

KILLER WHALES (*ORCINUS ORCA*) OFF THE NORTH CAROLINA COAST 1709–2011

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Abstract: Killer whales, *Orcinus orca*, were first reported off North Carolina by naturalist John Lawson in 1709, and during the 20th century were documented from North Carolina eight times in the scientific and popular literature. The most recent confirmed sighting of killer whales off North Carolina was in the spring of 2011. There have been no reports of killer whale deaths from North Carolina. There has been only one killer whale stranded along the North Carolina coast, with the animal being alive when it was returned to the sea. All sightings have been in the waters of the Atlantic Ocean, none on the west side of the Outer Banks in the waters of Pamlico or Currituck sounds. Only three confirmed reports are from nearshore waters, while the rest were spotted more than 20 km offshore. Orcas are most frequently reported from the waters off the Outer Banks from Cape Lookout north to the Virginia border. A 200 yr gap exists in the historical record of killer whales from North Carolina.

Key Words: killer whale; *Orcinus orca*; whale-killer; orca; thrashers; John Lawson.

INTRODUCTION

The killer whale, *Orcinus orca*, is the largest member of the family Delphinidae, males reach a size up to 9.8 m in length and 10,000 kg in weight, females 8.5 m and 7,500 kg (Jefferson et al. 1993). This marine mammal is found in all of the world's oceans and occasionally inland in sounds and rivers (Baird 2006). Also commonly known as orcas, these animals have been encountered in the waters off the eastern United States from the Bay of Fundy south to the Gulf of Mexico (Katona et al. 1988). Killer whales are considered rare between Cape Hatteras and Georgia (Caldwell and Golley 1965), and uncommon from Cape Hatteras north to Cape Cod (Katona et al. 1988). The southernmost record of a killer whale along the continental shelf off North Carolina was one spotted well offshore at 34° 05' N, while the southernmost nearshore sighting was recorded in 1934 at New River Inlet at 34° 31' N. The northernmost sighting is near the Virginia border off the Outer Banks at 36° 30' N. I examine the scientific literature as well as early historical accounts of killer whales that have been recorded from North Carolina waters, and include undocumented accounts of encounters with killer whales off North Carolina in the spring of 2011.

EARLY OBSERVATIONS

The naturalist John Lawson was the first person to write about the presence of orcas along the coast of North Carolina. This fact is often overlooked by modern researchers because Lawson called these whales thrashers (Lawson 1709). Use of the term thrasher for *Orcinus orca* fell out of use in the middle of the 19th century, and researchers unfamiliar with this often

confused these early accounts with sharks of the family *Alopiidae*, which are today commonly called thresher sharks (Schwartz 2003). Orcas have been given other colloquial names, including blackfish, grampus and whale-killer. When Lawson published his book, *A New Voyage to Carolina*, in 1709, thrasher was the most commonly used name given to what we today know as *Orcinus orca*.

When Lawson (Lawson 1709) wrote of the various types of whales found along the Carolina coast, he, like many of his contemporaries, classified these animals as fish instead of mammals. He wrote specifically about the orcas inhabiting the waters just offshore that ate the tongues out of whales that had been killed. "These Fish seldom come ashoar [sic] with their Tongues in their Heads, the Thrasher (which is the Whale's mortal Enemy, wheresoever [sic] he meets him) eating that out of his Head, as soon as he and the Sword-Fish have kill'd him. For when the Whale-catchers (in other Parts) kill any of these Fish, they eat the Tongue, and esteem it an excellent Dish." Lawson (1709) observed that thrashers were large animals from which the colonists made good oil. He gave no details concerning an exact location where these animals were captured, and noted that they were infrequently encountered in North Carolina.

Lawson's account of killer whales eating the tongues from larger whales is consistent with reports of killer whale behavior observed in other parts of the world. Dudley (1724) reported observations made by whalers from New England who observed killer whales attacking the larger whales, and after killing their prey, "...they chiefly feed upon the Tongue and Head, but when he begins to putrify[sic], they leave him." Jefferson et al. (1991) reported that killer whales in both the Northern and Southern Hemispheres, "...preferred to feed on the

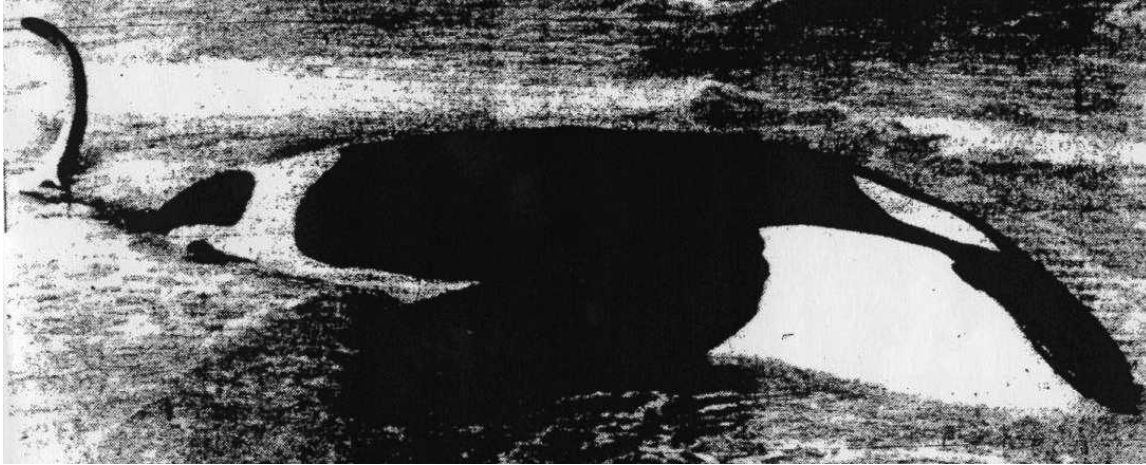


FIG. 1. Killer whale, *Orcinus orca*, stranded upon the beach at Kill Devil Hills, North Carolina, on 19 September 1974. Photo originally published in the *Virginian-Pilot* 20 September 1974.

tongue and lips of baleen whales.” The most famous account of such behavior comes from Twofold Bay, Australia, where orcas assisted shore based whalers in the pursuit and capture of humpback whales, *Megaptera novaeangliae*, in exchange for being allowed to feast on the dead humpbacks’ tongues (Stephens 1963).

Inhabitants of the North Carolina coastal region were long acquainted with whales (Reeves and Mitchell 1988). North Carolina was the site of shore-based whaling activities from the Colonial period until the 20th century. Whalers usually targeted right whales, *Eubalaena glacialis*, that migrated within sight of lookouts posted along the sand dunes next to the beach. They did not restrict their efforts to a single species, and processed any whales they found stranded along the shore. Despite their familiarity with the cetacean fauna gained by firsthand experiences with whales, there are no known records of killer whales ever being taken by whalers along the North Carolina coast, nor are there any records mentioning these animals being found stranded and processed for oil during the period when whaling activity was at its peak (Reeves and Mitchell 1988).

CONTEMPORARY RECORDS OF *ORCINUS ORCA*

Over two centuries passed after Lawson published his account before a killer whale from North Carolina was chronicled in the scientific literature. C.S. Brimley (1944) noted that T.G. Samworth had seen one of unspecified size and sex in March of 1934 near New River Inlet, located in Onslow County near Sneads Ferry. Samworth reported that the inhabitants of the area called this particular species of whale “Porpoise Killer” (Brimley 1944). This suggests that even though killer whales were heretofore undocumented by scientists and naturalists in the 19th and early 20th centuries, they were seen with enough frequency by the local inhabitants living in the

vicinity of New River Inlet that a name for *Orcinus orca* had entered the local vernacular.

A killer whale (STR 2629) washed ashore on 19 September 1974 at 1,410 hr on the beach at Kill Devil Hills in Dare County, North Carolina. The whale was still alive when it was found, though it appeared to be injured, possibly the result of a collision with a ship. A boat from the U.S. Coast Guard station at Oregon Inlet arrived on the scene and towed the orca back out to sea. The whale was released three kilometers offshore, where it rested on the surface of the water briefly before swimming away (Anonymous 1974). At least two photographs were taken of the whale while it was stranded on the beach, providing conclusive evidence that it was indeed *Orcinus orca* and not a similar species of cetacean (Fig. 1).

Researchers from the University of Rhode Island conducted population surveys assessing the abundance of sea turtles and cetaceans off the northeast coast of the United States from October of 1978 through January of 1982. Known as the Cetacean and Turtle Assessment Program or CETAP, the researchers investigated the waters of the outer continental shelf from Cape Hatteras to the Gulf of Maine eastward to a line paralleling the 1,000 fm (1,829 m) isobath. Shipboard researchers from this program spotted a total of 10 killer whales on four separate occasions in the waters off the North Carolina coast. The first of these CETAP sightings of *Orcinus orca* occurred 24 March 1979, when researchers aboard the U.S. Coast Guard cutter *Tamaroa* spotted a single killer whale swimming well offshore near the extreme edge of the continental shelf at 34° 05' N, 71° 52' W, approximately 350 km east of Carolina Beach (Winn 1982). A pod of four orcas was spotted by researchers on board the *Eureka* on 17 April 1980 at 36° 16' N, 75° 46' W, which is 80 km east of Corolla off the northern Outer Banks (Winn and Edel 1980). Researchers aboard the U.S. Coast Guard cutter *Cherokee* observed on 8 May 1980 a single killer whale at 35° 22' N,



FIG. 2. One of the killer whales that visited the charter boats fishing for Atlantic bluefin tuna off the Outer Banks on 21 March 2011. Photo courtesy Kobey Treadwell.

74° 54' W, which is approximately 50 km east of Avon, NC (Winn 1982). The final CETAP sighting off the North Carolina coast occurred 26 May 1981 when researchers aboard an unspecified vessel observed four killer whales swimming in the water just three km off Hatteras Inlet at 35° 11' N, 75° 48' W (Winn 1982).

A pod of killer whales was spotted on the same day as the pod of killer whales was seen near Hatteras Inlet on 26 May 1981 by the crew of the charter vessel *Temptress* at 34° 03' N, 75° 03' W, which is approximately 130 km east/southeast of Cape Lookout. The *Temptress* was not connected with the CETAP program, but was sport fishing in 300 fm (548.64 m) of water when the pod passed within just a few meters of their boat. The pod consisted of three whales, including a male 8.5 m long, a female 6.71 m long, and a 1.83 m calf. Chip Shafer, captain of the vessel, subsequently reported the sighting to the Smithsonian Institution's Marine Mammal Event Program (SEAN 6204).

There have been two reports in the scientific literature noting the presence of killer whales in the waters of the sounds separating the Outer Banks from the mainland. The first of these was recorded by Schmidley (1981), who mentions the stranding of a killer whale at Waterlily, which is a community on Church Island on the west side of Currituck Sound. The remains to which he was referring, however, were not from a recently killed animal nor were they a complete skeleton, consisting of only a single tooth (USNM 241401). Investigation of historical records reveals that this particular tooth was unearthed during oil drilling operations on Church Island in 1925, and presented to the Smithsonian the following year (MacNeill 1947). Thus no orca stranded on the western side of Currituck Sound during the early 20th century.

Katona et al. (1988) noted the next report of the sighting of killer whales in the sound region of the North Carolina, which was a pod of killer whales along with a

humpback whale swimming near the Outer Banks. They give the location as 35° 30' N, 75° 30' W, which places the sighting in Dare County in the waters of Pamlico Sound two kilometers west of Hatteras Island between Salvo and Gull Island. The writers based their account on information obtained from an individual identified as D. Lee, who was working for the Naval Ocean Research and Development Authority. Given the shallow nature of the waters of Pamlico Sound at the location given, it is unlikely that a pod of killer whales could have been spotted here. The authors specifically note that the location was "N of Cape Hatteras" (Katona et al. 1988). The most likely explanation for this anomaly is that this is a typographical error. If this was such an error and the location of the sighting was one degree north, or 36° 30' N, 75° 30' W, instead of 35° 30' N, 75° 30' W, this would place these whales off Currituck County 30 km east of where the North Carolina/Virginia border intersects the Outer Banks, in an area where other killer whales have been observed.

The killer whales mentioned by Katona et al., in 1988 were the last orcas documented off the coast of North Carolina in the scientific literature. There have been reports of killer whales from places as far afield as Cape Fear and Oregon Inlet, but few of the sightings made over the past 25 yr have been verified. The most recent reports of killer whales off the North Carolina coast occurred in the spring of 2011 off the Outer Banks (Figs. 2, 3). A group of eight charter boats fishing for Atlantic bluefin tuna, *Thunnus thynnus*, on 21 March 2011, approximately 60 km east of Rodanthe were visited by several killer whales. Fishermen who witnessed the event estimate that there were as many as five separate pods made up of three to five animals each, which attacked the Atlantic bluefin tuna simultaneously at the respective boats scattered across several square kilometers of ocean. The orcas remained with the fishermen for nearly



FIG. 3. A killer whale photographed from the charter boat *Hooked Up 2* approximately 65 kilometers off Rodanthe on 21 March 2011. Photo courtesy Kobey Treadwell.

five hours from 1,000 to 1,500 hr. Captains Joe Meile, Kobey Treadwell and Jamie Reibel (pers. comm.) observed that the adult orcas were using the Atlantic bluefin tuna that had been hooked and their movements somewhat impeded as an opportunity to teach the juvenile members of their respective pods how to hunt. The whales pursued the fish up to several hundred meters, with the adults demonstrating how to pursue and kill prey, and the juveniles attempting to repeat the

behavior. The juveniles met with varying levels of success, with some clumsily capturing the fish, while others merely nudged the prey as the Atlantic bluefin tuna temporarily escaped, at which point the adult killer whales would dive and capture the Atlantic bluefin tuna before the fishermen could reel the fish onto the boat. The fishermen gave up trying to land the tuna once it became evident that their own chances of success were small.

Table 1. Killer whales off the coast of North Carolina documented in the scientific and popular literature 1934–2011 by year, locality, coordinates, number, status alive (A) or dead (D), size (meters), county and authority.

Date	Locality	Coordinates	Number	Status	Approximate Size	County	Authority
March 1934	New River Inlet	34° 31' N 77° 20' W	1	A		Onslow	C.S. Brimley 1944
19 September 1974	Kill Devil Hills	36° 00' N 75° 30' W	1	A	8 m	Dare	<i>The Virginian-Pilot</i> , 20 September 1974. (STR 2629)
24 March 1979	350 kilometers east of Carolina Beach	34° 05' N 71° 52' W	1	A		New Hanover	BLM CETAP ship sighting #P179072-20
17 April 1980	80 kilometers east of Corolla	36° 15' N 74° 46' W	4	A		Currituck	BLM CETAP ship sighting # P180106-30
8 May 1980	50 kilometers east of Avon	35° 20' N 74° 54' W	1	A		Dare	BLM CETAP ship sighting #P180123-24
26 May 1981	3 kilometers southeast of Hatteras Inlet	35° 11' N 75° 48' W	4	A		Hyde	BLM CETAP sighting #0181705-2.
26 May 1981	130 kilometers east/southeast of Cape Lookout	34° 03' N 75° 03' W	3	A	8.5 m (male) 6.71 m (female) 1.83 m (calf)	Carteret	MME 38
9 September 1987	30 kilometers northeast of Corolla	36° 30' N 75° 30' W	3	A		Dare	Katona et al. 1988, p. 223
21 March 2011	65 kilometers east of Rodanthe	35° 37' N 74° 49' W	12–15	A	Adults and calves of various sizes	Dare	This study
15 April 2011	95 kilometers northeast of Oregon Inlet	36° 17' N 74° 40' W	3	A	8 m (male) 6 m (female) 2 m (calf)	Currituck	This study

Captain Tom Krauss (pers. comm.) observed 15 April 2011 a pod of three killer whales at 36° 16' N, 74° 40' W, approximately 95 km northeast of Oregon Inlet. The pod was made up of two adults and a calf. The pod was swimming on the surface in 100 fm (183 m) of water, headed in a northerly direction. Unlike the pods that visited the charter boats the previous month, these orcas did not approach the boat, and showed little interest in the fisherman's activities.

CONCLUSIONS

Killer whales have been documented as part of the cetacean fauna of North Carolina for three centuries. A gap exists of over 200 yr between the sightings chronicled during the Colonial period and the first modern accounts penned in the early 20th century, which may have more to do with the use of ambiguous names employed by the inhabitants of the region for marine mammals than to an absence of orcas from the waters off the Carolina coast. The majority of modern accounts of killer whales are concentrated in the waters off the Outer Banks between Cape Hatteras and the Virginia border (Table 1). The limited number of confirmed sightings makes it impossible to accurately determine whether there is a resident population of killer whales off the northern Outer Banks, or if the pods that were sighted there were merely passing through the area in pursuit of migrating prey species, especially Atlantic bluefin tuna. Reports of killer whales from this region have been widespread and sporadic, and further research is necessary to gain a more thorough understanding of *Orcinus orca* off the coast of North Carolina.

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