

**Efforts to Examine Spatial Distribution, Life History,
Demographics, and Habitat Use of Endangered Main Hawaiian
Islands False Killer Whales in 2025 and early 2026**

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to

Cascadia Research Collective

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The main Hawaiian Islands (MHI) population of false killer whales was first recognized as a distinct stock in 2008, when the “Hawai‘i stock” was split into both Hawai‘i insular and Hawai‘i pelagic stocks (Carretta et al. 2009). Only a few years after it was first recognized, on December 28, 2012, the MHI insular stock was listed as Endangered under the U.S. Endangered Species Act (ESA), based on evidence of a population decline and a number of threats (Oleson et al. 2010). To help understand and address threats to this population, since 2015 the State of Hawai‘i Department of Land and Natural Resources (DLNR) has obtained grants from NOAA Fisheries under Section 6 of the ESA, and has provided contracts to Cascadia Research Collective (CRC) to collect and analyze data related to this population. Earlier grants (Baird et al. 2019; Baird et al. 2023) have resulted in substantial increases in what is known about this population. This has included identifying areas where individual fishermen are most likely to have encounters with false killer whales, based on the ratio between where tagged whales spend their time and the level of fishing effort in an area (Baird et al. 2021), identification of false killer whale social cluster membership and genetic makeup of clusters (Mahaffy et al. 2023), development of a catalog-based, probabilistic age estimation procedure (Kratofil et al. 2026a) and providing samples for an epigenetic aging study (Martien et al. 2026), documentation of fisheries interactions through injury detection using photographs, and how such interactions vary by age, sex, and social cluster (Harnish et al. 2024), providing data for estimating abundance and trends (Badger et al. 2024, 2025), and examining ecological and social drivers of movement and foraging behavior (Kratofil et al. 2026b, 2026c).

In May 2025 the State of Hawai‘i DLNR Division of Aquatic Resources Protected Species Program provided a one-year contract under NOAA grant NA25NMF472G0017 to CRC. The goals of the contract to CRC were to collect and synthesize data on the MHI insular population of false killer whales to address life history, demographics, habitat use, and spatial distribution, as well as provide data to NOAA Fisheries Pacific Islands Fisheries Science Center (PIFSC) for continued abundance estimation and population trend analyses. From May 2025 through April 2026, CRC undertook a variety of field work and analytical efforts to address these goals, providing new information on this population, including the first documentation of a false killer whale entanglement in marine debris. This report summarizes the results of these efforts.

Methods

Two types of field work were undertaken during the contract: multi-day dedicated field projects off O‘ahu, Lāna‘i, and Hawai‘i Island, and ‘rapid-response’ efforts undertaken off O‘ahu and Kona (see Baird et al. 2013, 2024 for details on methods). During dedicated field work information was collected on the vessel trackline through an onboard GPS and sea state was recorded at the start of each day and as it changed throughout the day. During each encounter, start and end times and GPS locations, group size and spatial spread of the group, and the number of neonates (identified by fetal folds) and young-of-the-year (i.e., individuals thought to be a year old or less based on relative body size, but no longer a neonate) were recorded. When false killer whales were encountered efforts were made to obtain photos of all individuals present, and depending on the sea conditions and behavior of the group, as well as the social cluster encountered (determined in the field based on a comparison of photos taken with the CRC catalog), efforts were made to attempt to deploy LIMPET satellite-linked tags or collect biopsy samples, and on occasion to obtain drone video footage.

Two types of LIMPET tags were used: location-only SPOT-365 tags and depth-transmitting SPLASH10-F-333 tags. In October 2025 data became available from the new Kinéis satellite constellation, which provides satellite coverage 24 hours per day, with relatively similar coverage 23 of the 24 hours per day (during the 24th hour there was less coverage, but the hour would shift throughout the day over time). Prior to October 2025 SPOT-365 tags were programmed to transmit up to 60 times per hour during two six-hour blocks (one in the morning, one in the evening) that corresponded with the periods with the greatest overlap in Argos satellites, with the goal of increasing tag battery life while maximizing data throughput for periods where tag transmissions were most likely to be successful, and up to 10 times per hour for an additional five hours each day, to facilitate relocating groups with an onboard goniometer (an Argos receiver). SPLASH10-F-333 tags were programmed to transmit only in the two six-hour blocks corresponding with high overlap in Argos coverage. High-quality Fastloc®-GPS snapshots, recorded by the SPLASH10-F-333 tags, were programmed to be obtained 12 hours a day, in two alternate blocks that corresponded with poor satellite coverage, potentially resulting in locations 24 hours a day. Beginning in October 2025 SPOT-365 tags were programmed to take advantage of the new Kinéis satellites although SPLASH10-F-333 tags retained original programming as information was not yet available on the effectiveness of the Kinéis system. SPOT-365 tags were programmed to transmit for 16 hours per day for the first 50 days of the deployment, with a maximum of 30 transmissions per hour, to provide high temporal resolution data during the period for which the tags were most likely to remain attached. With the new Kinéis satellites, with 30 transmissions per hour, two or three locations per hour were expected. After day 50, the number of hours transmitting per day and the number of transmissions per hour were reduced to provide lower temporal resolution data while maximizing tag longevity, in the case tags remained attached for an extended period. The number of hours per day was reduced to 12 hours per day on day 51, 8 hours per day on day 71, and 6 hours per day on day 91 (with 20 transmissions per hour for all three regimes).

Tag data were filtered to remove erroneous locations following standard protocols (Kratofil et al. 2023). Maps of long-term population-level space use were generated by summarizing gridded tag location density using data from the entire dataset (i.e., data collected since 2007 and through the reporting period, see Baird et al. 2023). For this effort, we used 4-hourly movement-model estimated locations to reduce temporal autocorrelation, with locations interpolated over 24+ hour gaps removed, and only mapped data from one of each pair or trio of individuals that were acting in concert. We applied a 24-hour ‘late start’ (removing the first day of data) to mitigate deployment locality bias, as in Baird et al. (2023). Filtered satellite-linked tag data were fit to continuous-time movement models and predicted 4-hourly using the *ctmm* R package (Fleming and Calabrese, 2023) following the methods detailed in Kratofil et al. (2026c). We summarized habitat use of tagged whales by extracting seafloor depth and distance from shore variables to each of the 4-hour locations using the *terra* and *sf* R packages (Hijmans, 2025; Pebesma, 2018), respectively. Seafloor depth was extracted from the 50-m MHI Multibeam Bathymetry Grid¹.

¹ <https://www.soest.hawaii.edu/hmrg/multibeam/bathymetry.php>

Dive behavior logs, including the start and end times of dives, dive depth and duration, and dive shape (defined based on the percentage of the duration spent below 80% of the maximum recorded depth of a dive) were recorded by SPLASH10-F-333 tags using a 50 m and 30 second threshold to define dives. These tags were also programmed to record time series depth readings every 10 minutes on every other day. Behavior data were checked to ensure quality following standard protocols (Kratofil et al. 2026b), and geo-referenced by using the fitted movement models to predict locations at the start time of each behavior log record. We then extracted seafloor depth (following the methods above) and classified diel category (dawn, day, dusk, or night) for each record as in Kratofil et al. (2026b).

In addition to photographs obtained during both dedicated field projects and rapid-response efforts, photographs were obtained from other researchers (i.e., Pacific Whale Foundation), regular citizen science contributors (Dolphin Excursions Hawai‘i, Wild Side Specialty Tours, Hawaiian Adventures Kona, Captain Zodiac, Hawai‘i Bird Tours, and Kaimana Ocean Safari), and occasional citizen science contributors. In addition, photographs from two stranded individuals were contributed by the Hawai‘i stranding response program. Efforts were made to encourage photo submissions in a variety of ways. During field efforts, outreach materials were distributed to volunteers and individuals working with local dive or tour operations off O‘ahu, Lāna‘i, and Hawai‘i Island. Information was also shared on sightings and research outcomes on social media (Facebook, Instagram, YouTube), and updates were provided on ongoing contributions of photos to regular contributors. Updates on results of field efforts were also distributed on individual project web pages².

Photographs were compared to the CRC photo-identification catalog following established protocols (Baird et al. 2008; Mahaffy et al. 2023). Briefly, photos were sorted by individual within each encounter and the best photo of each individual was assigned a photo quality rating: 1 (poor), 2 (fair), 3 (good), 4 (excellent). Each individual was also assigned a distinctiveness rating: 1 (not distinctive), 2 (slightly distinctive), 3 (distinctive), 4 (very distinctive). Due to the likelihood of misidentifying individuals or missing identifications, abundance estimation efforts analyses are restricted to good or excellent quality photos of distinctive or very distinctive individuals (see Bradford et al. 2018; Badger et al. 2025). Population identity (e.g., MHI, Hawai‘i pelagic stock, unknown) was determined following the methods of Mahaffy et al. (2026), using associations with other individuals of known identity, mitochondrial haplotypes, or tag or location information.

Results and Discussion

Field work and encounters

Between May 2025 and April 2026 CRC spent a total of 33 days on the water. This included three directed field efforts (O‘ahu June 2025, Lāna‘i October 2025, Hawai‘i Island November 2025) and six days of rapid-response efforts off O‘ahu (June 2025) and Hawai‘i Island (July and August 2025, January and February 2026). False killer whales were encountered on 10 different days during those efforts, off O‘ahu (June 2025), Lāna‘i (October 2025), and

² <https://cascadiaresearch.org/hawaii/field-projects-updates/>

Hawai‘i Island (November 2025, January and February 2026). Based on photo-identification of individuals (see below), nine of the encounters were with groups from the MHI population, and one was a group from the Hawai‘i pelagic stock (from February 2026).

Photographs were also provided for two encounters with MHI false killer whales by Pacific Whale Foundation, with both groups located using location data of previously tagged individuals provided by CRC. Photographs or video were also provided by 15 different citizen scientist contributors from 28 different false killer whale encounters, including one encounter with a group that CRC also worked with. Of the 28 encounters from citizen science contributors, two were with unknown groups (i.e., with no links by association to other groups, albeit with a small number of identifications and limited photo quality), and the remaining groups were from the MHI population (see below).

Photo-identification results

During the period of the contract, with no restrictions on photo quality or individual distinctiveness, photographs were obtained from 34 different false killer whale encounters and two strandings of lone individuals, and cell phone video were obtained from five different encounters. Matches to individuals in cell phone videos relied heavily on scarring on the body due to inherent limitations in resolution from cell phone videos, highlighting the importance of collecting photos showing more than just the dorsal fin. From the encounters, 271 identifications of false killer whales were obtained, of which 253 were from the MHI population, nine were from the Hawai‘i pelagic stock, and nine were from an unknown population.

Over all CRC encounters, approximately 80% of identifications (79.8%) had good or excellent quality photos (the criteria for use in abundance estimation efforts Bradford et al. 2018; Badger et al. 2025) while from other contributed encounters approximately 50% (50.7%) of the identifications had good or excellent quality photos. From the 253 MHI identifications, 76 individuals were documented, although when restricted to good or excellent quality photos only 159 identifications were available, representing 58 individuals. Of these 58 individuals, 21 were from Cluster 1 (from 77 identifications), nine were from Cluster 2 (from 14 identifications, although four of those were one individual, HIPc0143, associating with Cluster 1), 22 were from Cluster 3 (from 61 identifications), and six were from Cluster 4 (from seven identifications). Photographic data for mark-recapture abundance estimation have not yet been requested by collaborators with Pacific Islands Fisheries Science Center, but will be provided prior to the next abundance estimation effort. Additionally, photos could be incorporated into an updated effort to assess injuries from fisheries interactions (e.g., Harnish et al. 2024) and examine changes in injury rates over time.

Although no neonates were documented with good or excellent quality photos, poor quality photos of two individuals considered probable neonates (based on relative size but with no fetal folds visible) were obtained off Maui in February 2026. Each individual was seen in echelon position with a different adult female from the group and were assumed to be no more than 39 days old when photographed, based on observations of both adult females 39 days prior without neonates present. These individuals were associated with Cluster 1, although the group has not been re-sighted since to confirm whether the neonates survived. This sighting occurred

five days after another neonate stranded off Maui (see below). Neonates are rarely documented in this population, with only 10 included in the CRC photo-identification catalog since 1999. The 10 previous neonates had been documented during the months of February (2), March (1), April (2), May (1), June (3), and July (1), suggesting that births are concentrated early in the year, although an analysis of the total number of individuals documented throughout each month of the year would be of value to confirm this.

Of the 58 individuals with photos of suitable quality for inclusion in the abundance estimates, five were new to the catalog (i.e., had not been knowingly documented prior to 2025). These included an older calf from Cluster 3 photographed off O‘ahu in May 2025, and four individuals from Cluster 2 documented off Hawai‘i Island in November 2025. It is important to note that Cluster 2 has been very poorly photographed in recent years (e.g., just four individuals documented in 2023 and one in 2024), and thus “new” individuals may be inadvertently designated because of limited photographs and long time intervals between encounters, which make it harder to track individuals over time. The new individuals from Cluster 2 are thought to be adults or sub-adults, based on markings or relative size, but were considered to be not distinctive (one individual) or slightly distinctive (three individuals).

Mark changes leading to an increase in distinctiveness ratings (from “slightly distinctive” to “distinctive”) were documented for two individuals during this period (HIPc0661 from Cluster 2 and HIPc0717 from Cluster 1). The individual from Cluster 2 had been last documented in 2019 and thus the timing of the mark change is unknown, but the individual in Cluster 1 acquired new marks during 2025. Individuals moving from “slightly distinctive” to “distinctive” categories can be used as a measure of recruitment into the “marked” population.

One individual from Cluster 4, HIPc0373 (an adult male first documented in 2009), was photographed with a life-threatening marine debris entanglement off Lāna‘i on October 22, 2025. In addition to surface-based photographs we obtained both underwater video footage (with a camera on a pole over the side of the vessel) and drone-based video footage, to better document the nature of the entanglement. Based on an analysis of imagery obtained, the entanglement involved a loop of 3-strand polyblend rope wrapped tightly around the body, cutting through the leading edge of the partially-severed dorsal fin (Figure 1). New and necrotic tissue suggested wound healing, although trauma to the site was ongoing. Based on an examination of photographs the individual was in good body condition. This individual has not been subsequently photographed in spite of efforts to relocate the individual and there have been no re-sightings of Cluster 4 since the October sighting. Entanglement in marine debris is a risk for cetaceans worldwide, with 97% of cases caused by derelict fishing gear (Baulch and Perry 2014). Incidents of entanglement are increasing over time and combined with other environmental stressors entanglement in marine debris could have impacts at the population level for some species (Gall and Thompson 2015). This is the first documented entanglement of a false killer whale in marine debris and reveals that marine debris is another potential threat for this population.

One individual (HIPc0138, an adult female from Cluster 1), was documented with a possible abscess on the right flank in July 2025 (Figure 2), and the swelling was still present when photographed in October 2025. When photographed in January 2026, the abscess had

reduced in size but was still visible and showed a small abrasion or skin disruption on the surface. This individual is a regularly seen member of Cluster 1, having been documented on 63 occasions since it was first photographed in December 1988, likely allowing for continued monitoring of the area of the abscess. A future assessment of the types and potential origin of wounds not attributed to fisheries, and their healing rates, will be important to understand how all injury types (e.g., from interactions with marine debris) affect this population. This work could examine differences by age class, sex and genetic parentage and incorporate contaminant loads from persistent organic pollutants (Kratofil et al. 2020) when available.

Photographs were received of a stranded newborn from Maui from February 21, 2026, but it could not be matched to the catalog of known individuals and genetic determination of mitochondrial haplotype is still needed to confirm population identity. Photographs of an adult male that was found dead on Kaua‘i on April 30, 2026 were matched to an individual from the Hawai‘i pelagic stock (HIPc1017), an adult male that had been documented once previously (February 20, 2024) between Kaua‘i and O‘ahu. During the February 20, 2024 encounter HIPc1017 was biopsied, and was confirmed genetically as a male from the Hawai‘i pelagic stock with haplotype 6 (see Martien et al. 2014). This individual was from pelagic Cluster 20 and was part of Main Component 8 of the pelagic social network (Mahaffy et al. 2026).

Biopsy sampling

Two biopsy samples were collected during the project period, one from an individual from the Hawai‘i pelagic stock (in February 2026) and one from a MHI false killer whale from Cluster 3 (in June 2025). Based on photo-identification neither individual had been previously sampled. Samples were sent to the Southwest Fisheries Science Center for genetic analyses to determine sex and mitochondrial haplotype.

Movements and habitat use based on tagging

Nine satellite-linked tags were deployed in 10 tagging attempts, including individuals from both the MHI population (six tags; Table 2), and the Hawai‘i pelagic stock (three tags). One tag was lost in a tagging attempt on a MHI individual. Of the six tags deployed on MHI individuals, two were SPLASH10-F depth-transmitting tags (one on a Cluster 1 individual in July 2025 and one on a Cluster 2 individual in November 2025) and four were SPOT-365 location-only tags (one each on Cluster 1 individuals in July and October 2025, one on a Cluster 2 individual in November 2025, and one on a Cluster 4 individual in October 2025). Tags deployed on MHI individuals transmitted between 4.7 and at least 205 days (PcTag100, deployed onto a Cluster 1 individual in October 2025, was still transmitting as of May 13, 2026; Table 2).

Tagged individuals’ movements largely reflected what is known for their respective social clusters (Baird et al. 2012, 2023; Kratofil et al. 2026c). Two of the tagged individuals from Cluster 1 (PcTag098, PcTag099) exhibited more wide-ranging behavior, moving among multiple island areas and using the entire MHI chain during their tag attachment periods (Figures 3, 4). One of the Cluster 1 individuals (HIPc0214/PcTag100) was associated with Cluster 4 individuals at the time of tagging and remained associated with a tagged Cluster 4 individual (HIPc0709/PcTag101) for the 25 days of overlap between the two tags. The Cluster 1 individual

exhibited limited ranging behavior, with no movements outside of the Maui Nui and O‘ahu region over the 205-day tracking period (Figure 5). Such restricted ranging behavior for this amount of time has not been documented in any of the previous Cluster 1 tag deployments (n=35 since 2007 not accounting for pseudoreplication, a combined 1,726 days of data), although it is common based on the 10 individuals from Cluster 4 tracked since 2009 (a combined 518 days of data; Kratofil et al. 2026c). The Cluster 4 individual (PcTag101) exhibited spatial behavior typical for Cluster 4, restricting its range to the Maui Nui and O‘ahu region with most movements between leeward Maui Nui and the Kaiwi Channel (Figure 6, Kratofil et al. 2026c). While the two Cluster 2 individuals (PcTag102, PcTag103) were tracked for shorter periods (Table 2), they exhibited movements similar to previously tagged Cluster 2 whales (Kratofil et al. 2026c), spending time off NW Hawai‘i Island and windward Maui Nui (Figures 7, 8).

Patterns in habitat use among the whales tagged during the reporting period also mirrored cluster-level differences observed in the larger dataset (Figure 9; Baird et al. 2023; Kratofil et al. 2026c). Specifically, Cluster 1 individuals (PcTag098, PcTag099) used more nearshore (median distance to shore = 8.5 km) and shallower waters (median seafloor depth = 479 m) compared to the Cluster 2 (PcTag102, PcTag103; median distance to shore = 14.5 km, depth = 823 m) and Cluster 4 (PcTag101; median distance to shore = 13.7 km, depth = 599 m) individuals (Figure 9). The median distance from shore for these two Cluster 1 individuals was slightly lower than that of the larger dataset (median distance to shore = 10.7 km; Figure 9), reflecting more consistent nearshore habitat use than typically documented. Further, these same two Cluster 1 individuals (PcTag098, PcTag099) appeared to closely track some bathymetric features (e.g., Penguin Bank); such fine-scale behavior is not typically documented, but was made possible in these cases from improved volume and quality of location data from the Kinéis system (and optimal tag deployment placement, Fastloc®-GPS data for PcTag099, Figure 4). Moving forward, this higher quality data will enable assessments of environmental drivers of fine-scale movements and development of more robust behavior classification models (e.g., hidden Markov models).

While these findings largely reinforce known cluster-level patterns in spatial distribution and habitat use (Figure 10), the close association between the Cluster 1 (HIPc0214/PcTag100) and Cluster 4 (HIPc0709/PcTag101) tagged individuals represents novel information. Inter-cluster associations do occur and are important for mediating population connectivity (Mahaffy et al. 2023), but such associations are typically brief in duration (Kratofil et al. 2026c). There are two non-mutually exclusive processes that could explain this observation: (1) uncertainty in cluster assignments due to methodological limitations and (2) changes in association patterns as a result of demographic processes. Cluster assignments are derived from the photo-identification based social network analyses (Mahaffy et al. 2023), and thus higher re-sighting rates of individuals and their associates strengthens certainty in cluster membership. In the case of HIPc0214, this individual had been documented on 28 occasions over a 17-year span in the sample used by Mahaffy et al. (2023), thus the confidence in assignment with Cluster 1 is high. While HIPc0709 had only been sighted three times over a five-year span in the Mahaffy et al. (2023) study, in those and in three subsequent encounters (extending the span to 12 years) HIPc0709 has been sighted almost exclusively with Cluster 4 individuals. In regards to point (2), demographic turnover (e.g., death of certain group members) is known to influence social association patterns in Southern Resident killer whales (*Orcinus orca ater*; Ellis et al. 2021), a

species and population with highly similar social structure to MHI insular false killer whales. Given the decline in MHI insular false killer whales over the past decade (Badger et al. 2025), changes in association patterns due to such demographic processes could be at play. Future work to examine within- and between-cluster associations in finer detail (e.g., to assess changes over time) using approaches that better incorporate uncertainty (e.g., Bayesian methods) would help to reveal whether this effect is indeed influencing spatial and social association patterns. Similarly, our improved current understanding of social clusters and larger sample size of tag data suggests that analyses to predict which areas are most likely to have high interaction rates for individual fishermen (Baird et al. 2021) should be updated. This could include social cluster-level overlap, deriving indices reflecting both whale- and fishery-driven overlap (e.g., as in Glencross et al. 2025), and quantifying overlap at finer temporal scales (e.g., within a given tagged whale's deployment period).

The additional Kinéis satellites also appeared to have improved data throughput for behavior log data from dive depth-transmitting SPLASH10-F-333 tags. Data from the Cluster 1 individual (PcTag099) were incorporated into a comprehensive study of false killer whale diving behavior (Kratofil et al. 2026b), and thus we only briefly describe their vertical movements here and provide more details on data from PcTag103 (this tag was not included in the Kratofil et al. 2026b study). A total of 25.7 days of behavior log data (after accounting for gaps in data throughput; 86.7% data coverage) were obtained from the Cluster 1 individual tagged in July 2025 (PcTag099, Figure 11), and 2.8 days of data (77.4% data coverage) from the Cluster 2 individual tagged in November 2025 (PcTag103, Figure 12). The Cluster 1 individual had a total of 191 dives (≥ 50 m, 2 min as standardized across tags in Kratofil et al. 2026b) with a median dive depth of 208 m and duration of 5.4 min. This individual undertook several deep dives (Figure 11), with a maximum dive depth of 1,136 m and duration of 14.0 min. While limited data were obtained from the Cluster 2 individual due to the short attachment duration, these are the first dive data available for any Cluster 2 false killer whales. There were a total of 29 dives (≥ 50 m, 30 sec) from this individual, with a median dive depth of 70 m and duration of 3.6 min. This individual did not dive deeper than 350 m (maximum depth = 312 m, duration = 7.5 min; Figure 12), but this is likely due to the limited duration of dive data available, given that median and maximum dive depths from the larger dataset (16 individuals) are 246 m and 1,424 m, respectively (Kratofil et al. 2026b). Similar to the other 16 individuals (Kratofil et al. 2026b), the Cluster 2 whale spent a large proportion (97.2%) of their time within the top 50 m of the water column, with an overall dive rate of 0.43 dives per hour. This individual demonstrated relatively shallow dives despite moving through deep water habitats, with a mean 1,087 m difference between dive depth and seafloor depth (range = 230-2,562 m). Although caveated by a small sample size, this individual's diel patterns in dive behavior were similar to the average trends across tagged false killer whales, with deeper and longer dives occurring during the day compared to other periods (Figure 13; Kratofil et al. 2026b).

Conclusions

While the MHI population of false killer whales is the most well-studied false killer whale population world-wide (Zaeschmar and Baird 2025), efforts undertaken under this contract still provided substantial new information on the population. In particular, new tag data has been collected for both Cluster 2 and Cluster 4—the two most data-limited social groups in the

population—high-quality photo-ID data has been collected to contribute to ongoing abundance estimation efforts, and the first case of marine debris entanglement for false killer whales was documented, identifying a new potential threat to this population. However, key research gaps remain in our current knowledge of MHI false killer whales. Clusters 2 and 4 continue to be the groups with the most limited photographic coverage, as both clusters spend the majority of their time in areas that are difficult to access (Baird et al. 2012; Kratofil et al. 2026c). Without additional investments into research efforts off Lāna‘i (a high-use area for Cluster 4) and Kohala (a high-use area for Cluster 2), these groups will continue to be poorly sampled, which will limit the ability to examine cluster-specific trends in abundance (Badger et al. 2025), and better document evidence of threats to these social groups. Given the recent decline in abundance (Badger et al. 2025), continued investment will be needed to both monitor the health of this population and identify solutions to slow or reverse their decline.

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Figure 1. Entangled false killer whale HIPc0373 documented off Lāna‘i October 22, 2025. HIPc0373 is a member of Cluster 4 of the endangered main Hawaiian Islands population that had been first documented as a young adult in December 2009. Based on the overhang of the rostrum in 2025 this individual is thought to be an adult male.



Figure 2. Individual HIPc0138, an adult female from Cluster 1, with evidence of an abscess on the right flank. This possible abscess was first documented in July 2025 and was still present when HIPc0138 was seen in October 2025.

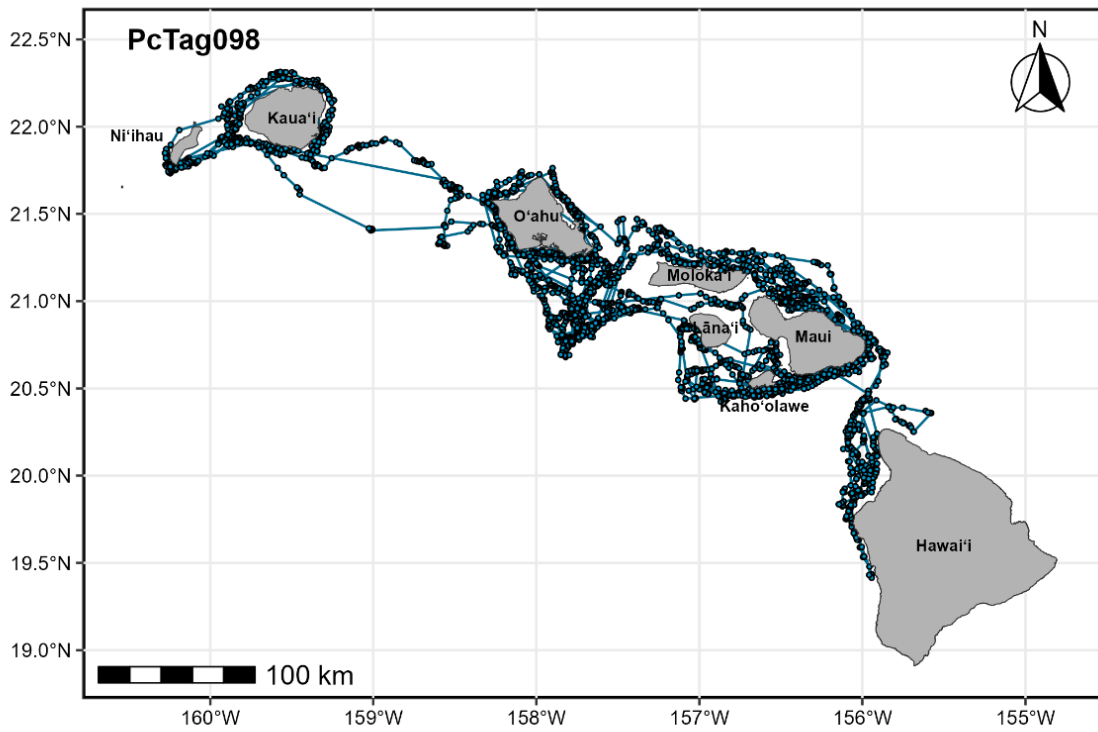


Figure 3. Movements of HIPc0717 (PcTag098) over an 82-day period between July 10 and September 30, 2025 from a SPOT-365 location-only tag. This individual (a probable adult of unknown sex) is from Cluster 1 and had been previously tagged in 2022, although no data was obtained from the 2022 deployment (see Baird et al. 2023).

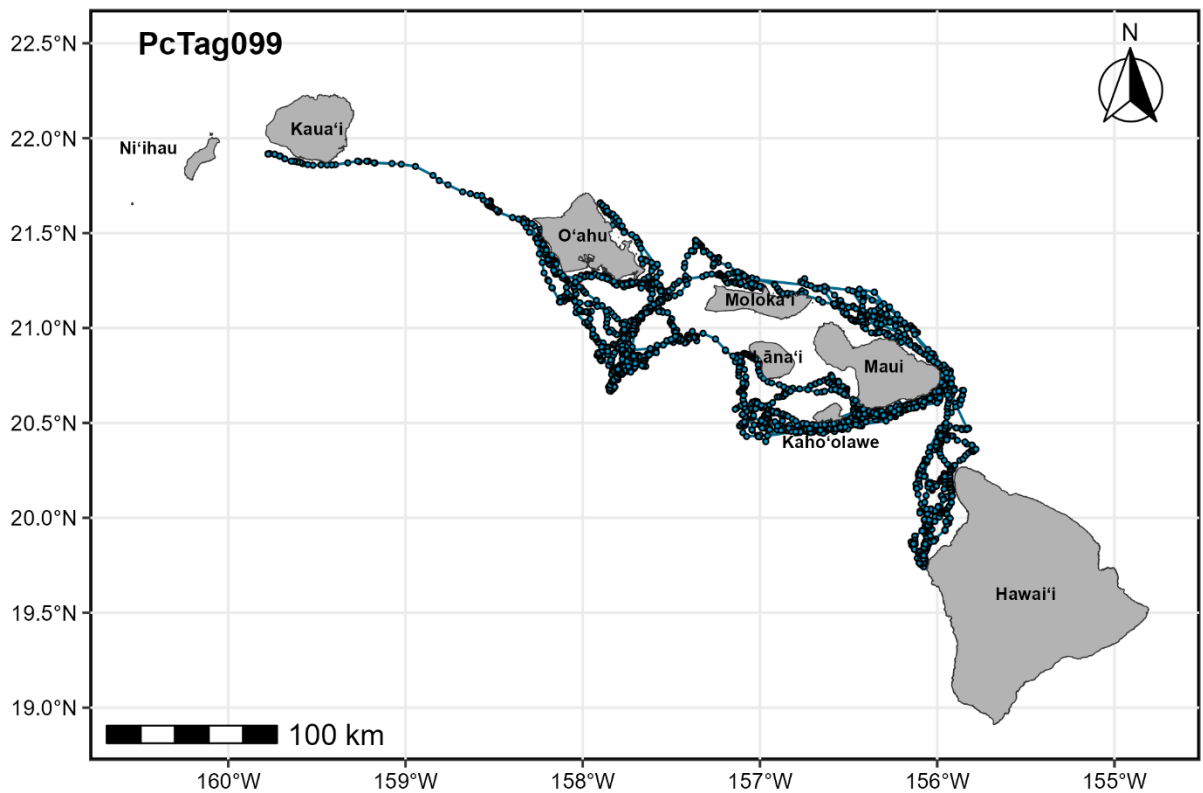


Figure 4. Movements of HIPc0115 (PcTag099) over a 31-day period between July 13 and August 13, 2025 from a SPLASH10-F tag, providing higher temporal resolution of location data with the combination of Argos locations and Fastloc®-GPS locations. This individual, an adult male, is from Cluster 1 and had been previously tagged in 2009. Although HIPc0115 has been photographically documented 44 times over a 30-year span, this is the first time this individual has been documented off Kaua'i.

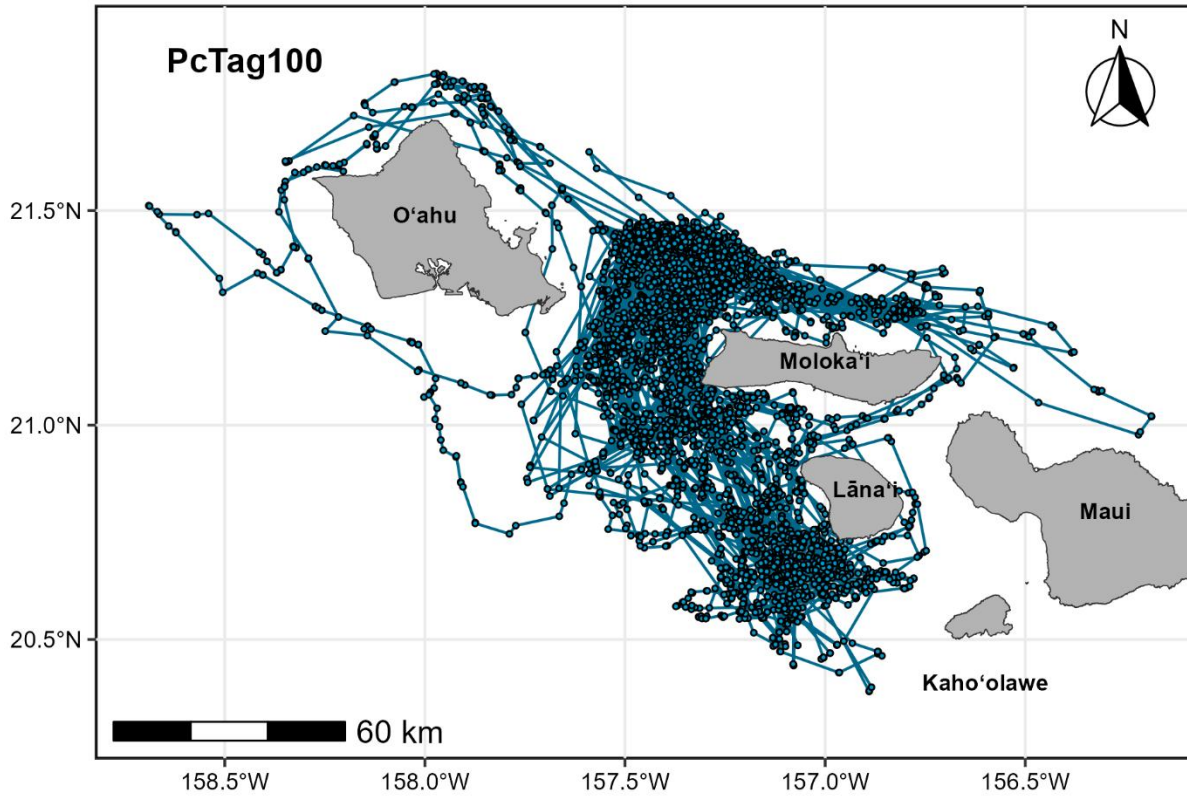


Figure 5. Movements of HIPc0214 (PcTag100) over a 205-day period between October 20, 2025 and May 13, 2026 from a SPOT-365 location-only tag. This individual, an adult female, is from Cluster 1 but had been traveling with Cluster 4 individuals in July 2024 and on the day of tagging in October 2025. HIPc0214 has not been previously tagged.

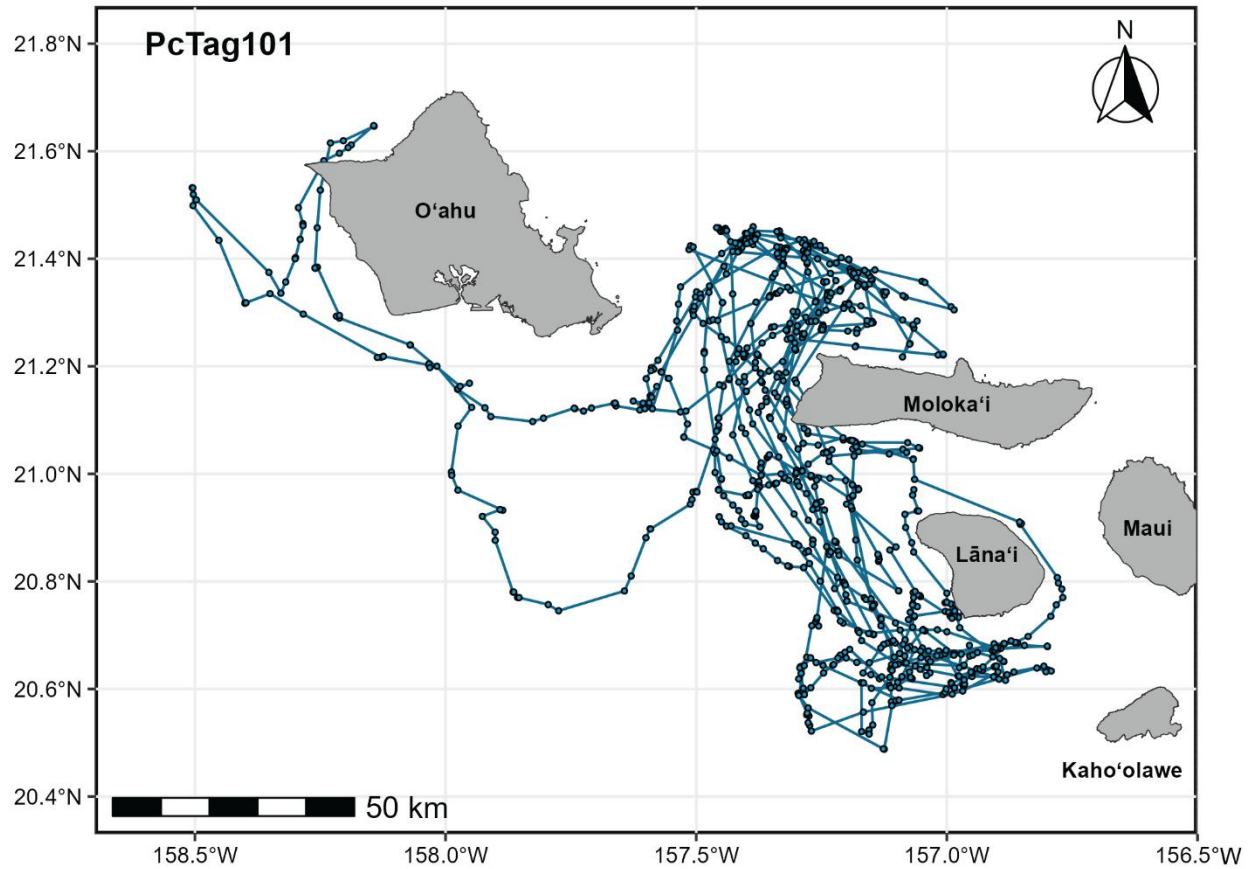


Figure 6. Movements of HIPc0709 (PcTag101) over a 25.0-day period between October 20 and November 14, 2025 from a SPOT-365 location-only tag. This individual, an adult (most likely a female), is from Cluster 4 and has not been previously tagged.

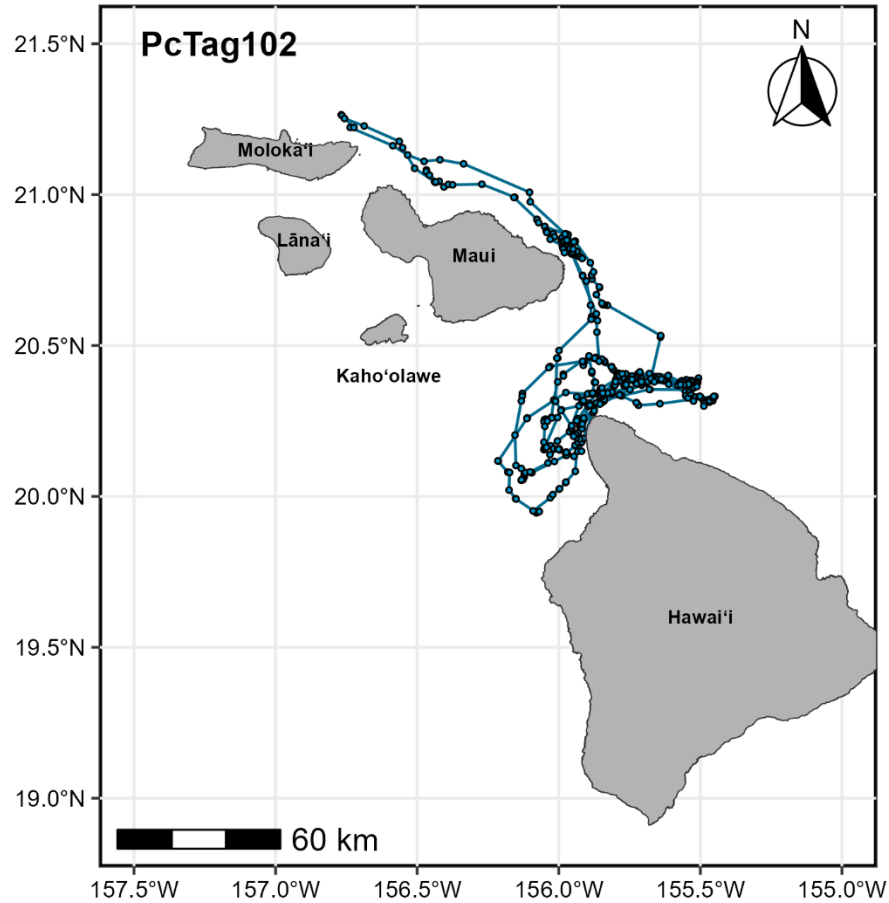


Figure 7. Movements of HIPc1270 (PcTag102) over a 12.6-day period between November 18 and December 1, 2025 from a SPOT-365 location-only tag. This individual, an adult female-sized individual, had not been previously documented but was traveling with Cluster 2 individuals, and is presumed to be a member of Cluster 2.

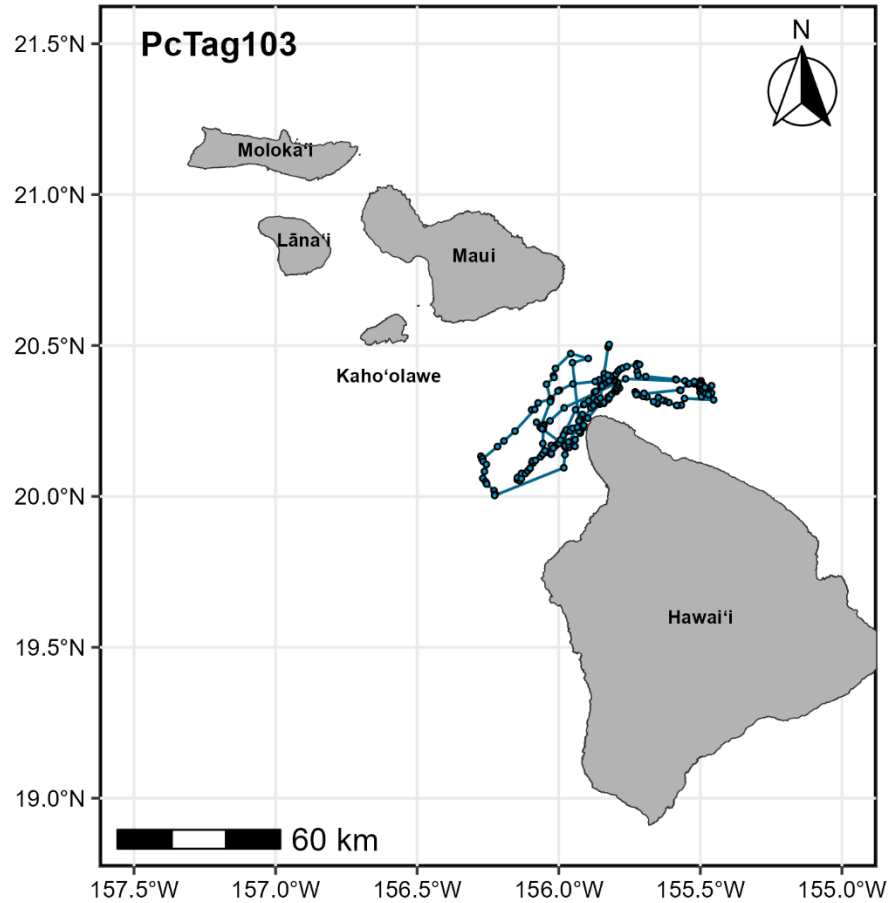


Figure 8. Movements of HIPc1268 (PcTag103) over a 4.8-day period between November 18 and November 23, 2025 from a SPLASH10-F tag. This individual, an adult female-sized individual, had not been previously documented but was traveling with Cluster 2 individuals, and is presumed to be a member of Cluster 2.

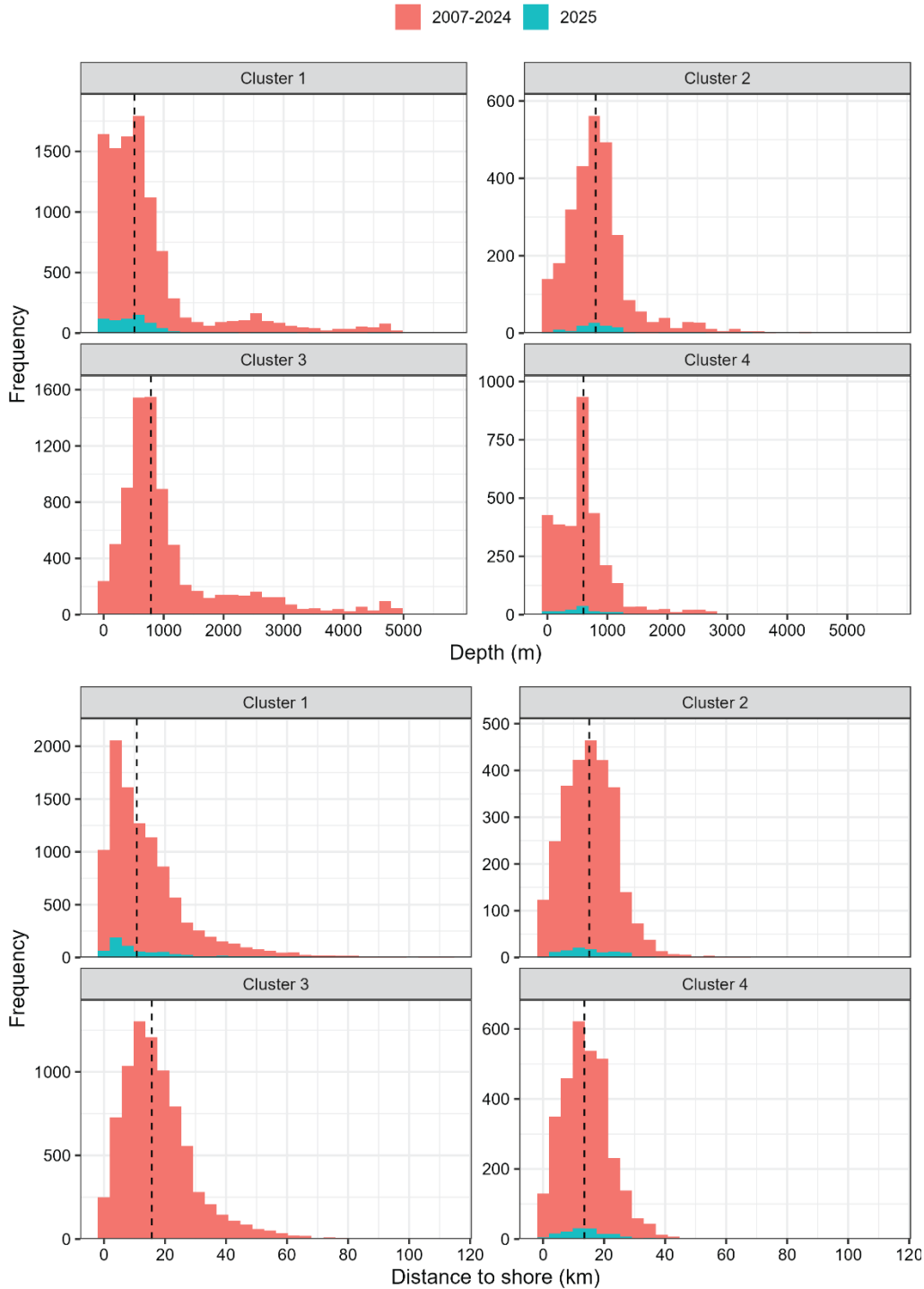


Figure 9. Frequency distributions of tagged MHI insular false killer whale habitat use by seafloor depth (top) and distance to shore (bottom) by social cluster. Distributions are shown for the 2025 tag deployments (teal) and for the full dataset previous to the 2025 deployments (71 tags up to the reporting period, not excluding pseudoreplicates; salmon). Note that no Cluster 3 individuals were tagged in 2025. The vertical dashed lines represent the median values across the entire dataset within each cluster.

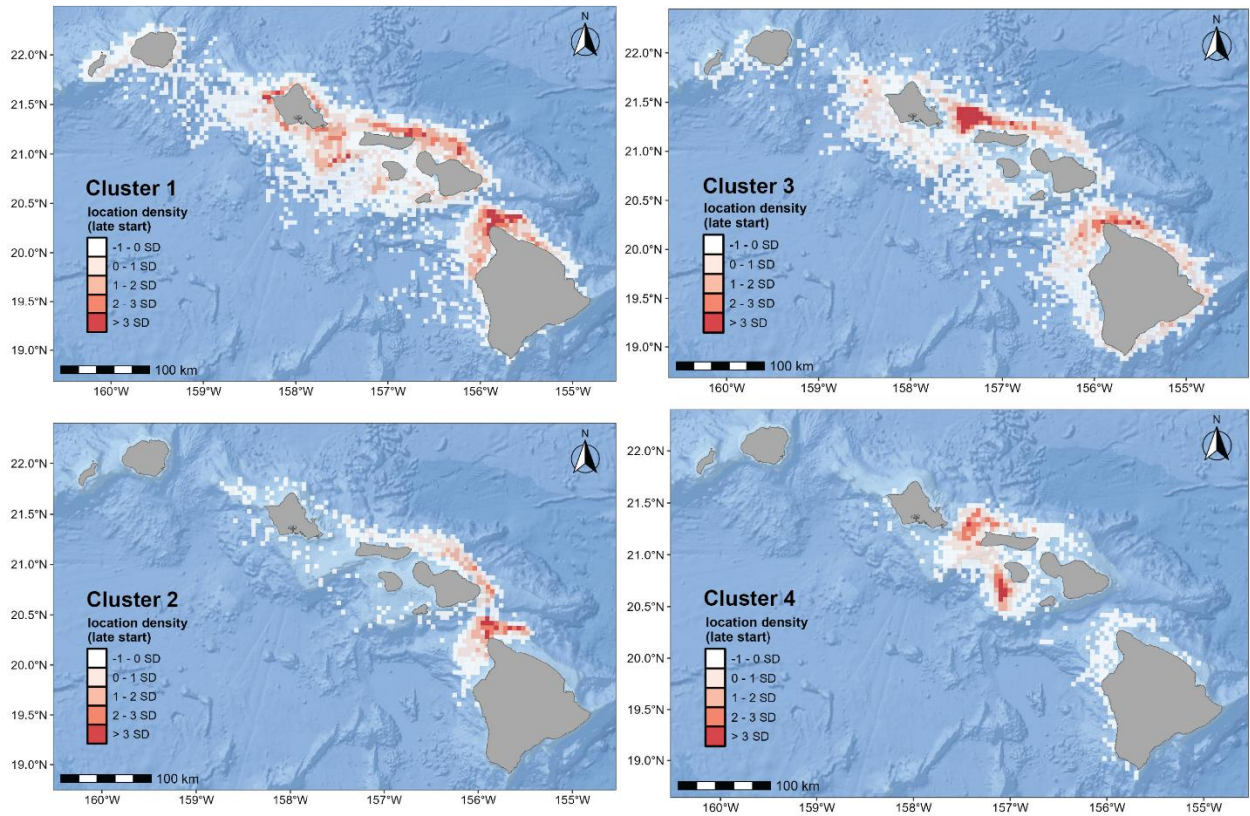


Figure 10. Density map for tagged MHI insular false killer whales by cluster using all tag data available through 2025 (57 groups up to the reporting period, not excluding pseudoreplicates; PcTag100 not included). Pseudoreplicate individuals were excluded, and the first day of data was removed to mitigate tag locality bias ('late start'). Location density is gridded as the number of standard deviations (SD) from the mean value for each cluster.

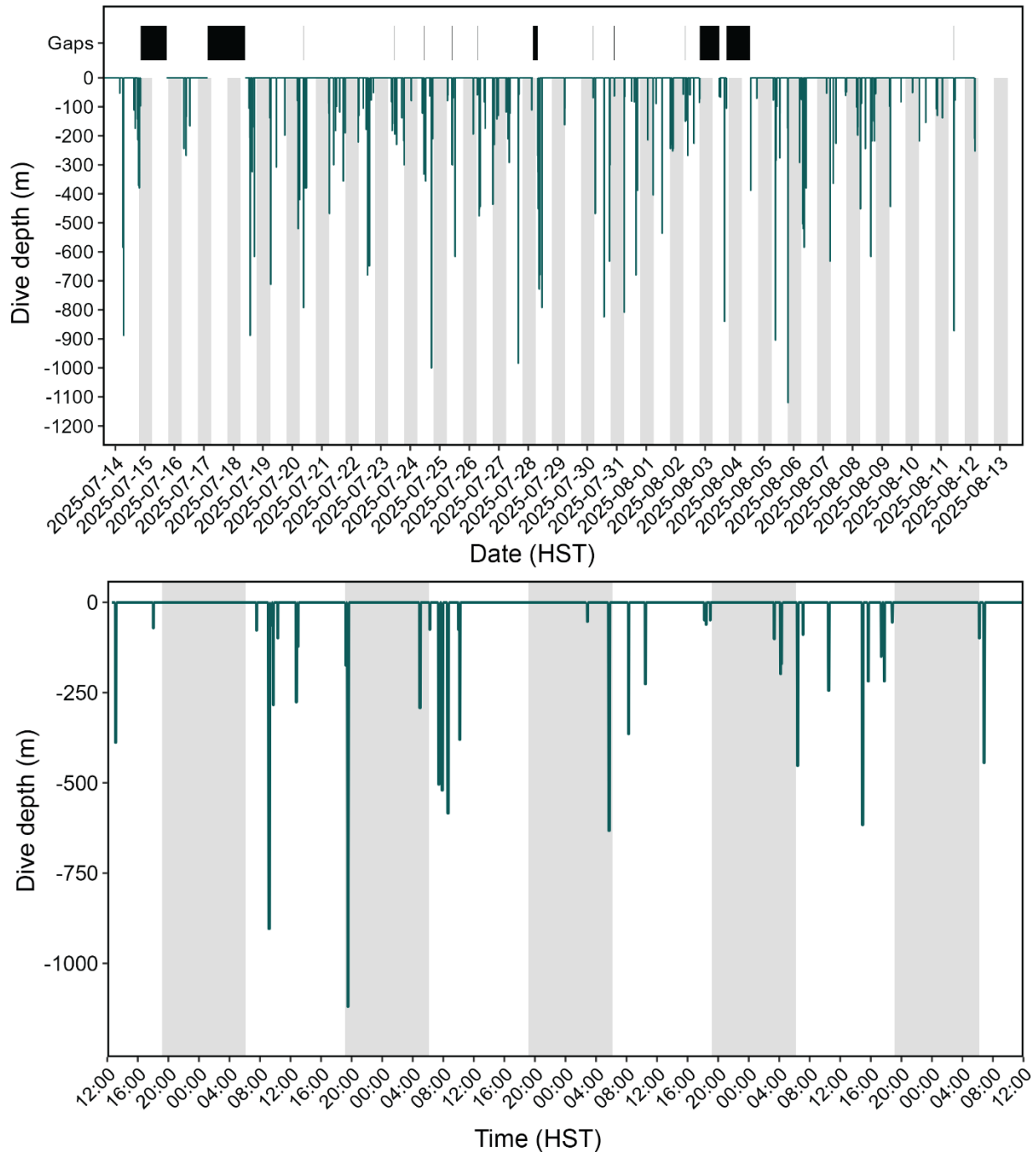


Figure 11. Dive data from HIPc0115 (PcTag099), a member of Cluster 1 tagged off Hawai‘i Island in July 2025. Top: complete dive record. Bottom: Detail over a 5-day period (August 4-9, 2025). Data from this tag were incorporated into a comprehensive analysis of false killer whale diving behavior (Kratofil et al. 2026b). Diel period is indicated with background shading (grey = night, white = day). Gaps in the data are indicated with a black bar sitting at the top of the plot.

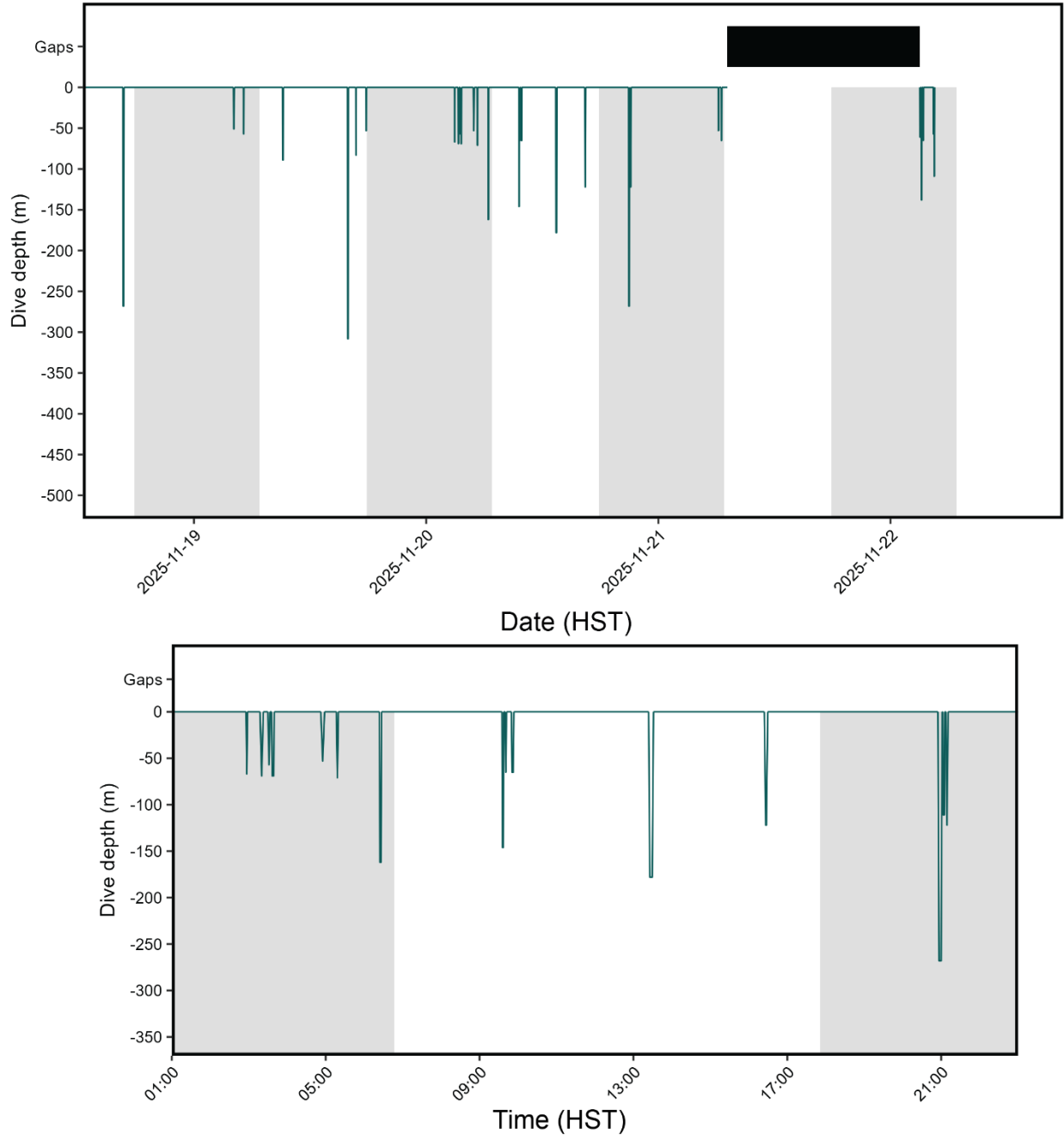


Figure 12. Dive data from HIPc1268 (PcTag103), a member of Cluster 2 tagged off Hawai‘i Island in November 2025. Top: complete dive record. Bottom: Detail over a 1-day period (November 20, 2025). Data from this tag were obtained after the revision of the larger manuscript on false killer whale diving behavior (Kratofil et al. 2026b) and thus not included in that study. Diel period is indicated with background shading (grey = night, white = day). Gaps in the data are indicated with a black bar sitting at the top of the plot.

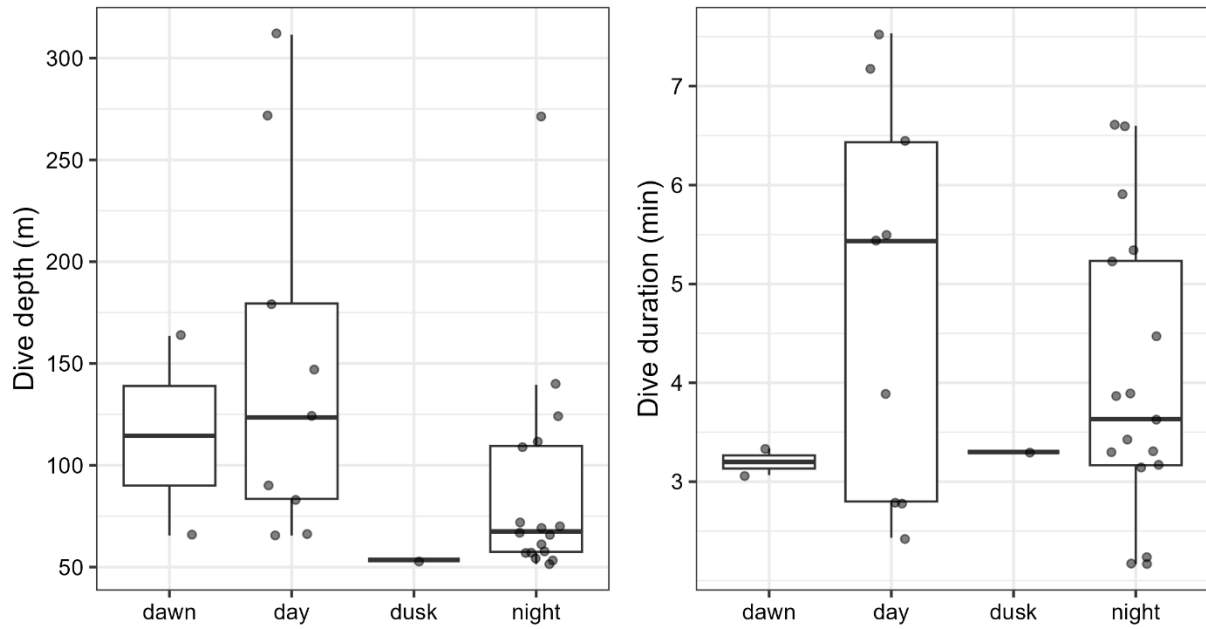


Figure 13. Boxplots of dive depth (left) and duration (right) by diel category for PcTag103, a member of Cluster 2. Data points are jittered with boxplots.

Table 1. Details on false killer whales encountered by CRC between May 2025 and April 2026.

Date	Island	Number of IDs [^]	Estimated group size	Clusters present (or population), predominate cluster noted first
12-Jun-25	O‘ahu	17*	18	Cluster 3
20-Jun-25	O‘ahu	20 ⁺	18	Cluster 3
10-Jul-25	Hawai‘i	17	15	Cluster 1 (plus HIPc0143 from Cluster 2)
13-Jul-25	Hawai‘i	18	20	Cluster 1 (plus HIPc0143 from Cluster 2)
27-Jul-25	Hawai‘i	11	12	Cluster 1 (plus HIPc0143 from Cluster 2)
20-Oct-25	Lāna‘i	8	12	Cluster 4 (1 of Cluster 1 and 1 of Cluster 3)
22-Oct-25	Lāna‘i	1	1	Cluster 4
18-Nov-25	Hawai‘i	10	15	Cluster 2
05-Jan-26	Hawai‘i	11	10	Cluster 1 (1 of Cluster 2)
01-Feb-26	Hawai‘i	9	10	Cluster 20 of Hawai‘i pelagic stock

[^]With no restrictions on photo quality or distinctiveness

*Includes photo contributions from Dolphin Excursions Hawai‘i and Wild Side Specialty Tours

⁺Includes photo contributions from Dolphin Excursions Hawai‘i

Table 2. Details on satellite-linked tag deployments on individuals from the main Hawaiian Islands population of false killer whales in 2025.

Date tagged	Tag type	Catalog ID	Tag ID	Cluster membership	Attachment duration (days)
10-Jul-25	SPOT-365	HIPc0717	PcTag098	Cluster 1	82.0
13-Jul-25	SPLASH10-F	HIPc0115	PcTag099	Cluster 1	30.9
20-Oct-25	SPOT-365	HIPc0214	PcTag100	Cluster 1 [^]	205*
20-Oct-25	SPOT-365	HIPc0709	PcTag101	Cluster 4	25.0
18-Nov-25	SPOT-365	HIPc1270	PcTag102	Cluster 2	12.6
18-Nov-25	SPLASH10-F	HIPc1268	PcTag103	Cluster 2	4.8

[^]Although a member of Cluster 1 based on Mahaffy et al. (2023), HIPc0214 has been documented traveling with Cluster 4 in July 2024 and at the time of tagging.

*Tag still transmitting as of May 13, 2026