

Supplemental figures and tables for:

Odontocete Spatial Patterns and Temporal Drivers of Detection at Sites in the Hawaiian Islands

Morgan A. Ziegenhorn¹, John A. Hildebrand¹, Erin M. Oleson², Robin W. Baird³, Sean M. Wiggins¹, and Simone Baumann-Pickering¹

¹Scripps Institution of Oceanography, University of California San Diego, LaJolla, California, USA

²NOAA Fisheries Pacific Islands Fisheries Science Center, Honolulu, Hawaii, USA

³Cascadia Research Collective, Olympia, Washington, USA

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Corresponding author: Morgan A. Ziegenhorn, maziegenhorn36@gmail.com

Appendix S1 *Recording schedule for deployments from all sites.*

Deployment	Sampling Frequency (kHz)	Duty Cycle (minutes on/total minutes)	Latitude, Longitude (decimal degrees)	Instrument Depth (nearest 10 meters)	Start Date	End Date
Hawai'i05	200	5/5	19.578, -156.014	550	2009-02-10	2009-04-01
Hawai'i06	200	5/15	19.583, -156.016	750	2009-04-23	2009-08-18
Hawai'i07	200	none	19.582, -156.015	720	2009-10-25	2009-12-15
Hawai'i08	200	5/12	19.581, -156.015	750	2009-12-20	2010-03-05
Hawai'i09	200	none	19.581, -156.016	750	2010-05-01	2010-06-16
Hawai'i10	200	5/8	19.582, -156.015	720	2010-09-30	2011-03-12
Hawai'i11	200	5/8	19.582, -156.015	720	2011-05-12	2011-10-22
Hawai'i16	200	5/15	19.583, -156.015	720	2013-10-23	2014-04-03
Hawai'i17	200	none	19.583, -156.016	720	2014-03-25	2014-07-14
Hawai'i18	320	none	19.583, -156.016	720	2014-07-28	2014-10-12
Hawai'i19	320	none	19.583, -156.016	720	2014-12-06	2015-03-06
Hawai'i20	320	none	19.583, -156.016	720	2015-04-25	2015-08-18
Hawai'i22	200	none	19.583, -156.016	720	2015-11-07	2016-03-19
Hawai'i23	200	none	19.583, -156.016	720	2016-07-04	2016-09-14
Hawai'i26	200	none	19.582, -156.015	740	2017-07-12	2017-10-25

Hawai'i27	200	none	19.583, -156.016	750	2017-10-26	2018-04-25
Hawai'i28	200	none	19.583, -156.016	730	2018-04-29	2018-11-19
Hawai'i29	200	none	19.583, -156.016	740	2018-11-23	2019-03-31
Hawai'i30	200	none	19.583, -156.015	700	2019-04-04	2019-09-29
Kaua'i01	200	5/20	21.953, -159.887	720	2009-10-08	2010-05-13
Kaua'i02	200	none	21.954, -159.890	730	2010-06-04	2010-08-20
Kaua'i05	200	5/7	21.949, -159.888	730	2016-07-09	2017-08-09
Manawai01	200	5/20	27.725, -175.638	770	2009-10-20	2010-05-24
Manawai02	200	none	27.727, -175.632	750	2010-06-01	2010-09-17
Manawai04	200	none	27.725, -175.638	770	2011-04-12	2011-07-29
Manawai05	200	5/8	27.725, -175.638	770	2011-08-15	2012-01-07
Manawai08	200	5/20	27.742, -175.559	970	2014-09-12	2015-07-16
Manawai09	200	5/30	27.742, -175.560	960	2015-10-15	2016-08-14
Manawai10	200	5/30	27.741, -175.560	960	2016-08-20	2017-03-14

Table S1.1. Recording schedule. Recording schedule for deployments from all sites, adapted from Ziegenhorn et al. (2022). Deployments with a 25 kHz crossover between the low and high frequency hydrophones have been bolded. Lines in-between rows represent different sites, including Manawai subsites 1-2.

Appendix S2 *Seasonal species composition for each site*

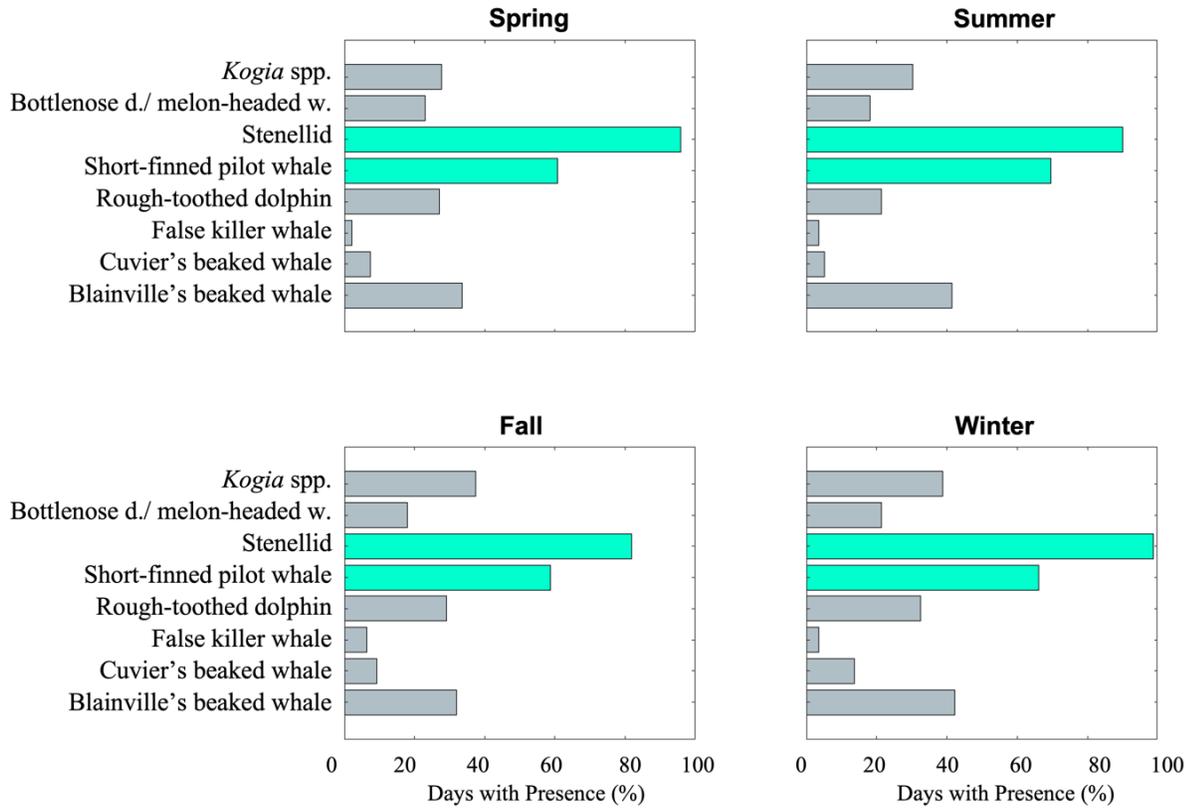


Figure S2.1. Percentage days with presence-Hawai'i. Percent days out of total recording days at Hawai'i with presence of each type for each season. Values greater than 50% are shown in green.

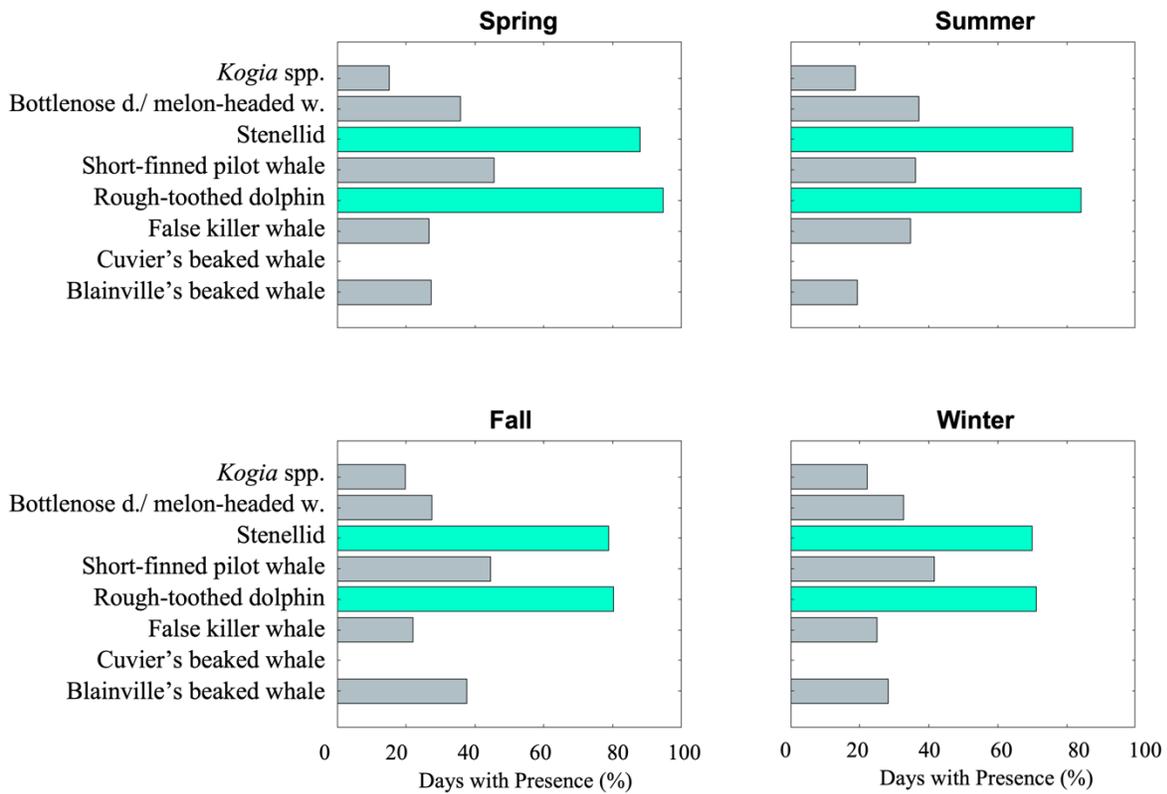


Figure S2.2. Percentage days with presence-Kaua‘i. Percent days out of total recording days at Kaua‘i with presence of each type for each season. Values greater than 50% are shown in green.

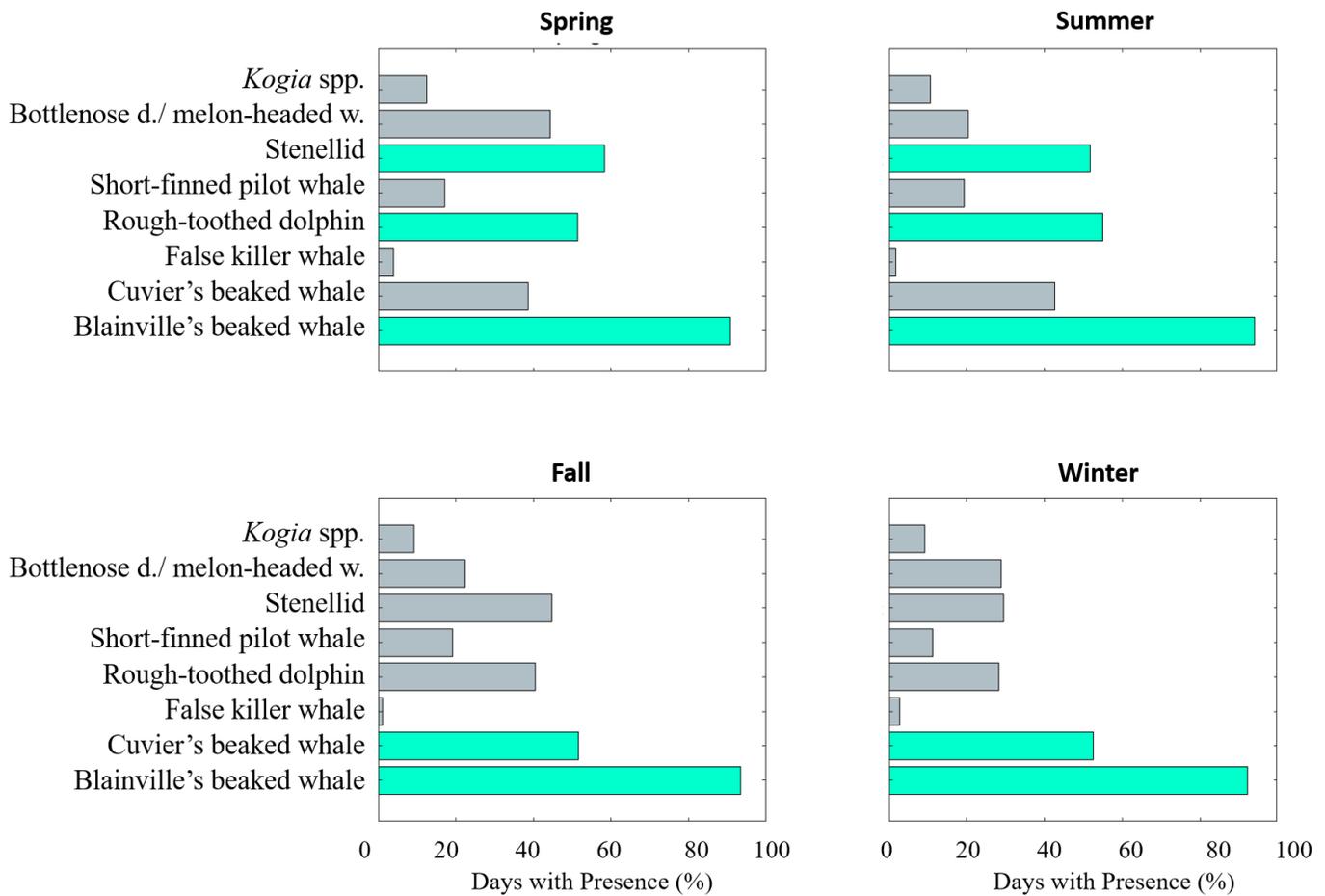


Figure S2.3. Percentage days with presence-Manawai. Percent days out of total recording days at Manawai with presence of each type for each season. Values greater than 50% are shown in green.

Appendix S3 *Full timeseries of species presence*

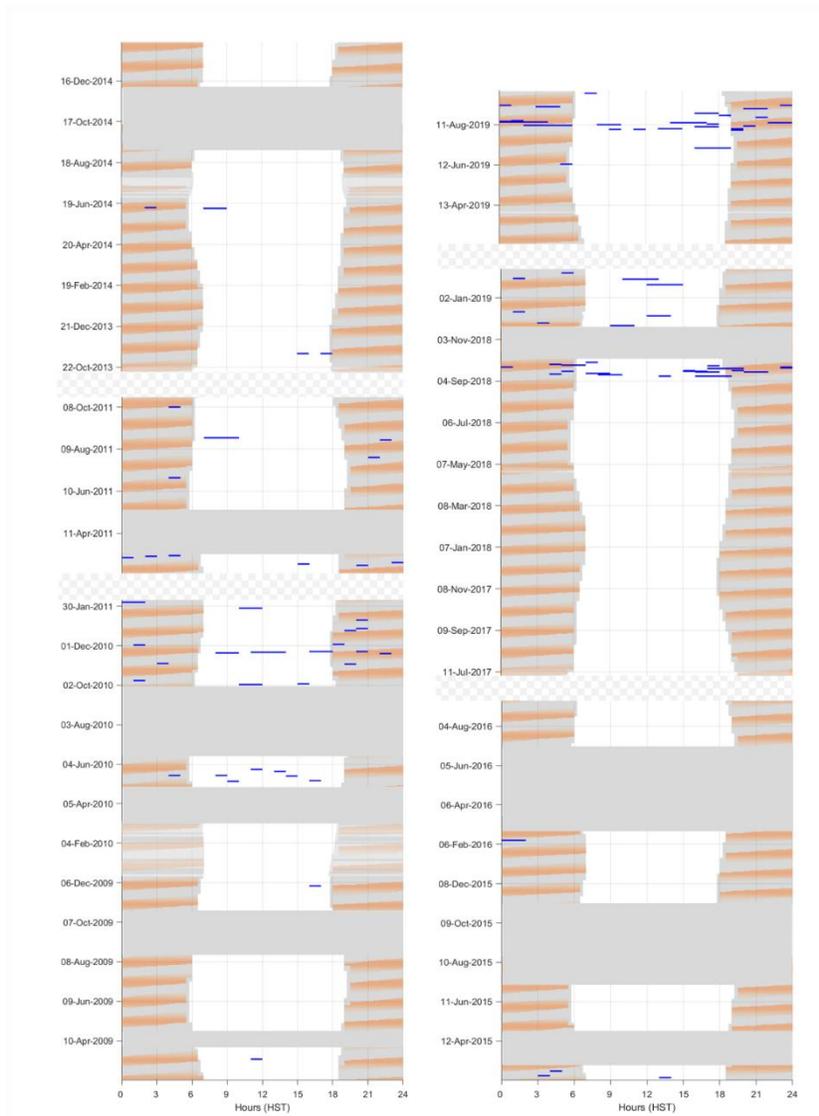


Figure S3.1. Diel and lunar timeseries for false killer whales at Hawai'i. Hours of presence for false killer whales at Hawai'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

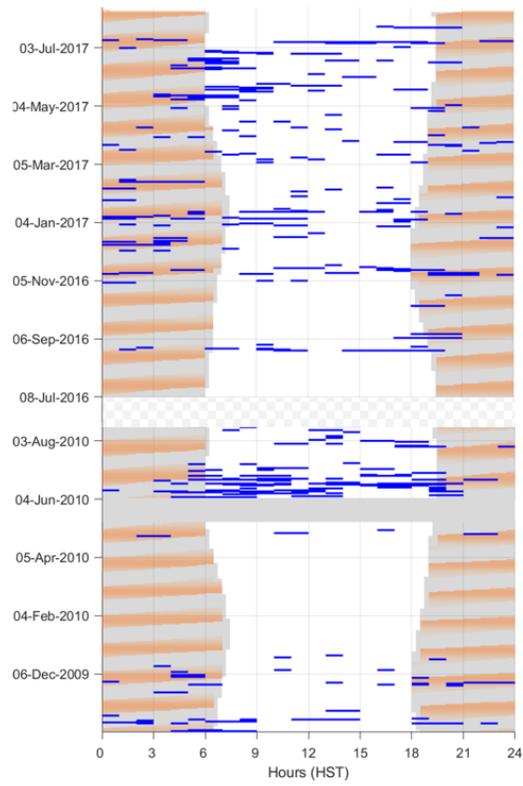


Figure S3.2. Diel/lunar timeseries- false killer whales at Kaua‘i. Hours of presence for false killer whales at Kaua‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

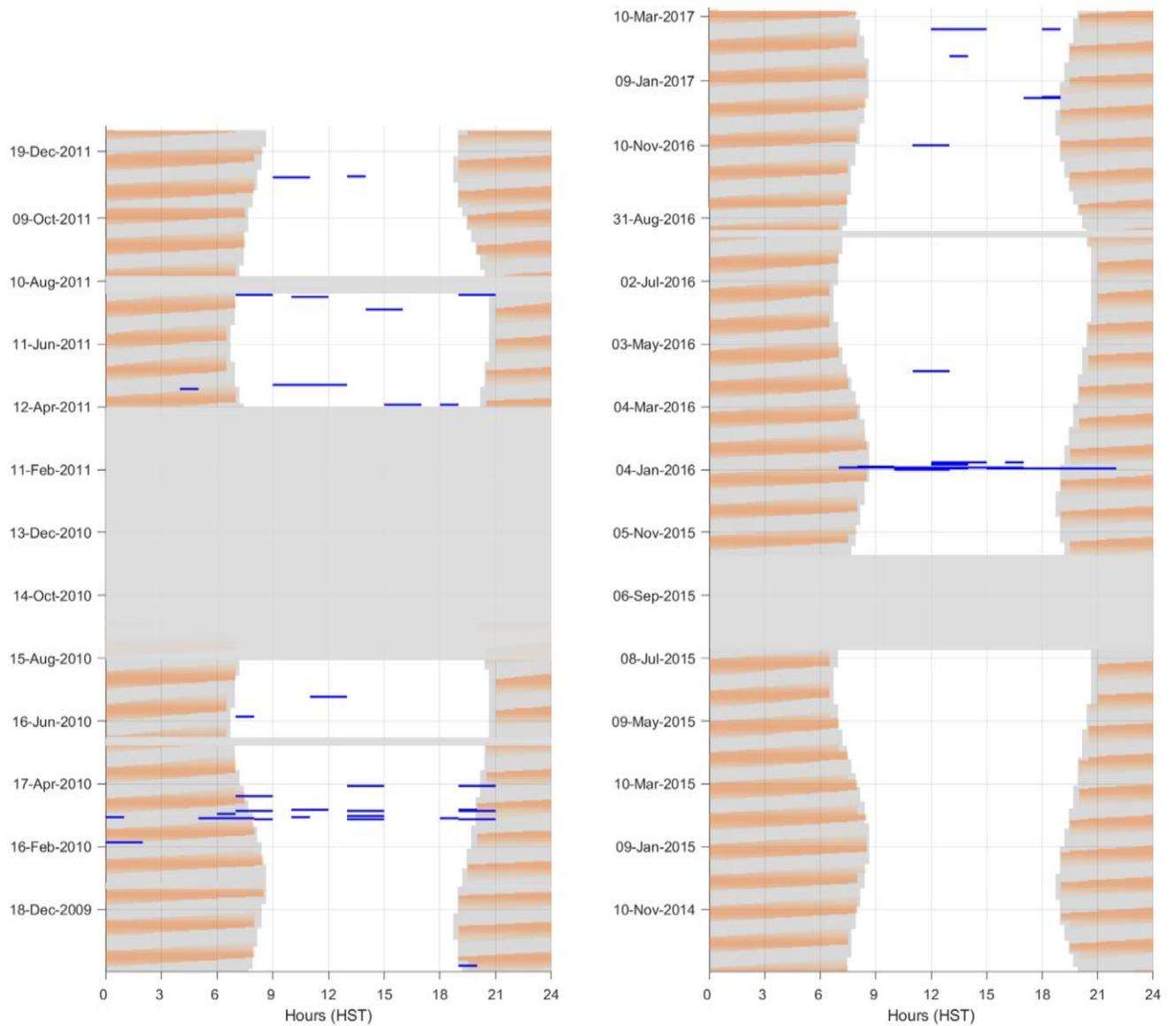


Figure S3.3. Diel/lunar timeseries- false killer whales at Manawai. Hours of presence for false killer whales (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

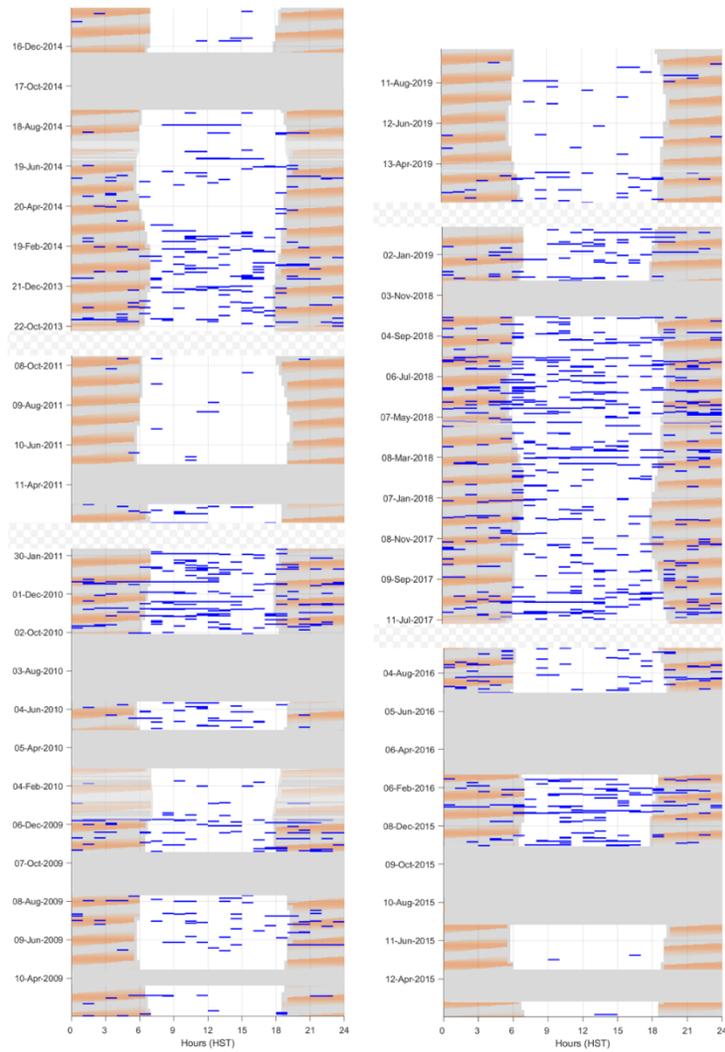


Figure S3.4. Diel/lunar timeseries- *Kogia* spp. at Hawai'i. Hours of presence for *Kogia* spp. at Hawai'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

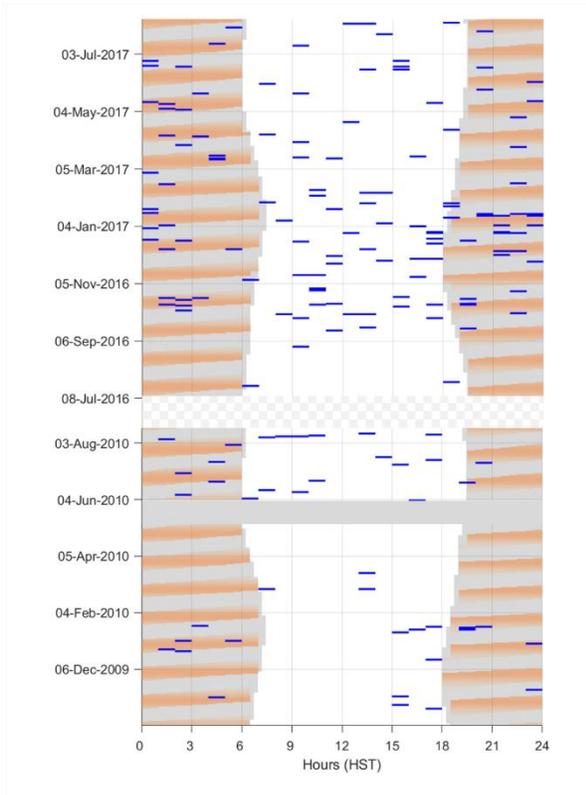


Figure S3.5. Diel/lunar timeseries- *Kogia* spp. at Kaua‘i. Hours of presence for *Kogia* spp. at Kaua‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

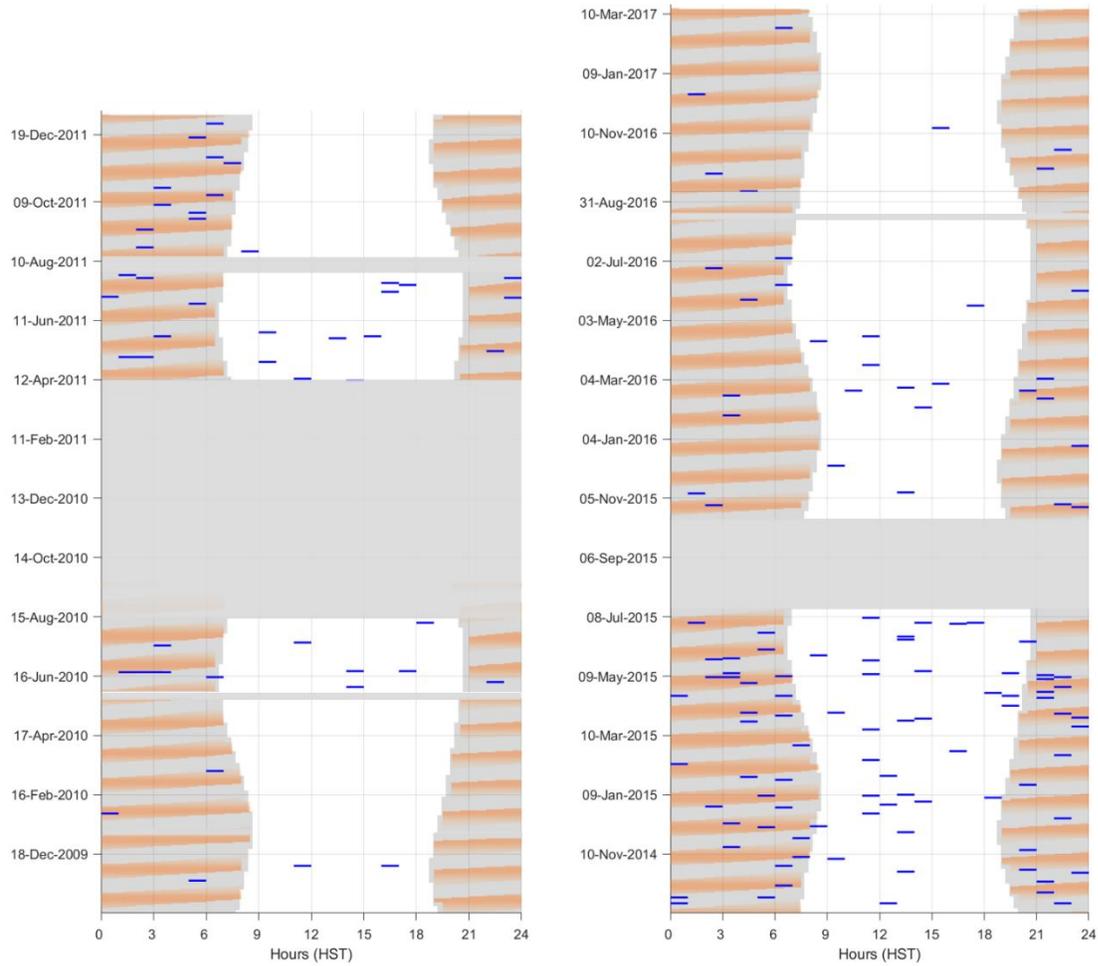


Figure S3.6. Diel/lunar timeseries- *Kogia* spp. at Manawai. Hours of presence for *Kogia* spp. (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

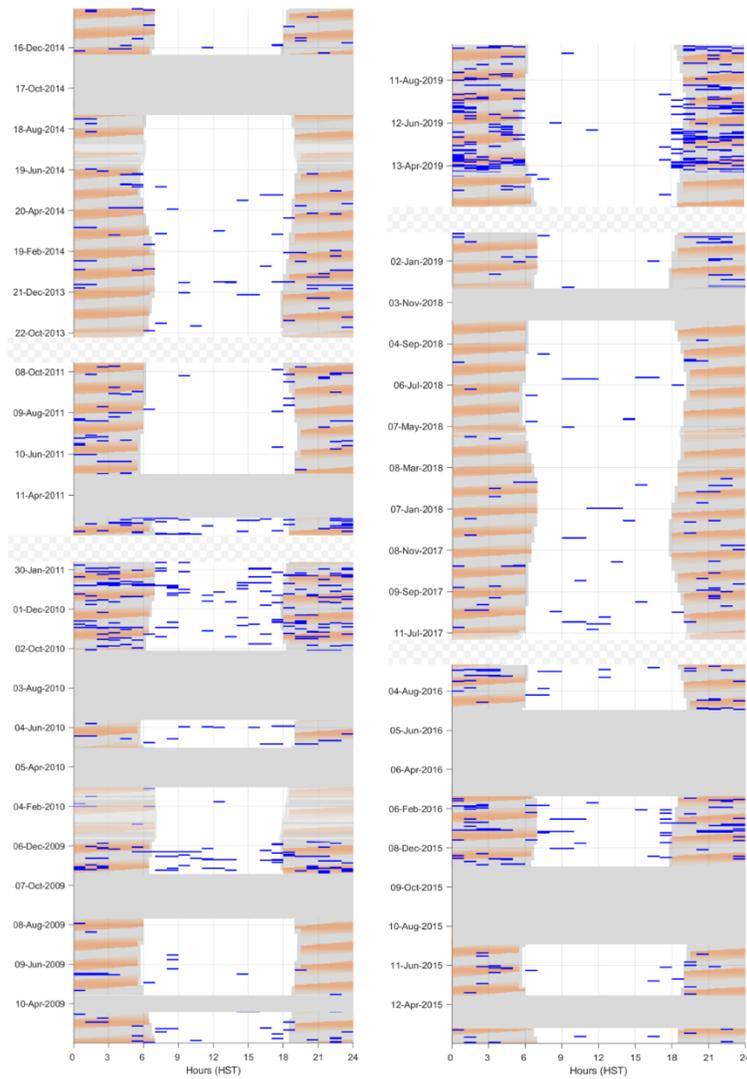


Figure S3.7. Diel/lunar timeseries- rough-toothed dolphin at Hawai‘i. Hours of presence for rough-toothed dolphin at Hawai‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

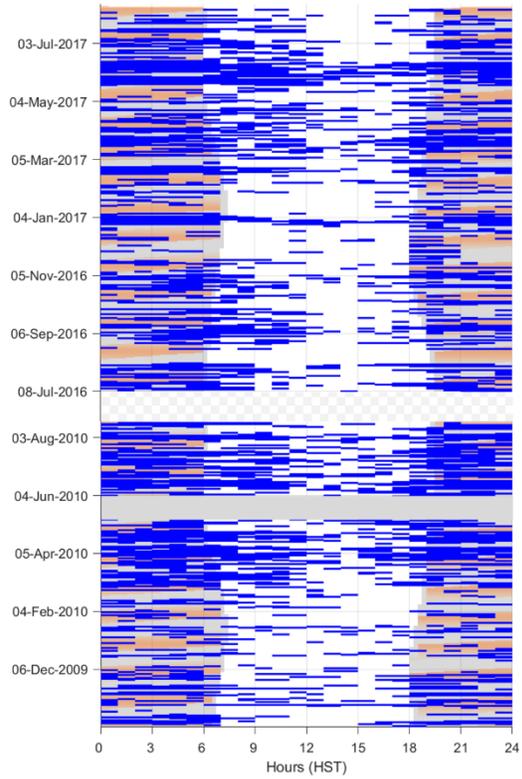


Figure S3.8. Diel/lunar timeseries- rough-toothed dolphin at Kaua‘i. Hours of presence for rough-toothed dolphin at Kaua‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

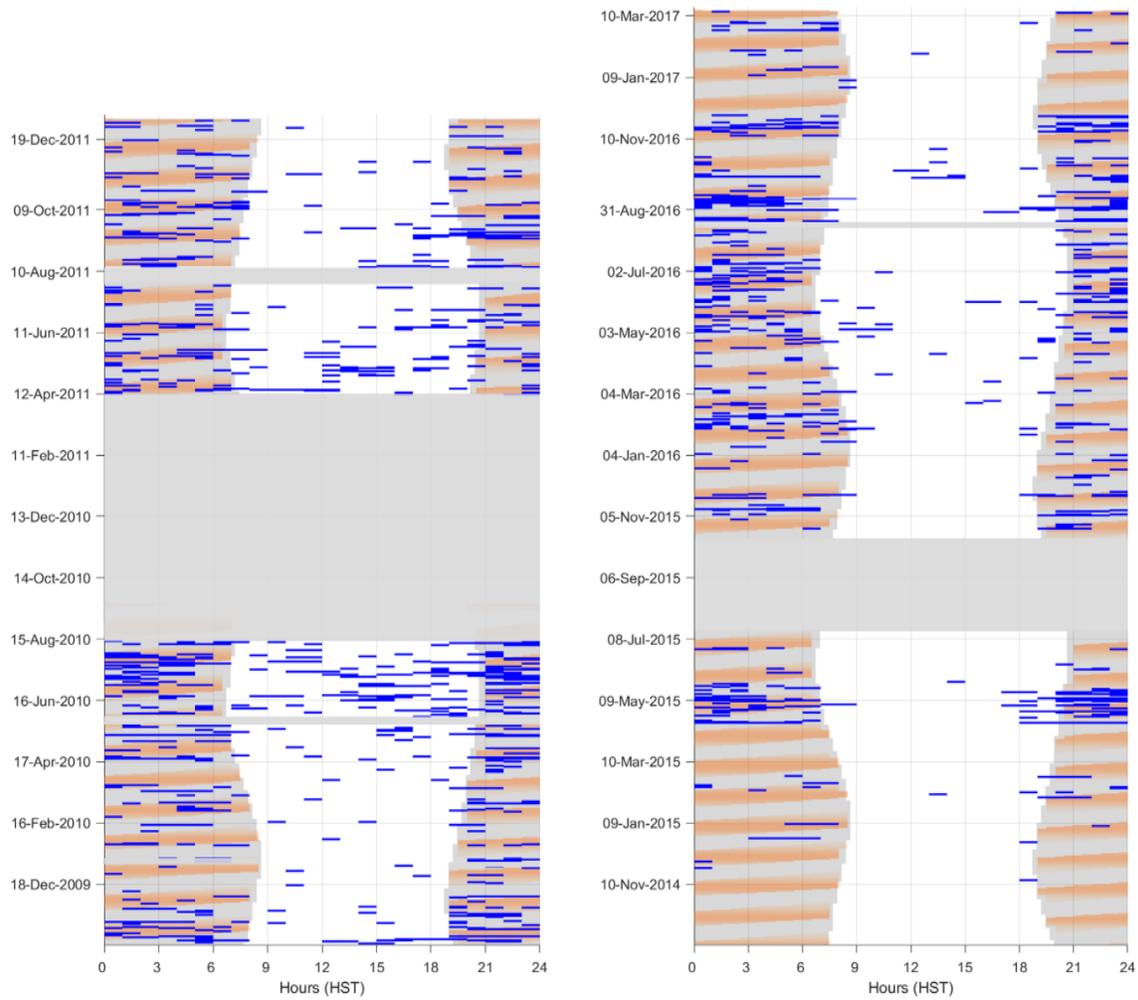


Figure S3.9. Diel/lunar timeseries- rough-toothed dolphin at Manawai. Hours of presence for rough-toothed dolphin (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

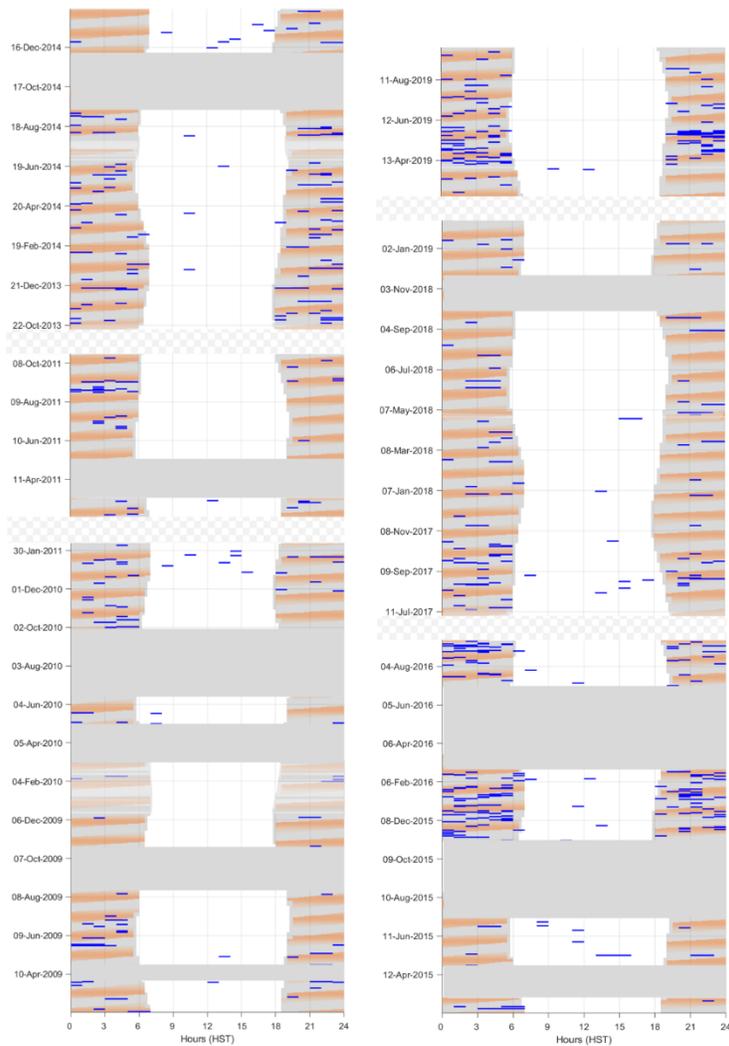


Figure S3.10. Diel/lunar timeseries- bottlenose dolphin and melon-headed whale at Hawai‘i. Hours of presence for bottlenose dolphin/melon-headed whale at Hawai‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

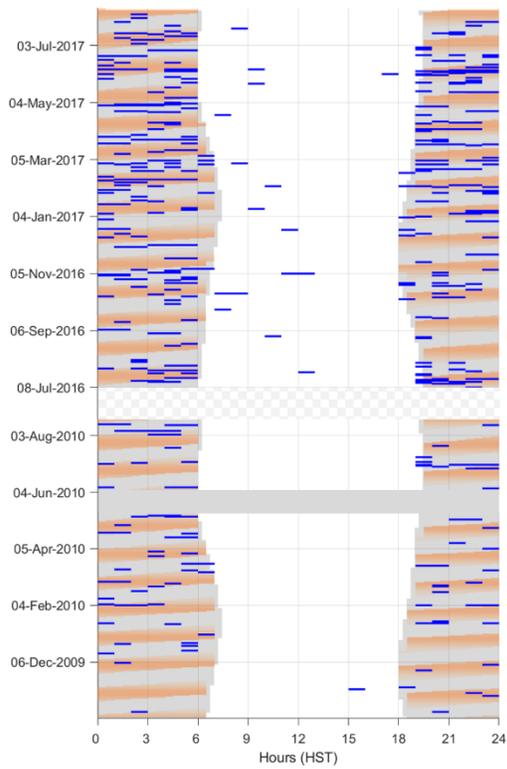


Figure S3.11. Diel/lunar timeseries- bottlenose dolphin and melon-headed whale at Kaua'i. Hours of presence for bottlenose dolphin/melon-headed whale at Kaua'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

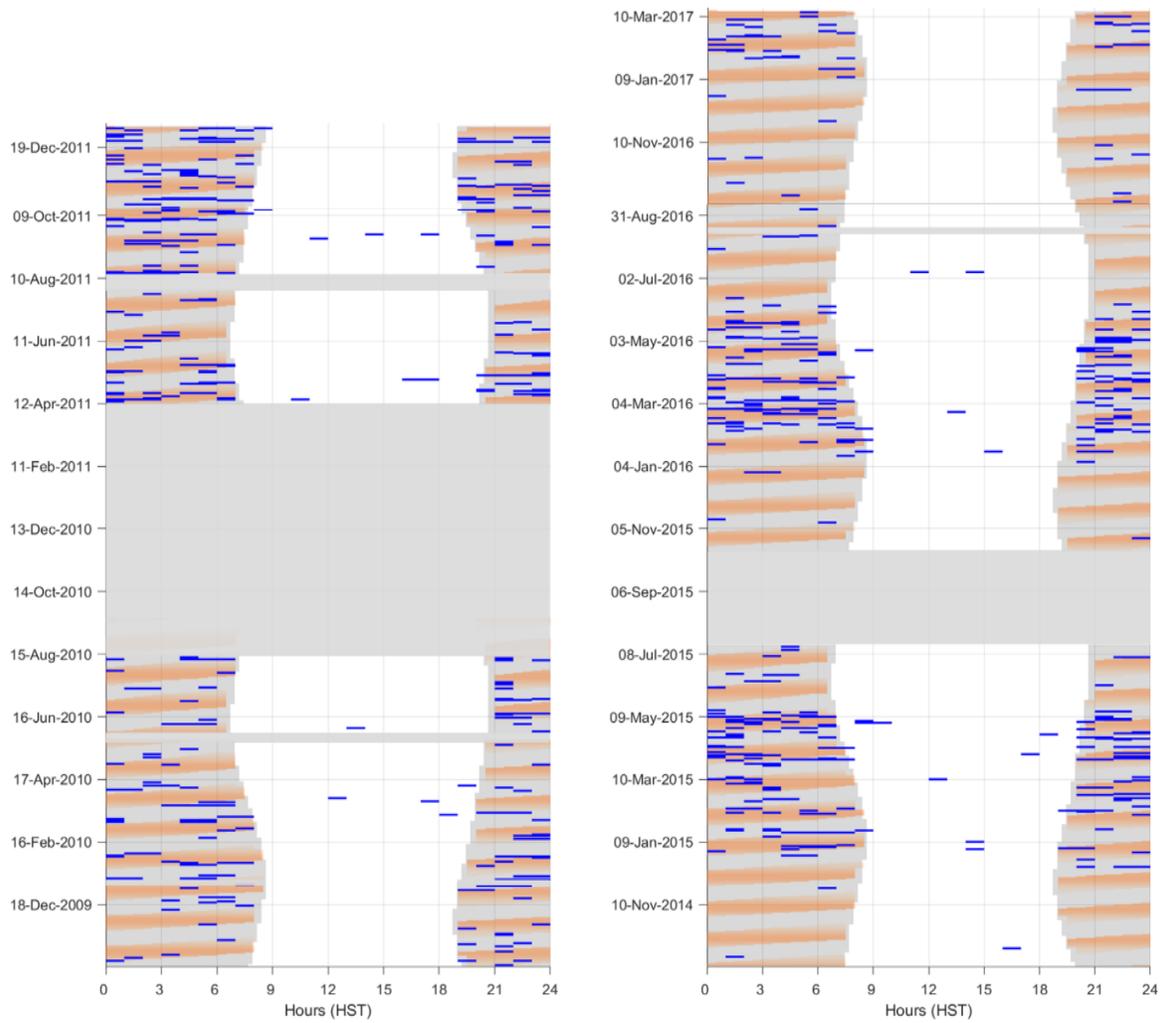


Figure S3.12. Diel/lunar timeseries- bottlenose dolphin and melon-headed whale at Manawai. Hours of presence for bottlenose dolphin/melon-headed whale (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

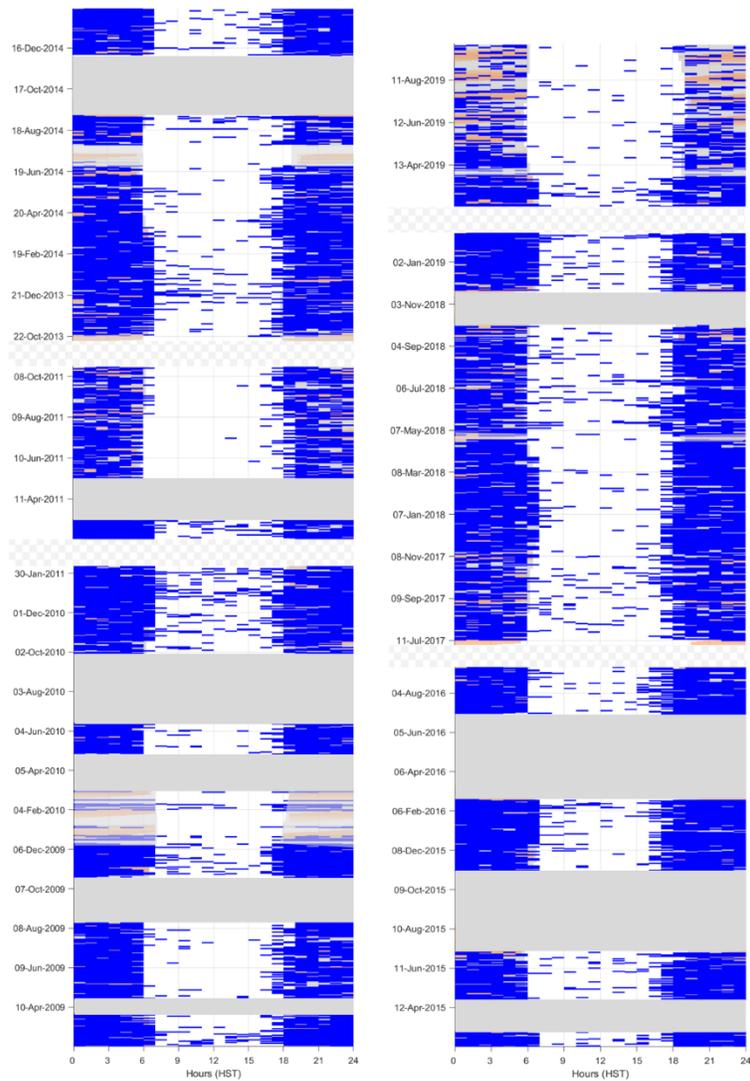


Figure S3.13. Diel/lunar timeseries- stenellid dolphins at Hawai'i. Hours of presence for stenellid dolphins at Hawai'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

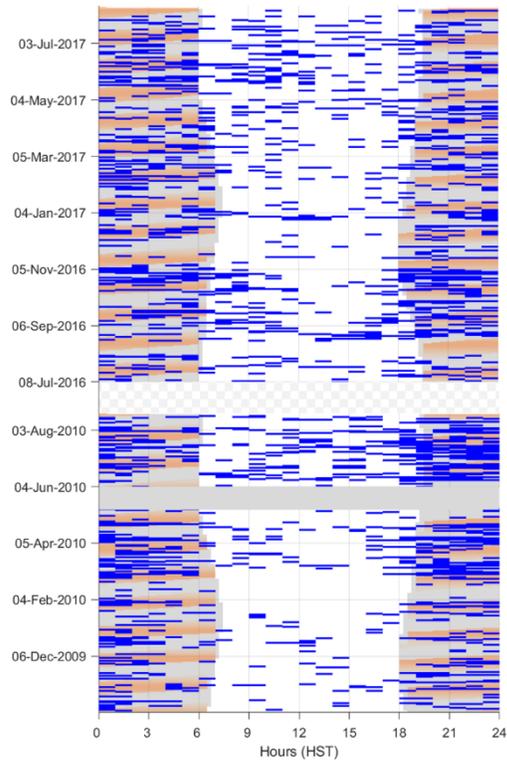


Figure S3.14. Diel/lunar timeseries- stenellid dolphins at Kaua'i. Hours of presence for stenellid dolphins at Kaua'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

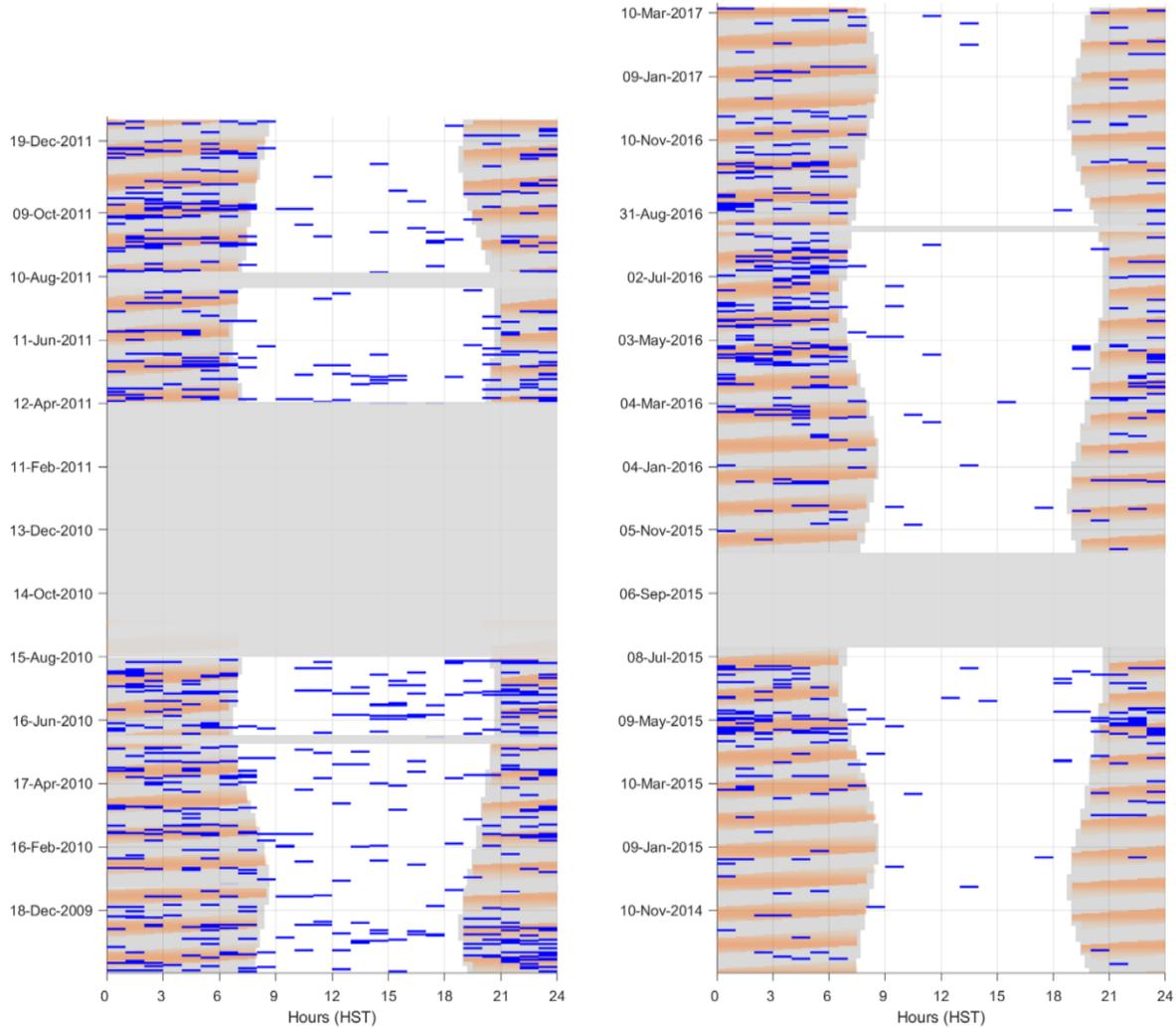


Figure S3.15. Diel/lunar timeseries- stenellid dolphins at Manawai. Hours of presence for stenellid dolphins (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

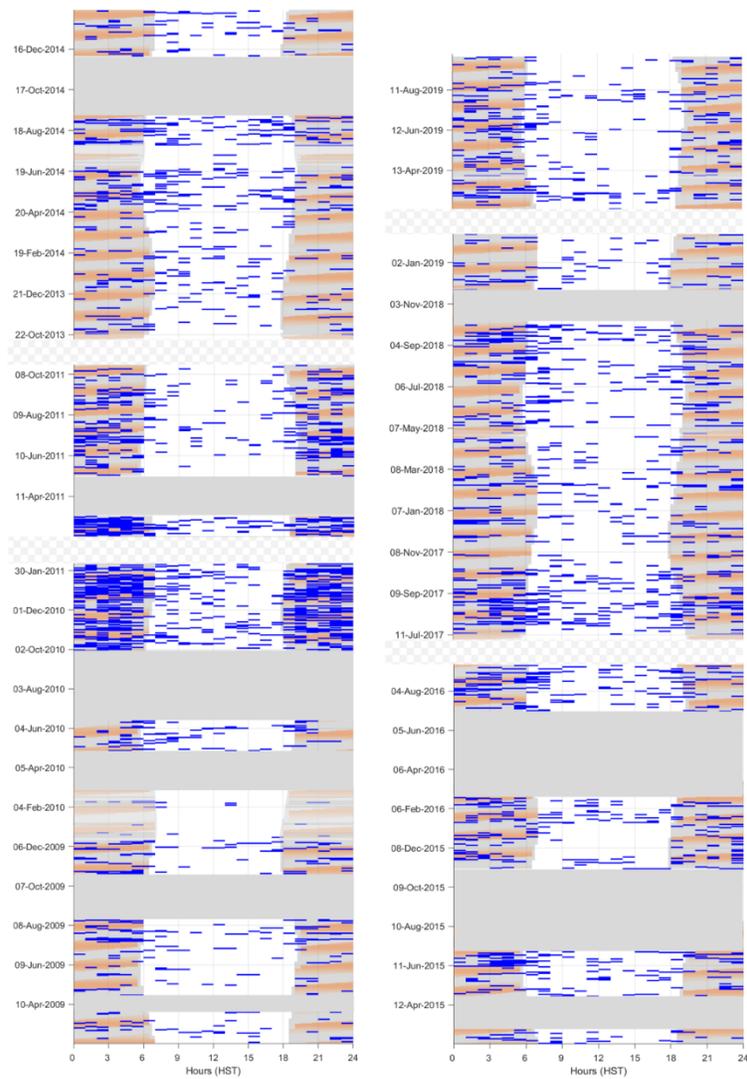


Figure S3.16. Diel/lunar timeseries- short-finned pilot whales at Hawai‘i. Hours of presence for short-finned pilot whales at Hawai‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

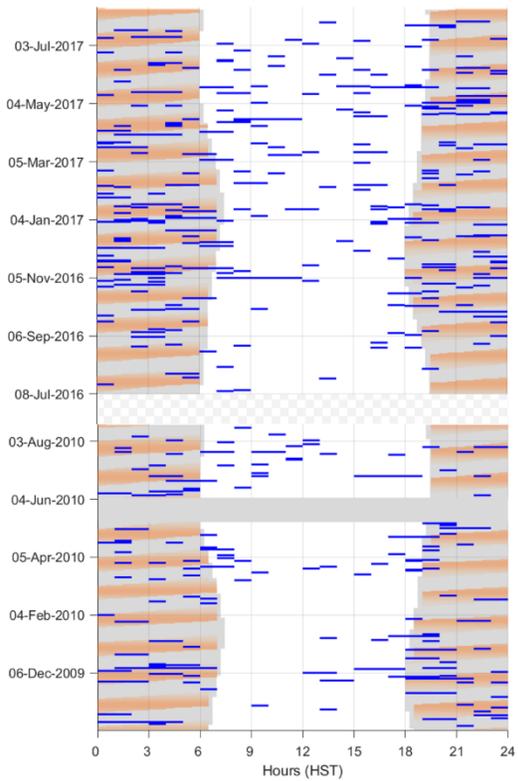


Figure S3.17. Diel/lunar timeseries- short-finned pilot whales at Kaua‘i. Hours of presence for short-finned pilot whales at Kaua‘i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

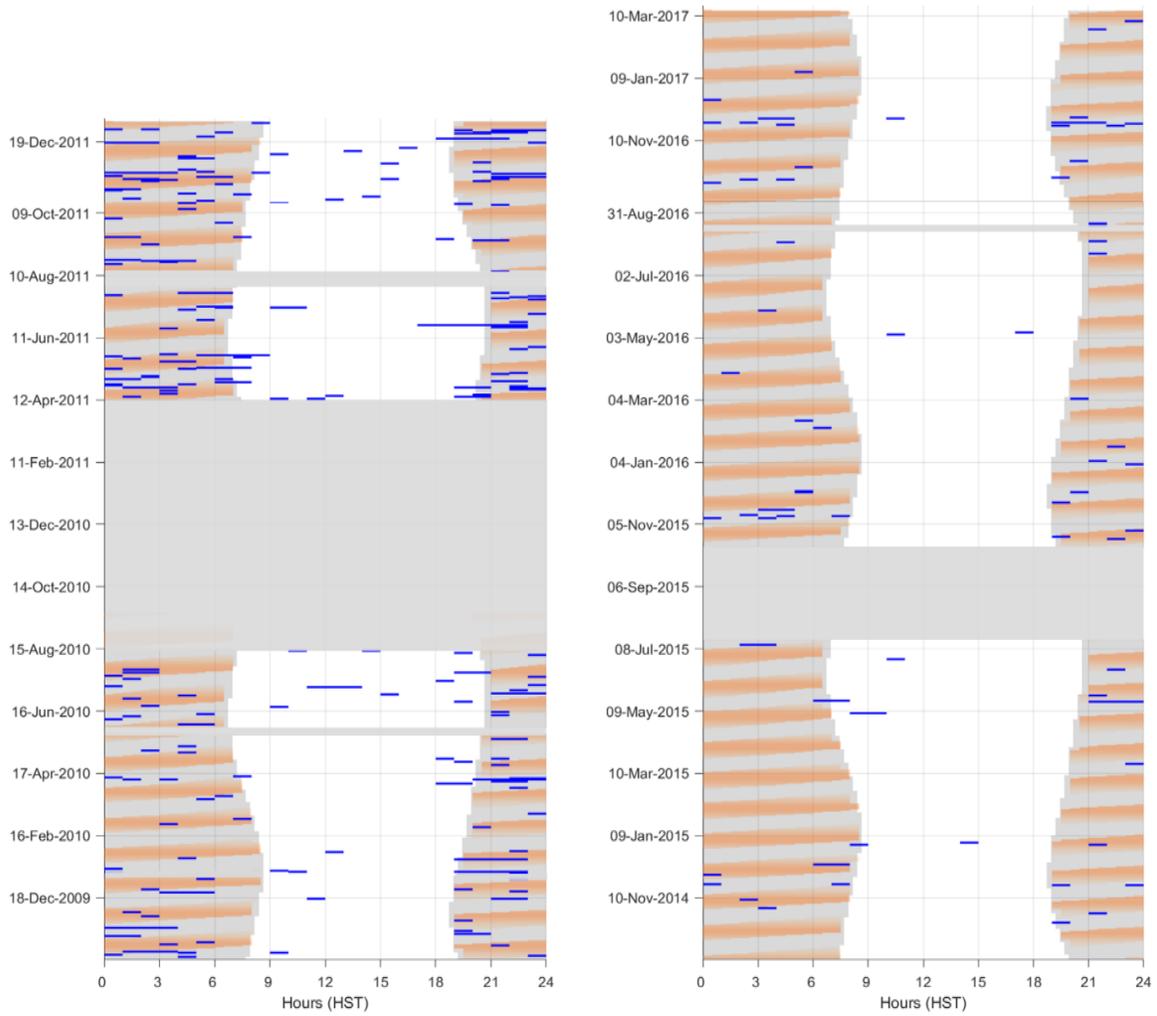


Figure S3.18. Diel/lunar timeseries- short-finned pilot whales at Manawai. Hours of presence for short-finned pilot whales (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

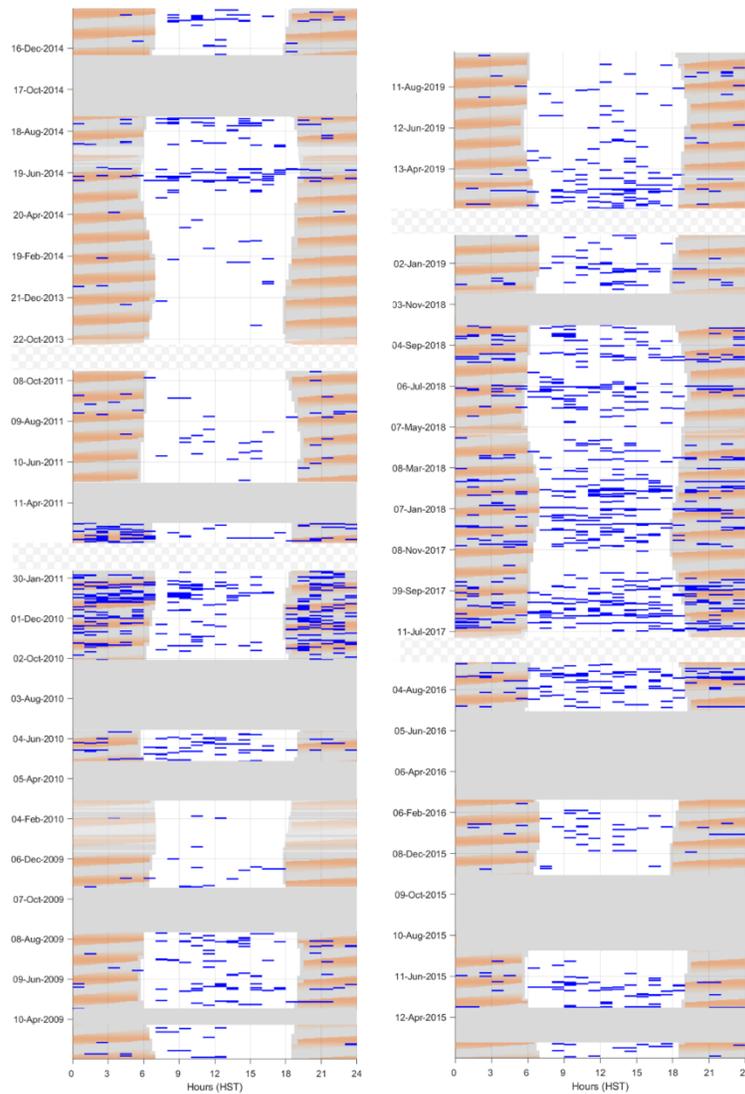


Figure S3.19. Diel/lunar timeseries- Blainville's beaked whales at Hawai'i. Hours of presence for Blainville's beaked whales at Hawai'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

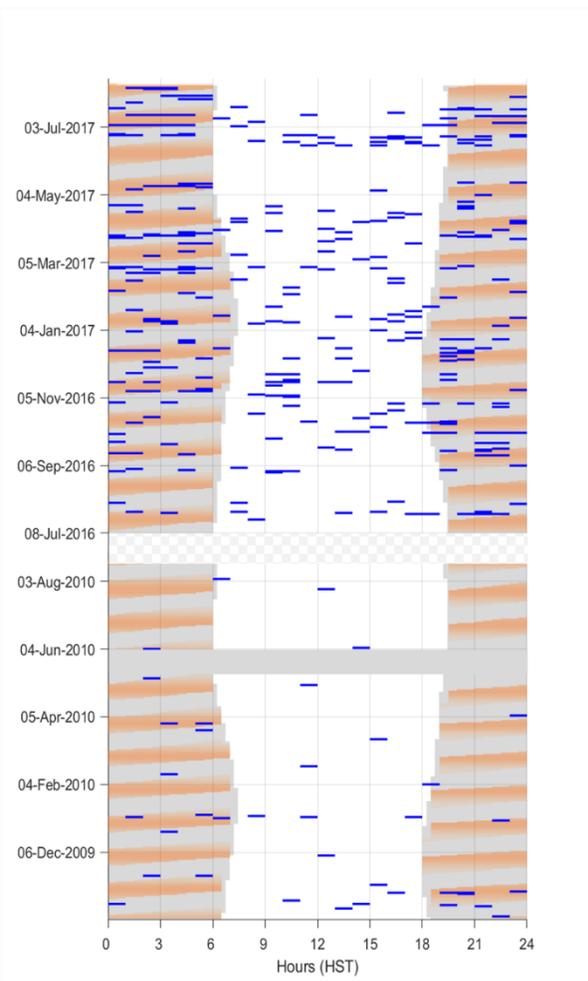


Figure S3.20. Diel/lunar timeseries- Blainville's beaked whales at Kaua'i. Hours of presence for Blainville's beaked whales at Kaua'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

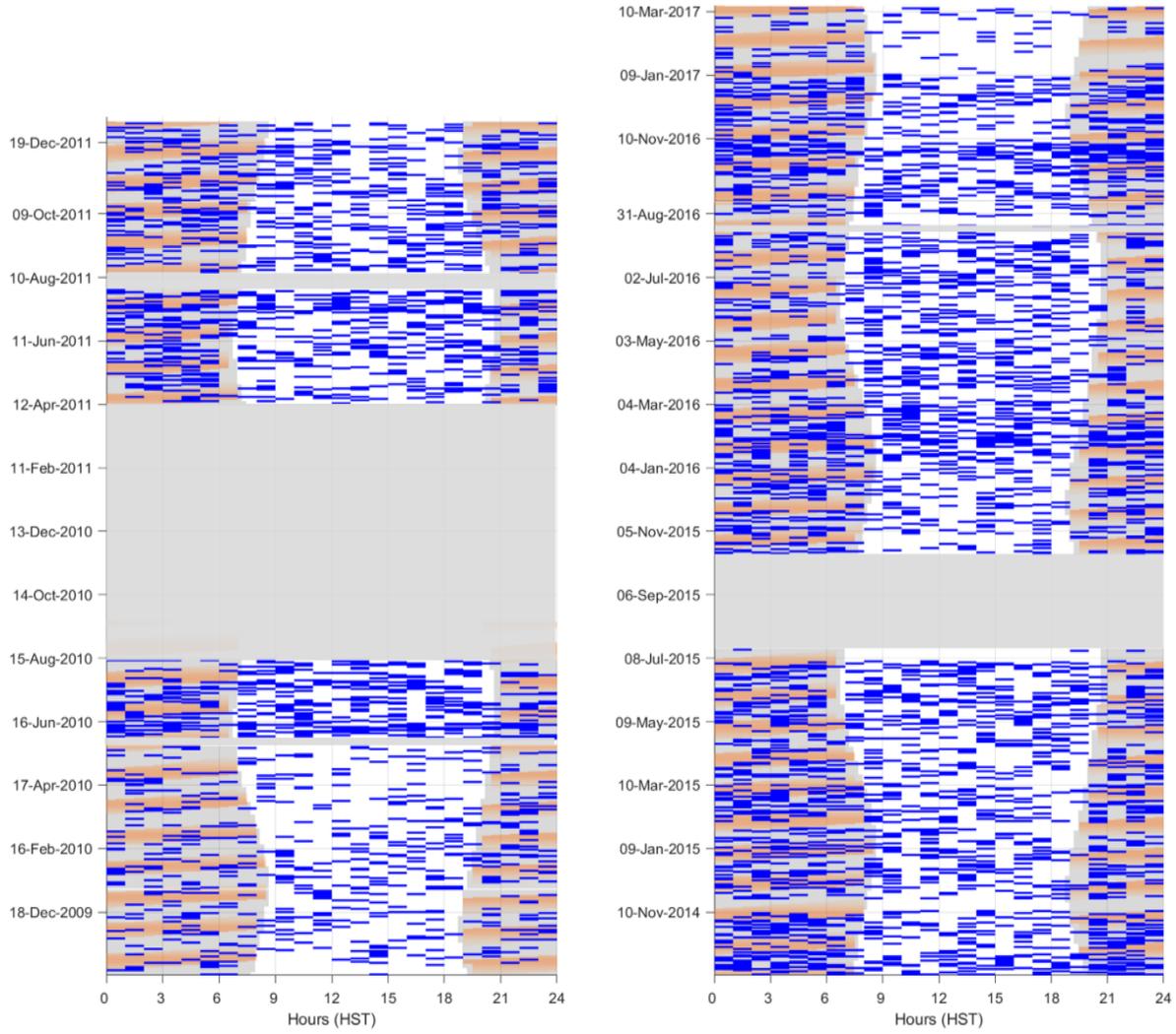


Figure S3.21. Diel/lunar timeseries- Blainville’s beaked whales at Manawai. Hours of presence for Blainville’s beaked whales (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

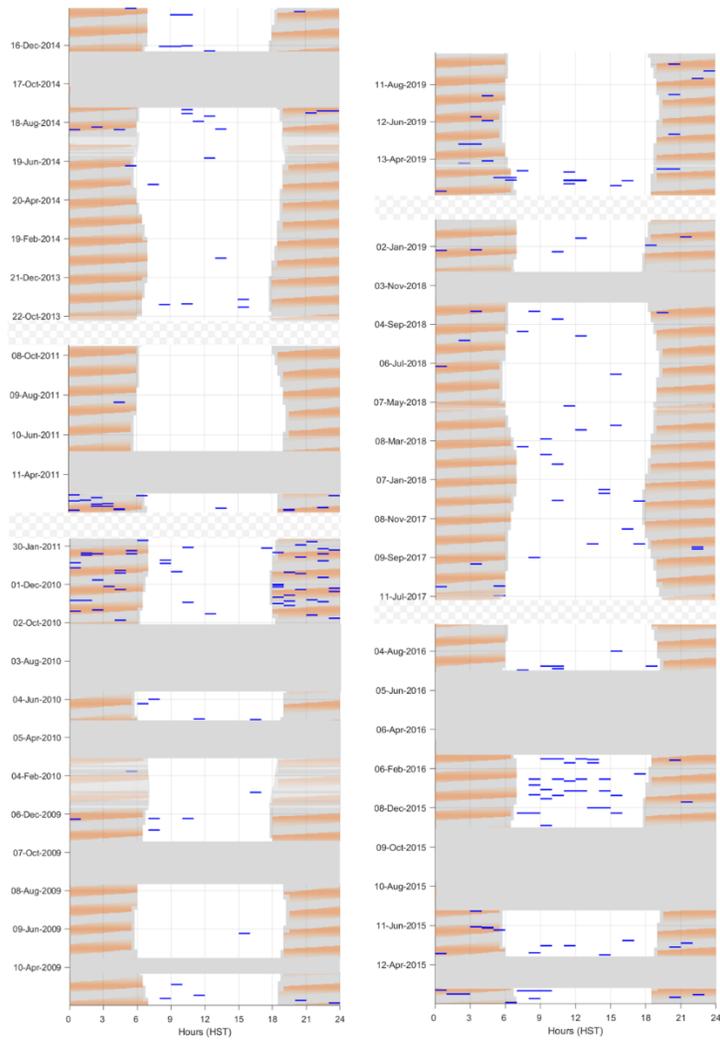


Figure S3.22. Diel/lunar timeseries- Cuvier's beaked whales at Hawai'i. Hours of presence for Cuvier's beaked whales at Hawai'i (blue). Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

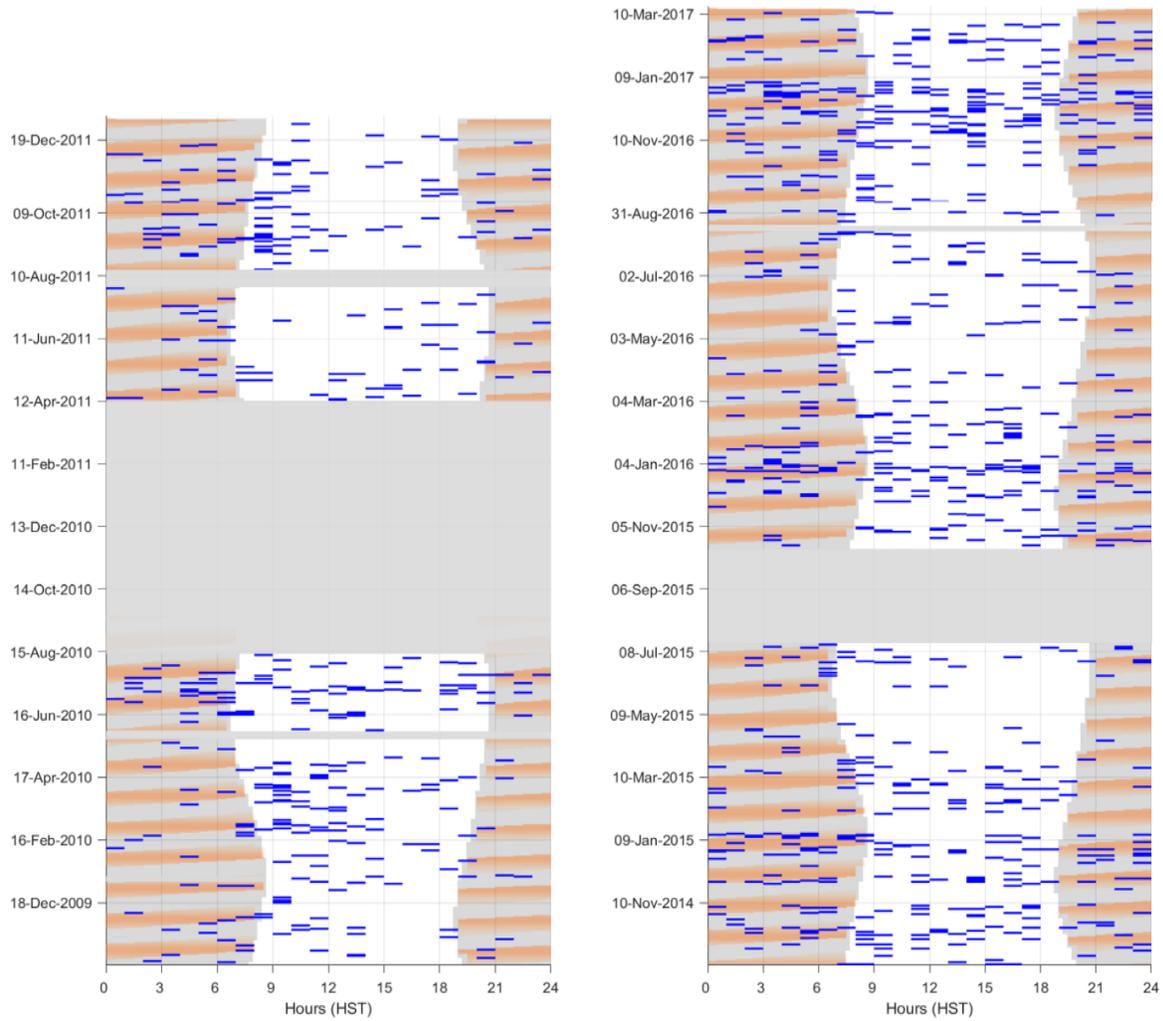


Figure S3.23. Diel/lunar timeseries- Cuvier's beaked whales at Manawai. Hours of presence for Cuvier's beaked whales (blue) at Manawai. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.

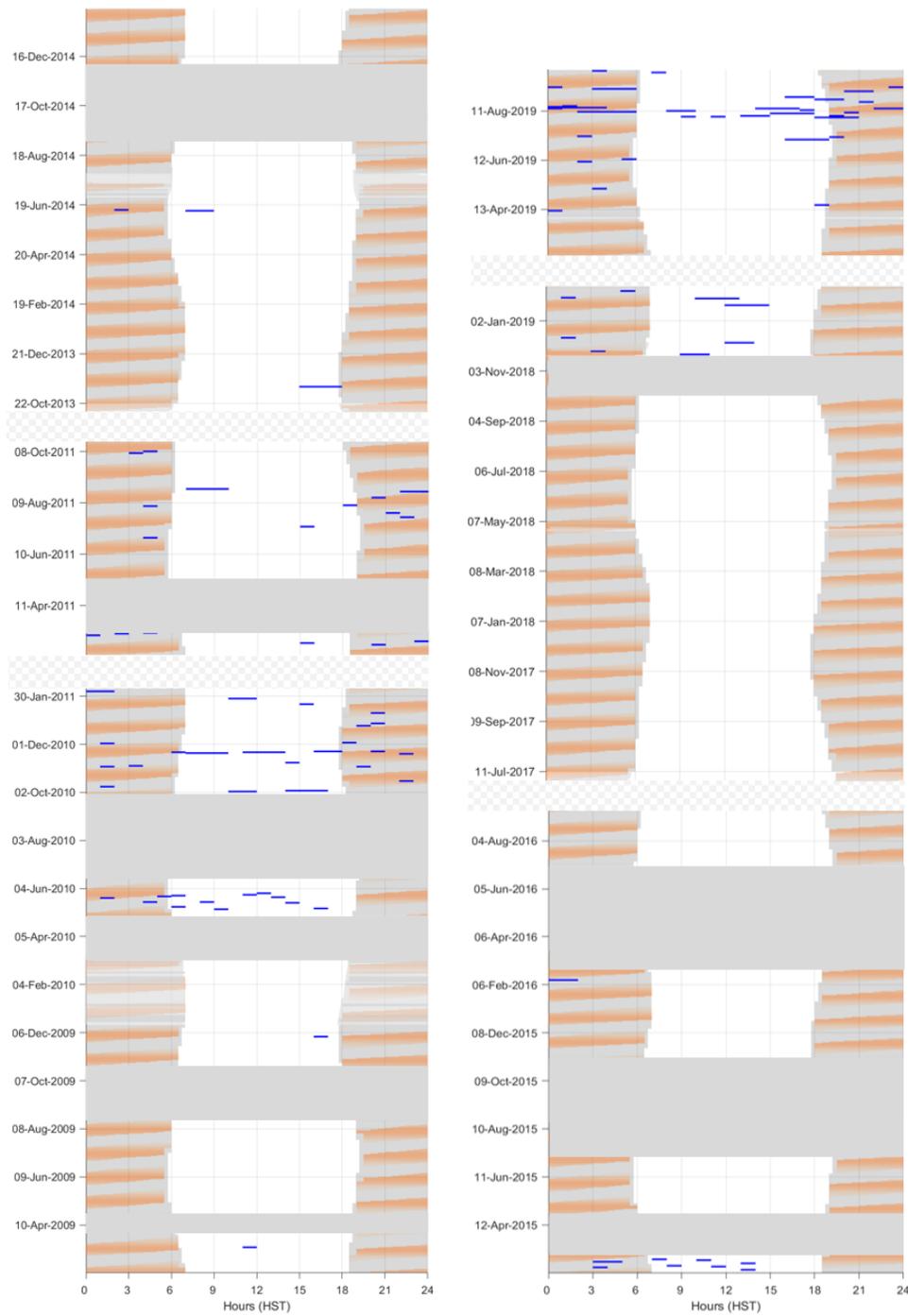


Figure S3.24. Diel/lunar timeseries- False killer whale (alternate) at Hawai'i. Hours of presence for false killer whales at Hawai'i (blue) for the precision-modified timeseries instead of the manually-edited timeseries. Date is shown on the y-axis, and hour of day on the x-axis. Lunar illumination (orange shading), nighttime hours (grey shading), times of no effort (dark gray boxes), and large time gaps (hashed gray boxes) are drawn.