Psychotic, Depressed, or Just a Whale? Studying Whales in Captivity at Marineland of the Pacific, 1954-1967

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Abstract: Prior to the onset of large-scale marine mammal captivity, marine biologists had limited access to whales and dolphins. Scientists were often forced to rely on inadequate wild observations, study whale carcasses from whaling ships or factories, collect stranded specimens, or hunt their own cetaceans. Opening in 1954, Marineland of the Pacific revolutionized the marine mammalogy field by providing unprecedented opportunities for scientists to closely observe, study, and interact with live whales. In addition to studying breathing rates, swimming speeds, and diving capabilities, scientists at Marineland also made advances in understanding echolocation, social structure, and emotional intelligence in cetaceans. Through examinations of scientific studies, changes in animal husbandry practices, and popular publications, this paper shows that the connection between oceanariums and marine research has been largely overlooked in historical scholarship, but is critical to understanding the transformation in the mid-twentieth century relationship between humans and cetaceans.

On February 2, 1957, after months of planning, Dr. Kenneth S. Norris and the capture crew from Marineland of the Pacific ventured out into the Catalina Channel off the coast of California to capture a pilot whale. Only days into the expedition, the crew shot and killed a young male pilot whale before hauling the animal aboard the collection boat. Norris proceeded to measure the whale and make notes of its anatomical features before dissecting it. "The procedure sounds cruel and was not pleasant for any of us," reflected Norris, "but we could rationalize our way out by remembering the works of whalers past and present, and the fact that the animal would die instantly from a shot in the head."[1] By killing and studying the whale, the crew gathered accurate measurements to construct a durable net for the future capture of live pilot whales. From a contemporary perspective, this event seems disturbing. For those familiar with Norris, it is not in keeping with the memory of the revered biologist who was instrumental in writing the 1972 Marine Mammal

[1] Field Notes, 1949-1960, 300-302, Box 36, Norris (Kenneth S.) Papers, University of California Santa Cruz Archives (hereafter UCSCA).

Protection Act, which made it illegal to collect, harass, or kill marine mammals in the United States. Yet, this event was a critical part of a much larger transformation in the mid-twentieth century.

When Marineland of the Pacific opened in August 1954, a decade before SeaWorld was founded, it was the first oceanarium on the Pacific coast of North America, the largest oceanarium in the world, and the lead institution in cetacean capture, entertainment, and marine mammal research.[2] Although bottlenose dolphins had been displayed and studied in aquariums around the world for decades, larger cetaceans were mostly absent from the display industry until Marineland's ventures. Marineland's eventual successful capture, display, and study of pilot whales, as well as several other firsts in the oceanarium world, allowed public audiences to experience cetaceans in new ways and eventually empathize with whales.[3] These days, marine mammal captivity is profoundly controversial, and research conducted in captivity is strongly critiqued, but at the time, whaling companies still operated up the coast in San Francisco Bay at Point San Pablo. The whaling industry's activities do not prove widespread social acceptance of whaling along the Pacific Coast, but popular media suggests that the public did not disapprove of hunting whales. For example, newspaper articles highlighted whale poaching by local fishermen, calling the killing of an orca in 1931 "Fisherman's Luck," while marine biologists reported finding pilot whales shot dead, their bodies left unharvested, throughout the 1940s and 1950s.[4] Furthermore, since marine mammalogists and the public knew little about cetacean physiology or cognitive abilities, ideas about ethical rights did not yet extend to whales and dolphins.

Through examinations of scientific studies, popular publications, and Marineland personnel journals, this article argues that Marineland's establishment and early years of pilot whale captivity revolutionized the

[2] Originally named Sea World, the company's name changed to SeaWorld in the late 1990s.

[3] Marineland of the Pacific is responsible for collecting a Cuvier's beaked whale and a pygmy sperm whale along with the first display of a false killer whale and a killer whale. Marineland Scrapbook 1950-1959, 39-48, Box 59, Norris (Kenneth S. Papers) UCSCA; "Rare Baby Whale Captured Near Catalina, Dies," *Los Angeles Times,* January, 1958, Marineland Scrapbook 1957-1959, 19, Box 60, Norris (Kenneth S.) Papers, UCSCA.

[4] "Fisherman's Luck," *Healdsburg Enterprise,* August 6, 1931: 7; "Fishermen Bag Killer Whale," *Torrance Herald,* August 13, 1931: 6A; Gordon Gunter, "Records of the Blackfish or Pilot Whale from the Texas Coast," *Journal of Mammalogy* 24, no. 4 (November 1946): 374-377; Andrew Starrett and Priscilla Starrett, "Observations on Young Blackfish, Globicephala," *Journal of Mammalogy* 36, no. 3 (August 1955): 424-429.

marine mammalogy field by providing unprecedented opportunities for researchers to closely observe, study, and interact with live whales. Prior to the onset of large-scale marine mammal captivity, biologists had limited access to live marine mammals; therefore, scientific knowledge of whales was restricted to a basic understanding of their anatomy and geographical distribution. As historian Kurkpatrick Dorsey explains, "whales did not have the decency to haul out on islands like seals, and dissecting one was not exactly lab work."[5] Instead, marine mammalogists in the early twentieth century were forced to rely on inadequate wild observations, study carcasses on whaling ships or at factories, collect stranded specimens, or hunt their own cetaceans during this era of what journalist Mark Leiren-Young refers to as "slice-and-dice science."[6]

In 1942, for example, Dr. Gordon Gunter—while working as a marine biologist for the Texas Fish, Game, and Oyster Commission—shot and killed thirty-seven bottlenose dolphins in the Gulf of Mexico to determine what the dolphins ate and whether or not they were a threat to the local commercial fishery. Gunter, a pioneer in fisheries science, discovered that the animals primarily fed on commercially unimportant fish. He concluded his research by stating "the population of bottlenose dolphins is not great and appears to have declined in the past 40 years on the Texas Coast. For these reasons the animal should be protected by Texas law."[7] In another instance, biologist Dr. Charles F. Yocom observed the location and colouration of wild Dall's porpoises from a U.S. Navy ship in 1945, but admitted poor weather and distance between the ship and animals made it difficult to discern any details.[8] Without reliable and continuous access to cetaceans, marine mammalogists struggled to learn more about whales' physiology, social behaviour, and intelligence. However, Marineland's displays allowed scientists to start researching and understanding these aspects of cetaceans. Consequently, Marineland and its displays played a critical role in creating new sites of interaction between cetologists and live whales, transforming scientific

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[5] Kurkpatrick Dorsey, *Whales & Nations: Environmental Diplomacy on the High Seas* (Seattle: University of Washington Press, 2013), 10.

[6] Mark Leiren-Young, *The Killer Whale Who Changed the World* (Vancouver: David Suzuki Institution, 2016), 31.

[7] Gordon Gunter, "Contributions to the Natural History of the Bottlenose Dolphin, *Tursiops Truncatus* (Montague), on the Texas Coast, with Particular Reference to Food Habits," *Journal of Mammalogy* 23, no. 3 (August 1942): 275.

[8] Charles F. Yocom, "Notes on the Dall Porpoise off California," *Journal of Mammalogy* 27, no. 4 (November 1946): 364-368.

understandings of marine mammals, and advancing the field of cetacean science.

Historical analyses of cetaceans tend to focus primarily on nineteenth and twentieth century whaling, the environmentalist movement of the 1970s, or contemporary technological advances used by wildlife biologists, but disregards the ways in which the early years of captivity advanced cetacean science. One of the few studies devoted entirely to the marine display industry is Susan G. Davis' *Spectacular Nature: Corporate Culture and the Sea World Experience,* which provides an in-depth analysis of marketing, programs, and performances from the 1970s to the 1990s. Davis shows how the corporately-produced space profited from public interactions with man-made "nature" and shaped popular understandings of the environment and science.[9] Although Davis provides insight into late twentieth-century marine parks, she neither acknowledges the origins of the marine mammal captivity and display, nor is she interested in the development of cetacean sciences in connection to marine parks.

In their recent works, Jason Colby and Etienne Benson examine how killer whale captures in the 1960s and 1970s provided opportunities for marine park corporations to partner with scientists to develop tracking and identification technologies, as well as how changing public values and legislation eventually restricted scientific research. Yet they concentrate solely on killer whales in the years when marine parks were already well established.[10] The era prior to killer whale captivity has been largely overlooked by historians but is essential to understanding how early whale captivity transformed the domain of cetacean science. Without the advancements in scientific understandings of whales which took place in captivity, contemporary environmental organizations known for their anti-whaling campaigns would not fully understand cetaceans' intelligence or cognitive capabilities, which serve as the driving force in many of their missions.

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[9] Susan G. Davis, *Spectacular Nature: Corporate Culture and the Sea World Experience* (Berkeley: University of California Press, 1997), 66-68.

[10] Jason Colby, *Orca: How We Came to Know and Love the Ocean's Greatest Predator* (New York: Oxford University Press, 2018); Etienne Benson, *Wired Wilderness: The Technologies of Tracking and the Making of Modern Wildlife* (Baltimore: John Hopkins University Press, 2010).

The connection between early cetacean captivity and scientific discoveries has received little attention by historians. Instead, scholars have concentrated on the connections between whaling, international policies, and data collection. For example, D. Graham Burnett traces how whaling research and ecological management policies shaped cetacean science over the twentieth century. He claims that John C. Lilly, a well-known and controversial neuroscientist involved with questionable dolphin experiments in the 1960s, was largely responsible for inspiring the public to see whales and dolphins as intelligent creatures similar to humans.[11] While there is no doubt Lilly had an influential role in developing marine mammalogy, Burnett ignores how interactions at marine parks also changed public opinions and how scientific research was often conducted in tandem with oceanariums.

In *The Structure of Scientific Revolutions,* philosopher Thomas S. Kuhn argues that science is not only the accumulation of facts, but rather, that fact-gathering is interrupted by fundamental shifts in scientific practice and thought. Such scientific revolutions cause scientists "to see nature in a different way," reinterpret available data, discover unfamiliar phenomena, and alter the way scientific work is accomplished.[12] The mid-twentieth-century development of marine mammal captivity caused such a revolution in cetology. As oceanariums allowed scientists unprecedented access to live whales and dolphins, marine mammalogists were no longer confined to only observing cetaceans' distinct physiological features or geographical ranges, spawning new questions about their abilities, behaviours, intelligence, and social structures. By

[11] D. Graham Burnett, *The Sounding of the Whale: Science and Cetaceans in the Twentieth Century* (Chicago: University of Chicago Press, 2012): 532. In the late 1950s, Lilly, a psychoanalyst, became interested in human-dolphin communication leading to a NASA-funded research program in the Caribbean. To encourage intra-species communication, both Lilly and the lab's dolphins were given LSD and a young female research assistant was encouraged to live full-time, with the dolphins in a partly flooded home. The program was cut in the late 1960s, and Lilly continued his exploration into New Age practices. For more on Lilly see: John C. Lilly, *Man and Dolphin* (New York: Saalfield Publishing Company, 1963); Mark Werner, "What the Whale Was: Orca Cultural Histories in British Columbia since 1964," (MA Thesis, University of British Columbia, 2010).

[12] Thomas S. Kuhn, *The Structure of Scientific Revolutions,* 3rd ed. (Chicago: University of Chicago Press, 1996), 53.

allowing unhindered, ongoing access to cetaceans, oceanariums provided scientists with the opportunity to revolutionize the marine mammalogy field and dramatically advance cetacean knowledge for scientists, animal display workers, and the general public.

Research and Discoveries

In 1953, Dr. Kenneth S. Norris applied for and obtained the position of curator at the newly conceived Marineland of the Pacific. With degrees in biology and desert zoogeography from the University of California, Los Angeles and two years into his doctoral work under renowned fish biologist Carl L. Hubbs at the Scripps Institution of Oceanography, Norris still admitted, "I found myself in total terra incognita. Nobody knew anything about the marine mammals that went by our door."[13] For Norris, Marineland of the Pacific served as a scientific institution that promoted research and investigation into aquatic sciences, cetaceans, fish, and invertebrates. In his park operations journal, Norris expressed his belief that independent scientific investigators should be solicited and invited to conduct research at the park. Researchers were screened by Scientific Advisory Board members which included renowned ecologist Dr. W. C. Allee and ethologist Dr. Frank A. Beach. The selected researchers gained access to Marineland's animals, facilities and equipment and were expected to develop publishable material on water chemistry, husbandry techniques, and animal behaviour. Some visiting investigators were even funded by the oceanarium.[14] Norris established this vision of Marineland of the Pacific not only as a site of family entertainment but also–with his own research on the park's whales and dolphins–as an esteemed scientific institution.

In 1959, producers from *Conquest*, a CBS science television show, approached Norris about filming an episode on dolphin communication at Marineland of the Pacific. Norris rejected the offer; instead, he suggested they produce a show featuring a blindfolded dolphin navigating a maze. While working with dolphins at Marineland, Norris

[13] Randall Jarrell and Irene Reti, *Kenneth S. Norris: Naturalist, Cetologist, & Conservationist, 1925-1988. An Oral History Biography* (Berkeley: University of California Press, 2010), 2-3, 16, 131-132.
[14] Marineland Notebook 1953, 171-172, Box 66, Norris (Kenneth S.) Papers, UCSCA.

had observed them emitting high-frequency sounds as they approached objects. He believed the dolphins were echolocating but had not yet conducted experiments to confirm the ability. The potential publicity from the television show convinced Marineland's general manager to provide Norris with the funding, space, and dolphin needed to test the species' echolocation abilities for the broadcast.[15] Echolocation is the ability to transmit sound waves that are reflected by objects and enables toothed whales to navigate the underwater environment and locate obstacles and prey. Echolocation in cetaceans is now a widely known fact but, in the 1950s, it was little more than a rumour in whale sciences.

Norris's first step in the experiment was to create a blindfold for a dolphin. After unsuccessful attempts using fabric wraps, adhesive tape, and harnesses, Norris's assistant, John Prescott, came upon a solution. "What could be better," Prescott wondered, "than to make the actual eye cup of that gay human deceiver, the all-American falsie?"[16] Using bra padding and a jar of casting latex, Norris and Prescott fastened the newly created blindfold to Kathy, an Atlantic bottlenose dolphin described as possessing "a peppery sense of humor," and a "blind and friendly attitude toward humans."[17] With the blindfold in place, Kathy easily maneuvered around her tank before returning to Norris and Prescott. Over the next few weeks, Kathy navigated mazes, detected differences between fish and gelatin capsules, and located an inch-wide target from thirty-five feet away, all while blindfolded.[18] In confirming, for the first time, echolocation in cetaceans, Norris's research and discovery serves as an example of how early cetacean captivity led to critical developments in the marine mammalogy field.

Three years earlier, while preparing to capture Marineland's first pilot whale, Norris realized how little information existed about the species in scientific journals or texts. In the months leading up to the cap-

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[15] Jarrell and Reti, *Kenneth S. Norris*, 83; Kenneth S. Norris, *The Porpoise Watcher* (New York: W. W. Norton & Co. Inc., 1974), 100. William E. Schevill and Barbara Lawrence conducted echolocation experiments six years earlier, but the resulting conclusions were poorly published and understood. Norris came across Schevill's work after completing his own independent experiments.
[16] Norris, *The Porpoise Watcher,* 106.
[17] Ibid., 101.
[18] Ibid., 109-110.

Figure 1: *"Kathy" Presses the Lever Blindfolded*, 1959.

ture crew's venture, he gathered foundational information about pilot whales by observing their behaviour in the wild. Norris's discoveries included pilot whales' seasonal residence off the California coast, infant pilot whales' colouration, and schooling behaviour of large pods.[19] These findings revealed previously unknown information about the species, yet detailed observations about whale cognitive abilities and social interactions could not be obtained in the wild. For example, Norris noted that several species of dolphins accompanied the pod of pilot whales and believed the relationship between the species was based on the dolphins benefitting from the whales' efficient hunting techniques. Later in captivity, however, pilot whales and dolphins were observed interacting and developing a relationship not based on hunting. Close studies of Marineland's pilot whales continued to bring new revelations about the species and transform the way scientists thought about and studied cetaceans.

On February 26, 1957, Norris and Marineland's capture crew succeeded in catching a live pilot whale and transferring it from Catalina Channel to its new home at Marineland of the Pacific. Norris celebrated the animal's capture, boasting "[e]verybody was exultant. We, by golly, had caught a real, live whale, and were about to bring it in! We didn't

[19] Norris, *The Porpoise Watcher,* 72-74.

think many people had done that before us."[20] Norris was correct: No other aquarium in the world at that time held a live whale for public viewing. Pilot whales quickly became Marineland's biggest attraction, or as its advertisements stated, "the most famous salt water star in history."[21] Named "Bubbles," the young pilot whale was later joined by "Bimbo," "Squirt," and several other members of her species. The whales made headlines across the country, appeared in popular television shows, drew audiences to the park, and offered scientists unparalleled opportunities to closely study live cetaceans.

Several years prior to Bubbles' capture, aggressive behaviour by dolphins at Marine Studios caused the death of a pilot whale that the park had rescued from a beach stranding. Accordingly, Marineland personnel initially kept Bubbles isolated from other cetaceans.[22] For the first fourteen months of her captivity, Bubbles' only tank mates were turtles, rays, and human divers. At first, Bubbles displayed friendly behaviour towards divers entering her tank, gently taking fish from them and responding to commands, but after a year without the companionship of other whales, Bubbles' behaviour towards divers changed. Beginning in March 1958, she became increasingly aggressive. She snapped at divers when they attempted to feed the other animals in her tank and eventually started ramming humans who entered her tank. In one incident, Bubbles attacked visiting photographers, snapping her teeth at them and chasing them around the pool, causing them to abandon their equipment and retreat from the tank. Just days later, Bubbles rammed another diver, causing him to briefly lose consciousness in the tank before he was rescued. This final incident compelled Brown to suspend all diving operations indefinitely.[23]

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[20] Field Notes, 1949-1960, 308, Box 38, Norris (Kenneth S.) Papers, UCSCA. For more accounts of the capture see: Norris, *The Porpoise Watcher,* 78; Timothy Branning, "Whale Done," *Westways* (May 1980): 47-49, Point Vicente Interpretive Center Archives; Kenneth S. Norris, "The Big One Got Away," *Pacific Discovery* XI, no. 5 (October 1958): 3-8, Marineland Scrapbook 1957-1959, Box 60, Norris (Kenneth S. Papers), UCSCA.

[21] Marineland of the Pacific Brochure, File 422, Box 9, Millay Papers, University of Central Florida Archives.

[22] Kritzler, "Observations on the Pilot Whale in Captivity," 329; David H. Brown, "Behavior of a Captive Pacific Pilot Whale," *Journal of Mammalogy* 41, no. 3 (August 1960): 343. In 1948, Marine Studios in Florida rescued four stranded pilot whales from a nearby beach. One young male, Herman, survived for nine months but was never displayed to the public or heavily studied.

[23] Jake Jacobs, *Marineland Diver* (New York: Dodd, Mead & Co., 1960), 168-169; Brown, "Behavior of a Captive Pilot Whale," 347.

Figure 2: *Dave Feeds Bubbles for the First Time*, 1957.

Jake Jacobs, Marineland's head diver, thought Bubbles had lost respect for human divers and was trying to establish dominance in the tank. He believed the divers just needed to "show her who was boss," by striking her with a metal rod when she attempted to attack a diver, so she would remain "under control."[24] Jacobs was content with the idea that whales were insentient beings to be mastered by humans, and thus failed to consider the psychological consequences of this treatment on the whale. David Brown, who would eventually become Marineland's curator and director, instead consulted with Marine Studios and learned that one of their bottlenose dolphins had also exhibited aggressive behaviour towards humans after being kept in isolation. Following this discovery, Brown researched the social structure of dolphins and discovered that "enforced solitude of this nature may prove disagreeable to the species" and "social behaviour in pilot whales was just as well developed as in smaller species and enforced solitude may prove equally disquieting."[25] By July, Brown moved Bubbles to another tank containing two striped dolphins and a recently captured female pilot whale, Squirt. In the wild, Norris had observed pilot whales swimming with large pods and other dolphin species. Yet, in captivity, the small dolphins appeared to tease or 'torment' the pilot whales by biting their fins and swimming away, but Squirt and Bubbles were frequently seen

[24] Jacobs, *Marineland Diver,* 171.
[25] Brown, "Behavior of a Captive Pilot Whale," 347-348.

swimming side by side, rubbing against one another, and vocalizing.[26] With Bubbles no longer exhibiting aggressive behaviour towards divers, Brown reinstated diving operations and Marineland personnel started recognizing how critical companionship was to cetaceans as both commercial entities and conscious beings.

When Bimbo joined the other pilot whales at Marineland in 1959, staff and researchers were excited about the prospect of observing mating behaviours between pilot whales, as well as the commercial potential of owning a breeding pair. Although Marineland's pilot whales never became pregnant, Bimbo's addition to the tank clarified a behaviour Bubbles frequently displayed. In a seemingly hostile act, Bubbles often headbutted divers who entered her tank, but Norris offered an alternative interpretation after he observed similar behaviour with Bimbo. In an unpublished report, he described Bubbles and Bimbo making loud calls to each other from opposite sides of the tank before swimming straight towards each other and ramming into one another head-on. Norris noted, "the impact was so great that shock waves could be seen travelling down the bodies of both animals, and the smaller female was forced back a few feet."[27] While this behaviour could still be seen as aggressive, the whales were later spotted exhibiting overt sexual behaviour, but this behaviour has yet to be confirmed in the wild.[28] Through observing Bubbles and Bimbo's interactions, Marineland staff realized Bubbles' earlier behaviour was not aggressive but may have been affectionate, or "a whale's way of making love."[29] By closely observing and reinterpreting whale behaviours, Marineland personnel launched an era of scientific studies focused primarily on understanding whale and dolphin social interactions, studies that were impossible in the wild because of limited observation techniques and equipment.

In 1960, Norris left Marineland to teach at the University of California, Los Angeles and Brown took over as park curator, continuing to emphasize research on social interactions among cetaceans. The whale tank at Marineland provided multiple opportunities for him, along with

[26] Brown, "Behavior of a Captive Pilot Whale," 348-349.
[27] Research: Globicephala, "Pacific Pilot Whale," 1956-1965, File 22, Box 82, Norris (Kenneth S.) Papers, UCSCA.
[28] David H. Brown, "Further Observations on the Pilot Whale in Captivity," *Zoologica* 47, no. 1 (May 1962): 60.
[29] Jacobs, *Marineland Diver,* 168.

Figure 3: *A whale nips divers' flipper*, 1959.

cetacean behavioural studies specialists Melba C. Caldwell and David K. Caldwell, to conduct comprehensive investigations into whale social structures. An opportunity came in the early morning of March 8, 1960, when staff entered the whale holding area to find Bimbo grasping the lifeless Bubbles, by her flippers and towing her around the tank. One diver entered the tank to remove Bubbles, but Squirt and Bimbo—the latter having never exhibited aggression towards humans before—attempted to strike the diver. The whales repeatedly rejected efforts to lure them away from Bubbles, and only after multiple attempts was the diver successful in removing the deceased whale from the tank.[30]

At the time of Bubbles' death, she, Bimbo, and Squirt had all lived together for more than a year. They appeared closely bonded as they frequently swam together, vocalized, and rubbed against one another. Yet, Marineland staff were surprised at the behaviour displayed by Bimbo after Bubbles' death, since long-term aiding behaviour is significantly rarer in male cetaceans than in females. Similar behaviour between cetacean mothers and calves had been observed often in the wild, but Bimbo's response was unique since he was a mature male and not related to Bubbles. Brown initially proposed that Bimbo's behavior was a direct response to the stressful and confining quarters of captivity, but later interactions caused the curator to reassess his conclusions.[31]

[30] Brown, "Further Observations on the Pilot Whale in Captivity," 63. Another female pilot whale was later renamed Bubbles, she lived in captivity at Marineland of the Pacific and SeaWorld until her death in 2016.
[31] Ibid.

Several years after Bubbles' death, "Debbie," a striped dolphin who had lived with Bimbo and Squirt for over three years, died in their shared tank. Marineland personnel reported Bimbo swimming around the tank, holding the deceased dolphin by its fins and tail for hours. When a diver entered the tank to remove the dolphin, two female pilot whales tried to block his access to Bimbo and Debbie. The diver was able to successfully harpoon Debbie, but when the dolphin was hauled out of the pool, Bimbo launched himself out of the tank, grasped Debbie, and pulled her back into the tank. A second attempt to remove the dolphin was also blocked by Bimbo. On their third attempt, Marineland divers managed to harpoon and remove Debbie from the tank. Bimbo reportedly responded with loud, shrill cries but calmed within an hour and resumed performances the next day.[32]

Marineland researchers made several observations based on Bimbo's reactions to the deaths of Bubbles and Debbie. Most notable was the idea that cetaceans could recognize and form attachments not only to individuals from their own species, but to other species as well. One article published about Debbie's death noted that Bimbo displayed several signs indicating an emotional connection to the dolphin. First, Bimbo's gentle handling of the body was "particularly striking and showed the most careful deliberation."[33] Despite carrying the dolphin around for hours, the only marks on her body came from the moments when Bimbo prevented divers from removing Debbie from the tank. Second, Marineland personnel observed Bimbo's startled expression, an automatic response to emotional stress exhibited in both humans and animals. Finally, before Debbie's death, another female pilot whale died in the same tank as Bimbo. Yet, Bimbo had only known the whale for ten days and completely ignored the body. These observations together suggested that cetaceans could form long-time attachments with individual animals and can exhibit both affection and grief for other animals.[34]

The complex social interactions observed at Marineland spurred a dramatic paradigm shift in marine mammalogy as scientists expanded their studies beyond physiological research. While pilot whales' adaptation to captivity and quick responses to training were apparent from Bubbles' first days of captivity, the social complexity of the species

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[32] Melba C. Caldwell, David H. Brown, and David K. Caldwell, "Intergeneric Behavior by a Captive Pacific Pilot Whale," *Contributions in Science* no. 70 (October 1963): 4-8.
[33] Ibid., 9.
[34] Ibid.

was less understood.[35] After several years of captivity and research, cetaceans were now understood to form connections and bonds with other individuals, and were no longer seen as indistinct, mindless members of a pod. The information was valuable to Marineland personnel from a commercial point of view since it justified their capture of more whales, but it also transformed how scientists thought about cetaceans. From their observations, Marineland researchers started seeing whales and dolphins not only as anatomically unique, but also as socially and emotionally complex, an unfamiliar idea in cetacean science.

By the end of 1962, Marineland staff and researchers acknowledged the importance of social interactions among cetaceans and shared it with the public. For example, Norris starred on a University of California radio program entitled *Moby Dick's Cousins,* in which he discussed his echolocation experiments and the discovery of cooperation in whales and dolphins. Listeners learned that cetaceans were "not dull, lumbering creatures but animals of unusually high mental dexterity."[36] Yet doubts about cetacean emotional intelligence persisted and the majority of researchers and Marineland personnel did not extend their discovery of this intelligence to consideration on the ethics of captivity. To do so would require both researchers and oceanariums to acknowledge their own role in the "violent exercise of power" embedded in captivity and to question the balance between moral obligations and commercial or scientific potential.[37]

Complications in Captivity

In December 1963, Marineland captured a Pacific common dolphin, who joined Bimbo, along with a female pilot whale, a false killer whale, and several species of dolphins in the oceanarium's main pool. Two months later, to the surprise of Marineland staff, the dolphin went into labour and struggled to deliver a stillborn calf. One striped dolphin exhibited familiar aiding behaviour by pulling the calf free from the mother. The mother brought the dead calf's body to the surface, but she was interrupted by Bimbo who grabbed the calf, carried it around the tank for

[35] Brown, "Behavior of a Captive Pilot Whale," 346; Brown, "Further Observations on the Pilot Whale in Captivity," 60.
[36] "Moby Dick's Cousins," University of California: Radio-Television Administration, Broadcast #5051, April 29, 1962, Marineland Scrapbook 1957-1959, Box 60, Norris (Kenneth S.) Papers, UCSCA.
[37] Werner, "What the Whale Was," 22.

Figure 4: *Dave Brown & Ken Norris*, 1954.

over thirty minutes, and eventually devoured the carcass. The mother dolphin appeared distressed for several minutes as she whistled and swam around the tank, before calming and delivering the afterbirth with the help of a false killer whale. Bimbo's behaviour was especially puzzling considering he had previously shown cross-species mourning behaviour, but Brown, Caldwell, and Caldwell mention Bimbo's volatile behaviour had increased over the previous year, culminating with him attacking and killing one female pilot whale.[38]

When Bimbo was initially captured, Jacobs described how the whale's calm demeanor surprised Marineland personnel. Although the large male was "unmistakably a bull," he was not aggressive and appeared far more "placid and tractable than Bubbles."[39] Bimbo, however, seemed to never fully recover from the loss of Bubbles and Debbie. Months after Debbie's death in 1962, Marineland personnel described Bimbo as behaving in "a psychotic manner," with "aggressive asocial activity."[40] He lost his appetite, refused to perform, and lashed out at tank mates with whom he had previously lived peacefully. Brown's first attempt in administering antidepressants to the whale seemed successful, but after one week of calm behaviour, Bimbo attacked and killed a female pilot whale, throwing the 780-pound whale

[38] David H. Brown, David K. Caldwell, and Melba C. Caldwell, "Observations on the Behavior of Wild and Captive False Killer Whales, with Notes on Associated Behavior of Other Genera of Captive Delphinids," *Contributions in Science* no. 95 (April 1966): 7-12, 25.
[39] Jacobs, *Marineland Divers,* 175.
[40] Brown, Caldwell, and Caldwell, "Observations on the Behavior," 25.

out of the water and causing heart damage and multiple bone fractures.[41] Brown then turned to other cetaceans to help soothe the distressed whale.

Brown partly drained Bimbo's tank, stranding the pilot whales and allowing the dolphins to swim and nuzzle against Bimbo in an "obvious attempt to help and soothe him."[42] Marineland personnel believed "a common stress conjointly shared might re-establish the strong relationship normally so evident in this gregarious species."[43] Not only did researchers recognize how essential the complex social structure of cetaceans was to their well-being, they also believed these social bonds could help heal emotional distress. Their theory was correct to an extent. Aside from the incident with the dolphin calf, Bimbo displayed no further aggressive behaviour towards other animals, yet he still refused to eat and was removed from daily performances. Brown then returned to medication in hopes of curing the whale's apathy. By the end of 1963, Bimbo had lost over 500-pounds, becoming dangerously underweight. Consequently, Brown administered the whale 6,000 milligrams of an antidepressant in hopes of boosting his appetite. Within a day, Bimbo's spirits improved and he began eating again.[44]

Bimbo was the first cetacean to receive antidepressants at Marineland of the Pacific. Although his treatment initiated the now-routine procedure of administering mood stabilizers to captive cetaceans, the idea that whales were aware of their captivity and could feel depressed had gained traction among researchers and the public throughout Bimbo's treatment. While in the twenty-first century there is little doubt about whales' cognitive abilities, the belief that cetaceans have a conscious mind of their own and do not just react instinctively, was uncommon half a century ago. The belief that cetaceans could respond emotionally to their surroundings was, however emerging in the mid-twentieth century. The idea was reaffirmed in *Wonders of an Oceanarium,* when Jacobs explains that Bimbo was given "the same kind [of medications] doctors give to people with mental breakdowns," and that for Bimbo, "life in captivity seemed to have affected the whale's mind" since after some time, "a tank may begin to seem like a prison."[45] Although scientific articles were more restrained, they also recognized that Bimbo's apparent depression could not be attributed to any disease

[41] Brown, Caldwell, and Caldwell, "Observations on the Behavior," 25.
[42] Duane Valentry, "Big Star All at Sea," *Sea Frontiers* no. 15 (1969): 223.
[43] Brown, Caldwell, and Caldwell, "Observations on the Behavior," 25.
[44] Valentry, "Big Star All at Sea," 223.
[45] Lou Jacobs Jr., *Wonders of an Oceanarium: The Story of Marine Life in Captivity* (California: Golden Gate Books, 1965), 67.

or infection. Instead, Marineland researchers suggested that Bimbo's volatile behaviour came from the environmental stress caused by participating in performances.[46]

Bimbo's erratic behaviour continued, and on June 6, 1967, instead of performing his usual leap and splash at the end of the whale and dolphin performance, Bimbo charged an observation window in his pool and crashed through the double-paned glass. Four visitors were knocked down, over 300,000 gallons of water drained from the whale tank, and Bimbo suffered several lacerations. The American Humane Society investigated the collision, and a spokesperson suggested Bimbo had been frightened and, similar to a spooked horse, reacted instinctively. In response, Bill Monahan, Marineland's general manager, stated that Bimbo could not be compared to a horse since he was more intelligent and reasonable. Rather, Monahan believed Bimbo's collision was "just a freak error." After all, "why should he want to escape?"[47] The tank was repaired and performances soon resumed, but behind the scenes, Marineland staff were hard at work planning Bimbo's future.

With Bimbo noticeably struggling in captivity, Marineland personnel decided it would be best to release him back to the wild. His erratic behaviour, along with his large size, placed Marineland at risk, both financially and with its public image. Staff moved Bimbo to isolation and he underwent a multitude of physical tests to get him ready for release.[48] In early July, Bimbo was brought back to the Catalina Channel—his capture site eight years earlier—and released into the open ocean. The release seemed successful with Bimbo immediately joining a pod of pilot whales. Although other research facilities released several dolphins in earlier years, none conducted follow-up studies and the animals' survivals were never confirmed. Marineland employee John Prescott claimed to spot Bimbo swimming off the California Coast in 1969 and 1974. While it is possible that Prescott recognized Bimbo, pilot whale pods traverse the Pacific Coast and cetacean identification through scars and markings was uncommon in cetacean sciences until the 1980s. It is likely that Prescott did not see Bimbo, but instead, another large pilot whale, and sought to improve Marineland's standing by capitalizing on growing save-the-whales and anti-captivity movements of the early

[46] Brown, Caldwell, and Caldwell, "Observations on the Behavior," 26.
[47] Dial Torgerson, "Why did Bimbo Shatter Glass Window?" *Los Angeles Times,* June 6, 1967.
[48] Valentry, "Big Star All at Sea," 223.

1970s.[49] Yet some believe that Marineland of the Pacific's release of Bimbo was the first successful reintroduction of a cetacean back into the wild.[50]

By the late 1960s, increased competition from other marine parks led Marineland of the Pacific to struggle financially. In an attempt to improve their finances, the park further emphasized entertainment at the cost of research and education efforts. Although SeaWorld's opening in 1964 caused Marineland of the Pacific's revenue and popularity to decline, Bimbo's release in 1967 could have reaffirmed the oceanarium as a leader in cetacean research.[51] His reintroduction showed potential opportunities for breeding and release and endorsed life in captivity as comparable to the wild since Bimbo could survive in both environments. Years earlier, Marineland managers and employees prided themselves on cetacean research and education, but by 1967, personnel appeared concerned about what scientific research or behind-the-scenes information was released to the public. Marineland published little about Bimbo's behaviour, training program, or reintroduction; instead, Marineland personnel's focus shifted to ensuring the park had effective animal husbandry techniques and entertaining shows. Since Bimbo no longer enhanced Marineland's image of wholesome entertainment, he was largely ignored and then quietly removed from the oceanarium. Furthermore, the oceanarium likely kept Bimbo's removal hidden from the public because of possible angry reactions to the park giving up on and ejecting a beloved whale from its home.

Less than a decade of whale captivity had caused a complete transformation in scientific and public understanding of the social and emotional intelligence of cetaceans. At a time when active whaling was taking place only hours away from Marineland and marine mammalogists were often required to hunt and kill their own specimens, Marineland personnel were not only considering the social bonds among whales and dolphins but also the psychological harm captivity and death could do to cetaceans. While Marineland and other oceanariums continued to capture and display cetaceans despite evidence about the

[49] Dorothy Townsend, "'Psychotic' Bimbo Banished, Returned to Old Sea Haunts," *Los Angeles Times,* November 23, 1967; Jim Patryla, *A Photographic Journey Back to Marineland of the Pacific* (Lulu Books, 2005), 44.
[50] Patryla, *A Photographic Journey,* 44.
[51] Economics Research Associates, *An Economic Plan for the Revitalization of Marineland* (Los Angeles, June, 1972): I-1, Millay Papers, Box 9, File 423, University of Central Florida Archives.

psychological and physical harm it causes, many other marine mammalogists, such as Alexandra Morton and Paul Spong, learned about the intelligence and needs of whales from their work in the industry, and were then inspired to rally against captivity and whaling in later years.[52] Today, the notion of emotional and social intelligence in cetaceans is often taken for granted, yet scientists and ethicists have debated the idea of animal consciousness for centuries. While Marineland researchers were starting to consider cetaceans' mental states in the 1960s, it took until 2012 for a group of neuroscientists, in the presence of Dr. Stephen Hawking, to sign the Cambridge Declaration on Consciousness and confirm that non-humans were conscious beings.[53]

Contemporary Oceanarium Research

In the 1950s and 1960s, Marineland of the Pacific inspired leaders in the field of marine mammalogy, provided unprecedented opportunities to study cetaceans, and expanded fundamental knowledge about whale physiology and social structure. Yet the trend of valuing entertainment over education and research in oceanariums has continued to grow throughout the late twentieth century and into the present day. While Craig Phillips, the former director of the National Aquarium, hoped that oceanariums would "begin to place less emphasis on 'show business,'" and instead display "such natural wonders as bioluminescence, animal sonar, color-changing, protective mimicry, and convergent and divergent evolution," contemporary oceanariums have failed to encourage such research and education.[54] Despite many marine parks boasting about their scientific programs, close investigation of financial records suggest present-day oceanariums continue to expand the field of animal husbandry while marine mammalogy research dwindles.

In the 1980s, the Whale and Dolphin Conservation Society commissioned Erich Hoyt, a cetacean activist-writer, to conduct an in-

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[52] Alexandra Morton worked at Marineland in the 1970s studying killer whale vocalizations before shifting her focus to wild killer whales. Paul Spong studied killer whales at Vancouver Aquarium in the late 1960s. Following his discoveries at the aquarium, he became a leader in the anti-captivity movements in the Pacific Northwest. For more see: Alexandra Morton, *Listening to Whales: What the Orcas Have Taught Us* (New York: Ballantine Book, 2002); Frank Zelko, *Make it a Green Peace!: The Rise of Countercultural Environmentalism* (New York: Oxford University Press, 2013).

[53] Philip Low and Christof Koch, "Cambridge Declaration on Consciousness," (signed at Francis Crick Memorial Conference on Consciousness in Human and non-Human Animals, Cambridge, UK, July 7, 2012), http://fcmconference.org/img/CambridgeDeclarationOnConsciousness.pdf.

[54] Craig Phillips, *The Captive Sea* (Philadelphia: Chilton Company, 1964), 271.

depth examination of oceanariums across North America. Hoyt interviewed politicians, marine park managers and curators, scientists, and animal trainers to uncover the scientific and educational value of whale captivity, as well as the health and safety of both orcas and their human trainers at the parks. In his report, Hoyt revealed that although "scientific programmes of most marine parks are used as arguments to support keeping orcas and other dolphins... the portion of the budget devoted to science is very small," and averages around 1% of the total operating budget at most oceanariums.[55] Hoyt noted that while some parks, such as Vancouver Public Aquarium and Marineland of the Pacific, provided insight on the natural history of their animals during performances, other oceanariums largely focused on playing music and exciting the crowd. Overall, the oceanariums he studied focused more on developing performances and personalities for their animals rather than educating audiences. Hoyt's report concluded that most oceanariums use science to legitimize their enclosures, and none were "in a position to boast to the public about its scientific mission."[56]

In recent years, oceanariums have come under intense criticism regarding the ethics of captivity and usefulness of research conducted on animals in captivity. Since contemporary marine research often focuses on ensuring sustainable wild marine mammal populations and the discovery of cetacean culture in those populations, the behaviour displayed by captive animals contributes little to understanding innate animal behaviour.[57] Yet modern advancements in technologies, such as cameras, boats, and drones, that allow for noninvasive field research require massive amounts of funding that scientific institutions often lack. SeaWorld's for-profit parks, for example, allow the SeaWorld and Busch Gardens Conservation Fund (SWBGCF) to provide financial assistance for institutions such as the Hubbs SeaWorld Research Institute, Wilderness Foundation Africa, and dozens more. In 2013, however, SeaWorld made a net profit of $50 million but only contributed $669,422 to the SWBGCF, roughly 1.3% of the park's total earnings.[58] Despite

[55] Erich Hoyt, *The Performing Orca-Why The Show Must Stop: An In-depth Review of the Captive Orca Industry* (England: Whale and Dolphin Conservation Society, 1992), vii.
[56] Ibid., 76.
[57] For more on cetacean culture see: Hal Whitehead and Luke Rendell, *The Cultural Lives of Whales and Dolphins* (Chicago: University of Chicago Press, 2015).
[58] U.S. Department of Treasury, Internal Revenue Service, *Form 990PF: Return of Private Foundation: SeaWorld and Busch Gardens Conservation Fund (2013).* Retrieved from ProPublica Nonprofit Explorer database; U.S. Securities and Exchange

promoting conservation and research as one of oceanariums' main missions, Hoyt's conclusions about the tenuous connection between oceanariums and research remain valid today.

Early research at Marineland of the Pacific not only allowed scientists to gather foundational information about cetacean anatomy, swimming speeds and echolocation—information we often take for granted now—but also encouraged scientists to rethink the social life of whales. By observing close interactions, social bonds, and expressions of grief and apathy, marine mammalogists recognized whales and dolphins as emotionally and socially complex animals, an idea rarely considered in the 1950s. While cetacean intelligence was well known, especially in terms of their ability to be trained, the discovery of emotional intelligence and unique personalities revolutionized both marine mammalogy and the way public audiences understood and perceived whales, and especially the park's iconic pilot whales. Yet, research in captivity has limits, and in the twenty-first century, both animal ethics and the marine mammalogy field call for non-invasive field research, not continuous studies of captive animals, to expand knowledge about marine life.

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Figures

Figure 1: *"Kathy" Presses the Lever Blindfolded*, 1959. Photograph. Located in Marineland Scrapbook 1950-1957, Norris (Kenneth S.) Papers, Box 59, Special Collections and Archives, University of California, Santa Cruz.

Figure 2: *Dave Feeds Bubbles for the First Time*, 1957. Photograph. Located in Marineland Scrapbook 1957-1959, Norris (Kenneth S.) Papers, Box 60, Special Collections and Archives, University of California, Santa Cruz.

Figure 3: *A Whale Nips Divers' Flipper*, 1959. Photograph. Located in Norris (Kenneth S.) Papers, Box 65, Special Collections and Archives, University of California, Santa Cruz.

Figure 4: *Dave Brown & Ken Norris*, 1954. Photograph. Located in Marineland Scrapbook 1950-1957, Norris (Kenneth S.) Papers, Box 59, Special Collections and Archives, University of California, Santa Cruz.

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