Marine Mammal Monitoring Program

FEX Barging Project, 2006

Prepared for:

ASRC Lynx Enterprises, Inc.
3900 C Street, Suite 601
Anchorage, Alaska 99503

Prepared by:

Tetra Tech EC, Inc.
12100 NE 1985th Street, Suite 200
Bothell, Washington 98011

Technical Investigators:

Gregory A. Green
Steve Negri

December 2006

Introduction

A marine mammal monitoring program was conducted 3 August to 2 September 2006 in conjunction with barging operations in the Beaufort Sea, Alaska that support onshore oil and gas exploration by FEX L.P. The 2006 barging operation consisted of transporting equipment from West Dock to Cape Simpson and was managed by ASRC Energy Services (AES). Marine mammal observations were conducted from two Agvik barges – M/S Stryker and M/S Garrett – used during the project. Tetra Tech EC, Inc. was contracted by AES Lynx Enterprises, Inc. (AES Lynx), a subsidiary of Arctic Slope Regional Corporation, to conduct the marine mammal monitoring program as required under an Incidental Harassment Authorization (IHA) permit granted to FEX by NOAA Fisheries (National Marine Fisheries Service). The monitoring program was also initiated as part of a Conflict Avoidance Agreement (CAA) with the Alaska Eskimo Whaling Commission and local whaling associations.

Methodology

The methodology involved viewing the waters in the vicinity of the barges searching for marine mammals. One qualified marine mammal observer and one trained Iñupiat observer were stationed on each support vessel at all times (each operating in four-six hour shifts). In a few cases, barges ran in tandem with observers stationed on the forward vessels. Searching took place at all hours of the day that viewing conditions were acceptable. Darkness, visibility less than 500 feet due to fog, and Beaufort sea states greater than 5 (see Table 1 for sea state descriptions) were considered unacceptable viewing conditions.

Table 1. Beaufort sea state scale.

Sea State	Wave Height (feet)	Wind Speed (kt)
0	0	0 - 1
1	1	1 - 3
2	2	4 - 6
3	3	7 - 10
4	4	11 - 16
5	6	17 - 21
6	10	22 - 27
7	14	28 - 33

Observers, using binoculars, scanned an area 180° forward of the barge. Observations took place from either the bridge or catwalk, both providing an observation height of 14 feet above the waterline on both vessels. For the 2006 barging season each barge was

fitted with a top wheelhouse to facilitate viewing over the load. Marine mammal observers were occasionally allowed to observe from this higher vantage point which provided an observation height of 25 feet. Often, during barge runs bound to Cape Simpson loaded equipment limited forward observation necessitating observers to shift observing stations in an attempt to look around the load. Distances to marine mammals were estimated visually or by using reticled binoculars. Because of the low observation station heights, measurements using inclinometers were of little value. The effective viewing distance for seals was difficult to quantify, but was probably less than 1,000 feet.

Most marine mammals were under observation for a relatively short period, and all were aware of the presence of the barge. Consequently, little information on animal behavior was discernable other than traveling (swimming in a straight-line direction) or milling (generally watching the barge travel past or swimming lazily around ice floes). Reaction was defined as a change in behavior interpreted as caused by the vessel presence. Reactions were recorded as mild (e.g., changes in swimming direction, sliding off ice floes) or strong (e.g., sudden dives characterized with tail slaps or violent splashes). Strong reactions were interpreted as a "take" by harassment because it presumably elicited a flight or fright response. Position data were recorded using Garmin® hand-held or vessel GPS units for each sighting, vessel position change, and any environmental change. Environmental data included Beaufort sea state, wind speed, wind direction, ambient temperature, precipitation, percent cloud cover, and percent ice coverage. Wind and temperature data were extracted from onboard meterological stations (when available). Ice cover was estimated to the nearest 5 percent.

Results

Marine mammal monitoring was conducted between 3 August and 2 September from two different support vessels making 15 round trips between West Dock and Cape Simpson (Figure 1). Some observations were made on a side trip between Cape Simpson and Point Lonely. During these runs, 1,021 ringed seal, 23 spotted seal, 75 unidentified phocid (either ringed or spotted seals), 28 bearded seal, 44 unidentified pinniped, and 3 polar bear observations were recorded. No cetaceans were observed during any of the barge runs.

Seals

At least 1,021 ringed seals were observed during all sea state conditions, but the great majority (924; 90%) was observed during sea states of Beaufort 2 or less (Figure 2). Under these calmer viewing conditions, ringed seals were observed in large numbers all along the travel routes, the highest density observations occurred off Harrison Bay (Figure 3), between 151°00'N and 151°30'N. Similar observations were made during the 2005 season (Green and Negri 2005). Figure 4 shows the location of all ringed seals recorded.

All but five of the 23 spotted seal observations were recorded by Iñupiat observers intimately familiar with the species, and then only after they were certain of the identity. All other suspected spotted seal sightings were recorded as unidentified phocids. Locational information is provided in Figure 5, and graphical information on distribution

is provided in Figure 6. Too few spotted seals were identified to discern patterns of distribution. Eighty-seven percent (20) of the spotted seal sightings occurred at Beaufort sea states of 2 or less (Figure 7). With a larger body size than ringed seals, spotted seals might be easier to view at the generally close distances during Beaufort sea state 2 (or 3).

A number of seals (75) were identified as either ringed or spotted, but certainty of which species could not be determined (Figure 8). Based on the phocid composition in the Beaufort Sea we would expect that most of the unidentified phocids were ringed seals. However, given that far fewer than expected spotted seals were recorded when compared to the 2005 results, and that the peaks of unidentified phocids occurred off the Colville River Delta and Smith Bay (Piasuk River) where spotted seal haulout sites occur, it is possible that a larger number of spotted seals were recorded as unidentified phocids this year than in 2005. Also, similar to ringed seals, 88 percent of the sightings occurred at Beaufort sea states of 2 or less (Figure 9).

Bearded seals were recorded 28 times. No reasonable pattern in distribution can be made from the limited data set (Figure 10, 11), which is expected given most of the seals sighted were probably moving through the area. Further, 93 percent of the sightings occurred at sea states of 2 or less.

Forty-four unknown pinnipeds were recorded as well (see Figure 8). The majority of these sightings are seal splashes, where the animal itself was not actually observed, and thus it could not be certain the animal was not a bearded seal.

Reactions

Reactions were recorded for 1,020 of the ringed seal sightings. Of these, 48 percent (490) had no reaction, 37 percent (381) reacted mildly, and 15 percent (148) more strongly. The percentage of ringed seals that reacted strongly is very similar to the 17 percent recorded in 2005. Recorded distances from the vessel of ringed seals that reacted strongly ranged from 10 to 700 feet, and averaged 128 feet. Sixty-eight percent were at 100 feet or less.

Of the 23 spotted seal sightings for which reactions were recorded, 39 percent (9) reacted strongly. Reaction distance ranged from 50 to 300 feet and averaged 134 feet, with 75 percent of the reaction distances at 150 feet or less.

Eighteen (24%) of the 75 unidentified phocids reacted strongly at an average distance of 159 feet. Only 2 (7%) of 28 bearded seals sighted reacted strongly to the vessel, one estimated at 200 feet and the other at 800 feet. Reactions were recorded for 44 unidentified pinnipeds, of which 10 percent (4) reacted strongly between 50 and 150 feet.

Polar Bears

Three polar bears were observed during the course of the monitoring program (Figure 12). One bear was observed at a distance of approximately 1 mile on 6 August, approximately three miles south of the Cape Simpson dock, and was traveling overland in

a south-southwest direction. One bear, observed at 800 feet on 17 August off Harrison Bay reacted to the barge by leaving the ice floe on which it was resting and attempted to swim away. The bear eventually swam back to the ice floe after the barge had past. The other bear was observed on September 1 resting on an ice flow off Harrison Bay. This bear was observed simultaneously by observers on both barges, but did not react likely owing to its distance (greater than a quarter mile) from the barges.

Discussion

As expected, the majority of marine mammals observed during the barging program were seals. No cetaceans were recorded in 2006, which was not unexpected since the barging did not extend into the normal bowhead migration period, and no barge runs were made west of Cape Simpson where gray whales have been recorded in the past.

Overall, 15 percent of all pinnipeds reacted strongly to the vessels, generally by a rapid dive often accompanied by a loud splash. Most of these recorded reactions, however occurred with seals within 100 feet of the vessels, especially those seals finding themselves in the vessel path; however, given the slow vessel speeds (2-6 kt), there was little chance for collision. These results are nearly identical to what was found during the 2005 barging season.

As in 2005, we found ringed seals throughout the project area, but with peaks off Harrison Bay. We did not see the peaks in spotted seal numbers off the Colville River Delta and Piasuk River haulout sites as we did in 2005. However, we did record far fewer than expected spotted seals, and did see peaks in unidentified phocids off these haulout sites, suggesting that a large number of the spotted seal sighting in 2006 were recorded as unidentified phocids. Bearded seals showed no discernable pattern in distribution (as in 2005), which was not unexpected given most of these animals were probably moving through the area.

Only three polar bears were recorded, one on land south of Cape Simpson, and the other two resting on ice in Harrison Bay. One bear, observed at 800 feet, reacted by attempting to swim away from the barge. The other two bears, observed at a much greater distance, did not react at all.

Acknowledgments

We would like to thank the following marine mammal biologist and observers for their participation in this project: Jonah Leavitt, Billy Adams, John Knutzen, Jim Rogers, and Steve Jones. Jocelyn Hastain (AES Lynx) did an excellent job coordinating our schedules on the North Slope, while Bruni Warrick and Leslie Smith did a wonderful job arranging our travel. We also thank the crew of the vessels we traveled aboard and for accommodating us on our stay.

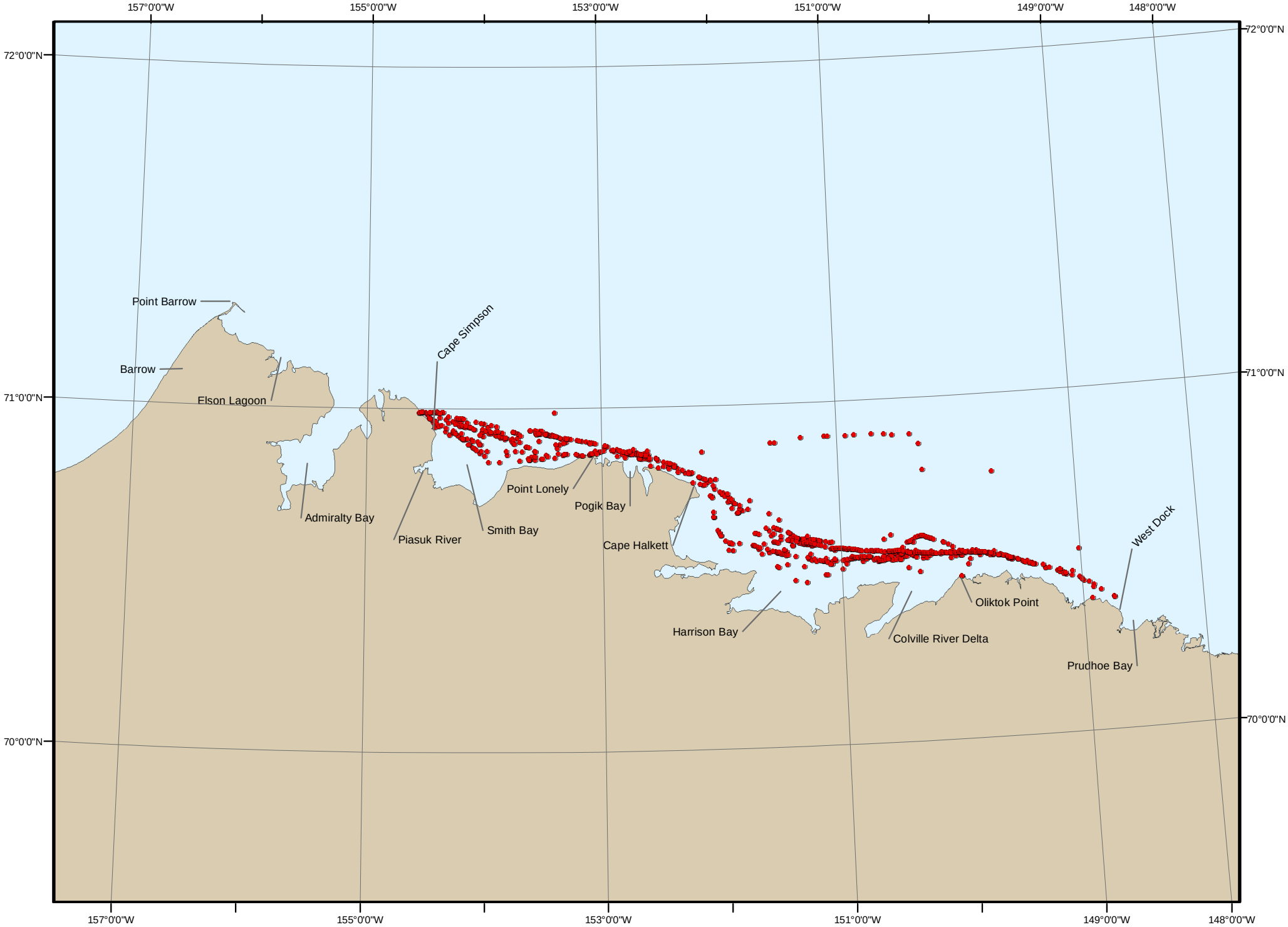

Figure 1. Locations of all marine mammals recorded from supply barges between 3 August and 2 September 2006.

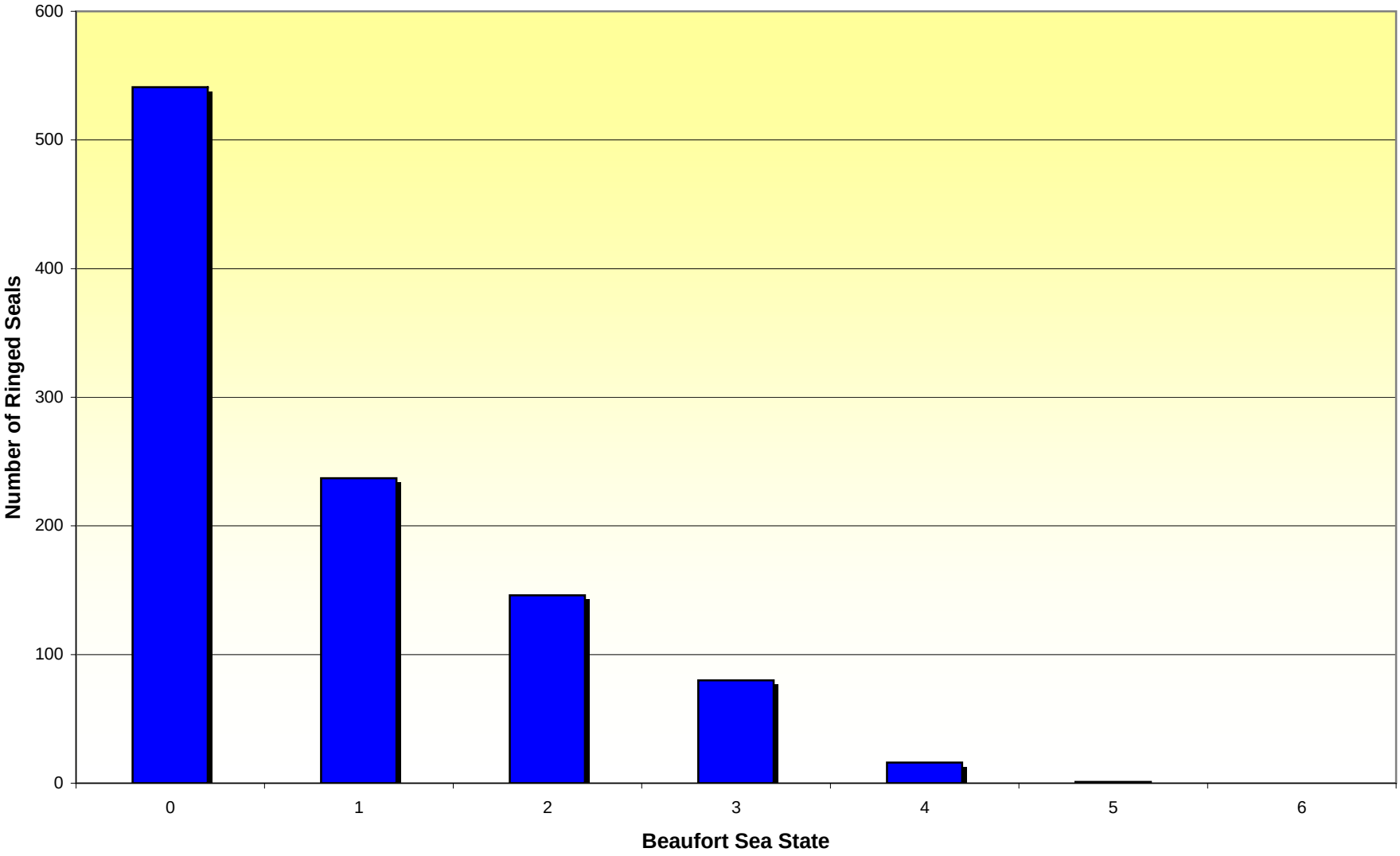

Figure 2. Numbers of Ringed Seals Observed by Beaufort Sea State

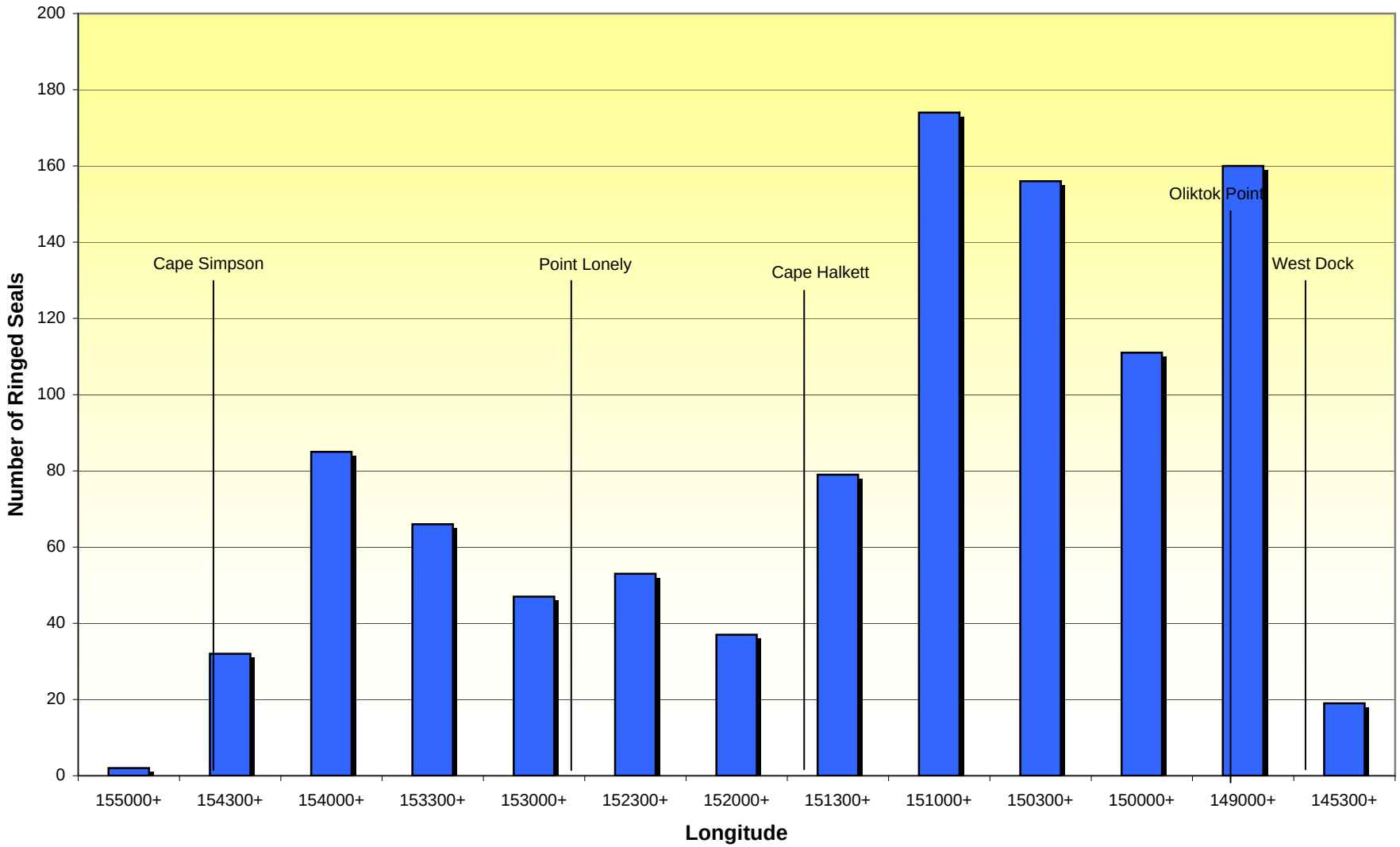

Figure 3. Numbers of Ringed Seals Observed by Location

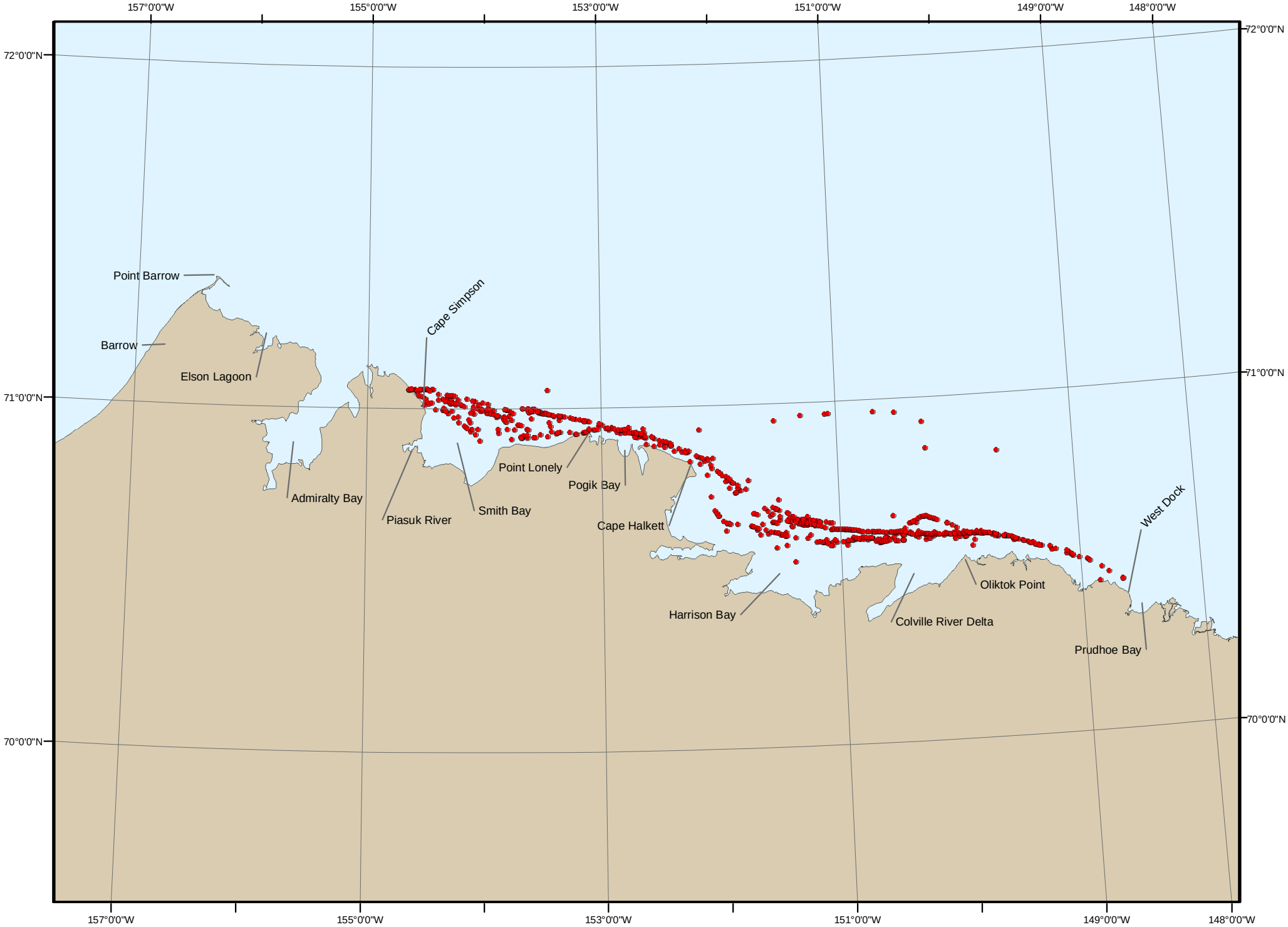

Figure 4. Locations of all ringed seals recorded between 3 August and 2 September 2006.

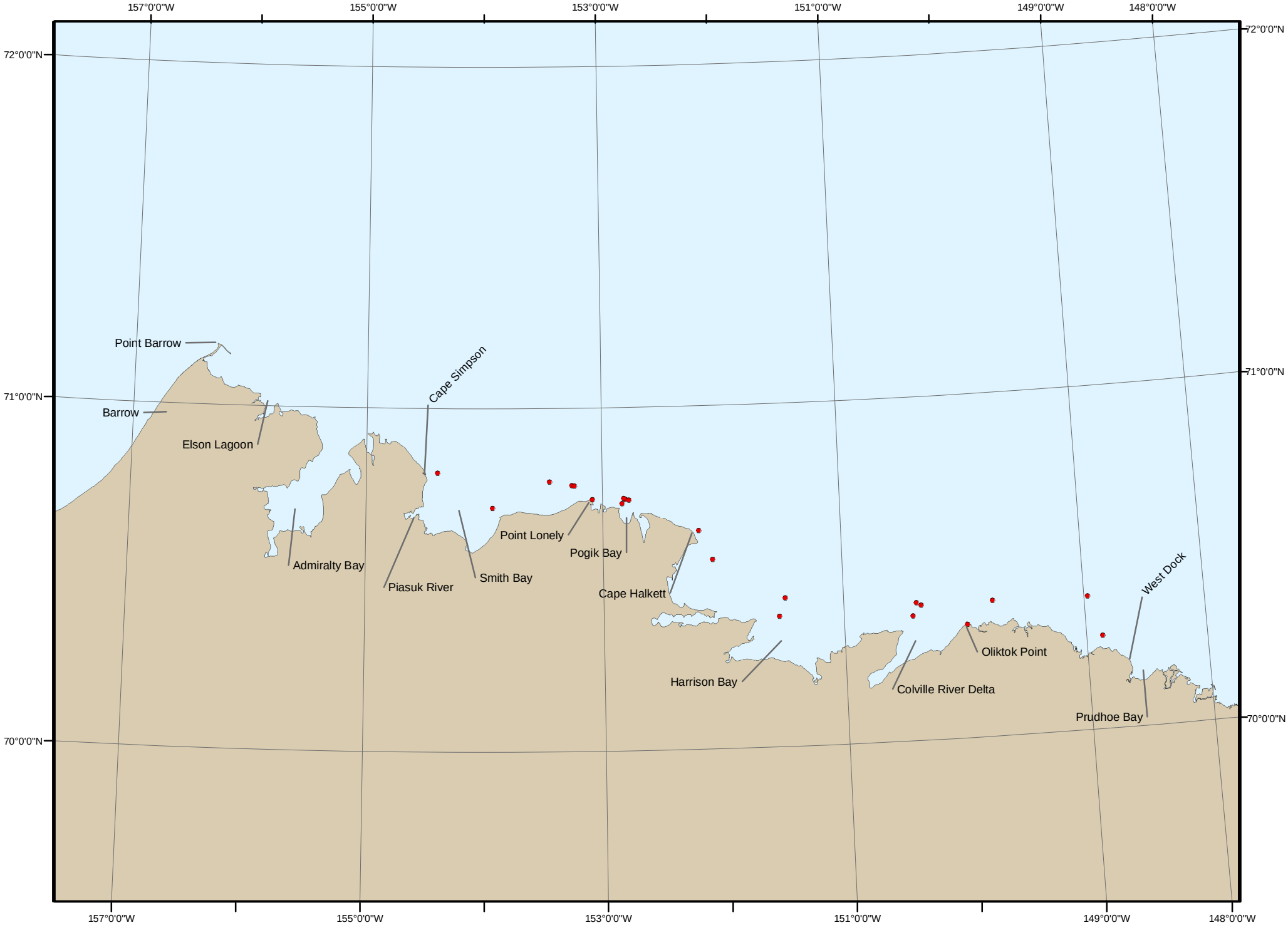

Figure 5. Locations of all spotted seals recorded between 3 August and 2 September 2006.

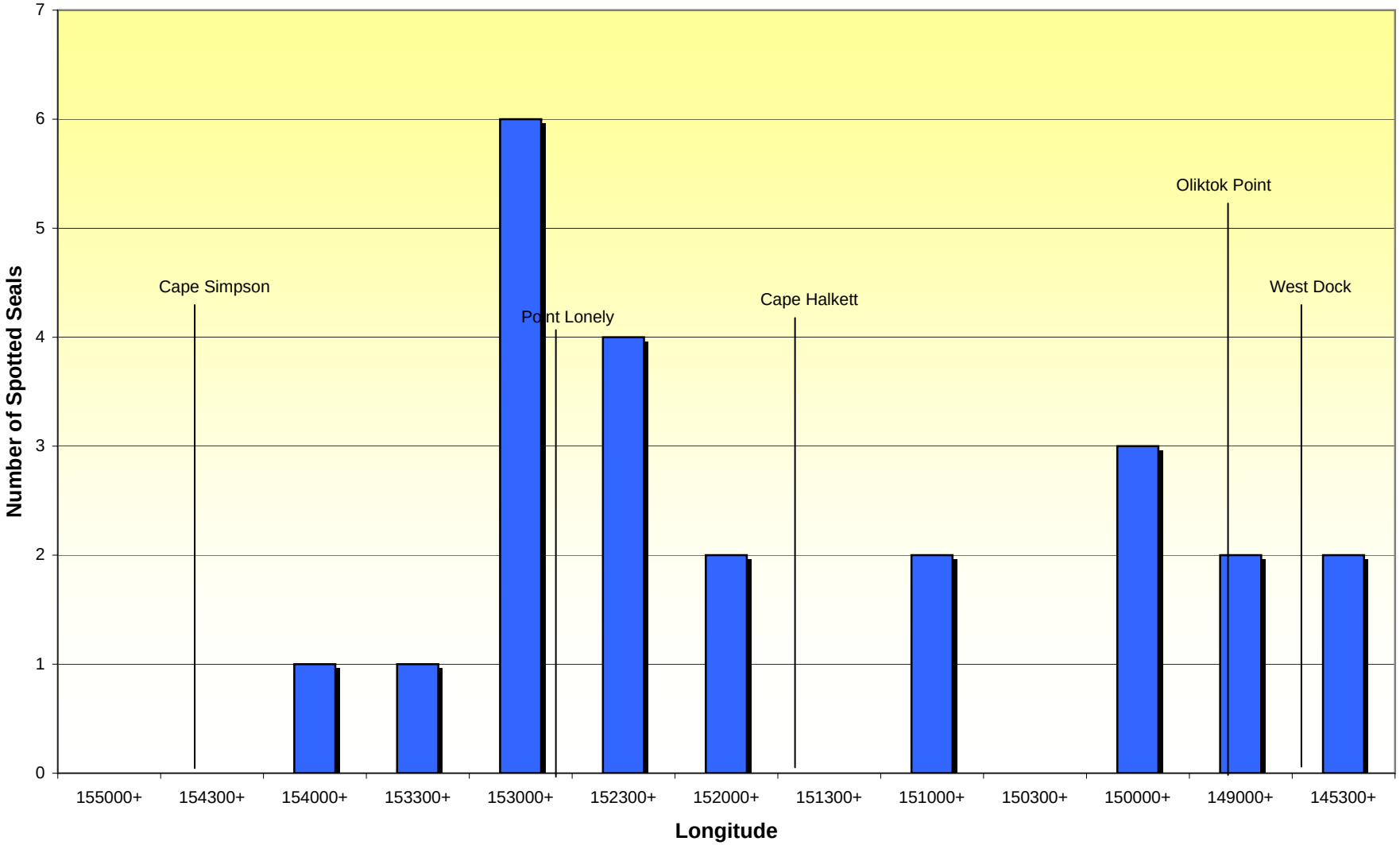

Figure 6. Numbers of Spotted Seals Observed by Location

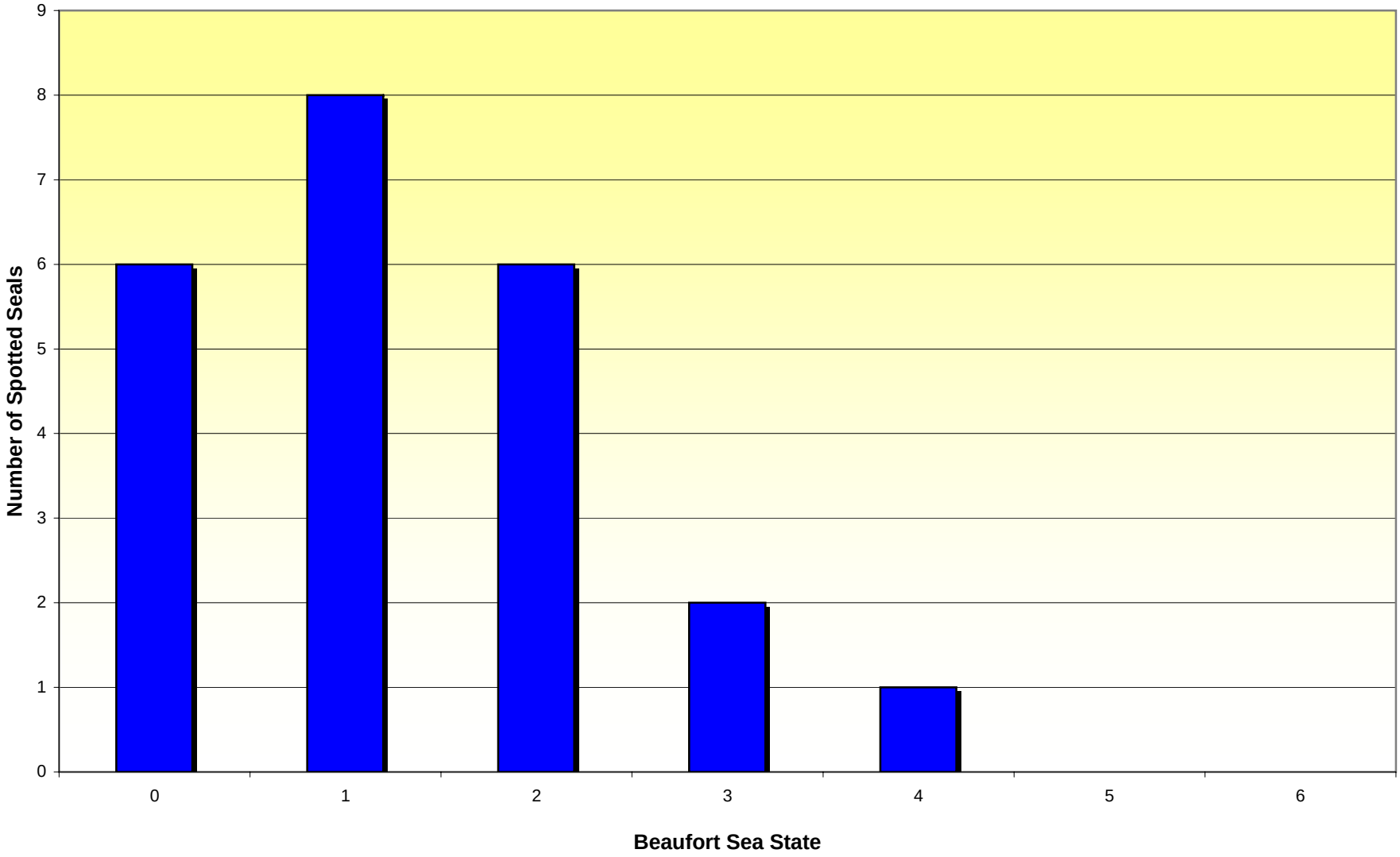

Figure 7. Numbers of Spotted Seals Observed by Beaufort Sea State

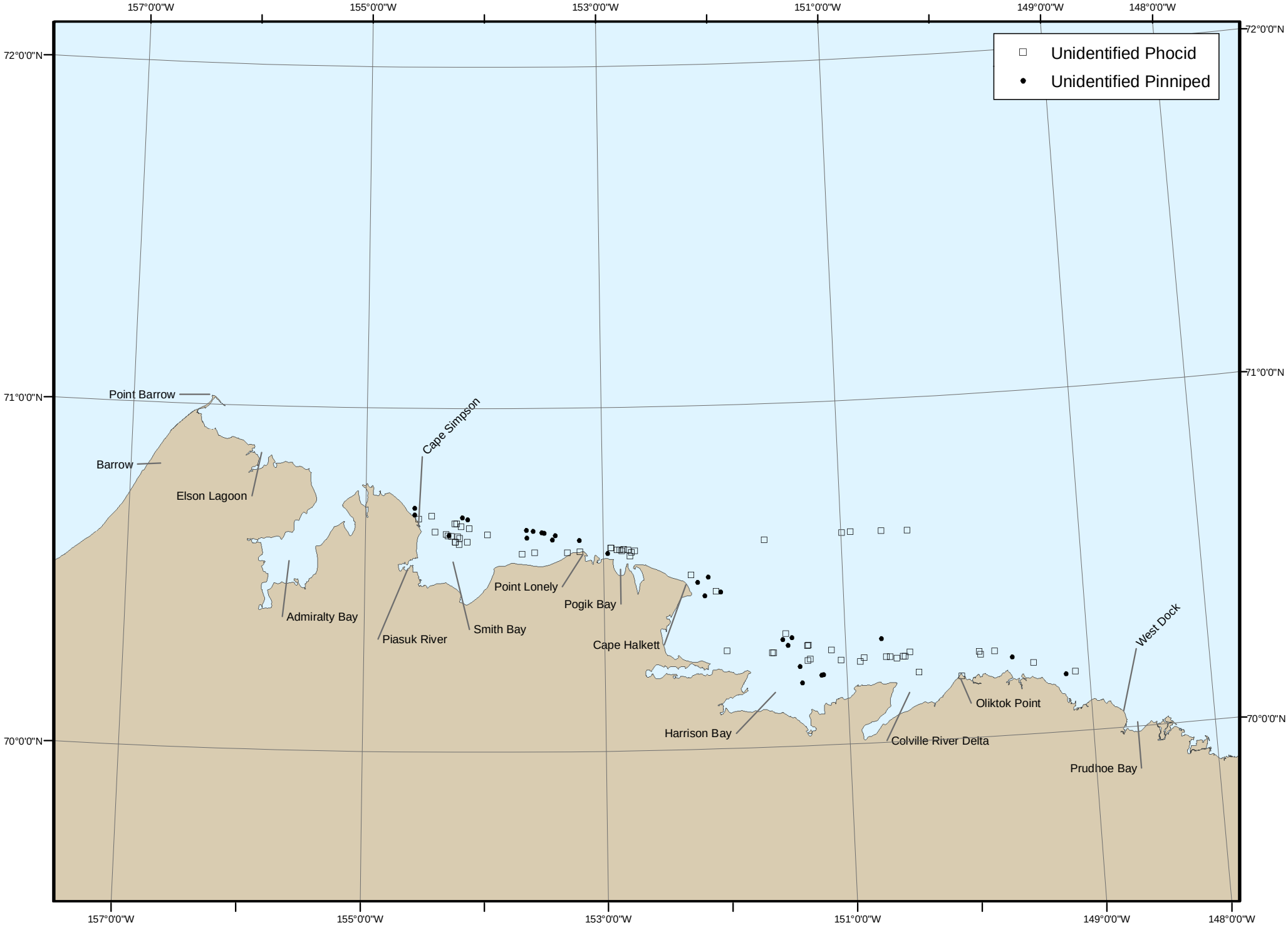

Figure 8. Locations of unidentified phocids and unidentified pinnipeds recorded between 3 August and 2 September 2006. See text for explanation of species classes.

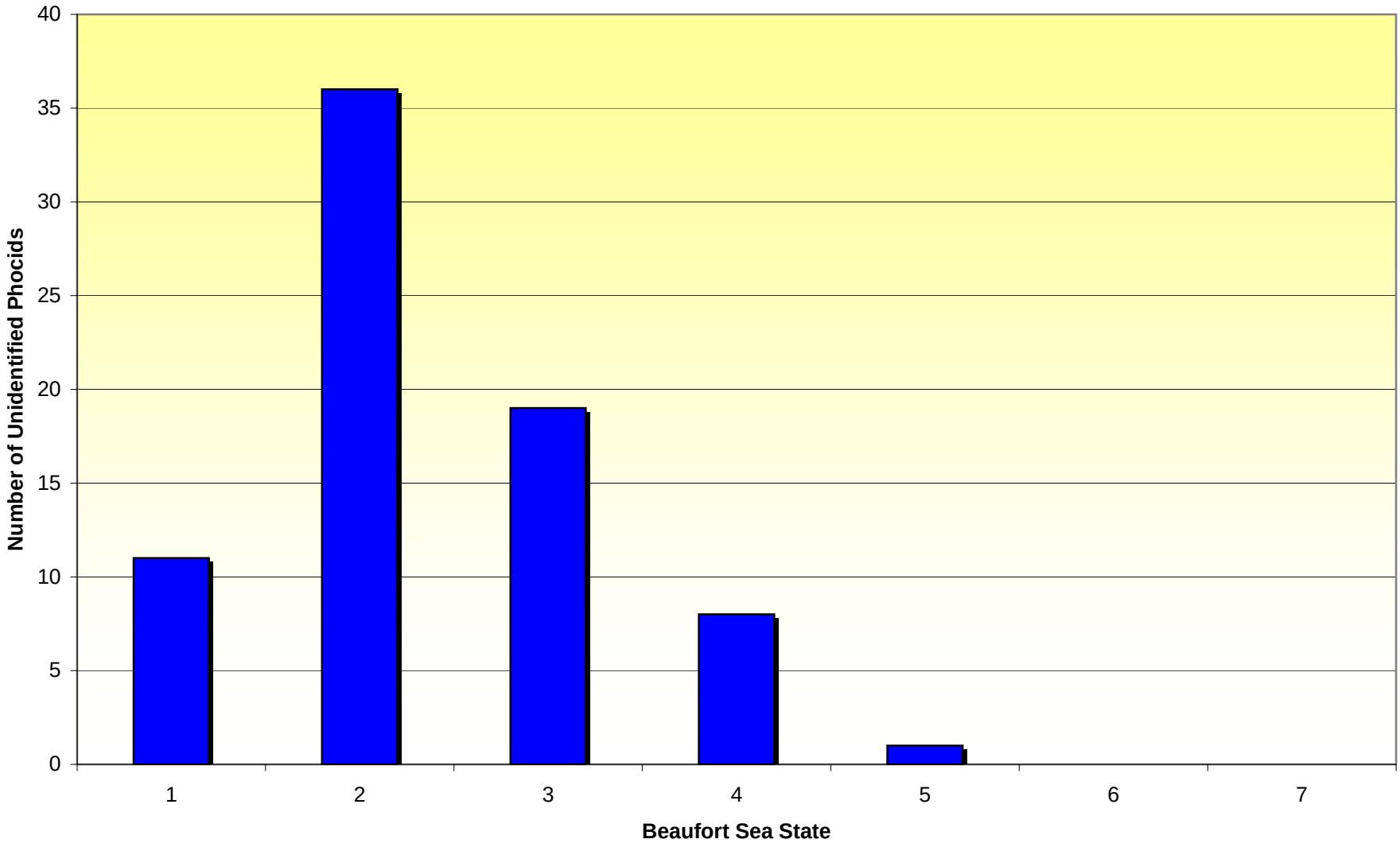

Figure 9. Numbers of Unidentified Phocids Observed by Beaufort Sea State

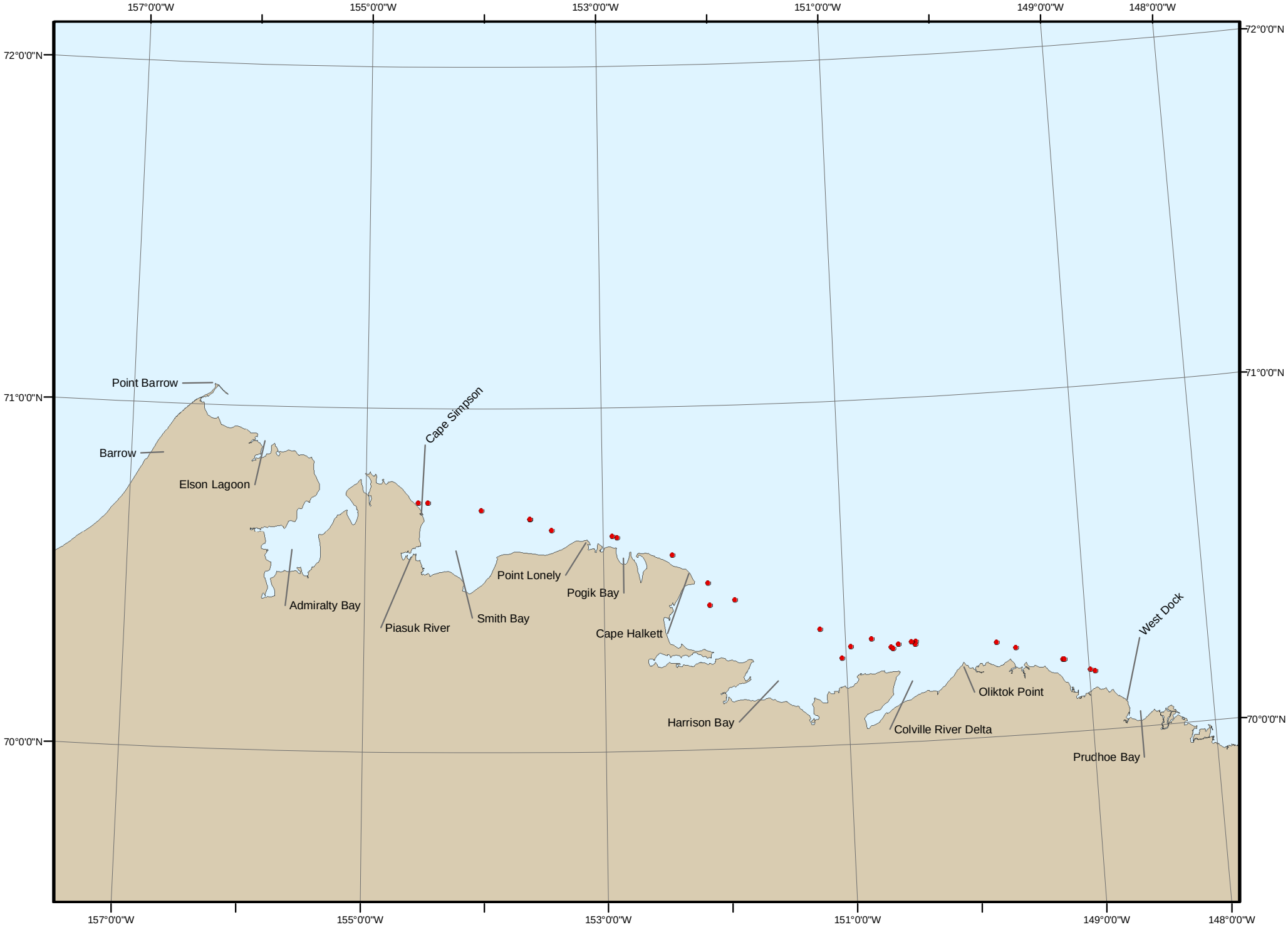

Figure 10. Locations of all bearded seals recorded between 3 August and 2 September 2006.

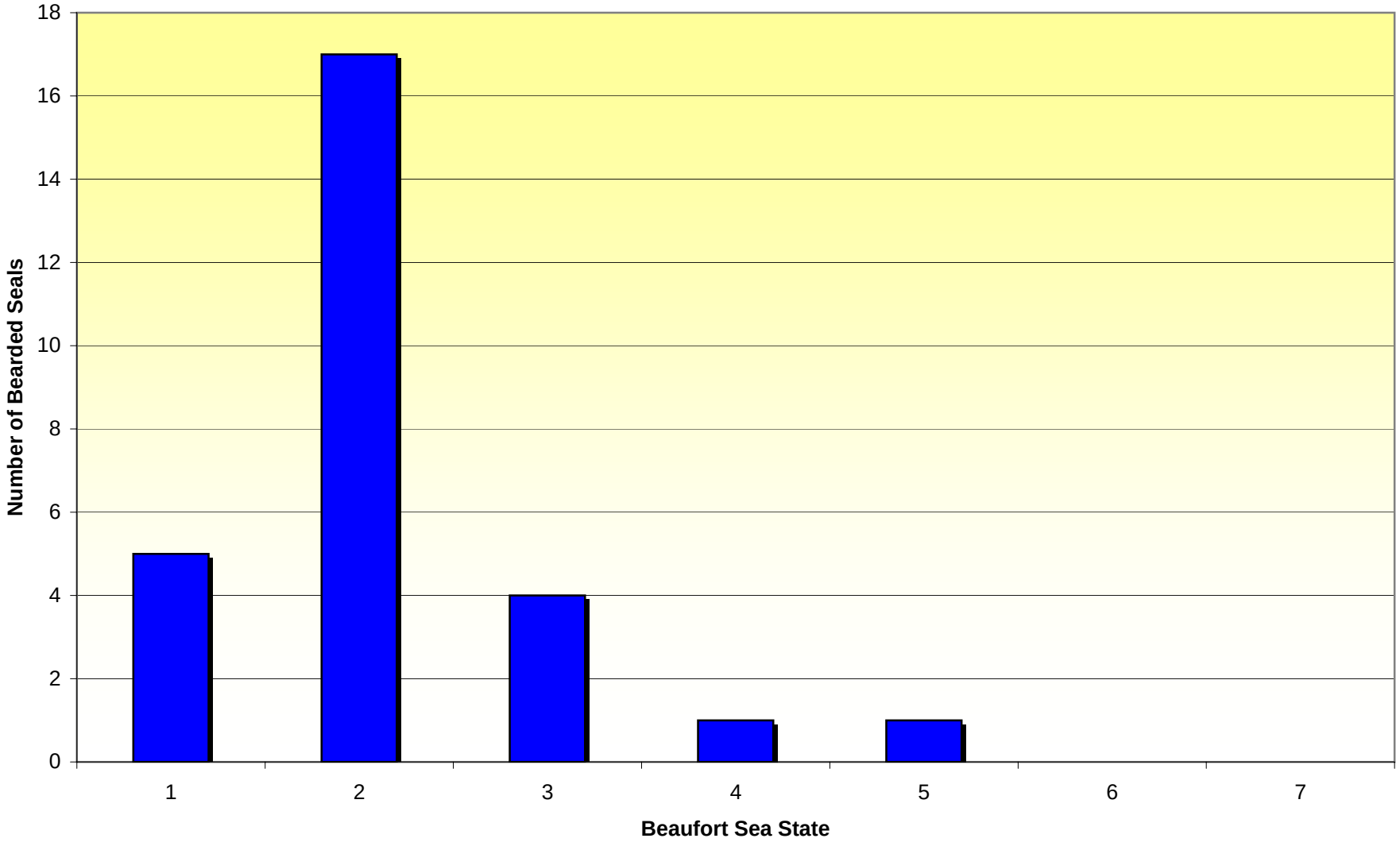

Figure 11. Numbers of Bearded Seals Observed by Beaufort Sea State

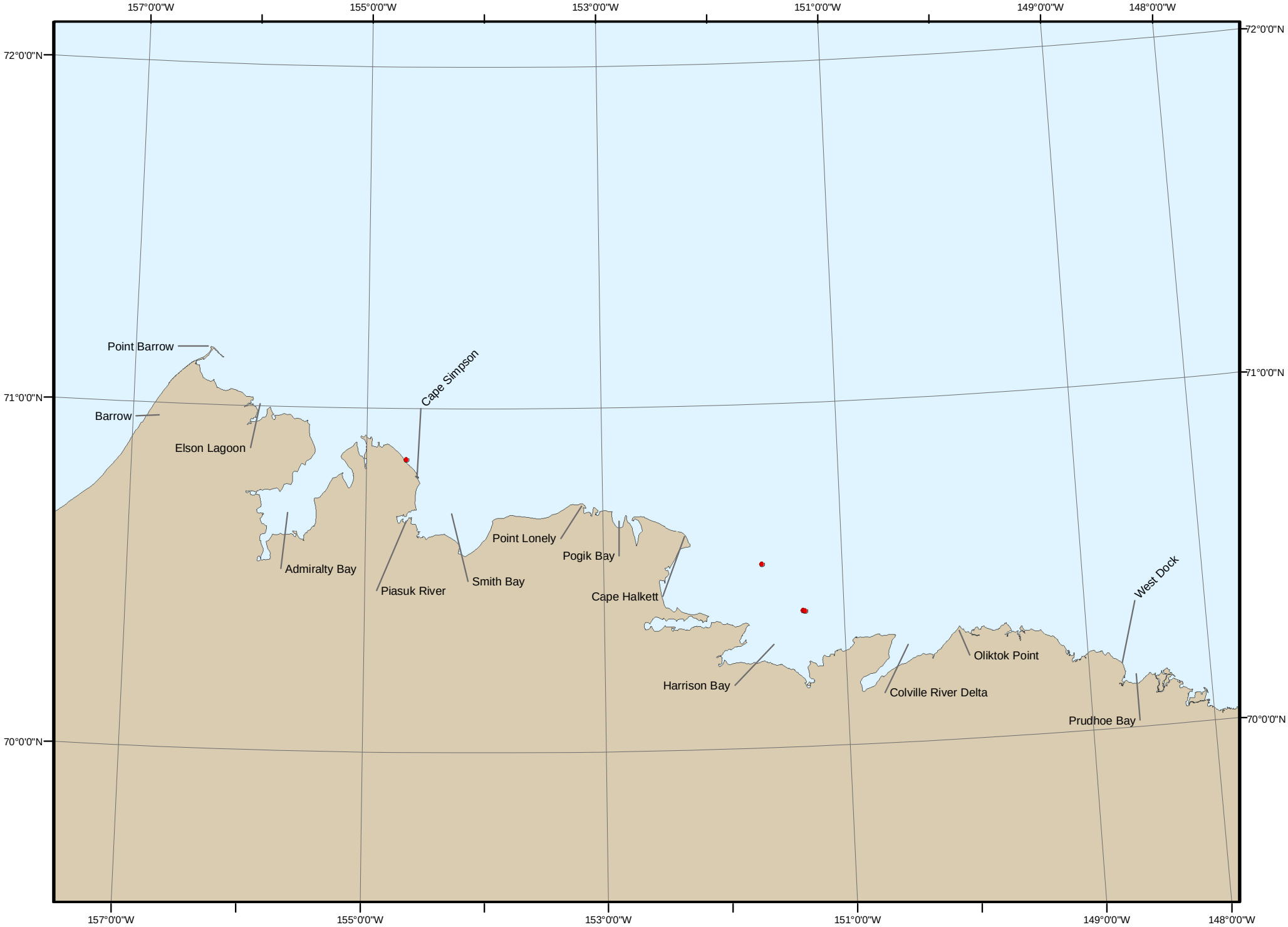

Figure 12. Locations of all polar bears recorded between 3 August and 2 September 2006.