

Relationship Between the Distribution of Gray Whales (*Eschrichtius robustus*) and Two Types of Prey in the Northern Bering and Chukchi Seas

Yuka Iwahara,^{1,2,3} Kohei Matsuno,⁴ Keiko Sekiguchi,⁵ Hiroko Sasaki,¹ Tsubasa Nakano,⁴ Bungo Nishizawa,¹ Takashi Uyama,⁴ Atsushi Yamaguchi,⁴ Yutaka Watanuki,⁴ Kazushi Miyashita⁶ and Yoko Mitani⁷

(Received 7 January 2025; accepted in revised form 26 May 2025)

TABLE S1. Sampling period for each survey.

Start date	End date	Distance in good weather (nmi)	Effective search half-width (nmi)
5 August 2007	13 August 2007	336.0	0.98
7 July 2008	15 July 2008	242.9	1.17
13 September 2012	4 October 2012	433.5	1.79
4 July 2013	19 July 2013	611.6	1.50

¹ Japan Fisheries Research and Education Agency, Fisheries Stock Assessment Center, 2-12-4 Fukuura, Kanazawa-ku, Yokohama, Kanagawa, 236-8648, Japan

² Graduate School of Environmental Science, Hokkaido University, Sapporo, Hokkaido 060-0810, Japan

³ Corresponding author: yuka.iw.irk@gmail.com

⁴ Graduate School of Fisheries Sciences, Hokkaido University, 3-1-1, Minato, Hakodate, Hokkaido 041-8611, Japan

⁵ Iruka Lab, 3-10-15 Tamagawa, Chofu, Tokyo 182-0025, Japan

⁶ Field Science Center for Northern Biosphere, Hokkaido University, 20-5 Benten-cho, Hakodate, Hokkaido 040-0051, Japan

⁷ Wildlife Research Center, Kyoto University, 2-24 Tanaka-Sekiden-cho, Sakyo, Kyoto 606-8203, Japan

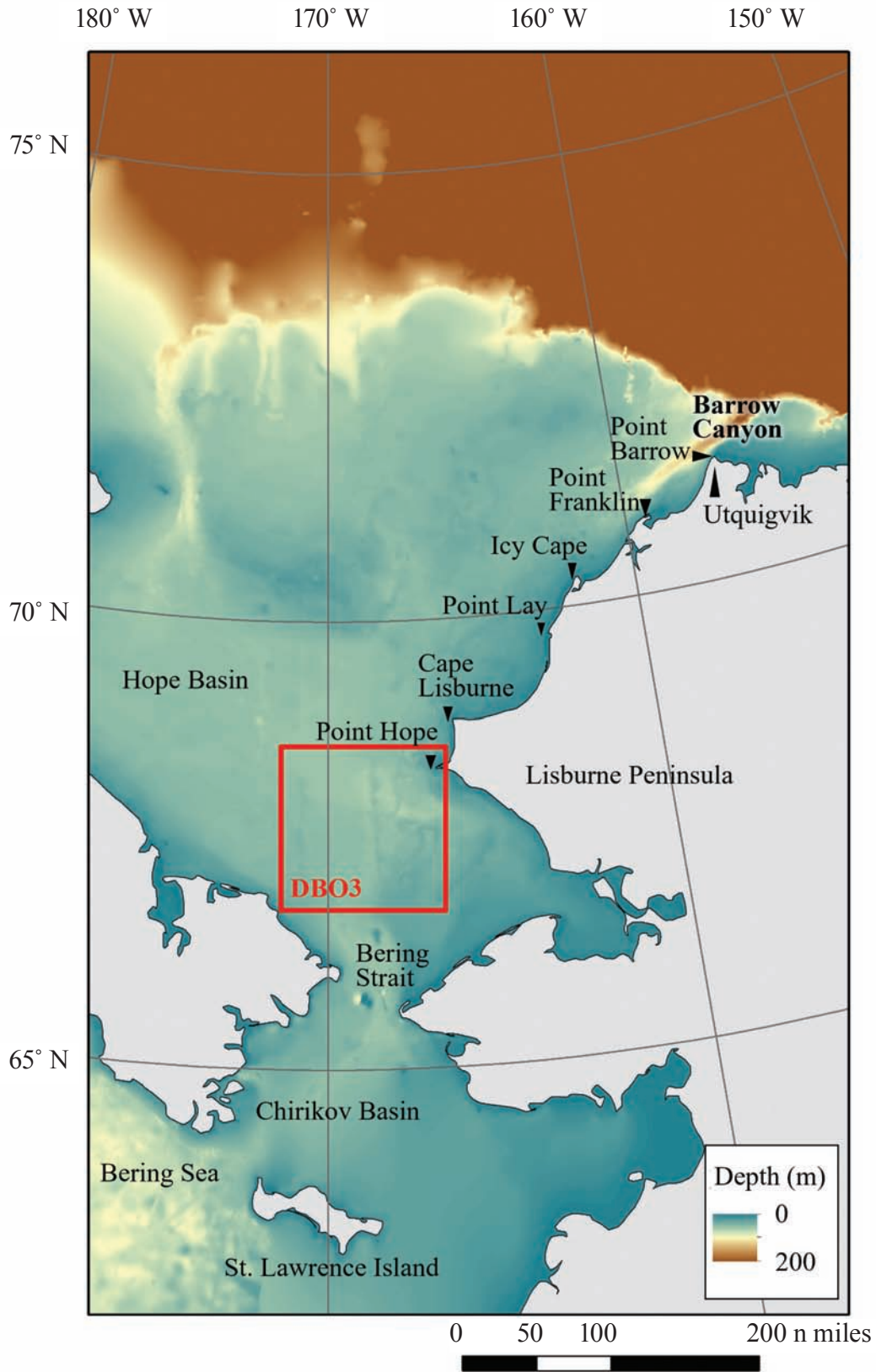


FIG. S1. Map of the entire survey area. The red rectangle indicates the DBO3 area. Names of places and seas mentioned in the paper are indicated.

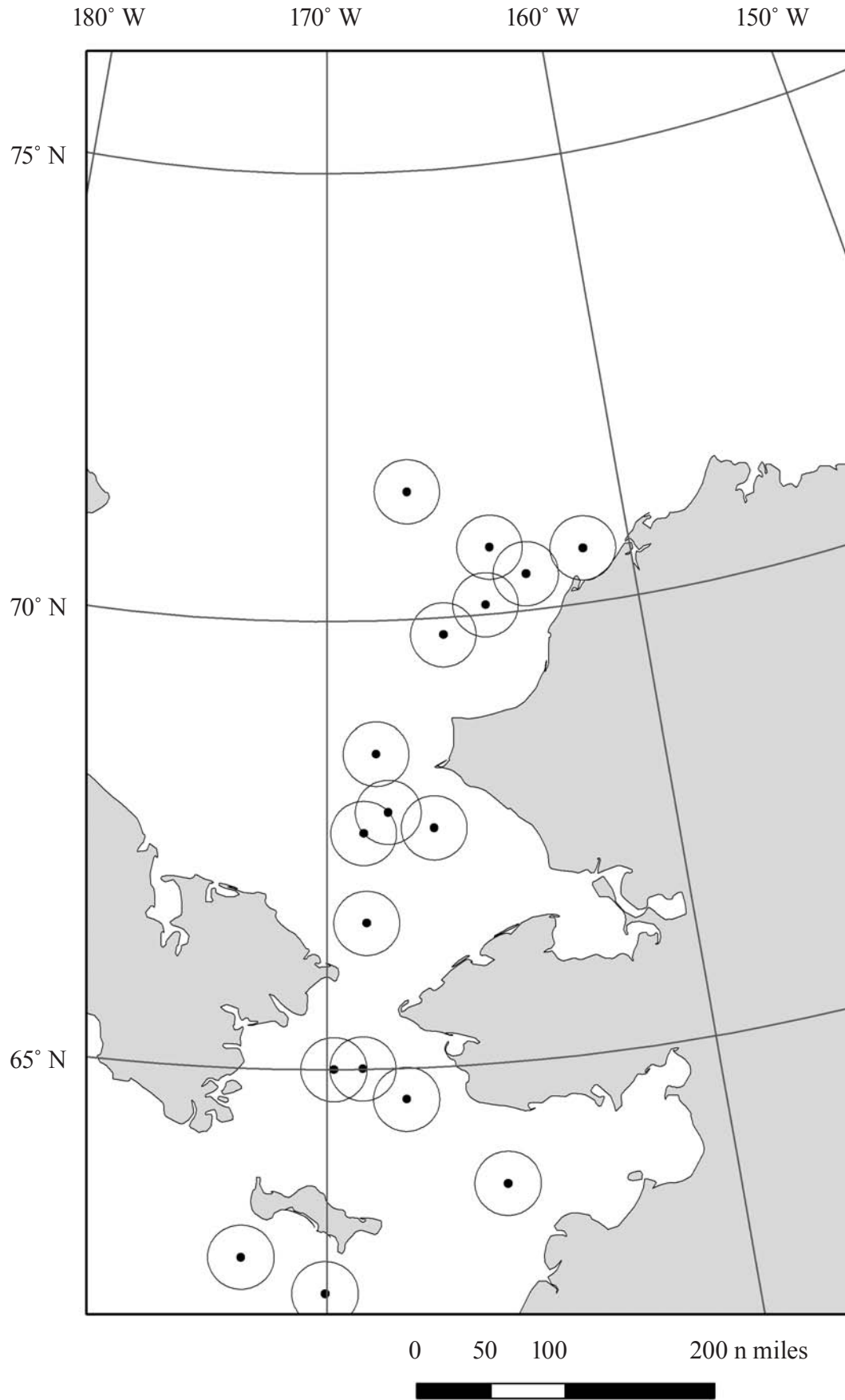


FIG. S2. Circles with a radius of 40 km from the stations where benthic sampling was conducted during the 2013 survey.

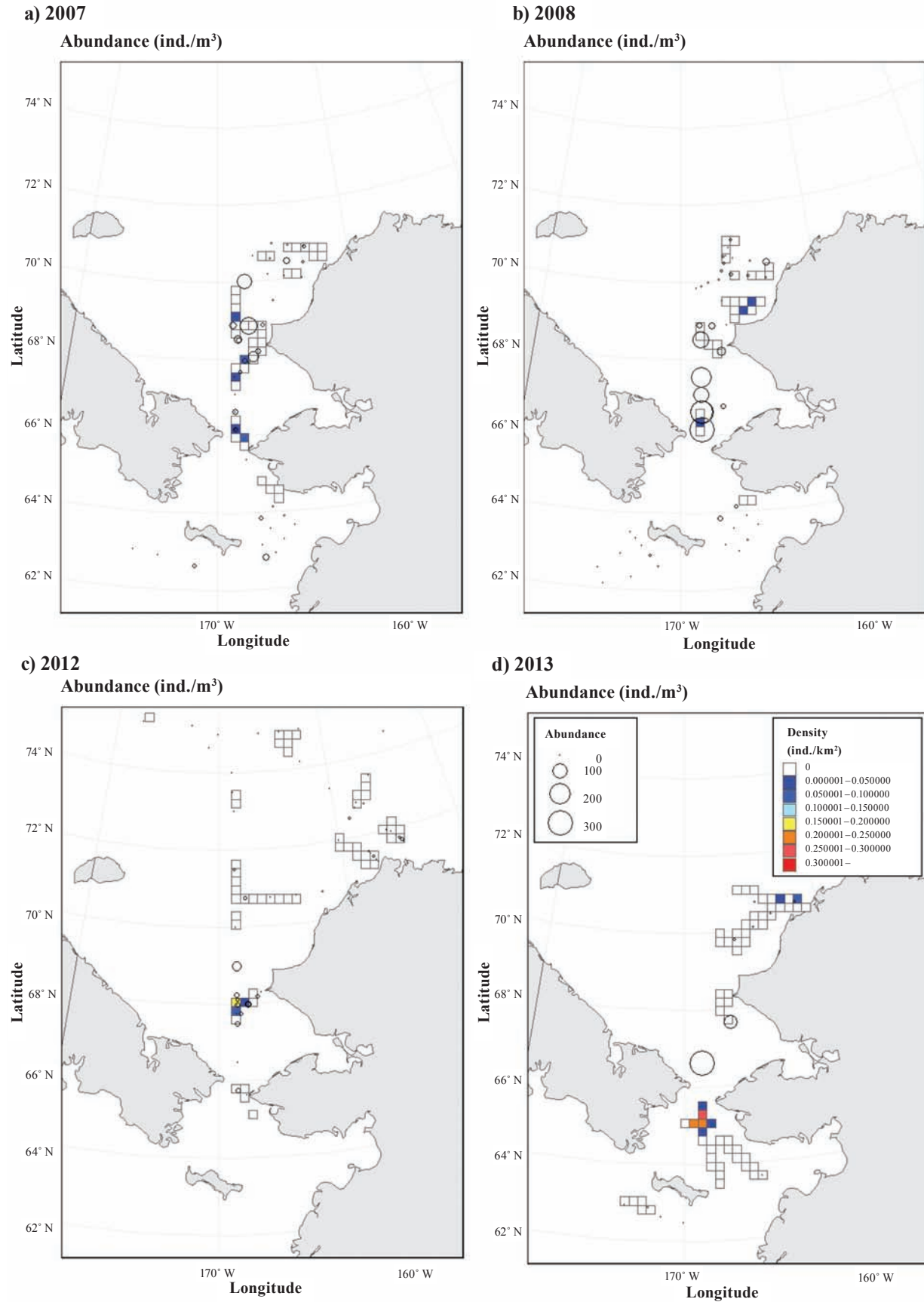


FIG. S3. Euphausiid abundance (ind./m³) and density of gray whales (ind./km²) in 2007 (a), 2008 (b), 2012 (c) and 2013 surveys (d). Circle size indicates abundance.

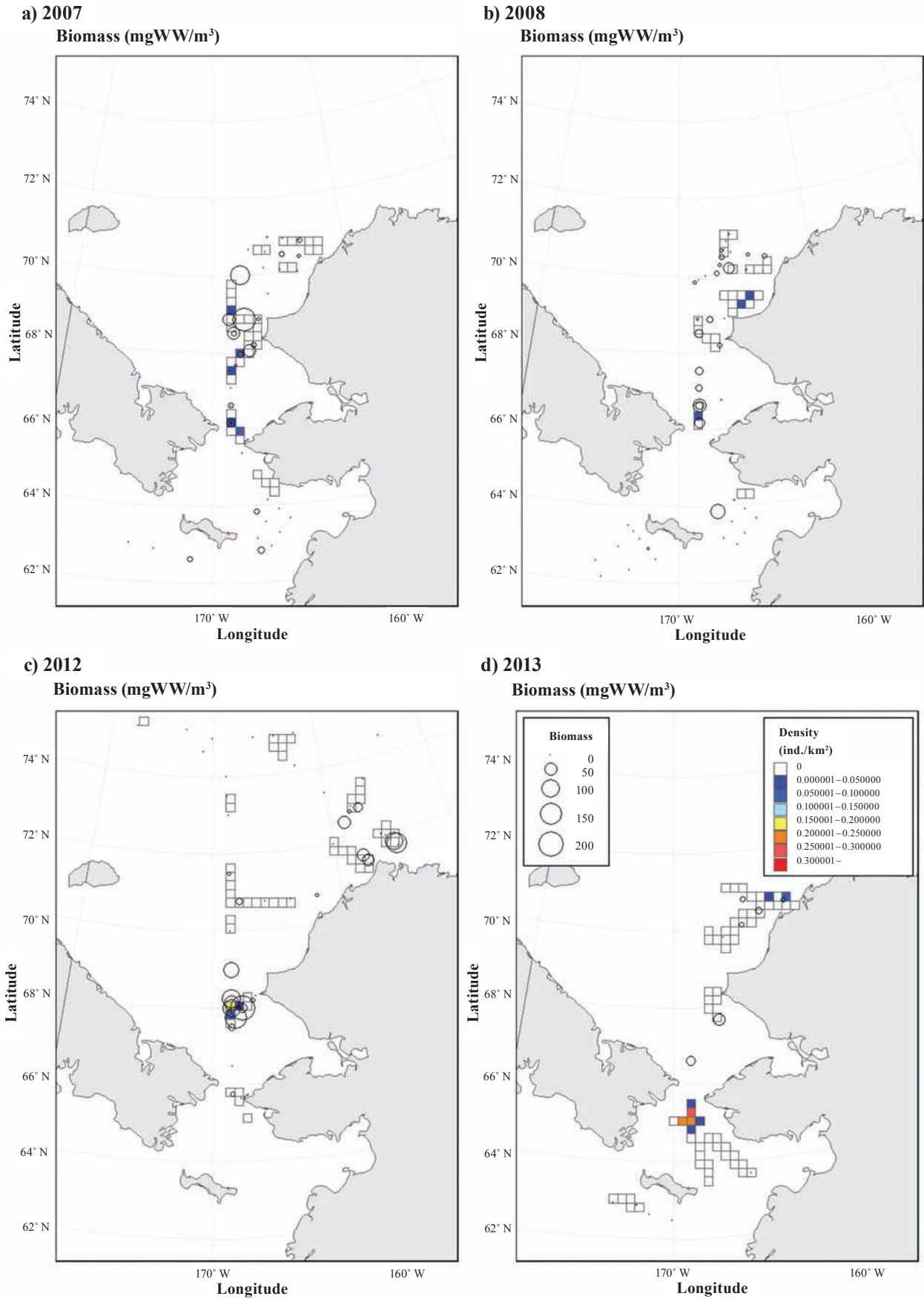


FIG. S4. Euphausiid biomass (mgWW/m³) and density of gray whales (ind./km²) in 2007 (a), 2008 (b), 2012 (c) and 2013 surveys (d). Circle size indicates biomass.

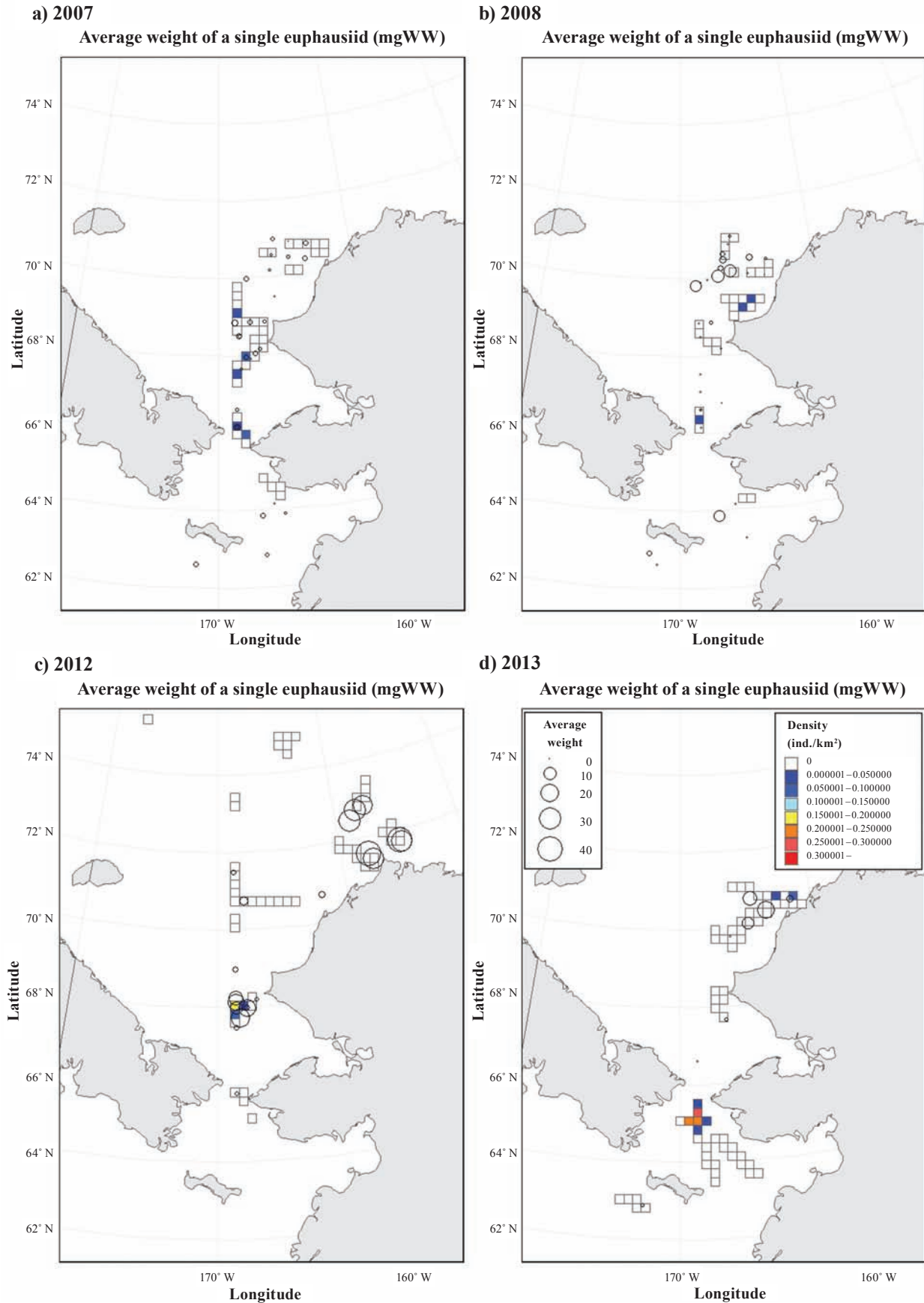


FIG. S5. Average weight of a single euphausiid (mgWW) and density of gray whales (ind./km²) in 2007 (a), 2008 (b), 2012 (c) and 2013 surveys (d). Circle size indicates average weight of a single euphausiid.

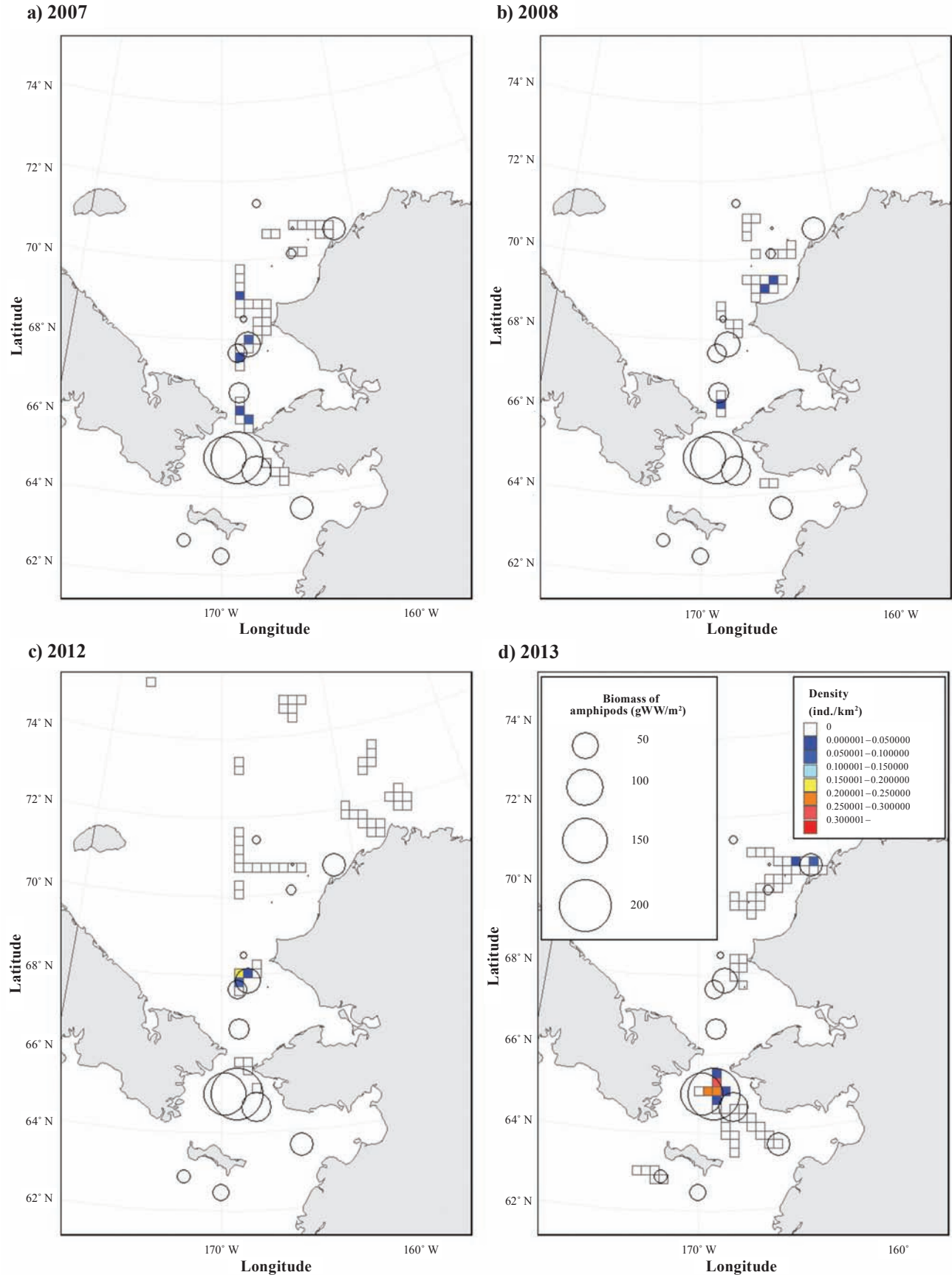


FIG. S6. Biomass of benthic amphipods (gWW/m²) and density of gray whales (ind./km²) in 2007 (a), 2008 (b), 2012 (c) and 2013 surveys (d). Circle size indicates the biomass of benthic amphipods in 2013.

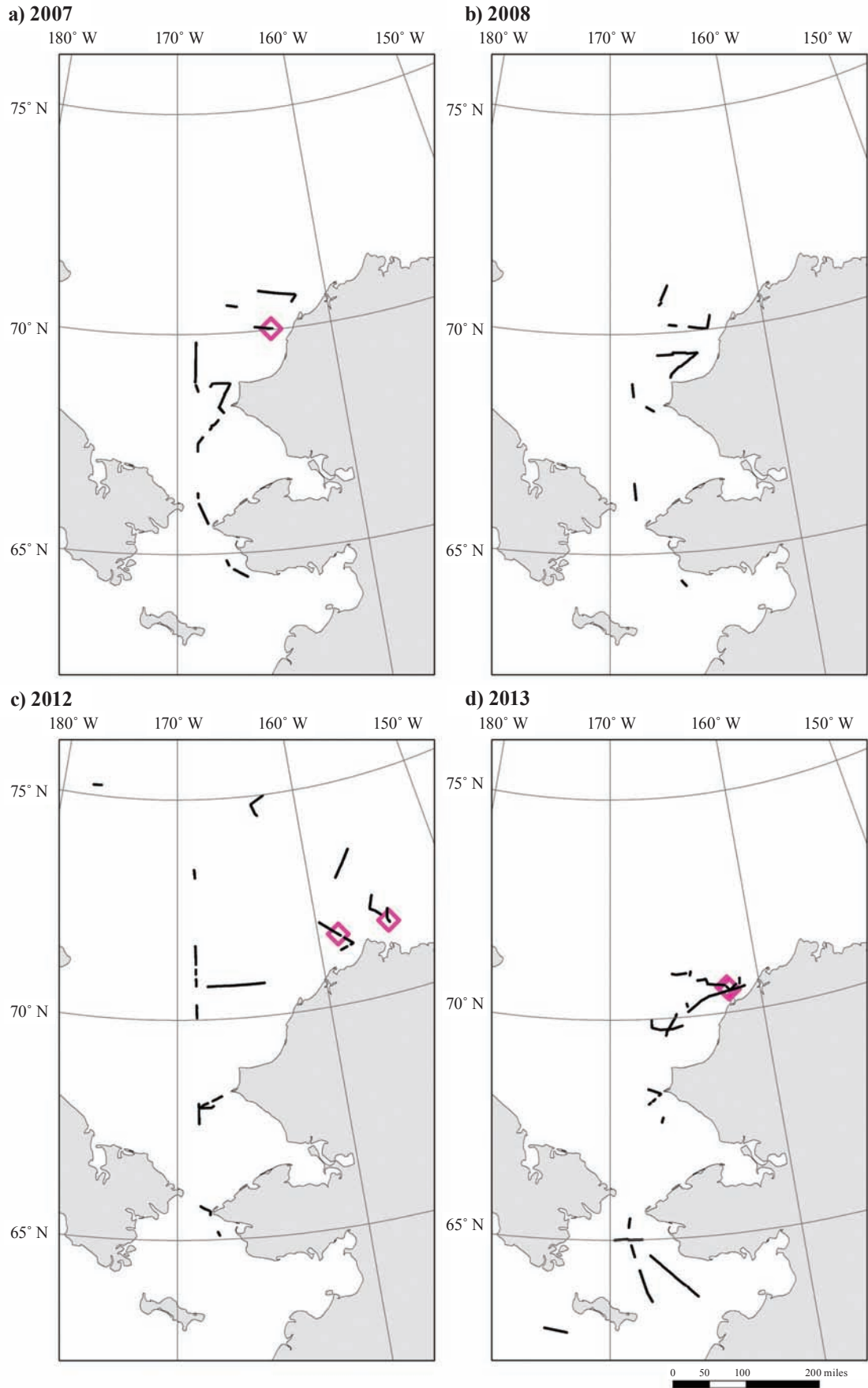


FIG. S7. Sighting positions of bowhead whales. Black lines indicate sighting survey lines, and pink squares indicate the sighting positions of bowhead whales.

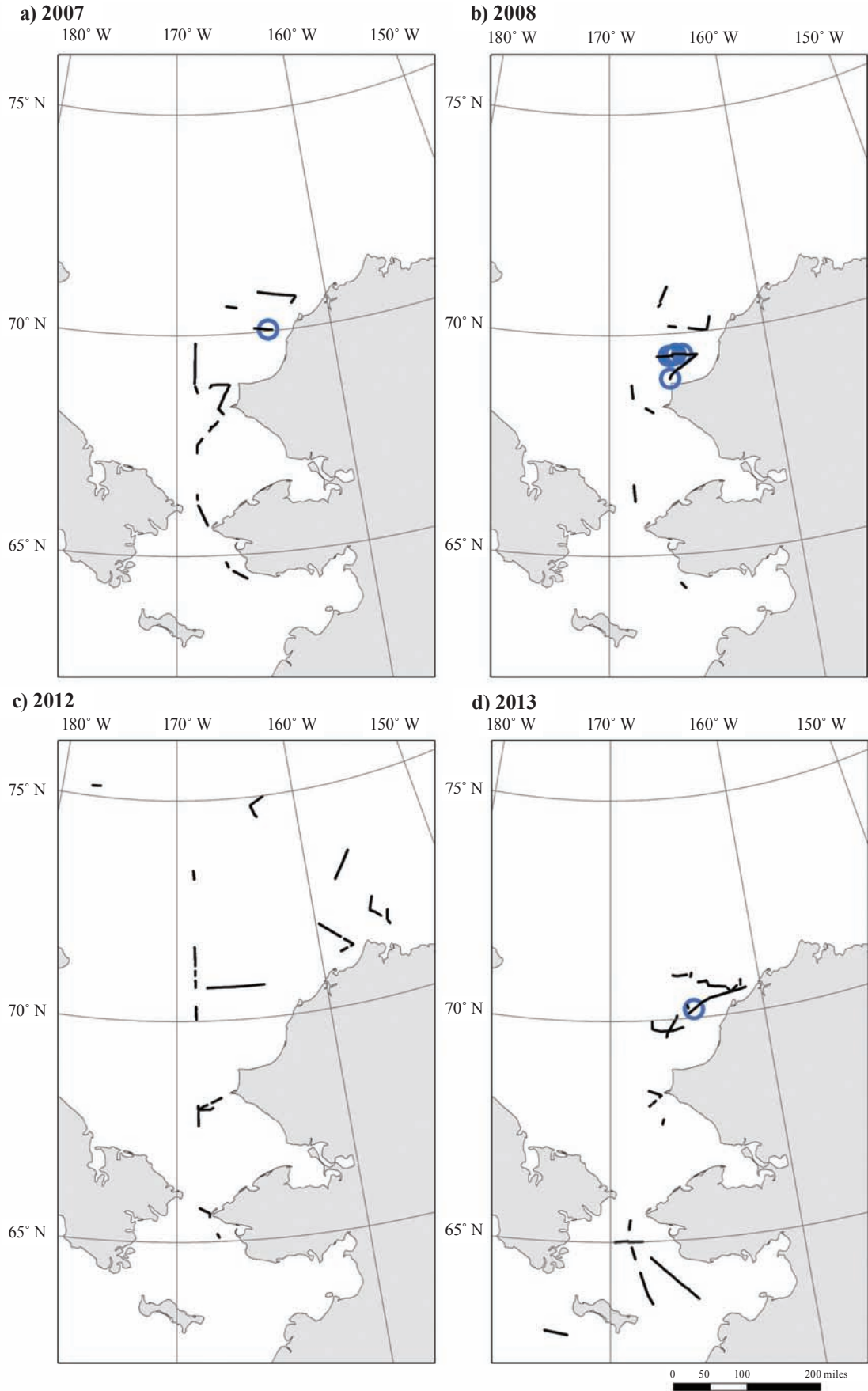


FIG. S8. Sighting positions of minke whales. Black lines indicate sighting survey lines, and blue circles indicate the sighting positions of minke whales.

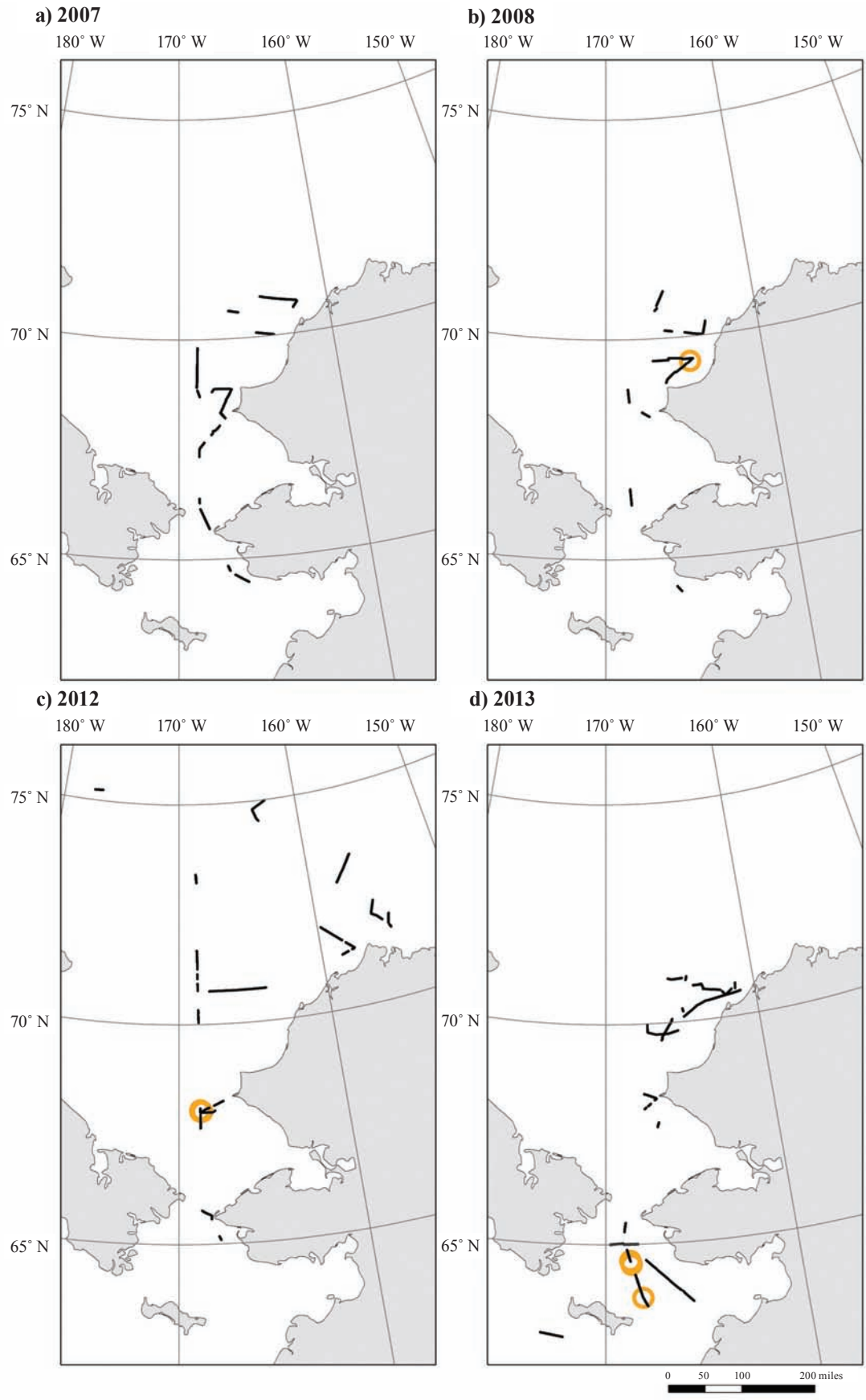


FIG. S9. Sighting positions of humpback whales. Black lines indicate sighting survey lines, and orange circles indicate the sighting positions of humpback whales.

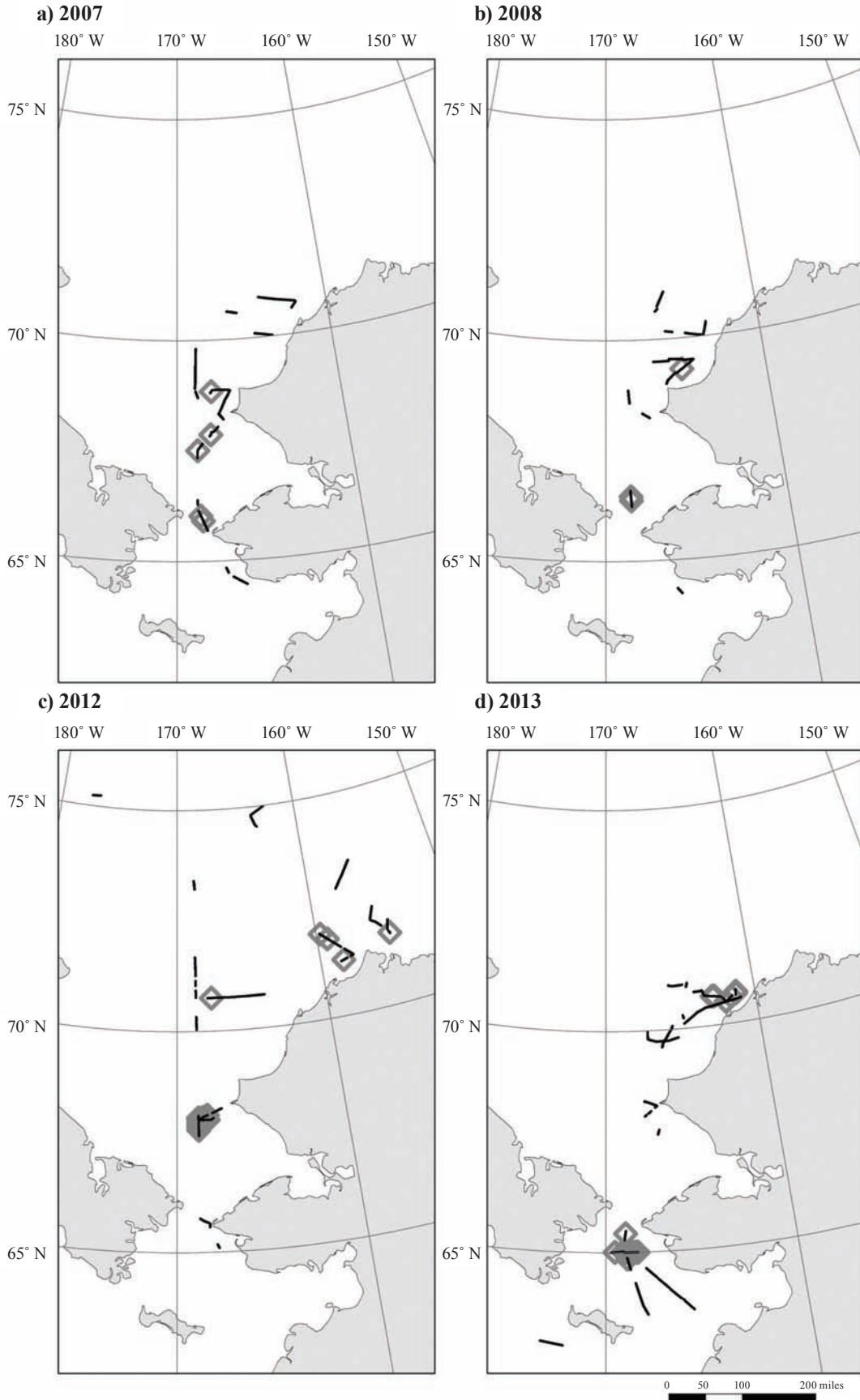


FIG. S10. Sighting positions of unidentified baleen whales. Black lines indicate sighting survey lines, and gray squares indicate the sighting positions of unidentified baleen whales.