the surface to cool off in the warm winter waters.*

James O. Watt, Planet Earth Pictures

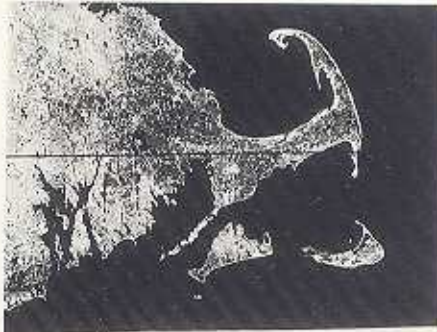
population probably make the 1,400-mile swim without eating. They linger in the bays of Peninsula Valdés for up to four months, during which time they give birth to a calf. Although a mother may get an occasional snack, she is basically fasting. (Normally, right whales catch their prey by skim feeding; we've recently discovered, however, that the whales of Peninsula Valdés are not feeding when they swim along with their mouths open but are probably cooling off in the warm waters through a heat-exchange mechanism along the roof of the mouth.)

For months after her calf is born, a mother pumps massive quantities of rich, creamy milk into the calf, which may gain as much as 125 pounds a day—at least in the first few weeks—while also putting on a thick blubber coat. At the end of this period, the mother—still fasting—leaves the wintering grounds with her calf and swims all 1,400 miles back to the feeding grounds. We are still not certain that we have found the main summer copepod and krill basket for Peninsula Valdés's right whales (although South Georgia does look like a good bet, as do the waters around Tristan da Cunha).

We can watch the mothers and calves closely from our observation hut (called the cliff hut), located above the only place for miles where the cliffs plunge straight into the water. When the tide is halfway up the cliff or higher, the water is just deep enough for whales to swim directly below the hut. Mothers with calves faithfully follow the 16.5-foot-depth contour at Peninsula Valdés, (just deep enough for a large mother to be clear of the bottom but not enough to allow attacks on her calf from below by killer whales and sharks). They are creatures of habit and will swim to exactly the same area—even the same rock—year after year. Once they start having calves, they return to the bays of Peninsula Valdés once every three years. So while following the 16.5-foot contour, they swim along almost touching the cliffs. Hundreds of whale-sized underwater niches in the eroded hardpan along the shore provide shelter.

*Satellite photographs of Cape Cod, top, and Peninsula Valdés show striking similarities in landforms.*

Roger Payne



The places chosen by mother whales to defend their calves, unlike the niches where they hide, are open areas with soft, sandy bottoms and plenty of room on every side from which to launch cataclysmic haymakers. Right whales defend themselves with their tails, which they sweep sideways with stunning effect. (In this sense they are like the "undefended" apatosaurus now believed to have fought off attackers by sweeping them off their feet with its massive tail, perhaps even breaking or disjuncting limbs in the process.) I suspect that if a person were struck by a right whale's tail, the blow might well be deadly.

I once watched a pack of killer whales move along a line of female right whales and their calves. As the orcas approached a mother and calf, the mother would flex her body, cocking her tail for a blow toward the closest killer whale. They never attacked. From the cliff hut, Katy observed a nearby group of mothers form a ring around the calves as killer whales passed nearby. With their heads directed toward the center of the circle, they thrashed the water frantically with their flukes. Had

nized individuals. We can now identify more than 1,200 individuals. Some we have seen hundreds of times; others we have never seen again because they were either passing through or have subsequently died.

Nothing is more exciting than seeing the first whales arrive at Peninsula Valdés for the winter. Each year these whales make the long migration from the cold, subpolar waters of Antarctica to winter in Patagonia's warmer waters. Their enormous size and thick blubber are adaptations enabling them to keep warm enough and swim far enough to gain access to the most enormous blooms of food on the planet—the annual swarms of krill in the icy Antarctic Ocean—as well as to return to their warmer wintering grounds to mate and give birth to young.

The pregnant females in our Argentine



Old-time whalers referred to the callosities on the right whale's snout as the "bonnet," below. The unique patterns of these callosities identify individual whales. Right: Usually most of the individuals in a mating group, like the one here, are males in pursuit of a single female that is the center of attention.

Iain Kerr



any orca tried to get at the calves in the middle of the ring, it would probably have been killed outright.

Females with calves appear to form the center of the herd in our corner of the bay, but over the years—through observations from the cliffs, boats, and the air—we have been able to piece together other information about the herd's overall structure and movements. Joining the primary mother-calf unit are subadult males and females, whose mothers have given birth to new calves. After a few years of traveling with this group, however, young males disappear, perhaps going off to live with other males, while the females remain with the group until the year they give birth to their first calf, when they are between five and nine years of age. We don't know where the females go between calving years; we only know that they subsequently reappear every three years on average with a new calf.

Covering up to twelve miles in a day, the herd doesn't take up a station at just any point along the shore, but moves back and forth along a fixed and relatively small stretch of the coastline. Once established, the beat remains the same for years, usually between headlands projecting out from the general contour of the coast. This

behavior makes sense given the underlying acoustics, as points of land cast underwater acoustic shadows, and we suspect that right whales use sound as a means of staying together in herds.

Along the most extensive sandy beaches of the peninsula, the mothers stretch out across the water each day like beads on a chain. Look at them in the morning, and the whole group appears stationary, a mother every half-mile or so. Look again at lunch time, and sometimes the entire herd has moved as much as six miles, but their spacing is still more or less intact. Females appear to help themselves to the best areas—a long beach, protected from the full force of wind and storm waves, with a gently sloping sand bottom—and to push everyone else out, which is just what seems to happen.

We have learned to identify individuals by callosities—patches of thickened skin distributed on the top, front, and sides of a whale's head—which make a whale recognizable from all directions except from below. Callosities tend to be more developed in males than females, and males seem to use their callosities for fighting, the way bulls use their horns—only not for gouging but for scraping opponents. Thousands of external parasites, called



cyamids, or whale lice, cover the naturally gray callous tissue so thoroughly they make it look white. As the cyamids feed on the thickened, dead skin of the callosities, they sculpt the tissue into distinctive forms. Another way to identify individual whales is by their distinctive white belly markings. If we are diving in murky water, these bright white markings look almost luminous and are clearly visible long before the rest of the whale looms into view. Callosities and belly patches probably also enable the whales to identify and recognize one another.

Although the whales of Peninsula Valdés appear to be active day and night, mornings are their favored time for sleeping, and when the morning is especially calm and sunny, they are scattered throughout the bay like drifting logs, with the sounds of their snores filling the air. When their nostrils don't open and close cleanly, the snores sound like deep growls,





which, when heard at night, may sound scary to the uninitiated.

When a mother falls asleep in the shallows, the falling tide lowers her slowly toward the sea bed. Often her flippers dig deep into the sand before she wakes up and moves. This leaves obvious flipper impressions, which, if the day is calm, survive the falling tides so we often can walk out to where the whale was sleeping and admire her flipper prints. As we stand between them on the vast, draining tide flats, the scale of these marks is an eloquent statement of just how big the whales are.

Aside from these tranquil activities, the whales are engaged in courtship and mating when in residence at Peninsula Valdés. Surrounding the central core of mothers are groups of adult males, scattered widely about in the middle of the bay. They appear to be doing nothing except for engaging in occasional bouts of furious breaching—possible challenges to the group of

males that has taken up a position closest to the coast and with the greatest access to the females. We do not yet know exactly what is going on, but perhaps the males nearest the shore help reduce the pressure from other males on the mothers with calves (thus increasing the chances that calves will not be injured).

There is no pair bonding, and on any given day a male may mate with several females. But since a female is slightly larger than a male, she can easily avoid unwanted mating attempts. Whales mate belly-to-belly, so one of the female's strategies is to swim into shallow water and scrape the male off on the bottom. Once, when a male managed to squeeze himself under a female in shallow water, I saw her flex her back dramatically so that her head and tail lifted out of the water into the air, bringing many tons of weight bearing down on top of him. He left.

Another strategy: Instead of lying belly

up, the female puts her tail in the air, holding it there for minutes at a time. If the male is to mate with her in this position, he must put his tail into the air alongside hers. But without his tail to act as a propeller, he can't swim. He has to use his flippers to drag his whole body, held in a vertical, head-down position, around her as he tries to achieve proper alignment with her. Meanwhile, she simply revolves slowly about her own long axis, keeping her ventral slit just out of reach, and when she needs to breathe, she slips off to one side and grabs a few breaths. Whenever a persistent male tries to get beneath her, she rolls forward and raises her tail into the air once again.

A male's testes weigh 2,200 pounds, making them the largest on earth (and particularly impressive when compared with the 150-pound testes of the blue whale, the largest animal in the world). Presumably such large testicles have evolved because



*A mother and large calf rest in shallow water, below. A right whale, opposite, breaches off Peninsula Valdés.*

Hoger Payne



of the right whale's mating system, in which multiple males compete to inseminate the female. The one who gets the most sperm into the female will have the best chance of being the father of a calf.

Yet by cooperating rather than competing, males gain at least some chance of mating with a female. In our bay, we have seen groups of males stay together for periods of at least six weeks. We are not sure yet how they are related or how they got together in the first place, but we have watched such groups try to push a female, who was lying belly up and inaccessible, under the water so one of them could mate with her.

We suspect that many of the groups are made up of related males. In a group of brothers, even if one whale gets less than his rightful share of successful matings, he still shares roughly half the genes that his more successful brother passed along to the next generation. If groups of related males are thus favored, this would explain why every year, for three years, some young males return to the same breeding areas to gather with their brothers.

We've also noticed that while a mother discourages her calf from playing (because the mother has to provide all of the calf's caloric intake at a time when she is

fasting), she will allow her calf to play with subadults, at least some of which are her calves from previous years. In this way, two related males can get to know each other so that later, when both are sexually mature, they may become members of the same mating group.

The sense of tranquillity, of life without urgency, power without aggression, has won my heart to whales. One time I watched a mother frustrate her calf's attempts at nursing by moving into shallow water where the calf could not get underneath her to nurse—just the way she would lead a male into water too shallow for him to fit beneath her. The calf still pestered her, so she rolled on her back, easing herself under the calf and cradling it in her flippers. She then came up from below, stranding the calf high and dry on her chest, and patting it slowly.

As the season at Peninsula Valdés nears its end, the right whales ease themselves out through the entrance to Golfo San José, perhaps to rendezvous briefly with companions and acquaintances at Punta Norte and then set out across the vast South Atlantic toward either South Georgia or Tristan da Cunha. I always wonder if I will see them again and what revelations I will be privileged to witness. □







# NATURAL HISTORY

A silhouette of a bird, possibly a frigatebird, stands in shallow water with its wings fully extended. The bird is dark against the bright, orange and red hues of a sunset sky. The water in the foreground shows gentle ripples and a reflection of the bird and the sky. The overall mood is dramatic and serene.

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