The New York Times

July 12, 2009

Watching Whales Watching Us

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On the afternoon of Sept. 25, 2002, a group of marine biologists vacationing on Isla San José, in Baja California Sur, Mexico, came upon a couple of whales stranded along the beach. A quick assessment indicated that they had died quite recently. The scientists radioed a passing vessel and sent a message to a colleague at a nearby marine-mammal laboratory, who came to the beach to do an examination.

They were beaked whales, of which there are 20 known species. Relatively small members of the cetacean family, they resemble outsize dolphins, and because of their deep-diving ways, they are among the least observed and understood. Curiously, the stranding on Isla San José followed by just one day the stranding of at least 14 other beaked whales 5,700 miles away along the Canary Islands beaches of Lanzarote and Fuerteventura. Rescuers there worked feverishly to water down the whales and keep them cool. They all eventually died, however, and some of their bodies were immediately sent to the nearby city Las Palmas de Gran Canaria for analysis.

It is nearly impossible to pinpoint the precise cause of a whale's stranding. Theories invariably include factors like the straying of a sick and dying whale leader, faithfully followed by the members of his pod, or sudden shallows along the shores of a migratory route. The two strandings in September 2002, however, did have something intriguing in common. It was noted by the Canary Islands rescuers that naval vessels were carrying out exercises that day not far offshore, a situation that had accompanied four other mass whale strandings on Canary Islands beaches since 1985. And while no such military exercises were being conducted off the beaches of Isla San José, the vessel that the scientists radioed turned out to be a research ship dragging an array of powerful underwater air guns that were repeatedly set off the previous morning in the course of seismic tests of the region's ocean floor.

The suspicion of a causal relationship between whale strandings and either seismic tests or the use of new high-tech sonar tracking devices in military-training exercises had been mounting for some time. Similar coincidences had been noted off the coasts of Brazil, the Bahamas, the Galápagos Islands, the U.S. Virgin Islands and Japan, as well as in the waters off Italy and Greece. Necropsies performed on a number of the whales revealed lesions about their brains and ears. The results of the examinations performed on the Canary Islands whales, however, added a whole other, darker dimension to the whale-stranding mystery. In addition to bleeding around the whales' brains and ears, scientists found lesions in their livers, lungs and kidneys, as well as nitrogen bubbles in their organs and tissue, all classic symptoms of a sickness that scientists had naturally assumed whales would be immune to: the bends.

It might sound like something out of a bad sci-fi film: whales sent into suicidal dashes toward the ocean's surface to escape the madness-inducing echo chamber that we humans have made of their sound-sensitive habitat. But since the Canary Islands stranding in 2002, similar necropsy results have turned up with a

number of beached whales, and the deleterious effects of sonar and other human-generated sounds on ocean ecosystems have been firmly established.

As described in a 2005 report published by the Natural Resources Defense Council, "Sounding the Depths II: The Rising Toll of Sonar, Shipping and Industrial Ocean Noise on Marine Life," oceans that as recently as 100 years ago had been one vast, ongoing whale and piscine chorus have now essentially become senses-wilting miasmas of human-made noise. At a 2004 International Whaling Commission symposium, more than 100 scientists signed a statement asserting that the association between sonar and whale deaths "is very convincing and appears overwhelming."

The question of sonar's catastrophic effects on whales even reached the Supreme Court last November, in a case pitting the United States Navy against the Natural Resources Defense Council. The council, along with other environmental groups, had secured two landmark victories in the district and appellate courts of California, which ruled to heavily restrict the Navy's use of sonar devices in its training exercises. The Supreme Court, however, in a 6-to-3 decision widely viewed as a setback for the environmental movement, overturned parts of the lower-court rulings, faulting them for, in the words of Chief Justice John Roberts's majority opinion, failing "properly to defer to senior Navy officers' specific, predictive judgments," thereby jeopardizing the safety of the fleet and sacrificing the public's interest in military preparedness by "forcing the Navy to deploy an inadequately trained antisubmarine force." In his decision, Roberts went on to minimize, in a fairly dismissive tone, the issue of harm to marine life: "For the plaintiffs, the most serious possible injury would be harm to an unknown number of the marine animals that they study and observe."

Still, the majority's verdict somehow seemed incidental to the greater, tacit victory for environmentalists of having gotten the nation's highest court to even consider the well-being of whales in the context of a debate about national security, something that would have been unthinkable not so very long ago. Justice Ruth Bader Ginsburg, in a dissenting opinion joined by Justice David Souter, took pains to cite the research linking sonar to "mass strandings of marine mammals, hemorrhaging around the brain and ears, acute spongiotic changes in the central nervous system and lesions in vital organs." After quoting as well the Navy's own environmental assessments of the extensive damages that its exercises would cause, Ginsburg went on to conclude: "In my view, this likely harm . . . cannot be lightly dismissed, even in the face of an alleged risk to the effectiveness of the Navy's 14 training exercises." Since the Supreme Court's ruling, meanwhile, the Navy has made an agreement with the N.R.D.C. to do more extensive environmental-impact studies and advanced scouting to avoid, whenever possible, conducting exercises in close proximity to whales.

In the end, the Supreme Court dispute over the use of sonar can be viewed as a turning point in our fraught relationship with whales — a moment when new insights into the behavior of our long-inscrutable, seabound mammalian counterparts began forcing us to reconsider and renegotiate what once seemed to be a distinct boundary between our world and theirs. Scientists have now documented behaviors like tool use and cooperative hunting strategies among whales. Orcas, or killer whales, have been found to mourn their own dead. Just three years ago, researchers at Mount Sinai School of Medicine in New York discovered, in the brains of a number of whale species, highly specialized neurons that are linked to, among other things, the use of language and were once thought to be the exclusive property of humans and a few other primates. Indeed, marine biologists are now revealing not only the dizzying variety of vocalizations among a number of whale species but also complex societal structures and cultures.

Whales, we now know, teach and learn. They scheme. They cooperate, and they grieve. They recognize themselves and their friends. They know and fight back against their enemies. And perhaps most stunningly, given all of our transgressions against them, they may even, in certain circumstances, have learned to trust us again.

Whale! Two o'clock!" our boatman and guide, Ranulfo Mayoral, shouted one morning in March, steering toward a distant spout of vapor above the clear blue waters of western Baja's Laguna San Ignacio, where I'd gone in hopes of experiencing firsthand this ever-evolving relationship between humans and whales. We had been out in Mayoral's 18-foot fishing skiff, or panga, the Dolphin II, for less than 20 minutes — myself, a marine mammal behavioralist named Toni Frohoff and a group of three other whale watchers — and already we had a number of gray whales in our sights, yet another exhalation appearing now along the Pacific's horizon, followed, in turn, by the balletic, sun-glistened flourish of a suddenly upraised tail, or fluke.

They largely elude us, whales, thus their deep allure. The earth's most massive creatures, they nevertheless spend the bulk of their lives off in their own element, beyond our ken, about as close as fellow mammals can get to being extraterrestrials. Other than the occasional disoriented stray or the victims of strandings, whales typically visit us only fleetingly, to grab a passing breath of air or, rarer still, when they're breaching: spectacular, body-long heaves, the impetus for which still baffles scientists, who have attributed them to everything from sheer exuberance to attempts to shake off body lice. And yet for all of their inherent elusiveness, the gray whales of Baja baffle scientists for the opposite reason: They can't seem to get enough of us humans.

When I first contacted Frohoff, a specialist in whale well-being and stress, back in January in Seattle, where she lived at the time, she mentioned that she would soon be heading down to Baja as part of her ongoing research into "the human-whale interactions there." Each winter and early spring, gray whales, members of the baleen family (named for the keratin mouth plates through which they filter their food) arrive by the thousands to the warm, placid lagoons off Baja's western coast, where the mothers give birth and nurse their calves for two to four months before beginning the migration northward to their feeding grounds in the subpolar waters of the Bering and Chukchi Seas. Typically such child-rearing is a time of intense seclusion and protectiveness among mammalian species, but many of the grays of Baja, Frohoff told me, treat their days of birthing and nursing there as a kind of protracted coming-out party. "It's extraordinary," she said. "At precisely the time when you'd expect them to be the most defensive, they're incredibly social. They'll come right up to boats, let people touch their faces, give them massages, rub their mouths and tongues."

The very notion of sociable, extroverted whales seemed to me at the time an oxymoron. And yet even as Mayoral, our guide, was speeding toward the blow we just sighted that morning, we were being treated to a spectacular breaching display: four consecutive, time-delayed flights of a mother gray's 40-foot-long, 30-ton bulk; a performance so exhilarating I couldn't believe that Mayoral was suddenly slowing his panga to a sputtering idle. Until, that is, he happened to mention that the very whale we were pursuing was now in fast pursuit of us.

"She's coming straight this way," Frohoff shouted as she reached for the sound-recording device she has fondly dubbed Fluffy — a two-foot-long, cylindrical microphone sheathed in a filtering fleece of shaggy fur — and held it off the bow toward a darkening wave of advancing whale.

Among the most ancient of all the whales, grays are also by far the homeliest, their gunmetal bulks encrusted with barnacles and lice and the crisscrossed scars of everything from orca attacks to the blades of boat propellers. Indeed, the mother gray fast approaching us just then looked like one of those sunken Civil War-era submarines and appeared to be just as inert, until she suddenly surfaced right alongside us with a huge, plosive whoosh of air from her blowhole before submerging once more.

Eighteen feet of boat on open seas is in almost any circumstance a tenuous alignment. But to suddenly find yourself in that same small vessel above a fleet, 40-foot-long midsea mastodon — one whose fluke alone could, with a cursory flip, send you and your boat soaring skyward — is to know the pure, wonderfully edgeless fear of complete acquiescence. I watched, wide-eyed, the soundless slide of that "moving land," as Milton once described whales, everywhere beneath our boat, and suddenly felt the whole of myself wanting to go away with her; to hop on for a long ride downward toward some dimly remembered, primordial home.

And then, within moments, the mother was surfacing again off to our stern and doubling back in our direction, but this time with her newborn male in tow: a miniature version of herself — if two tons of anything can be referred to as miniature — the calf's skin still shiny and smooth. The baby gray glided up to the boat's edge, and then the whole of his long, hornbill-shaped head was rising up out of the water directly beside me, a huge, ovoid eye slowly opening to take me in. I'd never felt so beheld in my life.

A FELLOW MAMMAL breaking the boundary of its domain for a long look at you is beguiling in and of itself. Such behavior becomes downright otherworldly, however, when you consider the not-so-distant history of human-whale interactions in the birthing lagoons of Baja. Much like their extinct Atlantic counterparts or the extremely endangered 100 or so western Pacific gray whales that still yearly ply the coastal waters between South Korea and Siberia, eastern Pacific grays were nearly hunted out of existence as recently as 75 years ago. The waters of Laguna San Ignacio once ran red with whale blood each winter and spring, orphaned calves circling whalers' vessels for days afterward before dying themselves of starvation.

Gray whales, thought by some scientists to live as long as 100 years, were once commonly referred to as "hardheaded devil fish" because of the ferocity with which they would defend themselves and their young, smashing whaling vessels and killing their occupants. A gray-whale hunting ban agreed upon by most of the world's whaling nations in 1937, along with the inherent resilience and adaptability of the eastern Pacific gray, has since allowed the species a rather remarkable rebound. Its current population is estimated to be in the range of 18,000, and in 1994 the gray became the first marine mammal to be removed from protection under the federal Endangered Species Act. Still, the question of why present-day gray-whale mothers, some of whom still bear harpoon scars, would take to seeking us out and gently shepherding their young into our arms is a mystery that now captivates whale researchers and watchers alike.

Some marine biologists have dismissed the phenomenon as little more than a reflexive behavior, suggesting that the whales are merely attracted to the sound of the boats' motors or that they are looking to scratch their lice-ridden and barnacled backs against the boats' hulls. Still, a combination of anecdotal evidence and recent scientific research into whale biology and behavior suggests that there may something far more compelling going on in the lagoons of Baja each winter and spring. Something, let's say, along the lines of that time-worn plot conceit behind many a film, in which the peaceable greetings of alien visitors are tragically rebuffed by human fear and ignorance. Except that in this particular rendition, the aliens keep coming back, trying,

perhaps, to give us another chance. To let us, of all species, off the hook.

The story is by now legend in the small fishing villages of Baja and beyond: how on a February morning in 1972, Francisco Mayoral — who is known as Pachico and happens to be the father of Ranulfo, the guide on my trip with Frohoff — was out in his panga with his partner, Santo Luis Perez, fishing for sea bass when a female gray whale approached their boat. Pachico tried to maneuver away. The whale, however, kept rising up beside them. At one point, she positioned herself directly under the panga. Pachico, Ranulfo told me one night over dinner at our beachside base camp, had no choice but to hold his place and wait for what would come next. “All he knew,” Ranulfo recalled of his father, “was that this animal was the boss.”

Human-whale relations at that time in Laguna San Ignacio were testy at best. Stories circulated about female grays smashing boats and overturning kayaks, and local fishermen and visitors alike were still making a point of steering clear of the devil fish, ever mindful of its fearsome reputation and of the turbulent history of human-whale interactions in San Ignacio and the other birthing lagoons of Baja — Bahía Magdalena to the south, Guerrero Negro and Ojo de Liebre to the north.

Ojo de Liebre was once known as Scammon’s Lagoon, after Charles M. Scammon, the 19th-century whaling captain who first discovered Baja’s birthing lagoons. A pioneer of modern commercial whaling and the newly emerging field of cetology, Scammon used new shoulder-launched harpoon guns that allowed him to take not only mother grays and their calves but migrating bulls, too, all along the gray’s coastal migratory route, thus setting the stage for the near extinction of the very species that Scammon himself exhaustively studied and detailed in “The Marine Mammals of the Northwestern Coast of North America, Together With an Account of the American Whale-Fishery,” published in 1874, 23 years after “Moby Dick” and, like it, still considered one of the best books ever written about whales and whaling.

Human-whale relations have long been defined by this stark dualism: manic swings between mythologizing and massacre; between sublime awe and assiduous annihilation, the testimonies of their slayers often permeated with a deep sense of both remorse and respect for the victims. In our earliest cosmologies, the whale loomed so large as to be more or less commensurate with the cosmos, equally vast and unknowable, as hugely fearsome and immeasurable as any god. The very earth was said to be borne upon the back of a whale, one whose writhings caused earthquakes and floods. In “A Thousand and One Nights,” Sinbad and his crew come at one point upon a pristine island. They set up camp there and light fires to cook their food, only to find themselves suddenly being tossed off and dashed at sea by the violent trembling of the whale they had mistaken for land. Similar tales of mistaken “whale-lands” recur throughout early literature.

IN A SENSE, the urge to kill the whale was originally rooted as much in a need to conquer and contain the unknown as it was in a need to gather the bounty of its actual flesh and bone. As far back as the first century B.C., a whale skeleton was transported from Palestine to Rome merely for the public to marvel at. This same impulse would persist through the late 19th and early 20th centuries, when ours had become a world lighted, greased and corseted by whale oil and bone. Joe Roman, a biologist at the University of Vermont, recounts in his book “Whale” that in cities and towns across Europe and the United States, the chemically preserved carcasses of beached whales became wildly popular traveling exhibitions. One blue whale that stranded off the coast of Sweden in the 1860s was converted into a kind of traveling cetological cafe that for years made the rounds of Europe’s major cities. People would stroll in through the whale’s opened mouth and have tea inside

its belly before re-emerging, Jonah-like, back into the light of day.

By the middle of the 20th century, worldwide stocks of nearly all the earth's whale species had been so depleted that the newly formed International Whaling Commission began placing limits and wholesale bans on commercial whaling in the futile hope of saving an industry fast running out of its only resource. Earth's oil, meanwhile, had by then more or less obviated our need for the whale's, which, because of its inherent resistance to extreme cold, is used now only in the most specialized machinery of, appropriately enough, sea and space exploration: deep-diving subs, Mars and lunar rovers and the Hubble Space Telescope. In the end, our conquest of whales has mirrored that of the very earth we once thought whales symbolized, just as our current regard for both entities now stems, in large part, from an increasing awareness of their finitude and frailty.

Of course, as the mother gray kept circling his boat on that February morning in 1972, the question of whether the grays of Baja had somehow heard the news of our gradual transition from murdering whales to marveling at them was very much on the mind of Pachico Mayoral. "At one point she went directly under and lifted the boat out of the water," Ranulfo, the son, told me. Pachico and his partner were poised there helplessly, like Sinbad and countless other travelers along the "whale road," as early Icelanders once referred to the sea.

And then their boat soon settled again, and the mother gray came back around once more, her head popping up out of the water now directly beside Pachico. She remained there for so long, just eyeing him, that Pachico finally reached across and touched her with a finger. And then with his whole hand, the whale holding still there before him, as if basking in the feel of a grasp without malice. "Before then, everyone went out of our way to avoid the whales," Ranulfo told me. "And then all of that suddenly changed."

It wasn't until I got back to our base camp on the day of my first close whale encounter that I could begin to parse what happened in a calm and coherent fashion: the seemingly undeniable fact, for example, that the mother whale's first pass that morning was a reconnaissance mission to check out our boat, and us, before offering up her calf for review: his of us and ours of him.

I read before my journey to Baja of what happens to people when they come in contact with a whale, how they tend to go, literally and figuratively, a bit overboard: nearly tipping over boats for a passing touch; spontaneously breaking into song; crying out in ecstasy; or just flat-out crying. Frohoff herself warned me as we were first boarding Dolphin II that morning that she was given to doffing her scientist hat in the presence of a whale, and sure enough, there was Fluffy, her microphone, set down for a moment beneath her seat, Frohoff dangling far out over the boat's prow, arms outstretched, cooing and trilling at the approaching mother and calf. Another watcher in our boat began singing Broadway show tunes. I joined in.

A behavioral and wildlife biologist, Frohoff is something of a pioneer in the field of human-cetacean interactions, having begun her career in the early 1980s studying the to and fro between dolphins and people — both in captivity, with the then-emerging swim-with-dolphins therapy programs, and in the wild. She currently serves as the research director of TerraMar Research, dedicated to the protection of marine mammals and their ecosystems, and is a founder of its educational offshoot, the Trans-Species Institute. She began observing the extraordinary goings-on with the so-called Friendlies of Baja in the late 1990s.

“Studying human-gray whale interactions was a natural progression for me and my work,” Frohoff told me as we sat up talking one night in base camp, the usually persistent desert winds so still at that moment that we could hear, out in the lagoon, the ethereal sound of whales breathing. “And yet even as somebody who has specialized in human-dolphin interactions, I was not prepared for the profound nature of what’s going on down here. These encounters are highly unique and rare. And there’s another word for it: it’s an enigma. Intellectually, it is an enigma as to why gray whales do this, because there’s a continuity and predictability to these interactions. What we have here are highly sophisticated minds in very unique bodies, living in such a different environment, and yet these whales are approaching us with some frequency for what appears to be sociable tactile contact. And with no food involved.”

The very coastal existence that has long afforded grays the protective lagoons for giving birth and nursing and the coastline kelp beds in which to feed and shield their young from the assaults of orcas on the journey north, has also, with the rise of human civilization, increasingly exposed them to a gantlet of human-made perils: ship and small-boat traffic as well as various chemical contaminants and forms of noise pollution, including military sonar.

Despite a mysterious die-off between 1998 and 2000, during which several thousand whales perished, the eastern Pacific gray has thus far proved to be one of the few whale-conservation success stories. Hunted to near extinction by whalers in the 1850s and again in the early 1900s with the introduction of so-called floating factories — modern whaling vessels that allowed for the immediate on-board flensing and refinement of the carcass — the gray-whale population was reduced, according to some estimates, to fewer than 1,000 animals, a small fraction of their current estimated population of 18,000. Nearly all other whale species, by contrast, have been far slower to rebound, with some scientists estimating that none have reached even half of their former numbers.

Indeed, grays have exhibited a degree of resiliency and adaptability that suggests, among other things, that their sociability in Baja is far more than a reflexive, moth-to-flame-like behavior. Elizabeth Alter, a marine biologist at the N.R.D.C., has done research, for example, that indicates that grays have what she describes as “a great degree of behavioral flexibility.” With time and shifting circumstances, they have switched from exclusive bottom-feeding to occasionally foraging higher up in the water column, and they have been able to seek out a variety of different feeding grounds depending on the conditions and obstacles with which they are confronted. A good percentage of the gray-whale population, Alter also says, may have avoided the Baja lagoons during the peak hunting years and found other areas to calve and nurse.

“Some naysayers,” Toni Frohoff told me, “might claim that these whales don’t have the intelligence to know the difference between the present peaceful climate in the lagoon and what transpired in the past, that they’re not smart enough to remember that humans can inflict pain and cause death. However, historical evidence, as well as the limited data we do have on these whales, compels us to think otherwise. I mean, there are numerous stories of how they avoid certain areas and learn to stay away from particular trouble spots, as well as the simple fact that they have to be intelligent and have good memories to survive the way they have, especially navigating along their migratory route, which involves not only memory but making quick assessments and decisions that go beyond just instinctual behaviors. So for me the most plausible explanation, without having any data indicating otherwise, is that they’ve now come to consider us as safe in these areas.”

TO DATE, NO neurological studies of the gray-whale brain have been done. In 2006, however, researchers at Mount Sinai School of Medicine analyzed the brains of two other baleen species — humpback and finback whales — as well as those of a number of toothed whales like dolphins and killer and sperm whales. The study revealed brain structures surprisingly similar to our own. Some, in fact, contained large concentrations of spindle cells — often referred to as the cells that make us human because of their link to higher cognitive functions like self-awareness, a sense of compassion and linguistic expression — with the added kick that whales evolved these same highly specialized neurons as many as 15 million years before we humans did, a stunning instance of a phenomenon biologists refer to as parallel evolution.

“In spite of the relative scarcity of information on many cetacean species,” the Mount Sinai scientists concluded in a report in the November 2006 edition of the journal The Anatomical Record, “it is important to note in this context that sperm whales, killer whales and certainly humpback whales exhibit complex social patterns that include intricate communication skills, coalition formation, cooperation, cultural transmission and tool usage.” They added that it is therefore “likely that some of these abilities” are related to the comparable complexity in the brain structures of whales and hominids.

The sperm whale, for example, which has the largest brain on earth, weighing as much as 19 pounds, has been found to live in large, elaborately structured societal groups, or clans, that typically number in the tens of thousands and wander over many thousands of miles of ocean. The whales of a clan are not all related, but within each clan there are smaller, close-knit, matriarchal family units. Young whales are raised within an extended, multitiered network of doting female caregivers, including the mother, aunts and grandmothers, who help in the nurturing of babies and, researchers suspect, in teaching them patterns of movement, hunting techniques and communication skills. “It’s like they’re living in these massive, multicultural, undersea societies,” says Hal Whitehead, a marine biologist at Dalhousie University in Nova Scotia and the world’s foremost expert on the sperm whale. “It’s sort of strange. Really the closest analogy we have for it would be ourselves.”

Whitehead has even discovered distinct clan dialects using different codas, what he describes as a “Morse code-like pattern of clicks” that the whales make with their long head cavities and use to communicate with one another over many miles, reinforcing social bonds and declaring clan affiliation. Whitehead, who has been tracking and recording sperm whales around the globe since the early 1980s, has positively identified five distinct clan dialects and studied two extensively. “The regular clan,” he told me in a phone conversation from his lab in Nova Scotia, “makes three to eight equally spaced clicks. And then there are the Plus-One clans. They have two to eight clicks and then a pause and an added click at the end, kind of like the Canadian ‘eh.’ We’ve also noticed that these clans ply the water differently. Regular groups move in wiggly tracks closer to shore, while the Plus-Ones swim further from shore in straight lines.”

Whales display an incredible degree of coordination and cooperation in their efforts. Aaron Thode, an associate research scientist from the Scripps Institution, who was in Baja doing acoustical studies of grays, told me of another project he is involved in, using the latest research tools to gain insights into how whales perceive the world. He showed me an extraordinary video of sperm whales pilfering catch from fishermen’s lines in Alaska, 50-foot-long, massive-jawed behemoths delicately snatching a single black cod from a longline’s dangling hook, like an hors d’oeuvre from a cocktail toothpick. Fishermen are currently losing 5 to 10 percent of their yearly haul and fear the problem could become worse because whales who have mastered

the technique are busily teaching it to others. The news seems to be rapidly spreading, as reports of similar fish-snatching are coming in from fishermen all over the world.

Humpback whales, meanwhile, have devised a prime example of what Fred Sharpe, executive director of the Alaska Whale Foundation, has described as “communal tool use.” Based on 20 years of observing humpbacks at sea and simulating their behaviors in the laboratory, Sharpe has been able to piece together the humpback’s rather ingenious fishing strategy. A group of humpbacks will get together and begin herding prey — herring, for example — toward the sea surface through the use of coordinated hunting calls. A designated leader of the group, meanwhile, will dive beneath the herded fish and emit from its blowhole an intense stream of rising bubbles, essentially forming a tube-shaped net to hold the fish in place. Waiting for the precise moment when the net has fully formed and captured the optimum number of fish, the group then rises as one, mouths agape, toward the surface.

Somehow the more we learn about whales, the more we’re coming to appreciate the sublimely discomfiting reality that a kind of parallel “us” has long been out there roaming the oceans' depths, succumbing to our assaults. Indeed, when that baby gray calf bobbed up out of the sea and held there that first morning, staring at me with his huge, slow-blinking eye, it felt to me as if he were taking one impossibly long and quizzical look in the mirror.

I asked Frohoff at one point if, given both the dark past of human-whale interactions in those lagoons and what we’ve now come to know about whale intelligence, there could possibly be some element of knowing forgiveness behind their actions. She took a deep breath and widened her eyes, making it clear that she wanted to be very careful about how she answered such a question.

“Those are the kinds of things that for the longest time a scientist wouldn’t dare consider,” she said. “But thank goodness we’ve gone through a kind of cognitive revolution when it comes to studying the intelligence and emotion of other species. In fact, I’d say now that it is my obligation as a scientist not to discount that possibility. We do have compelling evidence of the experience of grief in cetaceans; and of joy, anger, frustration and distress and self-awareness and tool use; and of protecting not just their young but also their companions from humans and other predators. So these are reasons why something like forgiveness is a possibility. And even if it’s not that exactly, I believe it’s something. That there’s something very potent occurring here from a behavioral and a biological perspective. I mean, I’d put my career on the line and challenge anybody to say that these whales are not actively soliciting and engaging in a form of communication with humans, both through eye contact and tactile interaction and perhaps acoustically in ways that we have not yet determined. I find the reality of it far more enthralling than all our past whale mythology.”

ON MY FOURTH and final day in Baja, I set out once more with Frohoff in Ranulfo Mayoral’s panga. We were well into Hour 2 of our watch that last day when a mother gray suddenly emerged from San Ignacio’s riled-up waters a short distance off our bow. Having trained my eye somewhat over the previous days, I knew straight off that this was the same mother from my first day’s encounter because of the telltale markings of her barnacles and orange sea lice, some 400 pounds of which gray whales typically bear upon their bodies all of their adult lives.

The mother gray let out a great exhale before sliding under again, only to re-emerge a moment later, this time

with her male calf, who began treating us to such a rollicking display of playful turns and flips we soon dubbed him Little Nut. For the next 30 minutes or so, despite the choppy seas, mother and son repeatedly wove us and our boat into their designs, and then all at once Little Nut popped up directly alongside the boat again and held there. I reached over and touched him on the head, the smooth, shiny, melon-cask of him, dimpled everywhere with stubbles of hair.

Then, as spontaneously as the interaction had been initiated, it was deemed, by the mother at least, over; time to move on to other things. Not, however, before she abruptly decided to admit us into that exclusive club of unwitting whale riders, the many Sinbads and other, real-life seafarers of this world.

“She’s coming under the boat,” Mayoral shouted, cutting the engine, and there we suddenly were, borne up on a swelling promontory of whale back, giddily airborne and helpless.

When Little Nut next emerged, the mother let us gently back down. She then thrust the whole of herself between her calf and our boat, and began to shepherd him away. For another 10 minutes or so, the two swam along about 50 yards off and parallel to us, the mother at one point going into a spectacular series of breaches, as if in both great relief and playful salutation, she and Little Nut fully off in their own element now, heading west toward the lagoon’s mouth and the open Pacific. “They’ll behave totally differently when they do decide to leave,” Mayoral said. “It’s all business out there. They know they’re going to be attacked and that they need food. There’s no time to be friendly.”

AMONG THE MANY obstacles migrating grays face in the course of their travels, boat traffic has become such a problem that a number of whale researchers are now proposing to establish an official boat-free zone or “whale’s lane,” as they call it. From the Icelanders’ “whale’s road” to the “whale’s lane” — a transition that, in many ways, encapsulates the entire arc of our history with whales: from mythologizing to massacre to marveling at and making way for them anew.

At the American Cetacean Society’s biennial conference in Monterey, Calif., last November, a mixed bag of gray-whale experts, marine biologists, marine paleontologists, geologists and oceanographic researchers participated in a workshop on “Gray Whales and Climate Change.” They proposed that the resiliency and adaptability of gray whales in response to the shifts in their environment made them what’s known as an indicator species, one whose health and long-term survival prospects are a good reflection of the state of the overall environment in which they live. “We refer to them now as ‘sentinels of the seas,’ ” says Steven Swartz, a government marine biologist in Silver Spring, Md., and one of the world’s foremost experts on gray whales. “Typically, an indicator species is among the smaller creatures in the environment, micro-organisms. But here we have the largest taking on that role. So it is very unique. Gray whales are delaying their southbound migration and spending less time in the breeding lagoons. They’re expanding their feeding grounds all along their migration route and in the north, and some are even staying in Arctic water over the winter, all of which reflect climate change and changes in the whole ecosystem.”

Scientists and devout whale watchers alike now keep constant vigil over the movements of gray whales up and down the West Coast, conducting a census of their numbers, watching out for the injured and stranded. By far the best-known stranding incident occurred in January 1997. A 7-day-old, 14-foot-long baby gray whale was found on the beaches of Marina del Rey, Calif., her skull and ribs evident from extreme malnourishment. An army of local volunteers tried to push her back out to sea to rejoin the southerly

migration of her fellow grays, but by morning she was found in a nearby channel, listless, near death.

J. J., as the stranded baby was named, was loaded onto a flatbed truck and driven 150 miles south to SeaWorld in San Diego. The plan was to try to nurture J. J. back to health and release her back into the wild, something that had been done only once before with a captive gray whale, GiGi (for Gray Girl) at the same SeaWorld park. Kept in a 40-by-40-foot tank and tube-fed fluids, glucose and antibiotics, J. J. began to rebound. Soon shifting to a formula that included cream, puréed fish and vitamins, intended to approximate a mother's milk, and then to a daily intake of up to 500 pounds of everything from krill to squid to sardines, J. J. by her 14th month had grown to be 30 feet long and 18,000 pounds, the largest marine mammal ever in captivity.

Her tenure at SeaWorld proved to be an invaluable learning experience for whale scientists. J. J. would lead researchers to, among other things, a key insight into the gray whale's navigational skills. During the first spring of her stay at SeaWorld, J. J. was always found floating off to one side of her pool, and caretakers feared that she was perhaps suffering from boredom and depression. It soon dawned on them, however, that she was facing north, the direction of the gray's spring migration. Subsequent necropsies on gray-whale brains revealed that they contain tiny particles of magnetic iron oxide, inner navigational ball bearings of a sort that whir in concert with the earth's magnetic fields, guiding the whales toward their Arctic feeding grounds and, in the early winter, back down to Baja's birthing lagoons. (Russian scientists, meanwhile, conducted sleep studies on J. J. and found the first definitive evidence that whales do, in fact, dream.)

By March 31, 1998, J. J.'s scheduled release date, millions around the world were following the story, hoping for the successful release of the largest animal ever to be returned back into the wild. The freeways were closed for J. J.'s transport to the release spot off San Diego's Point Loma, where a construction crane lifted the 31-foot-long, 19,200-pound whale onto the Coast Guard vessel Conifer. Coast Guard helicopters, meanwhile, were out off Point Loma, scanning the seas for any pods of northward migrating grays that J. J. might join up with. Researchers also outfitted J. J. with radio transmitters in hopes of tracking, for the first time, a complete whale migration. The public would be able to log on to the SeaWorld Web site and track J. J.'s daily progress.

As her huge body was being hoisted with winches and harnesses off of the Conifer's deck and then swung out and gently set down into the Pacific, the first question on everyone's mind was would J. J. even know which way to swim. She immediately dove out of sight. Two days later, radio contact was lost, the transmitters having likely been scraped off against the ocean's bottom.

The last confirmed sighting of J. J. had her not far from the U.S.-Mexico border. She was said to be near a group of migrating grays and heading north. Having been set free without any of the barnacled baggage and telltale scarring of a wild whale's travels, J. J. cannot be positively identified. There is no way to confirm, for example, the hopeful rumor that I would hear often during my days in Baja: that J. J. is now among the Friendlies who return each winter to the waters of Laguna San Ignacio.

BACK AT OUR BASE camp that last night, still worked up from the day's earlier turn with Little Nut and his mother, I sat up late talking with Mayoral and a number of the other boat guides, or pangeros. We talked that night mostly about the Friendlies and what might be behind their overtures toward us humans.

A distinctive aspect of the new cognitive revolution that Toni Frohoff spoke to me about is that scientific facts, of all things, are now freeing scientists like herself to be more expansive storytellers. The accusation of anthropomorphism — of projecting our thoughts and feelings on other animals; of trying to guess at what a whale's day might be like, or a chimp's or an elephant's — has been obviated by the increasing evidence that such creatures have parallel days of their own, ones as distinctly intricate and woundable and, ultimately, unknowable as ours. "I don't anthropomorphize," Frohoff told me. "I leave it to other people to do that. What I do is study gray whales using the same rigorous methodologies that have long been used to study the behaviors of other species and interspecies interaction. Those who would reject out of hand the idea that whales are intelligent enough to consciously interact with us haven't spent enough time around whales."

The pangeros, for their part, have seen enough remarkable whale behavior to know better than to prejudge any explanation, however mind-bending, for what is going on in the lagoons of Baja. A 25-year-old named Alberto Haro Romero, known as Beto, told me of something he saw a month earlier while kayaking off Cabo San Lucas. A group of southward-migrating gray whales were suddenly surrounded and attacked by a pod of pilot whales. Out of nowhere, a group of humpbacks — who, like grays, are baleen whales — appeared and began going at the pilot whales, a highly coordinated counterattack. "It was unbelievable," Beto said. "One baleen whale coming in on the behalf of another. It was, like, tribal."

As Beto spoke, I thought of another bit of interspecies cooperation involving humpbacks that I recently read about. A female humpback was spotted in December 2005 east of the Farallon Islands, just off the coast of San Francisco. She was entangled in a web of crab-trap lines, hundreds of yards of nylon rope that had become wrapped around her mouth, torso and tail, the weight of the traps causing her to struggle to stay afloat. A rescue team arrived within a few hours and decided that the only way to save her was to dive in and cut her loose.

For an hour they cut at the lines and rope with curved knives, all the while trying to steer clear of a tail they knew could kill them with one swipe. When the whale was finally freed, the divers said, she swam around them for a time in what appeared to be joyous circles. She then came back and visited with each one of them, nudging them all gently, as if in thanks. The divers said it was the most beautiful experience they ever had. As for the diver who cut free the rope that was entangled in the whale's mouth, her huge eye was following him the entire time, and he said that he will never be the same.

Charles Siebert, a contributing writer, is the author, most recently, of "The Wauchula Woods Accord: Toward a New Understanding of Animals."