Results of the 2013 Survey of the Reintroduced Sea Otter Population in Washington State

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The 2013 Washington sea otter survey was conducted from 15-18 July 2013 and included the inshore waters of Washington from the South Jetty at the mouth of the Columbia River, northward along the outer Washington coast and into the Strait of Juan de Fuca to Tongue Point. Biologists and volunteers from the Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Quinault Indian Nation, The Seattle Aquarium, and the Point Defiance Zoo and Aquarium participated in this year's survey. Counting conditions were variable ranging from good to excellent for both the aerial and ground components.

Methods

All of the known sea otter range in Washington was surveyed from the air in a Cessna 206 aircraft and included coverage of coastal waters from the South Jetty at the mouth of the Columbia River (covered only on the 15 July reconnaissance flight), north to Point Grenville (Point Grenville was the starting location for aerial surveys on all other days) and along the outer Olympic Peninsula coast to Cape Flattery then east into the Strait of Juan de Fuca past Pillar Point to Tongue Point (just west of Port Angeles). Additionally, ground observers conducted surveys and made counts using binoculars and spotting scopes from locations at Point Grenville, Cedar Creek, Yellow Banks, Sand Point, and Duk Point (near Seafield Creek). Ground observers were not stationed at Cape Alava or Anderson Point this year because needed permits could not be obtained. Typically, two south to north aerial surveys are scheduled each day over a period of 3 or 4 days, weather permitting. Thus, when conditions are favorable, six surveys of the entire range are completed.

The survey total is a single high count which is calculated by summing the highest daily counts for the south segment (Point Grenville to La Push) and north segment (La Push to Pillar Point) which represents the maximum count over the sea otter range in Washington and as a single count does not have an associated variance or confidence limits. This method of splitting the coast at La Push into south and north survey segments, assumes little or no movement between the two segments during our survey period. This single total count becomes the abundance estimate (N_{min}) used for calculating a Potential Biological Removal (PBR) for Washington sea otters.

Examination of survey data from years past, as well as documented movements of instrumented sea otters by USGS researchers in Washington supports this assumption. Large groups (>20) observed from the air were generally estimated and photographed with a digital camera. Digital images were later counted several times for consistency and the resulting numbers were used when 1) image quality of groups was good and ground counts were not available or 2) the aerial count from the digital image was deemed to be more accurate than the coinciding ground count of the same group of otters. Pups are identified visually and classified as dependent by their small size, wooly light brown pelage and close association (generally resting on the chest) with an adult.

Results and Discussion

For aerial surveys, we conducted an initial reconnaissance flight on 15 July covering the area from the Columbia River to Tongue Point; on 16 July two aerial surveys of the south and north segments were completed from Point Grenville to Cape Flattery; no aerial survey was conducted on 17 July; and two aerial surveys of the south and north segments were completed from Point Grenville to Cape Flattery on 18 July. Ground surveys were conducted under fair to excellent conditions on all days although at times morning low clouds, rain and fog reduced visibility.

The total count for the 2013 Washington sea otter survey was 1,272 obtained on 18 July which included 790 otters in the south segment and 482 otters in the north segment (Table 1). The count includes 57 pups, 10 and 47 respectively. This count (1,272) is the abundance estimate (N_{min}) used for calculating a Potential Biological Removal (PBR) for Washington sea otters. For comparative purposes, the N_{min} for 2010, 2011, and 2012 Washington sea otter survey counts were 1,004, 1,154 and 1,105 otters respectively. This year, the southernmost sea otters were observed near Willoughby Rock (3 independents) and the northernmost were observed at Tatoosh Island (8 independents). No sea otters were recorded east of Cape Flattery during the 16 or 18 July aerial surveys, however sea otters were recorded near Koitlah Point (1 independent) and off Chito Beach (5 independents) during the 15 July reconnaissance flight,.

During the 2013 survey, pups were observed at, Destruction Island, Diamond Rock/North Rock, Perkins Reef, Alexander Island, Giant's Graveyard, Cape Johnson, Sandy Island, north of Cedar Creek, Yellow Banks, Sand Point, Cape Alava, Duk Point (off Seafield Creek) and Tatoosh Island. In some cases pups do not appear in the summary because they were not observed during the day of the highest counts. The pup to independent ratio this year was to 4.7:100, compared to 2.7:100 in 2012, 3.9:100 in 2011, and 4.1:100 in 2010.

Survey results for 2013 indicate growth of the Washington sea otter population continues to remain positive overall, but slowing (Figure 1). Overall, the finite rate of increase for the Washington population since 1989 has been 7.6% ($R^2 = 0.96$).

Results from the north segment (La Push to Pillar Point) indicate that this segment may be approaching equilibrium density. However, the area continues to grow slowly (finite rate 3.5%, $R^2 = 0.68$), and there still appears to be some quality

unoccupied habitat available north from Point of Arches. During this year's survey, a small group of otters was seen consistently at Tatoosh Island, including a single pup.

Since 2000, growth in sea otter numbers in the south segment (Point Grenville to La Push) has slowed from the 20% per year increase observed in the 1990s. However, the population continues to increase, but more slowly at about 11% per year ($R^2 = 0.84$). In 2013, the majority of the Washington sea otter population was again located in the south segment and may represent a redistribution of individuals from the north segment to the south segment (Figure 2). No sea otters were observed east of Cape Flattery during the 16 or 18 July surveys; however six sea otters were observed in the Strait of Juan de Fuca between Cape Flattery and Pillar Point during the 15 July reconnaissance survey but are not included in the survey total.

The distribution pattern of Washington's sea otter population has continued to change in recent years with the larger proportion of the total Washington sea otter population now occurring in the segment south of La Push (Figure 2). In 2002, the segment south of La Push accounted for about the same percentage of the total population as the northern segment, 49% and 51% respectively. However, by 2008, 60% of the population was distributed south of La Push. In 2010 the distribution remained essentially unchanged. In 2011 the proportions were 62% south of La Push and 38% north of La Push; in 2012 proportions were 27% and 73%; in 2013 62% were south and 38% north identical to the 2011 results. This suggests the 2012 results were affected by poor counting conditions in the north. These results illustrate the importance of continuing annual surveys to monitor population trends and changes in distribution.

The single largest concentration of sea otters continues to be located at Destruction Island with 454 otters counted on 18 July this year. Consistent with recent surveys, a large male group continues to use the northeast reef and eastern kelp bed areas for resting, while increasing numbers of otters including females with pups are using the west end of the island. Counts made at other locations in the southern portion of the range indicate that otters, including females with pups may be regularly moving relatively short distances between rafting areas located at Destruction Island, Diamond Rock/North Rock (off the mouth of the Hoh River), inshore of Perkins Reef (Rocks 443), and Giants Graveyard. Similar movements have also been noted in the north survey segment with sea otters rafting areas inshore of Father and Son Rocks interchanging with rafting areas near Duk Point as well.

As in past surveys, we did not include any coverage of inland waters east of Tongue Point, although we are aware of credible sightings of scattered individual sea otters in the San Juan Islands and Puget Sound in recent years. Most of these sightings have been of one or two animals, with the most recent report being a 2013 sighting of a lone individual in south Puget Sound. No groups of multiple animals have been noted from any confirmed inland water sea otter sighting reports to date and we believe the small number of sea otters frequenting the inland waters would not add significantly to the population total. As with recent surveys, no large groups were recorded in the Strait of Juan de Fuca with only a small number of otters remaining in the area between Cape Flattery and Pillar Point.

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Cover photograph of sea otters rafted at Destruction Island taken by Joe Evenson, Washington Department of Fish and Wildlife.

Table 1. Results of the survey of the Washington sea otter population, 15-19 July 2013.

Location	Independent	Pups	Total
South Segment			
WILLOUGHBY ROCK	3	0	3
DESTRUCTION ISLAND	451	3	454
MIDDLE ROCK/DIAMOND ROCK	5	1	6
PERKINS REEF (ROCK 443)	266	2	268
ALEXANDER ISLAND	5	1	6
GIANTS GRAVEYARD	47	3	50
QUILLEUTE NEEDLES	3	0	3
North Segment			
CHILEAN MEMORIAL	1	0	1
CAPE JOHNSON/BLUFF POINT	112	4	116
SANDY ISLAND	2	1	3
JAGGED ISLAND	1	0	1
CEDAR CREEK./NORWEGIAN MEMORIAL	98	8	106
MIDWAY BEACH	2	0	2
YELLOW BANKS	70	15	85
SAND POINT	65	6	71
INSHORE WHITE ROCK SUBMARINE ROCK	2	1	3
WEDDING ROCKS	1	0	1
OZETTE/CAPE ALAVA/BODELTEH	30	6	36
SOUTH OF OZETTE RIVER	2	0	2
DUK POINT	34	6	40
POINT OF ARCHES	5	0	5
SOUTH OF PORTAGE HEAD	1	0	1
BAHOBOHOSH POINT	1	0	1
TATOOSH ISLAND	8	0	8
Totals	1215	57	1272

Figure 1. Growth of Washington sea otter population showing 3-year running average, 1989-2013.

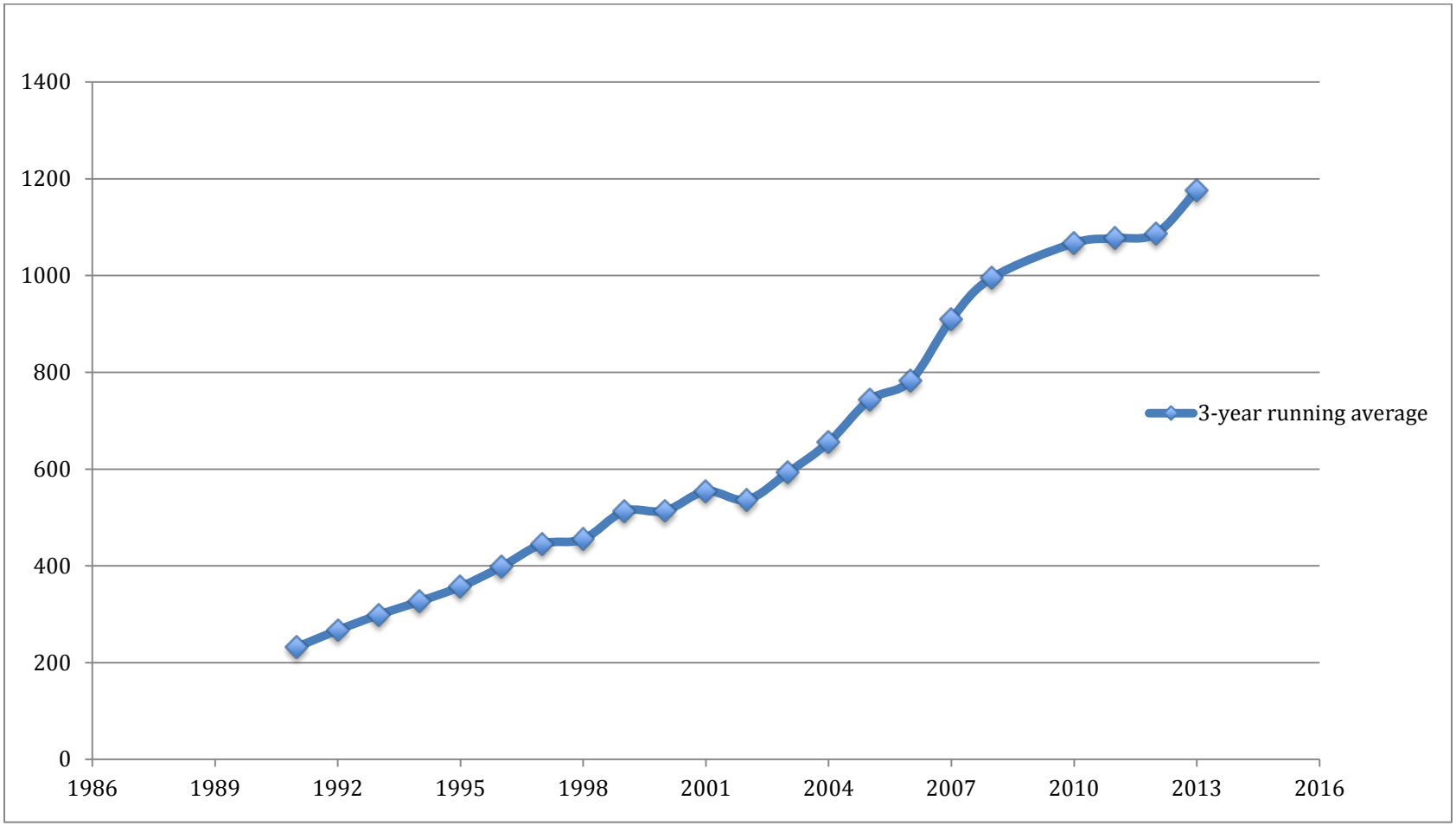

Figure 2. Comparative distribution of sea otters in Washington State between the north and south survey segments**,** 1989-2013.