GRAY WHALES COUNT
SANTA BARBARA CHANNEL

2016 On-Effort, Raw Totals and Estimates of Gray Whales Migrating Past Counter Point

GRAY WHALES COUNT

Gray Whales Count (GWC) is a research and education project, in which observers (Counters) on land monitor the passage of Gray whales (*Eschrichtius robustus*) migrating northbound through the nearshore of the Santa Barbara Channel, along a corridor extending approximately 3 nautical miles (nm) from shore. Our annual survey is approximately 100 consecutive days. Before 2011 we started in late January. We learned that there aren't many whales until February; and, we have pushed the conclusion to the end of May to capture a continuing flow of calves. Conditions permitting, each survey-day begins approximately at 0900 and ends usually at 1700.

GOALS

The goals of the research are to estimate the number of Gray whales and Gray-whale calves migrating northbound through our ocean corridor and to share our data to complement similar sampling-studies along the California coast.

SITE

Our survey site is Counter Point on the Coal Oil Point Reserve in Goleta, California, USA. We face due south across the Santa Barbara Channel towards the islands: Anacapa, Santa Cruz, Santa Rosa, and San Miguel. Our mainland coastline runs east-west, with northbound whales traveling west, for us, left to right across our Point towards Point Conception. From an elevation of 14.2 meters, we are able to track sightings up to 200 degrees from 80° to 280° magnetic.

COUNTERS

The observation team consists of from three to five Counters, including: the Project Coordinator; up to two Research Assistants (RA) and/or a student-intern training to be a Supervisor; with, up to two Observers. RA-Supervisor shifts are four hours; Observer shifts are two hours; and the Project Coordinator is usually on-site all day. The Project Coordinator and/or a Supervisor is always on Counter Point.

We monitor the northbound migration of Gray whales along a particular corridor. There are various routes Gray whales travel through the Southern California Bight. From our vantage, we are sampling approximately a third of a day from all the whales migrating 24/7 though the nearshore of the Santa Barbara Channel.

We see the migration as two, distinguishable migrations or phases. Whales migrating in the first phase usually begin showing up in late-January-to-mid-February. We have few sightings per day until later in February when the traffic increases to a peak around the third week of March, when we observe between 25 to over 50 whales a day. These whales are singles and groups of mature, male and female whales as well as juveniles, including yearlings, making only their second trip north. The mature whales generally travel further from shore, with the majority that we observe passing just inside or outside the oil platform, Holly, two statute miles southwest, off our shore. At least ninety percent of the first phase of the migration has passed Counter Point by the first week in April, and yet, we sometimes see whales not associated with calves well into May.

The second phase—the mother & calf migration—begins in late March to mid-April. It is in marked contrast to the earlier phase. Each mother guides her single calf close along the coastline. On occasion, we track them through areas of kelp and along the edge of the surf past awestruck surfers. It is a rare cow/calf pair that we see more than three quarters of a mile offshore.

For this estimate, we have collaborated with scientists from NOAA Southwest Fisheries Science Center, La Jolla, California, including Dave Weller, PhD; Wayne Perryman, PhD; and particularly, John Durban, PhD; who assisted us with protocols that conform to their surveys. We converted our raw data from our FileMakerPro database and—with guidance—utilized their algorithm-model in RStudio to create our estimates, which are directly comparable to their estimates and, of course, our own surveys.

We also received initial input and counsel from Cindy Wyels, PhD, Director of the Masters in Mathematics Program at California State University, Channel Islands.

References

Durban, J. et al. 2011. Abundance indices of eastern North Pacific gray whales from southbound migration counts, 2007-2011. Report to the Scientific Committee of the International Whaling Commission SC/63/BRG7.

Laake, J. L.,Punt, A., Hobbs. R., Ferguson, M., Rugh, D. and Breiwick, J. 2009. Re-analysis of gray whale southbound migration surveys, 1967-2006. NOAA Technical Memorandum NMFS-AFSC-203. 55 p.

Wyels, C., Bricker, J., Flores, J. 2009. Analyzing Local Gray Whale Migration Data, 2006-2009. Poster project of Dr. Wyels's Masters in Mathematics class in association with Michael Smith, Gray Whales Count.

2016 Survey Dates: February 16 through May 26

Number of Counters: 69 Total Counter Hours: 2701:45

Survey, On-Effort Hours: 640:35

Raw, On-Effort Count of all northbound Gray whales, including calves: 1,412

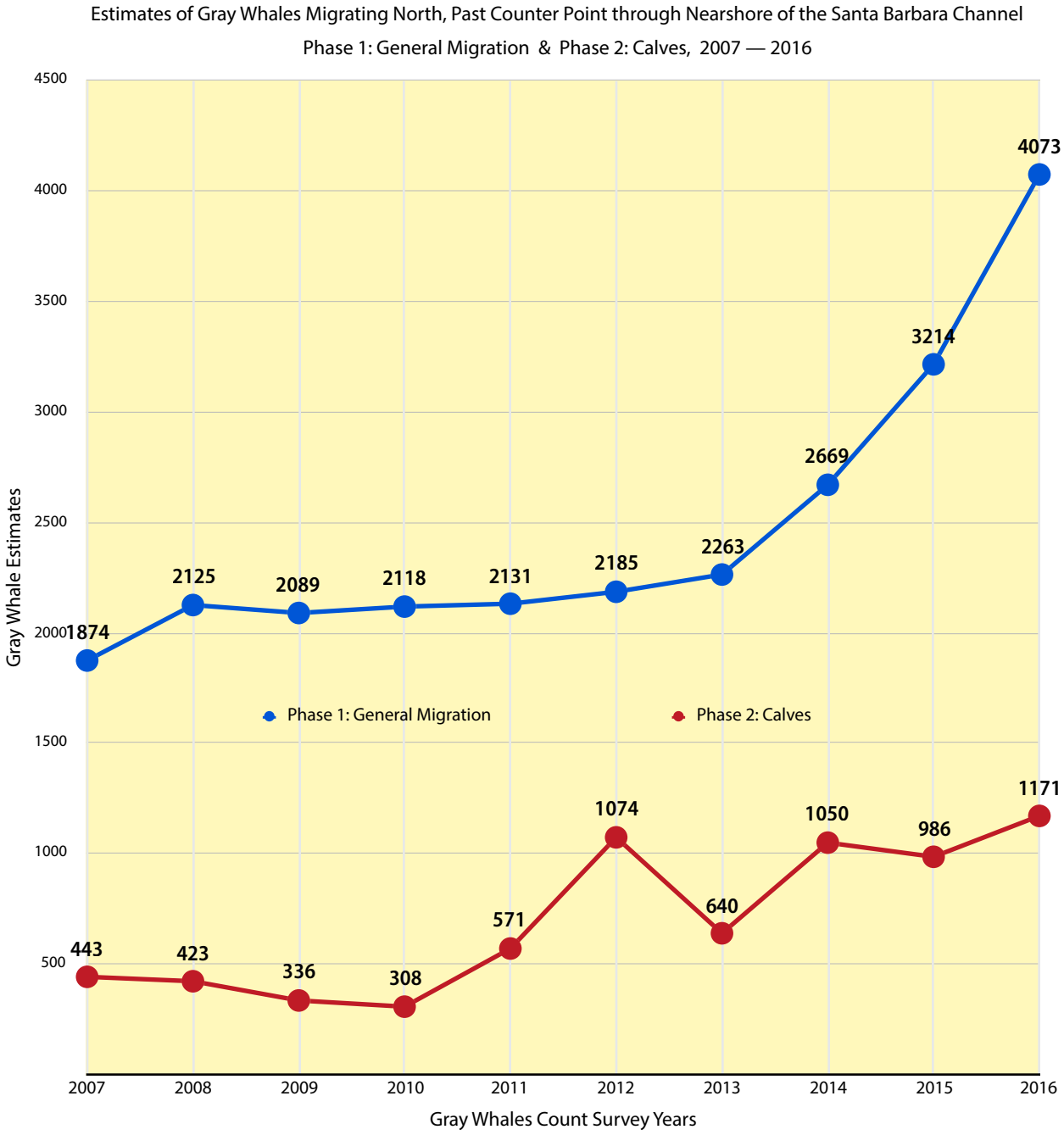
Raw, On-Effort Count of northbound Gray whale calves: 296

Estimate, Phase 1, General Migration: 4,073 **Estimate, Phase 2, Calves: 1,171**

Estimate, Migrating Gray whales, nearshore Santa Barbara Channel, past Counter Point: 6,415

These data include only entries on-effort, in adequate visibility, in sea conditions less than 5 Beaufort. General Migration is males and females, juvenile and mature, not associated with mothers and calves. The Estimate of calves records only each calf, and not the mother. (In the raw Count mothers are included in the total of all northbound Gray whales.) Since each calf is accompanied by its mother, we calculate the Estimate of Gray whales migrating through the nearshore of the Santa Barbara Channel, past Counter Point, as: (Estimate of Phase 1) + (2 x (Estimate Phase 2)).

Additional marine mammal species sighted in 2016: southbound Gray whales; Humpback whales; a Minke whale; Bottlenose dolphins, Common dolphins; Pacific White-sided dolphins; Southern Sea otters; a Northern Elephant seal; a Northern Fur seal; Harbor seals; and California Sea lions in need of rescue.



We are truly grateful to all our collaborators: Cascadia Research Collective, Coal Oil Point Reserve, Journey North, Scripps Acoustic Whale Laboratory, as well as NOAA Southwest Fisheries Science Center who have helped us make our work more meaningful for science and education.

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