REPORT FROM PATAGONIA: THE RIGHT WHALES

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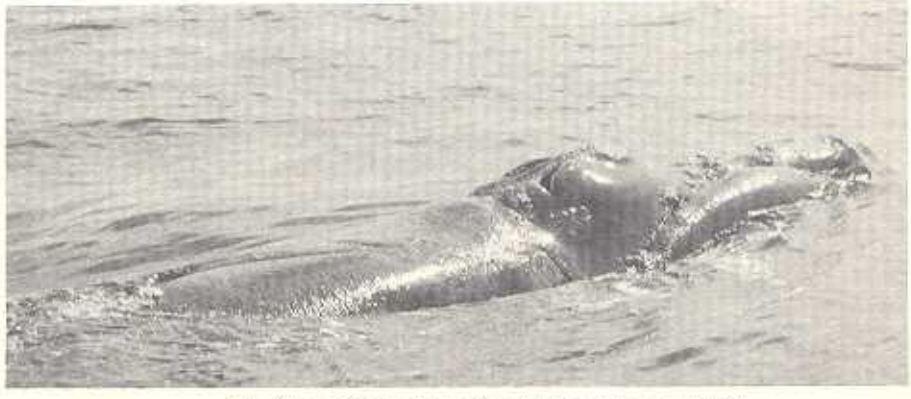
One September afternoon not long ago, from a high cliff on the shoreline of Patagonia, my wife and I observed a display that few people ever see. It was late in the day and the sky was turning pink and red as we scanned the sea, watching for any sudden movement on the calm ocean surface. Suddenly, as our eyes strained in the fading light, a massive black column appeared to surge clear out of the water, then topple back in a welter of spray, with a sound like the boom of distant artillery. We had caught a glimpse of a creature that is seldom seen in modern times—a right whale, *Eubalaena australis*, one of the rarest and largest mammals on Earth.

The sight of this huge marine mammal crashing into the sea was once common to the shores of all continents; but we had to travel to this remote and sparsely inhabited region of southern Argentina to see more than a remnant of this species. Hunted for six centuries to a state of near-extinction, a small colony of these playful and unaggressive creatures survived in this isolated corner of the world, north of the Straits of Magellan, far from the predatory greed of man. We were fortunate that a New York Zoological Society expedition had given us a unique opportunity to observe this impressive mammal.

Long before the heyday of American whaling, when the pursuit of the sperm whale brought wealth to New England captains and ship owners, the right whale was worth a fortune. It had earned its common name because it was the "right" whale to kill; slow enough to catch, fat enough to float after the kill, and carrying in its jaws a treasure in whalebone. The stakes of the hunt were high. In the 1620s it cost about $6,000 to equip a whaling ship, yet a single right whale produced about $12,000 in whalebone, plus the profit from its oil. In the 1600s the most famous whaling grounds surrounded Spitzbergen, where British and Dutch ships predominated. Here the right whale, along with its relative, the bowhead, was the most sought-after species on Earth.

Centuries before the days of deep-sea whaling, the right whale's unique habits had made it an attractive target. Right whales approach the shore so closely that they are sometimes within reach of a harpoon from the beach, a kill that requires very little courage or equipment. Some of the earliest recorded right whaling flourished during the 12th and 13th centuries in the Bay of Biscay. Possibly the very ease of this hunt may have attracted the world's attention to the rewards of whaling. The result: a burgeoning whaling industry and its subsequent catastrophic evolution. Had it been necessary from the first to kill whales from open boats on the high seas, the industry

Stratified cliffs (near the author's camp) containing numerous fossils.



The "bonnet", a callous-like growth on the head of a right whale, seen each time the whale surfaces for air.

might never have gotten a start.

The abundance of right whales prior to their exploitation is not known, but indirect evidence indicates that they once thrived off the east and west coasts of Asia, Africa, Australia, and North and South America. The southern hemisphere populations also moved south to feed in a band of water virtually surrounding the Antarctic continent.

When the pilgrims arrived in the New World in 1620, they saw whales in Massachusetts Bay. Although the species was not named, those of the party who were experienced in fishing recognized it as the right whale to make money, a sufficient indication that it was indeed the right whale, *Eubalaena australis*. The crew of the Mayflower postulated that Massachusetts Bay was a better site for whaling than the "Greendland fishery" (actually the Spitzbergen fishery) which was at that time the densest concentration of right whales known. In the five years prior to 1620 great fortunes were made from that area.

Just over 100 years after the pilgrims landed, whaling off New England experienced a series of "bad winters" and collapsed. But this period also heralded the development of whaling ships that could make worldwide voyages, sailing out of the same New England bays from which right whales had been hunted by small boats launched from local beaches. The final phase of right whaling had begun.

The indiscriminate slaughter of right whales went hand-in-hand with the worldwide spread of sperm whaling led by New England whalers. The most lucrative of these voyages were those that rounded the Horn. Ships bound for the Horn passed through the vast herds of right whales that thrived in the Southern Hemisphere. The whalers soon extended their efforts to the seas around Australia, New Zealand, and Kerguelen Island where about 14,000 right whales were killed each year. Such carnage dwindled along with the demise of sperm whaling, and towards the end of the 19th century right whales were rarely killed.

But whaling was to undergo yet another boom. In 1901, a chemical technique for removing the unpleasant taste of whale oil was developed which made it possible to use this oil in edible food products. The few remaining right whale concentrations were brought under the gun as the industry began its final and greatest expansion – the one that practically wiped out blue and humpback whales. By the 1930s the principal whaling nations finally agreed on the protection of right whales, but without international observers. A factor in this belated protection was that the species no longer had commercial interest, and its remnants were concentrated largely in regions no longer of prime interest to whalers.

Darwin's rhea chicks were camp mascots.

Male elephant seal in a typical display.

At this same time, grey whales were similarly protected, also after overexploitation to near extinction. Since then the eastern Pacific population of grey whales have made a dramatic recovery. But there is no such parallel for right whales. They still hang on by the thinnest of threads and to see one at all is a privilege and a major event in the life of anyone.

Accordingly, when the National Science Foundation's ship *Hero* encountered a small group of right whales off the east coast of Argentina in 1969, I immediately explored the possibility of observing these creatures. Mr. Robert G. Goelet, President of the New York Zoological Society, and Mr. William G. Conway, our Director, had visited the same area in which the right whales had been sighted (though at a different season) and had made friends with several local people to whom I wrote. Two replied that "whales" were to be seen nearby and photographs sent by one man clearly showed a right whale.

In 1970 the Society sponsored an exploratory expedition to the area, and in due time I found myself on the beach at Punta Norte on Peninsula Valdez where I saw for the first time the realization of a life-long dream. The beach stretched into a misty distance and was dotted with elephant seals spaced as regularly as beads on a string, while patrolling just offshore at a slightly wider spacing were six right whales. For six days we stayed in the area, going out in a tiny skiff when the weather permitted to make recordings of their sounds. The group was small, probably no more than 20 individuals, including females with their calves. But they lingered in the area the whole time we were there, and we had numerous chances to study various aspects of their social behavior, a facet of their existence that had been all but ignored during 600 years of constant persecution.

One of our Argentine hosts was a truck driver who told us that he often stopped for lunch in a nearby bay where he could watch whales at play. One day my wife went with him to see the spot. She brought back the news that it might be an even better location for study and so we shifted our operations to that bay.

There we saw occasional feeding, and a great deal of mating behavior. A cliff bordering the bay rose directly from the water in one place. Occasional whales meandered beneath the cliff,

which made it possible to see them even when they were underwater.

Although our stay was brief it was obvious that this was the best opportunity we had ever encountered to make a more prolonged study of whale behavior. Thus, in 1971 we returned to the area on a major expedition, for three months, sponsored by the New York Zoological Society and the National Geographic Society. Among the members were Nixon Griffis of the New York Zoological Society, diver and photographer Jane Frick, and Rockefeller University Graduate Student James Gould.

In the late Southern Hemisphere winter we set up camp near the cliff so we could live in daily sight of the right whales, even when cooking, eating or washing dishes. When we slept they still remained a part of our lives, for on calm nights when the whales would come near shore the sounds of their breathing often woke us.

We had a unique opportunity to correlate sounds of whales with detailed observations of their behavior, something never before possible in studies of wild whales. To do this we moored three sonobuoys near the cliff lookout. A sonobuoy is a floating transmitter which radios to shore any sounds detected by its hydrophone (an underwater microphone dangling beneath it). We used three widely spaced sonobuoys whose signals were recorded simultaneously on a four-track tape recorder (one track for each sonobuoy, the fourth for voice observations directly from the cliff and by radio from an observer in a small plane circling overhead). By accurately measuring arrival times of whale sounds it is possible to calculate the location of the noise-making whale within the bay. Because right whales have a series of prominent white growths on their heads which are different for each individual (called "the bonnet" by old whalers, or "callosities" by scientists), familiar heads can be recognized from aerial photographs. Thus we were in a position to tell, in favorable circumstances, which whale had made a particular sound.

Although we have not yet completed analysis of our data, some of the more obvious trends are already clear. For example, in the two principal areas in which we made observations, different herd structures seem to predominate. Toward the end of our stay, one herd was almost entirely composed of females and their calves, while the second had few calves but many groups actively engaged in mating. Thus one area seems to be a nursery, the other a courting and mating ground. The two areas gave us abundant opportunities to witness mating behavior and rearing of the young.

Mating in right whales seems to be promiscuous; on one occasion we saw what we assumed from watching their behavior to be two males mate with the same female and one of these males mate with a second female a few minutes later. There also seems to be considerable competition among males for a single female, since mating is accomplished by the female remaining on an even keel, with the male underwater, belly-up, beneath her. Because of her position, the female can, and does, avoid repeated attempts at mating simply by rolling belly-up at the surface. In this position she is invulnerable and males repeatedly swim over her tail or nudge her side in apparent attempts to roll her into a more favorable position. But almost invariably these attempts are unsuccessful and she is able to maintain her position by means of her flippers. However, she must right herself periodically in order to breathe, and when she does the group of males drifting by her side (as many as six, with two or three being more common) dive rapidly beneath her, whereupon there is much pushing and shoving in what seem to be efforts to get beneath her. (In one case we found such behavior accompanied by sounds as the whales collided.) This appeared to be rather frantic competition for the female, but we never witnessed anything that seemed to break into overt violence, only sudden turns and hard shoving.

More rarely, we witnessed pairs of whales obviously engaged in mating. Under these conditions, when the male was not competing with others, there was much apparently tender stroking between the partners for a considerable time.

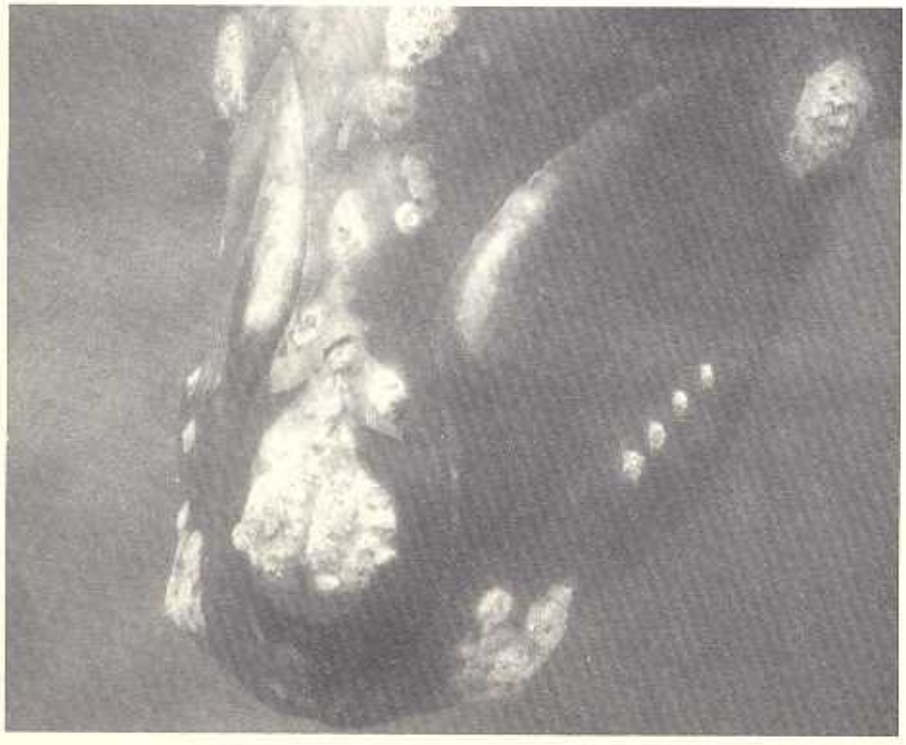
The sense of touch seems to be quite important to these animals. For example, females often dally with their calves for long periods, lying on their backs with the calf draped across their chests, occasionally patting it or allowing it to play on their tails, sliding repeatedly off one fluke or trying to swim and wriggle over the mother's back when she is breathing quietly at the surface.

We also witnessed whale calves playing with kelp (a giant seaweed) following a bad storm which left long strands of it floating out over the bay. A calf would approach such a strand with a shallow dive, coming up beneath it so that it draped over its neck or head like a comical hat. The calf would then submerge and swim forward allowing the seaweed to stroke slowly down its back and sides. Just as the kelp was about to slip off the tail, it would twist its tail around to bring the seaweed into reach

Jane Frick swimming with a right whale.

The dusky dolphin (*Lagenorhynchus obscurus*) named by Darwin Fitzroy's dolphins, in honor of the captain of the *Beagle*.

Underwater view of the top of a right whale's head, showing enormous curved lower lips reaching nearly to the top of the head. The lower jaw, the top of the head, and sometimes the upper edge of the lower lips are adorned with callosities (seen here as white growths) which have different size, shape and placement for each whale, thus making it possible to recognize whales as individuals. A large callosity in the position of an eyebrow can be seen in the upper left and right corners of the picture. These spots are immediately above large eyes, not visible here.



Photographs by Jane Frick and the author

Mother and calf surfacing near shore. The mother keeps the calf out of harm's way, on her shore side.

The author approaching a whale which is lying belly up, with both its flippers in the air.

Single vertebra of a right whale, 4½ feet from tip to tip.

A rare albino calf with its mother.

of its flippers. With these it would grab the kelp, patting it vigorously between them. This form of play was repeated many times and was made all the more fascinating by the very slow rate at which it all occurred, for such is the pace of the lives of right whales.

Often the whales appeared to do nothing for hours, simply drifting quietly at the surface, moving only enough to take an occasional breath. Watching this calm spectacle, we became aware of what this species might mean to man were it still present today in its former range and abundance. We cannot help but wish that the pilgrims and others in their century had had a different attitude toward the "right" whales they encountered in Massachusetts Bay.

Bradfords' Mayflower journal contains this account:

> "*We saw daily great whales* [AT CAPE COD], *of the best kind for oil and bone, come close aboard our ship, and, in fair weather, swim and play about us. There was once one, when the sun shone warm, came and lay above water, as if she had been dead, for a good while together, within half a musket shot of the ship; at which two were prepared to shoot, to see whether she would stir or no. He that gave fire first, his musket flew in pieces, both stock and barrel; yet, thanks be to God, neither he nor any man else was hurt with it, though many were there about. But when the whale saw her time, she gave a snuff, and away.*"

Thus ended the first recorded encounter between English-speaking settlers and right whales. And thus began the destruction of the great concentration of right whales.

We plan to go back to Patagonia for a more complete study based on our experiences from last year, hoping that when we return neither of the two illegal whaling operations in our area will have encountered these whales and turned them into dog food, margarine, or soap—things from which I, for one, have never gained the least inspiration.