MONITORING OF MARINE MAMMALS IN HONG KONG WATERS (2022-23)

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EXECUTIVE SUMMARY

A longitudinal study on Chinese White Dolphins and Indo-Pacific finless porpoises has been conducted in Hong Kong for more than two decades. With the funding support from the Agriculture, Fisheries and Conservation Department of the Hong Kong SAR Government, the present monitoring study represents a continuation and extension of this research programme, covering the period of April 2022 to March 2023.

During the one-year study period, 198 line-transect vessel surveys with 6,136.0 km of survey effort were conducted among ten survey areas in Hong Kong. A total of 181 groups of 646 Chinese White Dolphins and 55 groups of 121 Indo-Pacific finless porpoises were sighted during the vessel surveys. The dolphins were frequently sighted along the west coast of Lantau Island, and to a lesser extent in the coastal waters in SWL survey area. On the contrary, they seldom occurred in the southern and eastern portions of South Lantau waters, and have mostly disappeared from the entire North Lantau region. For the porpoises, the only concentration of their sightings occurred in surrounding waters of Tai A Chau.

In 2022, the most important dolphin habitats were concentrated along the WL coast and the western end of SWL, mainly extending from Tai O Peninsula toward Fan Lau Peninsula. In the past decade, dolphin occurrence in the North Lantau region has greatly diminished, and is largely confined to the western end since 2016 (and to the Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP) in the past four years), with no apparent signs of recovery owing to the consecutive implementation of major reclamation and coastal development works. Continuous and alarming declines in dolphin usage were observed within the Brothers Marine Park and SCLKCMP in North Lantau waters. On the contrary, their usage has remained fairly steady and high within the Southwest Lantau Marine Park in the past decade.

For finless porpoises, their most heavily utilized habitats in 2022 were limited to the offshore waters in SWL survey area, especially to the south and east of the Soko Islands. Temporal changes in porpoise habitat use were notable at the offshore waters between Shek Kwu Chau and the Soko Islands as well as to the south of Cheung Chau, with consistently high usage in 2015-17 before a noticeable decline in the past five years of 2018-22, especially around Shek Kwu Chau where the development works for the Integrated Waste Management Facilities occurred.

In 2022, the combined estimate of dolphin abundance in Hong Kong waters in the four main survey areas of dolphin occurrences (i.e. SWL, WL, NWL and NEL) was 34 (the combined estimates for the last five years, i.e. 2017 to 2021, were 47, 32, 52, 37 and 40 respectively). Large and appalling declines in dolphin abundance were detected over the past two decades in both NEL and NWL survey areas, and noticeable decline was also detected in WL waters but has stabilized in recent years.

During the 2022-23 monitoring period, 115 individual dolphins were identified with 420 re-sightings, and nearly three quarters of all re-sightings were made in WL waters. A total of ten new individuals have been added to the photo-ID catalogue, while 14 individuals that were frequently sighted in Hong Kong waters in the past have disappeared in 2022. Continuous decline in dolphin movements between NWL and WL survey areas as well as between WL and SWL survey areas were evident in recent years.

HKCRP researchers delivered a total of eleven education seminars at local schools regarding the conservation of local dolphins and porpoises in 2022-23. Through this integrated approach of long-term research and publicity programme, the Hong Kong public can gain first-hand information from the researchers.

行政摘要 (中文翻譯)

一項有關本地中華白海豚及印度太平洋江豚的長期研究，在過去二十多年以來一直在進行中，而此項為期一年 (由 2022 年 4 月至 2023 年 3 月)、獲香港特別行政區政府漁農自然護理署資助的研究工作，正是這長期監察項目的延伸。

在十二個月研究期間內，研究員共進行了 198 次樣條線船上調查，在全港十個調查區航行 6,136.0 公里，並在船上共觀察到 181 群中華白海豚 (總數達 646 隻) 及 55 群江豚 (總數達 121 隻)。中華白海豚經常出沒在西大嶼山水域，較少在西南大嶼山沿岸水域錄得其出沒記錄。相反，牠們甚少出現在南大嶼山水域的南部及東部，並且在北大嶼山整片水域幾近絕跡。另一方面，江豚的目擊記錄主要集中於大鴉洲附近一帶水域。

中華白海豚在 2022 年的重要棲身地，主要集中在西大嶼山近岸及西南大嶼山西端的水域，主要在大澳半島與分流半島之間一帶。在過去十年，海豚在北大嶼山水域的使用率大幅下降，並自 2016 年只集中出沒於此水域的西端(在過去四年更只局限在沙洲及龍鼓洲海岸公園內出沒)，而且隨著大型填海及近岸發展工程相繼推行，其使用量並未有任何明顯的復甦跡象。海豚在北大嶼山水域的大小磨刀海岸公園、沙洲及龍鼓洲海岸公園內的使用量均持續地大幅減少；相反地，大嶼山西南海岸公園仍錄得穩定而持續高企的海豚使用量。

在 2022 年錄得最高使用量的江豚棲身地，只集中在西南大嶼山的外海水域，尤其是在索罟群島以東及以南一帶。江豚在石鼓洲及索罟群島之間外海水域、以及在長洲以南水域的棲身地使用於不同時間出現改變：在 2015 至 2017 年間，於石鼓洲及索罟群島之間水域曾錄得持續高企的江豚使用量，但在隨後的五年期間 (2018 至 2022 年) 卻明顯減少，此下降趨勢尤其在毗鄰「綜合廢物管理設施」發展工程的石鼓洲水域更為明顯。

在 2022 年，中華白海豚在大嶼山西南、西、西北及東北四個調查區域的整體數目估計為 34 隻 (過去五年的年度數目分別為 47、32、52、37 及 40 隻)。在過去廿年，大嶼山東北及西北調查區域的海豚數量均錄得大幅度減少，同樣地在大嶼山西面調查區的海豚數目亦錄得明顯下降，但在近年已轉趨平穩。

於 2022-23 監察年度期間，研究員辨認出 115 隻個別海豚、共 420 次的目擊紀錄，其中接近四分之三均出現在大嶼山西面水域。2022 年內共有十隻新的個別海豚被加入相片辨認名錄，而在過去一些經常出沒於香港水域的海豚個體，共有十四隻於 2022 年間不見所蹤。於大嶼山西北面及西面調查區之間、與大嶼山西面及西南面調查區之間移動的個別海豚，兩者的數量均於近年持續下降。

在本年度，研究員為本地中小學主持了共十一場講座，內容主要圍繞香港中華白海豚及江豚的最新保育狀況。透過揉合長期研究監察及公眾教育活動，香港市民可從研究員獲得更多有關鯨豚的最新資訊。

1. INTRODUCTION

In more than two decades, the Hong Kong Cetacean Research Project (HKCRP) has been conducting a longitudinal study on Chinese White Dolphins (*Sousa chinensis*) and Indo-Pacific finless porpoises (*Neophocaena phocaenoides*) in Hong Kong and the Pearl River Delta region. Such multi-disciplinary research study in the past two decades has been primarily funded by AFCD as well as various government departments and NGOs, aiming to provide critical scientific information to the Hong Kong SAR Government for formulation of sound management and conservation strategies for the local populations of dolphins and porpoises. In addition, HKCRP has been extensively involved in numerous environmental consultancy studies to assess potential impacts of marine construction works on cetaceans in Hong Kong waters and the Pearl River Estuary, and to provide suggestions and guidance on mitigation measures to lessen the pressure of the development projects on dolphins and porpoises. Results from these integrated studies have been used to establish several systematic databases, which can be used to estimate population size, to monitor trends in abundance, distribution, habitat use and behaviour over time, and to keep track of levels and changes in mortality rates of local cetaceans (e.g. Hung 2008, 2021, 2022; Jefferson et al. 2002, 2009, 2012; Wang and Hung 2020, 2021, 2022).

The present monitoring project represents a continuation and extension of this research programme, with funding support from AFCD of HKSAR Government. The one-year project covers the period of 1 April 2022 to 31 March 2023, and this final report is submitted to AFCD as a summary of this monitoring project, covering the entire 12-month study.

2. OBJECTIVES OF PRESENT STUDY

The main goal of this one-year monitoring study was to collect systematic monitoring data for an in-depth analysis and assessment of distribution, abundance and habitat use of Chinese White Dolphins (CWD) and Finless Porpoises (FP) in Hong Kong, to take photographic records of individual dolphins, and to analyze the monitoring data for better understanding of various aspects of local dolphins and porpoises. To achieve this, several specific objectives were set for the present study. The first objective was to assess the spatial and temporal patterns of distribution, abundance and habitat use of CWD and FP in Hong Kong in detail. This objective was achieved through data collection on dolphins and porpoises by conducting regular

systematic line-transect vessel surveys and helicopter surveys.

The second objective was to identify individual CWD by their natural markings using photo-identification technique. This objective was achieved by obtaining high-quality photographs of CWD for photo-identification analysis. Photographs of re-sighted and newly identified individuals were compiled and added to the current photo-identification catalogue, with associated descriptions for each newly identified individual. Photographic records of FP were also taken during surveys for educational purposes.

The third objective was to analyze the monitoring data for better understanding of the various aspects of local populations of CWD and FP. This objective was achieved by conducting various data analyses, including line-transect analysis, encounter rate analysis, distribution analysis, behavioural analysis and quantitative grid analysis to assess the spatial and temporal patterns of abundance, distribution and habitat use and trends of occurrence of CWD and FP using vessel survey data. The fourth objective was to conduct ranging pattern analysis and residency pattern analysis to study individual core area, ranging pattern, habitat use and movement pattern of CWD based on the data obtained from both the line-transect vessel surveys and the associated photo-identification works.

The final objective was to educate the members of the public on local dolphins and porpoises, by disseminating the study findings from the long-term monitoring research programme. This objective was achieved by providing public seminars to local primary and secondary school students through the arrangement of AFCD.

3. RESEARCH TASKS

During the study period, several tasks were completed to satisfy the objectives set for the present marine mammal monitoring study. These five specific tasks were:

- to collect monitoring data for assessment on spatial and temporal patterns of distribution, abundance and habitat use of local dolphins and porpoises through systematic line-transect vessel surveys;

- to analyze line-transect survey data for assessment on spatial and temporal patterns of distribution, abundance, habitat use and trends of occurrence of dolphins and

porpoises in Hong Kong;

- to take photographic records of CWD for photo-identification analysis and update the photo-identification catalogue;

- to analyze photo-identification data of individual CWD to assess their ranging patterns, core area use and movement patterns;

- to take photographic records of FP; and

- to assist AFCD in arousing public awareness on local dolphins and porpoises through school seminars.

4. METHODOLOGY

4.1. Vessel Survey

The survey team used standard line-transect methods (Buckland et al. 2001) to conduct regular vessel surveys, and followed the same technique of data collection that has been adopted in the past two decades of marine mammal monitoring surveys in Hong Kong developed by HKCRP (Hung 2005, 2021, 2022; Jefferson 2000a, b; Jefferson et al. 2002). The territorial waters of Hong Kong Special Administrative Region are divided into twelve different survey areas, and line-transect surveys were conducted among ten survey areas (i.e. Northwest (NWL), Northeast (NEL), West (WL), Southwest (SWL) and Southeast Lantau (SEL), Deep Bay (DB), East Lantau (EL), Lamma (LM), Po Toi (PT) and Ninepins (NP)) (Figure 1).

For each vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area. Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously using 7 x 50 *Fujinon* or *Steiner* marine binoculars. Both observers searched the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). One to two additional experienced observers were available on board to work in shifts (i.e. rotating every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small

cetacean survey techniques and identifying local cetacean species and had participated in rigorous at-sea training program provided by the principal investigator.

During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (e.g. *Garmin eTrex*). When dolphins or porpoises were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin/porpoise group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin/porpoise group to the transect line was later calculated from the initial sighting distance and angle.

The line-transect data collected during the present study were compatible with the long-term databases maintained by HKCRP in a way that it can be analyzed by established computer programmes (e.g. all recent versions of DISTANCE programme including version 6.0, ArcView© GIS programme) for examination of population status including trends in abundance, distribution and habitat use of CWD and FP in Hong Kong waters.

4.2. Photo-identification Work

When a group of CWD were sighted during the line-transect vessel survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph each dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides differ. One or two professional digital cameras (e.g. *Canon* EOS 7D Mark II model), each equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater details, and were carefully compared to all identified dolphins in the Pearl River Estuary CWD photo-identification catalogue compiled and curated by HKCRP. Chinese White Dolphins can be identified by their natural markings, such as

nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000a; Jefferson and Leatherwood 1997). All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a database. Any individuals not in the current catalogue were given a new identification number and added to the catalogue along with their data and text descriptions including age class, gender, any nickname or unique markings. The updated photo-identification catalogue incorporated all new photographs of individual dolphins taken during the present study.

4.3. Data Analyses

4.3.1. Distribution pattern analysis

The line-transect survey data were integrated with a Geographic Information System (GIS) to visualize and interpret different spatial and temporal patterns of dolphin and porpoise distribution using their sighting positions collected from vessel and helicopter surveys. Location data of dolphin and porpoise groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView© 3.1) to examine their distribution patterns in detail. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, fishing boat associations, young calves and behavioural activities. Data from the long-term sighting databases were used to compare past distribution patterns of dolphins and porpoises in recent years to data from the present study period.

4.3.2. Encounter rate analysis

Since the line-transect survey effort was uneven among different survey areas and across different years, the encounter rates of CWD and FP (number of on-effort sightings per 100 km of survey effort) were calculated separately for each survey area to correct for the uneven survey effort. As such, encounter rates could be useful indicators of the relative importance of different regions within the study area to the dolphins and porpoises.

4.3.3. Line-transect analysis

Density and abundance of CWD for the four main areas of their occurrences (i.e. NEL, NWL, WL and SWL) in 2022 were estimated by line-transect analysis using systematic line-transect vessel survey data collected during the present study. To examine the long-term trend in dolphin abundance, the annual estimates in 2022 from the four areas were also compared with the ones generated for every year since 2001 in

the NWL and NEL survey areas and since 2003 in the WL survey area, as well as the biennial and annual periods since 2002 in the SWL survey area.

For the line-transect analysis, survey effort in each single survey day was used as the sample. Estimates were calculated only from dolphin sightings and effort data that were collected during conditions of Beaufort 0-3 (see Jefferson 2000a) and using standard line-transect methods (Buckland et al. 2001). The estimates were made using the computer program DISTANCE Version 6.0, Release 2 (Thomas et al. 2009). The following formulae were used to estimate density, abundance, and their associated coefficient of variation:

$$\hat{D} = \frac{n\,\hat{f}(0)\,\hat{E}(s)}{2\,L\,\hat{g}(0)}$$

$$\hat{N} = \frac{n\,\hat{f}(0)\,\hat{E}(s)\,A}{2\,L\,\hat{g}(0)}$$

$$\widehat{CV} = \sqrt{\frac{\hat{\text{var}}\,(n)}{n^2} + \frac{\hat{\text{var}}\,[\hat{f}(0)]}{[\hat{f}(0)]^2} + \frac{\hat{\text{var}}\,[\hat{E}(s)]}{[\hat{E}(s)]^2} + \frac{\hat{\text{var}}\,[\hat{g}(0)]}{[\hat{g}(0)]^2}}$$

where D = density (of individuals), n = number of on-effort sightings, f(0) = trackline probability density at zero distance, E(s) = unbiased estimate of average group size, L = length of transect lines surveyed on effort, g(0) = trackline detection probability, N = abundance, A = size of the survey area, CV = coefficient of variation, and var = variance.

A strategy of selective pooling and stratification was used in order to minimize bias and maximize precision in making the estimates of density and abundance (see Buckland et al. 2001). Distant sightings were truncated to remove outliers and accommodate modeling, and size-bias corrected estimate of group size was calculated by regressing $\log_e$ of group size against distance. Three models (uniform, half-normal and hazard rate) were fitted to the data of perpendicular distances to estimate f(0) and the resulting dolphin density and abundance (Buckland et al. 2001). The best model (and thus its associated values for these parameters) was determined by the lowest Akaike's Information Criterion (AIC) value.

4.3.4. Quantitative grid analysis on habitat use

To conduct quantitative grid analysis of habitat use (Hung 2008), positions of on-effort sightings of CWD and FP were retrieved from their long-term sighting databases, and then plotted onto 1-km^2 grids among the nine survey areas on GIS. Sighting densities (number of on-effort sightings per km^2) and dolphin/porpoise

densities (total number of dolphins/porpoises from on-effort sightings per km^2) were then calculated for each 1 km by 1 km grid with the aid of GIS. Sighting density grids and dolphin/porpoise density grids were further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent in each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin/porpoise density of each grid were then normalized (i.e. divided by the unit of survey effort).

The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort **s**ightings **p**er 100 units of **s**urvey **e**ffort. In addition, the derived unit for actual dolphin/porpoise density was termed DPSE, representing the number of **d**olphins/porpoises **p**er 100 units of **s**urvey **e**ffort. Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km^2 grid within the study area:

$$SPSE = ((S / E) \times 100) / SA\%$$

$$DPSE = ((D / E) \times 100) / SA\%$$

where S = total number of on-effort sightings, D = total number of dolphins/ porpoises from on-effort sightings, E = total number of units of survey effort, SA% = percentage of sea area

Both SPSE and DPSE values are useful for examining relative dolphin/porpoise usage within a one square kilometre area. For the present monitoring study, both SPSE and DPSE values were calculated in each 1-km^2 grid among all survey areas for the entire one-year period in 2022 for both CWD and FP, and in the past five years of monitoring (i.e. 2018-22) for FP.

4.3.5. Behavioural analysis

When dolphins were sighted during vessel surveys, their behaviours were observed. Different behaviours were categorized (i.e. feeding, milling/resting, traveling, socializing) and recorded. These data were then input into a separate database with sighting information, which was used to determine the distribution of behavioural data using a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities, and compared with past

distribution patterns of such activities. The behavioural data was also used in the quantitative analysis on habitat use to identify important dolphin habitats for feeding and socializing activities and examine trends in habitat use over the past two decades.

4.3.6. Ranging pattern analysis

For the examination of individual ranging patterns, location data of identified dolphins with 10 or more re-sightings and sighted during the present study period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home range for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension, created by the Alaska Biological Science Centre, USGS (Hooge and Eichenlaub 1997), was loaded as an extension of ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD (utilization distribution) level. The core areas of individuals at two different levels (50% and 25% UD) were also examined to investigate their range use in greater detail.

4.3.7. Residency pattern analysis

To examine the monthly and annual occurrence patterns of individual dolphins, their residency patterns in Hong Kong were carefully evaluated. "Residents" were defined as individuals that were regularly sighted in Hong Kong for at least eight years in the past 12 years (i.e. 2011-2022), or five years in a row within the same period. Other individuals that were intermittently sighted during the past years were defined as "Visitors". In addition, monthly matrix of occurrence was also examined to differentiate individuals that occurred year-round (i.e. individuals that occur in every month of the year) or seasonally (i.e. individuals that occur only in certain months of the year). Using both yearly and monthly matrices of occurrence, "year-round residents" were the individual dolphins that were regularly sighted in Hong Kong throughout the year, while "seasonal visitors" were the ones that were sighted sporadically in Hong Kong and only during certain months of the year within the study period.

5. RESULTS AND DISCUSSIONS

5.1. Summary of Data Collection

5.1.1. Survey effort

During the entire monitoring period, a total of 198 line-transect vessel surveys were conducted among ten survey areas in Hong Kong waters from April 2022 to March 2023. These included 13 surveys in DB, 20 surveys in NEL, 18 surveys in NWL, 49 surveys in WL, 37 surveys in SWL, 25 surveys in SEL, nine surveys in EL, 16 surveys in LM, seven surveys in PT and four surveys in NP. The details of these survey effort data collected are presented in Appendix I.

More effort was allocated to survey areas outside of North Lantau waters during the 2022-23 monitoring period, as additional surveys have already been conducted in NWL and NEL survey areas concurrently under the Tuen Mun-Chek Lap Kok Link (TMCLKL) and Hong Kong Link Road (HKLR) regular line-transect monitoring surveys as part of the EM&A works for the Hong Kong-Zhuhai-Macau Bridge (HZMB) construction. These additional HZMB-related marine mammal monitoring surveys employed the same HKCRP personnel, survey methodology and research vessels to ensure consistency and full compatibility with the AFCD long-term marine mammal monitoring programme. In order to increase the overall sample size for the present monitoring study, such EM&A data were combined with the AFCD monitoring data for various data analyses presented throughout this report, which can provide valuable supplementary information on dolphin and porpoise occurrences.

From April 2022 to March 2023, 604.0 hours were spent collecting 6,136.0 km of survey effort during the AFCD vessel line-transect surveys among the ten survey areas. More than two-third of the total survey effort was conducted among six areas where dolphins occurred regularly, which included 20.5% in NEL/NWL, 16.8% in WL, 27.9% in SWL/SEL and 3.2% in DB. On the other hand, 59.5% of total survey effort was allocated to survey areas in southern and eastern waters of Hong Kong (i.e. SWL, SEL, EL, LM, PT and NP) where porpoises regularly occurred. It should be mentioned that 98.5% of all survey effort was conducted under favourable sea conditions (Beaufort 3 or below, with good visibility). Such extremely high percentage of survey effort conducted in favourable conditions is crucial to the success of the marine mammal data collection programme in Hong Kong, as only such data can be used in various analyses to examine the encounter rates and habitat use of both dolphins and porpoises, as well as to estimate the density and abundance of dolphins.

During the same 12-month monitoring period in 2022-23, a total of 3,224.8 km of survey effort was also conducted in NEL and NWL survey areas under the HZMB-related EM&A dolphin monitoring surveys. This brings the total survey effort to 4,479.8 km for the combined dataset from AFCD and HZMB-related surveys in North Lantau waters. Over 95% of the survey effort of HZMB-related EM&A surveys was also conducted under favourable sea conditions, which can be combined with the AFCD monitoring data for various analyses.

Since 1996, the long-term marine mammal monitoring programme coordinated by HKCRP has collected 276,165 km of line-transect survey effort in Hong Kong and Guangdong waters of the Pearl River Estuary under different government-sponsored monitoring projects, consultancy studies and private studies, with 47.4% of the total effort funded by AFCD. The survey effort in 2022 alone comprised 3.7% of the total survey effort collected since 1996.

5.1.2. Marine mammal sightings

Chinese White Dolphins - From the AFCD monitoring surveys alone, 181 groups of 646 dolphins were sighted during the 2022-23 monitoring period (see Appendix II). Combined with the additional sightings (three groups of nine dolphins) contributed from the HZMB-related EM&A surveys, a total of 187 groups of 664 dolphins were sighted altogether during the same 12-month period. Among them, 173 groups of 638 dolphins were sighted during on-effort line-transect vessel surveys.

In 2022-23, the majority of dolphin sightings were made in the WL (146 sightings), SWL (30) and NWL (8) survey areas while only three sightings were made in SEL survey area and none was sighted in DB, NEL or EL survey areas, despite a considerable amount of effort (>1,200 km) surveying these areas. As in previous monitoring periods, no dolphin was sighted in LM, PT or NP survey areas, where porpoises primarily occur on a regular basis.

Similar to the survey results from recent years of AFCD monitoring work, no dolphin was sighted in NEL for the entire year of 2022 as well as the first three months of 2023. However, the passive acoustic monitoring (PAM) conducted concurrently by HKCRP with the funding support of AFCD revealed that dolphins have not completely abandoned this area (at least not around the Brothers Islands where the PAM units were deployed) in recent years (Wang and Hung 2018, 2019, 2020). Notably, in the past PAM monitoring periods, a strong diel pattern with significantly more dolphin detections at night than during the day was found among several sites within the

Brothers Marine Park (Wang and Hung 2022). Even though dolphin detections were still very low and declining around the Brothers Islands in NEL, the continuing night-time usage by dolphins of this once-important habitat should not be overlooked, and the on-going PAM studies would be critical to fill important data gaps in monitoring dolphin occurrences 24 hours a day within this marine park as well as for the NEL survey area (see Section 5.6.2).

Finless Porpoises – A total of 55 groups of 121 porpoises were sighted from vessel surveys during the 2022-23 monitoring period (see Appendix III). Among these porpoise sightings, all except one were made during on-effort search, which can be used in the encounter rate analysis and habitat use analysis. The porpoises were primarily sighted in the SWL and SEL survey areas with 29 and 17 groups, respectively. They also occurred occasionally in LM and PT survey areas with three and six sightings respectively, but did not occur in NP or EL survey area at all. As in previous monitoring periods, the porpoises were absent from the WL, NWL, NEL and DB survey areas, where dolphins primarily occur throughout the past two decades.

Notably, for the second consecutive monitoring period, no porpoise or dolphin was sighted during the systematic line-transect surveys conducted in EL survey area in 2022-23. However, from the various PAM studies conducted in southern waters of Hong Kong in the past several years (e.g. Wang and Hung 2021, 2022), porpoises are known to occur predominantly outside of daylight hours. According to the paper presented to the Legislative Council Panel on Development on Study on the Artificial Islands in the Central Waters in December 2022, finless porpoise detections were recorded in the waters near Kau Yi Chau, Siu Kau Yi Chau, Peng Chau and Sunshine Island. The paper also stated that the finless porpoise detections in the waters near these nearby islands were low when compared with those in other locations (such as Ha Mei Tsui of Lamma Island). Considering that visual monitoring survey alone may no longer be effective for assessing marine mammal occurrence in EL survey area, it is suggested to conduct supplementary PAM surveys in this area by AFCD to better understand the occurrences of FP and CWD.

5.1.3. Photo-identification of individual dolphins

During the 2022-23 monitoring period, approximately 18,000 digital photographs of CWD were taken during the AFCD monitoring surveys for the photo-identification of individual dolphins. All photographs taken in the field were compared with existing individuals from the photo-identification catalogue compiled and curated by HKCRP since 1995. All new photographs identified as existing or new individuals

during the study period, as well as any updated information on gender and age class of individual dolphins, were incorporated into the photo-identification catalogue. Some photo-identification data was also contributed from the HZMB-related surveys during the same 12-month period.

Up to January 2023, a cumulative total of 1,139 individual dolphins (including 16 that were confirmed to be dead) have been identified by HKCRP researchers in Hong Kong waters and the rest of the Pearl River Estuary. The current catalogue contained 589 individuals being first identified within Hong Kong's territorial waters and another 550 individuals being first identified in Guangdong waters of the Pearl River Estuary. In 2022, ten newly identified individuals from Hong Kong waters were added to the catalogue.

The catalogue summary revealed that 262 individuals have been seen 15 times or more; 164 individuals have been seen 30 times or more; and 109 individuals have been seen 50 times or more. In contrast, 39.0% of the identified individuals have only been seen once or twice, with most of these being first identified in Guangdong waters (326 out of 444 individuals). Temporal trends in the total number of identified individuals, the total number of re-sightings made, and the number of individuals within several categories of number of re-sightings showed good advancement in the photo-identification works during the 2022-23 monitoring period (Figure 2).

Between April 2022 and March 2023, a total of 115 individual dolphins, sighted 420 times altogether, were identified during the AFCD regular vessel surveys (Appendix IV). With the addition of the HZMB-related monitoring survey data collected in the NWL survey area, there was a combined total of 115 individual dolphins being identified 434 times during the same 12-month period. Nearly three quarters (73.5%) of all re-sightings made during the AFCD/HZMB surveys were in the WL survey area. Only 87 and 25 re-sightings were made in SWL and NWL respectively, while two individual dolphins (NL306 and WL250) were re-sighted three times in total in SEL waters. On the contrary, no individual dolphin was sighted at all in NEL, DB or EL survey area during the 2022-23 monitoring period.

Among the 115 identified individuals from the AFCD/HZMB combined dataset, the majority of them were re-sighted only a few times, but some of them were repeatedly re-sighted, indicating their strong reliance on Hong Kong's waters as an important part of their home range. For example, 33 individuals were re-sighted five times or more, while nine individuals were re-sighted ten times or more in the

combined dataset during the relatively short study period. Furthermore, only eleven individuals were re-sighted with their calves in 2022-23. The mothers that were re-sighted with young calves (either unspotted calf or unspotted juvenile) will be closely monitored, as their survival is critical for the long-term viability of the dolphin population, especially in light of the dramatic decline in calf occurrence in the past decade (see Section 5.4.2).

Since 2015, a total of 86 frequently-occurring individuals (with 20 or more re-sightings in the past decade) have disappeared from Hong Kong's territorial waters. The total annual numbers of missing individuals from Hong Kong's waters have fluctuated in recent years. Despite a small dip with only eight individuals went missing in 2019, and with three individuals reappeared in 2022 after disappearing for several years, the number of missing individuals has remained high in the past three years (13 in 2020, 12 in 2021 and 14 in 2022). Some notable missing individuals during 2022 included NL182, WL68 and WL98, which were re-sighted 58, 33 and 32 times respectively during the five-year period of 2017-21. Furthermore, seven of the 14 individuals went missing in 2022 have actually disappeared since early 2021, so their disappearance has been well over two years already. Among the 86 missing individuals since 2015, only four of them have been sighted across the border since their absence in Hong Kong's waters, and 2019 was the last year when monitoring surveys and associated photo-ID works were conducted in Guangdong waters. This highlights the importance of the cross-boundary survey works across the entire Pearl River Estuary, as not only this would provide information on cross-boundary movements of individual dolphins, but could also confirm if individuals that have disappeared from Hong Kong's waters may still be alive across the border.

5.2. Distribution

5.2.1 Distribution of Chinese White Dolphins

During the 2022-23 monitoring period, CWD were frequently sighted along the west coast of Lantau Island, and to a lesser extent in the coastal waters (especially between Fan Lau and Kau Ling Chung) in SWL survey area (Figure 3). On the contrary, they have mostly disappeared from the entire NWL survey area (with the exception of two rare sightings made at the southwestern end near the HKLR alignment), and also seldom occurred in the southern and eastern portions of South Lantau waters. Moreover, no dolphins were sighted at all in DB, NEL and EL survey areas where are part of the known dolphin habitat (Figure 3).

In 2022 alone, from the combined effort of the AFCD and HZMB-related surveys,

dolphin occurrence was the highest along the west coast of Lantau, while they also occurred regularly in the northwest portion of the South Lantau waters (Figure 4). A closer look at the North Lantau region revealed that CWD mostly occurred in northwestern end of the region (mainly around Lung Kwu Chau area, and a sighting each near Black Point and Sha Chau), but rarely occurred to the west of the airport (Figure 5). However, as consistently recorded in recent years of monitoring surveys in North Lantau waters, no dolphin was found at all in the central and eastern portions of the region, including the peripheral area of the Three Runway System (3RS, also known as the Airport's Third Runway) project work zone as well as the footprints of the HZMB at the juncture of NWL and NEL survey areas.

In WL waters, dolphins occurred much more frequently and evenly distributed throughout the area in 2022 (Figure 6). Higher concentration of dolphin sightings can be found near Tai O Peninsula, Kai Kung Shan, Peaked Hill and near Fan Lau. As in recent years, the dolphins generally occur more frequently along the inshore waters of WL, but less frequently further offshore along the western HKSAR boundary. Notably, dolphins appeared to occur much less frequently at the southern and northern ends of the survey area, with the latter overlapped with the HKLR alignment (Figure 6).

In the South Lantau region, the only concentration of dolphin sightings was found toward the northwestern end near the Fan Lau Peninsula, while other sightings were scattered along the coastal waters between Kau Ling Chung and the Shui Hau Peninsula (Figure 6). On the contrary, with the exception a handful of sighting made to the west of the Soko Islands, the dolphins have mostly disappeared in the southern half of the SWL survey area, as well as the entire SEL survey area (except a lone dolphin sighted to the southeast of Shui Hau Peninsula), despite a considerable amount of survey effort made in these areas.

5.2.2. Distribution of finless porpoises

From April 2022 to March 2023, the only concentration of porpoise sightings occurred in surrounding waters of Tai A Chau (Figure 7). On the contrary, only a handful of porpoise sightings were made a few kilometres to the south and west of Shek Kwu Chau, near Cheung Chau and within Pui O Wan, and at the offshore waters to the east of the Po Toi Islands (Figure 7). No sighting was made around Lamma Island and EL waters, despite more than 1,000 km of line-transect survey effort being spent there during the 2022-23 monitoring period.

Examination of temporal changes in porpoise distributions in the past four years

(2019-22) revealed that despite the offshore waters between the Soko Islands and Shek Kwu Chau being consistently and frequently used by the porpoises in the past (see Hung 2002), their occurrences in these waters have dramatically diminished in the past two years (Figure 8). Moreover, a few porpoise sightings were made at the western portion of the South Lantau region only in 2021, where porpoises were mostly absent in this area in 2019, 2020 and 2022. Notably, contrary to their frequent usage in 2019 and 2020, the surrounding waters of Shek Kwu Chau were seldom used by porpoises in the past two years, and such avoidance has also been extended to the southern waters of Cheung Chau. In the eastern survey areas, although their usage has fluctuated across the four-year period, the porpoises appeared to occur more frequently around the Po Toi Islands in 2019 and 2021, but occurred more often in the offshore waters instead in 2020 and 2022 (Figure 8).

5.3. Habitat Use

5.3.1. Habitat use patterns of Chinese White Dolphins

Habitat use patterns of CWD were examined using the quantitative grid analysis, to calculate the SPSE and DPSE values (i.e. sighting densities and dolphin densities, respectively) in all grids among the six survey areas where they occurred regularly in the past (see Hung 2008). These patterns were also compared to the annual patterns observed in recent years.

In 2022, all grids with high dolphin densities were concentrated along the coast of WL and the western end of SWL, mainly extending from Tai O Peninsula toward Fan Lau Peninsula (Figure 9). Such habitat use pattern of the dolphins has also been consistently recorded in recent past years (Hung 2021, 2022). However, the nine grids that recorded dolphin occurrence within the NWL survey area were all in very low densities (with only a single sighting with a handful of individuals among these grids), while the rest of the North Lantau region (including Deep Bay) did not record any dolphin occurrence at all. Furthermore, the central portion of South Lantau waters (mainly the inshore waters) only recorded low to moderately low dolphin densities, while they have mostly avoided the eastern portion for the entire year (Figure 9).

<u>Temporal changes in dolphin habitat use patterns</u>

A comparison was made among the habitat use patterns over the past nine years (2014-22) to examine the temporal changes in dolphin densities in the western waters of Hong Kong. In WL, more intense habitat use was recorded with high densities among most grids during the period of 2014-15. Since then, dolphin densities diminished progressively for the most parts of the area, even though there appears to be

slight rebounds observed in 2018-19 as well as in 2021-22 (Figure 10). Notably, dolphin usage in the northern portion of the WL survey area, which overlapped with the HKLR alignment, have been consistently low since 2016, when compared to the earlier years during the initial phase of HKLR construction. Dolphin usage should be continuously monitored in their priority habitats in WL waters, especially for the examination of the long-term impact of the bridge alignment on the north-south movement of individual dolphins between the North and West Lantau regions.

In SWL waters, after a resurgence of dolphin habitat use in 2014-15, such use has continued to diminish in recent years, especially in the past three years of 2020-22 (Figure 10). In the past three years, the few grids around the Fan Lau Peninsula has been the only area in SWL waters with consistently high dolphin densities, whereas their usage elsewhere has been low to moderately low, and quite scattered mostly in the northern portion of the survey area.

In the North Lantau region, a dramatic decline in dolphin habitat use pattern has been well documented in recent years, with greatly diminished dolphin occurrences since 2013 (see Hung 2021, 2022). Such trend continued in 2022, with dolphin occurrence declining to extremely low level in this region (Figure 11). In the past seven years, dolphin usage has been largely confined to the western end of the North Lantau region, and in the past four years their habitat utilization was mostly restricted to the SCLKCMP in generally low densities (Figure 11). The continuous absence of dolphins in the central and eastern portions of the region since 2015 is of great concern, as there have been no signs of recovery in dolphin habitat use after the completion of marine works associated with the HZMB construction as well as the massive reclamation works associated with the 3RS project in recent years.

Temporal changes in dolphin habitat use patterns among six key habitats

Temporal trends in dolphin usage at six key habitats were examined for the past two decades (2003-22), which included the four existing marine parks around Sha Chau and Lung Kwu Chau, the Brothers Islands, the southwestern corner of Lantau, and the Soko Islands, as well as two other “hot spots” at Tai O and Black Point where dolphins regularly occurred in the past (Figure 12). To examine dolphin usage over these six key habitats that encompass a suite of grids, the number of on-effort sightings and amount of survey effort were pooled together from those grids, to calculate dolphin densities (DPSE) as a whole for each year during the 2003-22 period and track any changes over the years.

Within the Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP, with 17 grids), there has been a continuous decline in dolphin usage since 2013, and such usage fell even further to the lowest level in the past four years of 2019-22 (Figure 13). Such an alarming decline raises serious concerns because this area has long been considered important dolphin habitat in Hong Kong (Hung 2008). Even at the historically lowest level of dolphin occurrence in recent years, the waters around Lung Kwu Chau remain the only habitat that is still being consistently utilized by dolphins in the North Lantau region, but at a much lower level in recent years as observed in Figure 11.

Furthermore, after a dramatic decline in dolphin usage since 2011, the Brothers Marine Park (BMP, with 15 grids) recorded zero dolphin density in seven consecutive years in 2015-22 (Figure 13). Although dolphin usage was expected to recover after the completion of most marine works associated with HZMB construction and the establishment of the BMP in December 2016, their occurrence around the Brothers Islands remains extremely rare in recent years. Notably, passive acoustic monitoring revealed that a very low level of dolphin detections was recorded within this marine park in the past several years, and most of these rare detections were made during night-time (Wang and Hung 2022). With the near-absence of dolphins in this once-important dolphin habitat for quite a long time now, acoustic monitoring of this area would be a useful method for detecting any signs of recovery in dolphin usage even at very low levels.

Besides a noticeable spike in dolphin usage in 2014 and 2015 within the Southwest Lantau Marine Park (SWLMP, with 15 grids), such usage has remained fairly steady and high in the past decade (Figure 13). Notably, this marine park has consistently recorded the highest levels of dolphin usage among all key dolphin habitats in western Hong Kong in the past two decades, and this last remaining stronghold of the top priority dolphin habitats should be closely monitored to examine any sign of temporal changes in their future usage.

After a dramatic decline in dolphin densities was detected in the South Lantau Marine Park (SLMP, with 30 grids) in 2018, dolphin usage there rebounded to a slightly higher level in 2019, before another steady decline to the lowest level in 2022 during the past two decades (Figure 13). The previous rebound was thought to be linked to the drop in high-speed ferry volume in the South Lantau Vessel Fairway in 2019 followed by a complete halt since February 2020 due to the Covid-19 pandemic (Hung 2021), but it is puzzling to observe such low level of dolphin occurrence within this

marine park in 2021 and 2022 in light of the complete halt of high-speed ferry traffic continued throughout these two years. This trend in dolphin usage within this marine park should be continuously monitored, especially after the resumption of the ferry traffic in the beginning of 2023.

Once identified as a critical dolphin habitat in the western waters of Hong Kong, the waters around Tai O Peninsula (with four grids) recorded a steady decline in dolphin densities from the highest in 2009 to the lowest in 2022 (despite two slight rebounds recorded in 2019 and 2021) (Figure 13). Such trend is worrying and should be monitored closely in coming years. On the other hand, the dolphin usage at Black Point (with four grids) fluctuated greatly in earlier years with no apparent trend. After a near-complete absence from this area between 2014 and 2018, there was a small spike in dolphin usage in 2019 before falling to a very low level in 2020 and then a complete absence once again in 2021 and 2022 (Figure 13). As this area is situated at the border of a proposed large-scale reclamation site at Lung Kwu Tan and only a few kilometres away from the Sha Chau and Lung Kwu Chau Marine Park, special attention on dolphin habitat use in this area in the near future is needed.

5.3.2. Habitat use patterns of finless porpoises

The spatial pattern of porpoise habitat use revealed that their more heavily utilized habitats in 2022 were limited to the offshore waters in SWL survey area, especially to the south and east of the Soko Islands (Figure 14). In particular, the waters near Shek Kwu Chau were rarely utilized by porpoises in 2022 (Figure 14), and such diminished occurrences of porpoises have occurred since the construction activities for IWMF commenced a few years ago in this area. Notably, although a number of grids in eastern part of LM survey area as well as the PT survey area recorded very high porpoise densities in 2022, those results should be treated with cautions as that could be heavily biased by the relatively low amount of survey effort conducted during the 12-month study period.

In order to increase the overall sample size, the survey effort and porpoise data collected from 2018-22 for SWL, SEL and LM survey areas were pooled and analyzed for a longer period in order to obtain sufficient survey data to provide a better representation of porpoise habitat use pattern in the southern waters of Hong Kong in recent years. Since the porpoises in Hong Kong exhibit pronounced seasonal patterns of distribution, with rare occurrence in each survey area during certain periods of the year (Hung 2005, 2008; Jefferson et al. 2002), the five-year dataset for SWL, SEL and LM survey areas was further stratified into winter/spring (December through May) and

summer/autumn (June through November) periods to deduce habitat use patterns of porpoises for the respective dry and wet seasons.

During the dry season (i.e. winter and spring months) in 2018-22, the grids with high porpoise densities mainly clustered at the offshore waters between the Soko Islands and Shek Kwu Chau, as well as the coastal waters immediately to the south and west of Tai A Chau (Figure 15). However, there has been a dramatic decline in porpoise densities near Shek Kwu Chau since the construction of the IWMF commenced in 2018 (see below on temporal changes in porpoise habitat use patterns). Furthermore, the porpoises seldom utilized the western portion of the South Lantau region, the offshore waters to the south of Cheung Chau, and the northern portion of the LM survey area during the 5-year period (Figure 15).

On the contrary, the porpoise usage during the wet season in South Lantau and Lamma waters was drastically different from the dry season. For example, almost all grids recorded porpoise usage in South Lantau waters were located at the offshore waters (with the exception of a few grids near Shui Hau Peninsula) with low to moderately low densities, and only a handful of grids to the southwest of Lamma Island recorded very low porpoise usage (Figure 16). Notably, a few grids at the eastern portion of LM survey area (or to the south of the Hong Kong Island) recorded relatively high porpoise densities during the wet season, but these results could still be biased as the survey effort accumulated over the five-year period in these areas was relatively low with less than six units of survey effort in each grid throughout this area.

Temporal changes in porpoise habitat use patterns

To examine the recent temporal changes in porpoise densities at various important habitats in southern waters of Hong Kong, comparisons were made on annual patterns of porpoise habitat use across eight-year period in 2015-22. In the earlier years, porpoise usage at the offshore waters between Shek Kwu Chau and the Soko Islands (2016-17) as well as to the south of Cheung Chau (2015-16) was at a consistently high level. However, such usage evidently changed in the past five years of 2018-22, with noticeable decline at the abovementioned important porpoise habitats, especially around Shek Kwu Chau and to the south of Cheung Chau (Figure 17). Such dramatic decline can be linked to the reclamation and other construction activities in relation to the construction of IWMF that commenced in 2018. Furthermore, porpoise usage of the waters to the west of Lamma Island has fluctuated across the years, with more extensive and intense usage in 2016 and 2017 but more sporadic occurrences in 2019 and 2020 before falling to the lowest levels in 2021 and 2022 (Figure 17).

Three key porpoise habitats in South Lantau (including the SLMP, Shek Kwu Chau and Pui O Wan; see Figure 12) were examined for temporal trends in their usage across the 15-year period between 2008 and 2022. Similar to the CWD, to examine temporal trends in porpoise usage of these key habitats that encompass a suite of grids, the number of on-effort porpoise sightings and unit of survey effort were pooled together from those grids, to calculate porpoise densities (DPSE) as a whole for each year from 2008 to 2022.

Porpoise usage fluctuated greatly at the SLMP (with 30 grids) in the past 15 years, starting at a lower level in 2008-09 (Figure 18). Since then, there was a steady increase in porpoise usage of this area to the highest level in 2014. However, in the past seven years, porpoise usage within this marine park has become less stable, with notable drops in 2016 and 2019, while such level remained moderately low in the past two years in 2021-22. Further monitoring would be needed to confirm whether the recovery in porpoise occurrence within SLMP revealed in the PAM data is valid or not.

The inshore waters of Pui O Wan (with nine grids) were more intensely used by porpoises in the earlier years in 2008-09, but then such usage became infrequent between 2010 and 2013 (Figure 18). Even though the porpoise usage rebounded to a higher level in the subsequent years, there were noticeable drops in 2018, 2020 and 2021, then no usage was recorded in 2022 within this once-important porpoise habitat. Such decline in recent years coincided well with the dramatic decline in porpoise usage at the nearby Shek Kwu Chau.

The surrounding waters of Shek Kwu Chau (with eight grids) were consistently utilized by the porpoises as an important habitat in the first decade of the 15-year period (i.e. 2008-17), especially with a steady increase in porpoise usage starting from 2013 to reach a much higher level in 2016 (Figure 18). However, there has been a sharp decline in porpoise usage since 2018 to reach to the lowest level with nearly complete absence in 2021 and 2022. The dramatic decline in porpoise usage of this habitat in the past five consecutive years and their near-absence in the past two years in a row has been closely linked to the construction activities near Shek Kwu Chau in association with the reclamation works for IWMF, as the preparation works began in March 2018 and the reclamation works commenced in June 2018. Such a sharp decline at this once-critical porpoise habitat raises grave concerns. Undoubtedly the habitat around Shek Kwu Chau can no longer serve the important functions for the porpoises that regularly occur in southern waters of Hong Kong. Future trends in their habitat use

near Shek Kwu Chau as well as for the entire southern waters of Hong Kong should be closely monitored as the IWMF construction works will be completed soon.

In recent years, a marine infrastructure project, namely the Hong Kong Offshore LNG Terminal (HKOLNG) construction, commenced in late 2020 through late 2022 at the offshore waters in South Lantau region adjacent to the South Lantau Marine Park (Figure 12). To examine the potential impact of jetty construction and terminal operation for the project, porpoise usage within the project footprint (overlapped with three grids O35, P34 and P35) is examined for the past six years with consistent annual survey effort among the three grids overlapping the project site. After an increase in porpoise usage to the highest level in 2018, such usage dropped noticeably in 2019 and remained at a low level in 2020, before a marked increase in 2021 then followed by another drop in 2022 to the previously low level in 2019/20 (Figure 18). It appeared that the fluctuation in porpoise usage in these offshore waters of South Lantau did not correspond well with the construction schedule of HKOLNG, as the drop in porpoise usage during 2019 was observed well before the commencement of construction, while the rebound in porpoise usage in 2021 happened during the bulk of the construction. It remains to be seen though whether the existence and operation of the HKOLNG jetty would impact porpoise usage in the long run, which should be closely monitored.

5.4. Group Size, Calf Occurrence and Activities

5.4.1. Group sizes of dolphins and porpoises

During the 2022-23 monitoring period, the group sizes of CWD varied from singletons to 21 animals, with an overall mean of 3.6 ± 3.35 (n = 187). Among the three areas where dolphins regularly occurred in 2022-23, the mean group sizes were the lowest in WL (3.5) and the highest in NWL (3.9, but based on a very small sample size of eight sightings) and SWL (3.9) (Table 1a). Only three singletons were sighted in SEL. Mean group sizes were similar across the four seasons as it was only higher in summer (4.3) and slightly lower in autumn (2.9) and spring (3.2). Similar to past monitoring periods, the majority of dolphin groups sighted in 2022-23 were small, with 52.4% of the groups composed of 1-2 animals, and 72.7% of the groups with fewer than five animals. Only 11 out of the 187 dolphin groups consisted of more than ten animals (Figure 19).

The examination of long-term trend in annual mean dolphin group sizes since 2002 revealed that the mean group sizes in recent years have stabilized with remarkably similar levels (i.e. 3.23-3.28) during the six consecutive years of 2016-21, which was then followed by a modest increase in 2022 (3.55) (Figure 20). However, it should be

noted that among different survey areas, the mean group size in NWL dropped to the lowest level in the past five consecutive years of 2018-22. After dropping steadily in the recent years of 2019-21, the mean group size in SWL experienced a strong surge in 2022 (Table 1a). Temporal changes in mean dolphin group sizes should be continuously monitored, as this could be indicative of changes in their foraging strategies in response to increased disturbance from various sources or changes in prey distribution and overall prey resources in the western waters of Hong Kong.

Distribution of dolphins in different group size categories in 2022 is shown in Figure 21. Larger dolphin groups occurred predominantly along the WL coastline and at the tip of Fan Lau Peninsula, with the very large groups (10+ dolphins per group) occurring near Tai O Peninsula, Kai Kung Shan, Peaked Hill, and between Fan Lau and Kau Ling Chung (Figure 21). Elsewhere, only two medium-sized groups occurred in the North Lantau region, and were located to the east of Sha Chau and to the west of the airport platform. In contrast, distribution of the smaller dolphin groups closely resembled the overall distribution around Lantau waters, even though almost all groups that occurred at the periphery of the overall distribution (e.g. around Lung Kwu Chau and near Shui Hau Peninsula) were very small.

For the finless porpoises, their group sizes during the 2022-23 monitoring period varied from singletons to 11 animals, with an overall mean of 2.2 ± 1.75 (n=55). The majority of these groups were very small, with 72.7% being composed of 1-2 animals, and all except five groups (or 90.9% of all groups) had fewer than five animals (Figure 22). The mean porpoise group size in the SWL (2.5) was above the overall mean, but the one in SEL (1.7) was well below the overall mean respectively (Table 1b). Only three groups of six animals were sighted in LM survey area.

Temporal trend in annual mean porpoise group sizes were examined between 2007 and 2021 (Figure 23). Over the 16-year period, mean porpoise group sizes were on a steady rise from the lowest in 2009 to the second highest recorded in 2016 (besides a large spike observed in 2012). Since then, other than another spike in 2019, the mean porpoise group size has fallen to a lower level in recent years (including the second and third lowest in 2021 and 2022 respectively during the 16-year period). It would be critical to continuously monitor the trend in porpoise group sizes, as that would provide insights on whether there are any changes in the porpoises' foraging strategies in response to anthropogenic impacts such as increased vessel traffic disturbance or changes in prey distribution and resources.

Distribution of porpoises in different group sizes in 2022 showed that the several larger porpoise groups mainly occurred at the offshore waters near the Soko Island in South Lantau waters, as well as another one to the offshore waters of PT survey area near the eastern HKSAR boundary (Figure 24). In contrast, almost all porpoise groups sighted in the eastern survey areas of PT and LM were generally small. The important porpoise habitat identified in the offshore waters between Shek Kwu Chau and the Soko Islands in recent years were also dominated by smaller groups of porpoises (Figure 24).

5.4.2. Occurrence of dolphin calves

Of the 516 dolphins sighted altogether in 2022, only one unspotted calf (UC, or newborn calf) and 10 unspotted juveniles (UJ, or older calves) were identified with their respective age classes, with these young calves (i.e. UC and UJ combined) comprising only 1.9% of the total. After a large and steady decline between 2013 and 2018, the annual percentage of young calves in Hong Kong waters appeared to rebound slightly in 2019-21, but was then followed by another drop in 2022 (Table 2; Figure 25). Notably, when compared to the earlier years, calf occurrence in the past eight years still remained at a very low level.

The very infrequent occurrence of dolphin calves in recent years is of great concern, as such low level of recruitment casts a very worrisome future for the local dolphin population. Notably, a recent examination on life history parameters deduced from the long-term photo-identification data also confirmed once again a low survival rate of newborns (Hung 2021). Since the mother-calf pairs are more susceptible to anthropogenic disturbances, the exceptionally low percentages of young calves in recent years certainly raises concerns about the suitability of Hong Kong's waters for reproduction and the rearing of calves, with the presence of the ever increasing adverse impacts from various coastal development projects and high level of vessel activities within their habitats around Lantau Island.

Distribution pattern of young calves in 2022 revealed that their sightings were only concentrated at the small stretch of coastal waters between Tai O Peninsula and Fan Lau Peninsula (Figure 26). On the contrary, no young calves were found throughout the North Lantau Region and almost the entire South Lantau region (except around the Fan Lau Peninsula) in 2022.

5.4.3. Activities of dolphins

In 2022, 25 (or 15.2% of the total) and six (or 3.6%) groups of dolphins were

observed to be engaged in feeding and socializing activities, respectively. Notably, none was observed to be engaged in traveling or milling/resting activity. Annual percentages of socializing activities remained at similarly low levels over the past seven years, but the percentage of feeding activities has rebounded noticeably in two consecutive years in 2021 and 2022 after remaining at very a low level during the five consecutive years of 2016-20 (Figure 27).

Distribution of dolphins engaged in different activities in 2022 is shown in Figure 28. Besides the single group to the east of Sha Chau, and a few groups scattered near Shek Pik and the Shui Hau Peninsula respectively, the majority of dolphin groups associated with feeding activities were found along the stretch of WL coastlines, with concentrations around Tai O Peninsula, Kai Kung Shan and Fan Lau Peninsula. On the contrary, dolphin sightings associated with socializing activities were mostly concentrated around Fan Lau Peninsula, with another two scattered near Tai O Peninsula and at Peaked Hill.

5.4.4. Dolphin associations with fishing boats

Of the 187 groups of dolphins sighted during the 2022-23 monitoring period, 14 (or 7.5% of all groups) were associated with operating fishing boats. Ten of these groups were associated with purse-seiners, while three other groups were associated with gill-netters (two groups) and a shrimp trawler (one group) respectively.

After remaining at a low level in the past three years of 2018-20, the overall annual percentage of dolphin sightings associated with fishing boats was at a higher level in consecutive years of 2021 (7.1%) and 2022 (9.7%) during the past decade. In 2022, the seven dolphin groups associated with operating gill-netters were mostly concentrated between the HKLR alignment and Peaked Hill (with another group to the east of Shui Hau Peninsula), while the nine groups associated with operating purse-seiners were located between Fan Lau Peninsula and Shek Pik as well as near Kai Kung Shan (Figure 29).

5.5. Encounter Rate

5.5.1. Encounter rates of Chinese White Dolphins

To calculate the encounter rates of CWD, only survey data collected in Beaufort 0-3 conditions was included in the analysis as in past monitoring periods. From April 2022 to March 2023, the combined encounter rate of dolphins from the four survey areas of NEL, NWL, WL and SWL was 2.6, which was the second lowest figure among all monitoring periods since 2002-03, which was only slightly higher than the lowest

figure recorded in 2021-22 (Figure 30a & Table 3). In the past two decades, after a steady decline of dolphin encounter rates in the past eight monitoring periods in 2011-19 then followed by a slight rebound in 2019-20, the rate dropped slightly to a lower level in 2020-21 but fell even further to the lowest level in the following two monitoring periods in 2021-22 and 2022-23. Among different survey areas, the encounter rates in NWL during the past four monitoring periods were at the historic lows, while the 2022-23 encounter rate in the WL survey area rebound slightly and stayed at a similar level to 2021-22 after falling to the lowest level in 2020-21 (Figure 30b). Steady decline of dolphin encounter rates in SWL was also detected in the past four monitoring periods.

As consistently recorded in past monitoring periods during the past two decades, WL continued to have the highest dolphin encounter rate (14.0) among the three survey areas with their occurrences, and was considerably higher than the ones in SWL (2.5) and NWL (0.3) (Table 3). The encounter rate in NEL was once again zero in 2022-23, as no on-effort dolphin sighting was made during 1,787 km of survey effort. Similar to the previous nine monitoring periods, dolphin encounter rate in the present period was once again higher in SWL than in NWL, which is the opposite to the observations made in earlier years (Table 3).

Temporal trend in annual encounter rate

Temporal trends in annual dolphin encounter rates in the past two decades were examined for the overall combined areas (i.e. NEL, NWL, WL and SWL), as well as in the North and West/Southwest Lantau regions. After a slight rebound in 2021 from the previous low level in 2018-20, the overall encounter rate of the combined areas dropped to the similarly low level in 2018-20 once again (Figure 31a). Furthermore, there was a clear declining trend over the past two decades for the combined areas. Furthermore, the dolphin encounter rate in the entire North Lantau region (NEL and NWL survey areas combined) in 2022 reached the lowest level ever, and such rate has remained at an exceptionally low level in four consecutive years from 2019-22 (Figure 31b). On the contrary, besides the two dips in 2018 and 2020, the dolphin encounter rate for the West/Southwest Lantau region has remained relatively stable since 2016 (Figure 31b).

5.5.2. Encounter rates of finless porpoises

Porpoise encounter rates were calculated using data collected in Beaufort 0-2 conditions as in past monitoring periods. From April 2022 to March 2023, the combined porpoise encounter rate of SWL, SEL, LM and PT survey areas was 1.8

sightings per 100 km of survey effort (Table 4), which was the lowest among the past 16 monitoring periods (with the second lowest recorded in 2020-21) (Figure 32). Among the four survey areas with porpoise occurrences, the encounter rate was the highest in SWL (3.7), while the ones in SEL (2.2) and PT (1.3) were slightly above and below the overall rate respectively and the one in LM (0.4) was extremely low during this monitoring period.

Annual porpoise encounter rate from the combined areas of SWL, SEL, LM and PT indicates that the overall porpoise usage of Hong Kong's waters have steadily increased from the lowest in 2005 to the highest in 2014, then followed by a steady decline from 2014 to a much lower level in recent years (Figure 33a). In fact, such encounter rate in 2022 (2.3) was the lowest in the past decade, and the second lowest since 2004 (with the previous lowest in 2005 with 2.1).

Furthermore, great variability in their annual encounter rates was evident among different areas with porpoise occurrence (Figure 33b). In South Lantau waters, after dropping to the lowest in 2021 since 2010, such encounter rate rebounded slightly but still remained at a lower level. The annual encounter rate remained very low in LM for six consecutive years in 2017-22, while the one in PT appeared to vary greatly across different years with no apparent trend (Figure 33b).

To account for the potential frequent movements across the SEL, SWL and LM survey areas in winter and spring months (i.e. their peak season of occurrences in these areas), data from these three areas were pooled to examine the temporal trend in annual porpoise encounter rates in the southern waters of Hong Kong collectively during the dry season. After reaching the highest level in 2013 in the past decade, such encounter rate was on a decline, reaching the lowest ever in 2021, before another slight rebound occurred in 2022 (Figure 34).

5.6. Density and Abundance

5.6.1. Estimates of dolphin density and abundance in 2022

Densities and abundance of CWD were estimated for the NEL, NWL, WL and SWL survey areas using the line-transect analysis method, following similar approach as in previous years of dolphin monitoring in Hong Kong (see Hung 2021, 2022). The annual estimates deduced from the 2022 vessel survey data can be used to assess the long-term temporal trend in dolphin occurrence in Hong Kong. Only effort and sighting data collected from the four areas during Beaufort 0-3 conditions were used in the analysis and this included 6,648.7 km of survey effort and 153 dolphin groups from

the four areas for density and abundance estimation in 2022 (Table 5a).

Among the four survey areas, WL recorded the highest dolphin density, with 87.32 individuals/100 km^2, which was more than six times and 58.2 times higher than the densities in SWL and NWL, respectively (Table 5a). Notably, the WL figures have fluctuated in recent years with no consistent trend, as they have rebounded in 2019 and 2021 and 2022 after dropping to lower levels in 2017-18 and 2020 respectively. On the contrary, dolphin density in SWL fell in three consecutive years of 2020-22, after a noticeable increase from 2018 to 2019. In contrast, the density estimate for NWL (1.50 individuals/100 km^2) dropped to the lowest level in 2022 after a slight rebound in 2021 and has remained at an extremely low level in five consecutive years of 2018-22 when compared to earlier years. Furthermore, as in the previous seven years, dolphin density and abundance could not be estimated for NEL in 2022 because no dolphin was sighted in this area for the entire year.

In 2022, the abundance estimates of CWD were 24, 9 and one dolphins in the WL, SWL and NWL survey areas, respectively, while no dolphins were observed in the NEL survey area. As a result, the combined estimate for the four areas was 34 dolphins (Table 5b). After a steady decline in combined abundance estimates from 188 dolphins in 2003 to the lowest of 32 dolphins in 2018, a sharp rebound was observed in 2019 (52 dolphins), but followed by noticeable drops in the most recent estimates in 2020 and 2021, then to the second lowest level in 2022 (Figure 35; Table 5b).

5.6.2. Temporal trends in dolphin abundance

Temporal trends of annual dolphin abundance in NWL and NEL (2001-22), SWL (2002-22) as well as WL (2003-22) were further examined, where consistent amount of survey effort (at least 500 km of annual survey effort) has been conducted in these four areas of major dolphin occurrence. In SWL, temporal trend of annual estimates was only examined since 2010 but not for a longer period, as consistent survey effort (at least 500 km of survey effort per year) was not collected annually prior to 2010. Alternatively, biennial estimates were deduced in SWL for 2002-03, 2004-05, 2006-07 and 2008-09 to examine the overall temporal trend in dolphin abundance over a longer period.

Firstly, the temporal trend in SWL showed fluctuations across the years, with a marked decline from the highest in 2002-03 (30 dolphins) to the lowest in 2006-07 (six dolphins) (Figure 36). Since then, the annual abundance estimates have remained at a lower level in subsequent periods, before a noticeable rebound in 2014 and 2015.

Thereafter, abundance estimates dropped to much lower levels in the three subsequent years of 2016-18, before another rebound occurred in 2019, then followed by a steady decline in three consecutive years of 2020-22 (Figure 36; Table 5b). Notably, the associated CVs of the annual abundance estimates in SWL always remained moderate and within the range of 20-40% (except for the biennial estimates in 2002-03 (45%) as well as the annual estimates in 2010 (67%) and 2012 (54%)), so the estimates should be reliable for most years.

In WL, dolphin abundance steadily decreased from 54 dolphins in 2007 to only 17 dolphins in 2012 (Figure 37; Table 5b). After a rebound in 2013 and 2014 (with 23 and 36 dolphins, respectively), there was another steady decline in the following years of 2015-17 to the lowest level of 16 dolphins in 2017. Thereafter, the annual abundance varied moderately within the range of 19-29 dolphins in the past five years of 2018-22 (Figure 37).

In contrast, dolphin abundance in the North Lantau region has shown a dramatic and consistent decline in the past two decades. In NEL, the decline was appalling, dropping from the highest in 2001 (20 dolphins) to only one dolphin in 2014 and then to zero for eight consecutive years (2015-22) (Figure 37). Dolphin abundance in NWL also dropped steadily and steeply from the highest in 2003 (84 dolphins) to an extremely low level in the past four years with only 1-4 dolphins, and such decline was more than 95% since 2003, or 90% since 2012.

As the dolphin numbers in North Lantau waters have dropped to extremely low levels (with zero dolphin in NEL since 2015, and only one dolphin in NWL in 2022), estimating their abundance with reasonable precision becomes increasingly difficult to near impossible. Although increasing survey effort may compensate for decreasing sighting rates, there have already been large amount of survey effort allocated to North Lantau waters with the additional HZMB-related EM&A data, and it is still impossible to estimate dolphin abundance with any reliability when the number drops to extremely low numbers. Therefore, there should be a rethink of monitoring strategy to avoid the ineffectiveness in monitoring dolphin occurrence in North Lantau waters through the traditional line-transect vessel survey method adopted in the past 25 years.

In the past several years, the PAM studies have proved to be an valuable monitoring strategy to assess dolphin occurrences in western waters of Hong Kong, especially in North Lantau waters when such occurrence has remained at historical low level in recent years. Furthermore, most dolphin activities within BMP and

SCLKCMP occurred primarily outside of daylight hours, thus providing stronger support that passive acoustic monitoring method is more suitable than the visual monitoring method in assessing dolphin occurrence and associated temporal trend in North Lantau waters. In fact, even at extremely low levels of dolphin acoustic detections at BMP in recent years, year-over-year comparison was still able to reveal a steady decline (Wang and Hung 2021, 2022). Ideally, the PAM programme should serve to complement the visual monitoring and provide critical information about the usage of areas by cetaceans during times when visual observations cannot be conducted (Wang and Hung 2022). However, in the case of North Lantau waters, apparently the passive acoustic monitoring should have a higher priority over the visual monitoring programme in the foreseeable future. If resources are limited and a decision is needed to be made between the two monitoring methods, there should be a strong consideration to continue the PAM studies instead of vessel-based monitoring for the long-term monitoring of cetaceans in North Lantau waters.

5.7. Range Use, Residency and Movement Patterns of Individual Dolphins

5.7.1. Individual range use, residency pattern and core area use

Individual Range Use

In order to examine the range use of individual dolphins, the 95% UD kernel ranges of 95 individuals that occurred in Hong Kong's survey areas in 2022 (as identified through photo-identification works) were deduced using the fixed kernel method, and their ranging patterns are shown in Appendix V. In addition, 87 of these individual dolphins that occurred in 2022 and also had a history of being sighted ≥15 times were further examined for their range use and residency patterns (Table 6).

Among these 87 individuals, all of them had occurred in WL in the past, while the majority of them had also occurred in NWL (65.5%) and SWL (86.2%), and to a lesser extent in NEL (17.2%) and DB (8.0%) (Table 6). In contrast, only five and two individuals had been re-sighted in the SEL or EL survey area, respectively, as part of their historical range. Furthermore, 74 of these 87 individuals (or 85.1%) occupied ranges that spanned the waters of Hong Kong and the Mainland (Table 6), indicating cross-boundary movements by many individual dolphins that occur regularly in Hong Kong's waters. However, some of these individuals occurred just to the west of the HKSAR boundary without venturing much further into Lingding Bay (see Appendix V).

Residency Pattern

The residency patterns of the 87 individuals were further assessed by examining

their annual and monthly occurrences in Hong Kong. Overall, 58 and 29 individuals were identified as year-round and seasonal residents respectively (Table 6). Therefore, all of the assessed individuals were considered residents in Hong Kong, as they have been sighted consistently in the past 12 years (i.e. 2011-22), or in at least the past five consecutive years. Furthermore, based on the monthly occurrences of these individuals, one third of them only occurred in Hong Kong during certain months of the year, while the rest occurred here year-round (Table 6).

In addition to their residency patterns, attempts were made to classify the 87 individuals into the two social clusters that occurred regularly in Hong Kong (see Dungan et al. 2012), based on their overall range use at 95% UD level as well as core area use at 50% UD and 25% UD levels. Results indicated that nine and 64 individuals belonged to the northern and southern social clusters, respectively (Table 6). In addition, there were also 14 individuals that spanned their range use more or less evenly across North and West Lantau waters with frequent occurrences in both waters, and some of them (e.g. NL156, NL242, NL261) actually shifted their range use from North Lantau waters to WL and SWL waters in recent years (see Appendix V).

Core Area Use

The analysis on individual core area use revealed that four major core areas of dolphin activities are located around Lung Kwu Chau, the Brothers Islands, in SWL waters, and along the coast of West Lantau, with the latter further subdivided into Tai O, Peaked Hill and Fan Lau. Among the 87 individuals, 19 and 17 individuals occupied Lung Kwu Chau as their 50% and 25% UD core areas, respectively, while only four individuals (EL01, NL33, NL98 and NL123) occupied the Brothers Islands as their 50% core area as well as 25% UD core area (Table 6). Notably, less than half of these individuals that utilized Lung Kwu Chau and the Brothers Islands as their core areas belonged to the northern social cluster, and the rest of them spanned their range use across North and West Lantau waters.

In contrast, 75 individuals utilized the waters along the west coast of Lantau as their 50% UD and 25% UD core areas, respectively, with the majority of them belonging to the southern social cluster (Table 6). As there has been a surge of individuals expanding or shifting their range use into SWL waters in recent years, there were also five and two individuals that have utilized South Lantau waters as their 50% and 25% UD core areas, respectively.

5.7.2. Individual movement pattern

By combining all photo-identification data collected through the present monitoring study and other studies, movement patterns of individual dolphins within Hong Kong territorial waters in 2022-23 were broadly examined. From April 2022 to March 2023, 117 individuals were re-sighted a total of 473 times, with 80 individuals being re-sighted more than once (i.e. occurred at more than one location).

The examination of individual movement patterns between re-sightings revealed that only 50 individuals moved across different survey areas around Lantau in 2022-23. That included 18 individuals that occurred across NWL and WL survey areas, and 32 individuals that were re-sighted in both SWL and WL survey areas (Table 7). Moreover, nine individuals (NL321, NL332, SL59, WL17, WL28, WL79, WL294, WL304 and WL305) occurred in all three areas of NWL, WL and SWL, covering extensive ranges during the 12-month study period. As in recent monitoring periods, no sighting was made in NEL during the 2022-23 monitoring period so there was no movement of individuals into this once-important habitat.

With an extensive amount of photo-identification data being collected from different surveys, there were still a significant portion of individual dolphins sighted repeatedly within just a single survey area and did not range into neighbouring areas. These included 30 individuals that occurred exclusively in the WL survey area, but none of such occurrence was recorded in SWL or NWL survey area. The restricted movement within the small survey area of WL raises some concern, as this could be related to potential obstructions to movements across different survey areas as a result of human activities (e.g. vessel traffic) or infrastructure projects (e.g. reclamation platform or bridge structure as physical barrier).

The temporal trend in individual movement patterns across different survey areas was examined among the past 13 monitoring periods (Figure 38; Table 7), in order to provide insights into temporal changes in their intensity of movements as a result of various anthropogenic factors. Besides the dramatic decline in dolphin movements between NEL and NWL survey areas due to the absence of dolphin occurrence in NEL in recent years, there were other notable changes. For example, there was a continuous sharp decline in dolphin movements across the NWL and WL survey areas in recent monitoring periods, but such level in 2022-23 has slightly rebounded, although most of the individual movement into NWL from WL survey areas were near the boundary between these two areas without venturing further north to the Sha Chau and Lung Kwu Chau Marine Park (see Appendix V). Furthermore, there was also a

continuous decline in dolphin movements across SWL and WL in recent years but a slight rebound also occurred in 2022-23 for such movement between the two areas.

6. SCHOOL SEMINARS AND PUBLIC AWARENESS

During the entire 2022-23 monitoring period, HKCRP researchers were able to deliver 11 education seminars at local primary and secondary schools (with some held online) on behalf of AFCD to increase public awareness on the conservation of local cetaceans. PowerPoint presentations were prepared for the school talks with up-to-date information on both dolphins and porpoises gained from the present long-term monitoring programme. The talk materials included content such as the threats faced by local cetaceans, and conservation measures that AFCD has implemented to protect them in Hong Kong. Through this integrated approach of the long-term monitoring programme and publicity/education programme, the Hong Kong public can gain first-hand information from our HKCRP researchers, and their support will be vital to the long-term success in conservation of local cetaceans.

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Table 1a. Mean group size of Chinese White Dolphins among different survey areas in recent monitoring periods
(* denote the mean group size calculated from a sample size of one group)

Monitoring Period	Overall	Deep Bay	NE Lantau	NW Lantau	W Lantau	SW Lantau	SE Lantau
2013-14	3.4	4.0	3.2	3.5	3.4	3.2	N/A
2014-15	4.1	5.1	2.7	3.5	4.4	4.0	1.0
2015-16	3.8	2.0	1.0*	4.1	3.8	3.7	2.5
2016-17	3.3	N/A	1.0*	3.8	3.5	2.4	1.4
2017-18	3.0	3.7	5.0*	3.3	3.0	2.8	1.5
2018-19	3.1	2.3	N/A	2.4	3.6	2.7	1.0
2019-20	3.2	2.0	N/A	2.7	3.2	3.6	1.0
2020-21	3.1	N/A	N/A	2.4	3.3	3.1	1.0*
2021-22	3.4	N/A	N/A	2.9	3.7	2.4	N/A
2022-23	3.6	N/A	N/A	3.9	3.5	3.9	1.0

Table 1b. Mean group size of finless porpoises among different survey areas in recent monitoring periods
(* denote the mean group size calculated from a sample size of one group)

Monitoring Period	Overall	SW Lantau	SE Lantau	Lamma	Po Toi	Ninepins
2013-14	2.3	2.8	1.9	2.6	N/A	1.3
2014-15	2.7	3.5	2.6	3.1	1.9	2.6
2015-16	3.1	3.1	2.9	4.4	2.5	1.7
2016-17	2.7	2.4	2.7	3.3	3.3	2.2
2017-18	2.5	2.8	2.5	1.9	2.7	1.5
2018-19	2.7	2.1	3.1	2.3	2.0	3.0*
2019-20	2.6	2.7	2.2	2.4	3.4	3.5
2020-21	2.7	2.8	3.2	2.1	1.8	3.5
2021-22	2.0	1.5	2.6	2.1	2.1	2.0
2022-23	2.2	2.5	1.7	2.0	2.2	N/A

Table 2. Occurrences of unspotted calves (UC) and unspotted juveniles (UJ) in Hong Kong, including the their annual total number and percentage of the total

Year	No. of UC	UC% of total	No. of UJ	UJ% of total
2002	13	1.0%	74	5.5%
2003	22	1.0%	153	6.9%
2004	18	1.1%	75	4.7%
2005	29	1.4%	123	5.9%
2006	24	1.1%	97	4.4%
2007	11	0.8%	56	4.1%
2008	12	1.0%	58	4.7%
2009	6	0.5%	87	6.9%
2010	4	0.3%	91	7.2%
2011	26	1.2%	80	3.7%
2012	27	1.5%	59	3.2%
2013	21	1.0%	102	4.8%
2014	15	0.7%	64	2.9%
2015	12	0.6%	32	1.6%
2016	1	0.1%	20	1.7%
2017	1	0.1%	20	1.7%
2018	2	0.2%	14	1.3%
2019	3	0.3%	23	2.2%
2020	3	0.4%	14	1.8%
2021	1	0.2%	17	2.6%
2022	1	0.2%	10	1.7%

Table 3. Encounter rates (no. of on-effort sightings per 100 km^2) of Chinese White Dolphins among different survey areas in the past 21 monitoring periods

Monitoring Period	Overall	NE Lantau	NW Lantau	W Lantau	SW Lantau
2002-03	8.6	4.6	10.8	22.6	2.4
2003-04	10.8	5.0	11.3	25.9	2.5
2004-05	8.2	2.9	8.3	21.4	2.6
2005-06	7.8	2.7	8.7	20.2	1.6
2006-07	6.9	2.3	5.7	20.6	1.0
2007-08	9.9	4.7	10.5	26.1	3.7
2008-09	7.2	2.2	7.2	17.9	2.4
2009-10	6.3	1.7	4.9	18.0	2.2
2010-11	6.8	2.6	7.5	13.4	2.4
2011-12	7.7	5.0	8.7	15.3	2.6
2012-13	7.3	1.6	7.8	19.2	3.5
2013-14	7.2	0.7	6.3	19.6	6.8
2014-15	5.5	0.1	3.6	18.4	5.6
2015-16	4.7	0.1	2.2	15.5	5.5
2016-17	4.0	0.0	1.9	14.9	3.2
2017-18	3.4	0.0	2.4	11.8	4.1
2018-19	3.0	0.0	1.7	13.0	2.0
2019-20	3.5	0.0	0.7	13.3	3.8
2020-21	3.3	0.0	1.1	11.6	3.1
2021-22	2.5	0.0	0.5	13.9	2.7
2022-23	2.6	0.0	0.3	14.0	2.5

Table 4. Encounter rates (no. of on-effort sightings per 100 km^2) of finless porpoises among different survey areas in the past 16 monitoring periods

Monitoring Period	Overall	SW Lantau	SE Lantau	Lamma	Po Toi
2007-08	3.0	2.7	5.1	1.9	1.9
2008-09	3.3	2.8	1.4	7.8	2.9
2009-10	3.5	1.9	6.1	1.0	5.5
2010-11	3.3	2.7	5.4	3.0	3.4
2011-12	4.9	3.0	5.8	9.6	3.4
2012-13	4.7	5.9	8.4	4.6	2.2
2013-14	6.4	7.4	12.5	7.6	0.0
2014-15	4.2	2.6	8.7	2.9	2.2
2015-16	3.8	2.3	5.3	6.4	5.2
2016-17	3.7	2.8	8.1	2.5	1.8
2017-18	3.3	3.9	6.2	1.5	2.7
2018-19	2.9	2.9	5.1	1.9	1.2
2019-20	3.3	3.9	5.6	1.9	2.2
2020-21	1.9	2.8	2.3	1.4	1.5
2021-22	2.2	3.2	1.7	0.9	3.3
2022-23	1.8	3.7	2.2	0.4	1.3

Table 5a. Line transects parameters and estimates of density and abundance for Chinese White Dolphins in western waters of Hong Kong in 2022

([1]unit for encounter rate: number of on-effort sightings per 100 km of survey effort; [2]unit for individual density: number of dolphins per 100 km^2)

	NE Lantau	NW Lantau	W Lantau	SW Lantau
Effort	1835.9	2725.1	883.3	1204.4
Number of Sightings	N/A	11	116	26
Average Group Size	N/A	2.27	3.78	3.73
Encounter Rate[1]	N/A	0.40	12.91	2.16
Individual Density[2]	N/A	1.50	87.32	14.11
Abundance	N/A	1	24	9
95% C.I. (Abundance)	N/A	1-3	17-34	4-19
%CV	N/A	44	18	38

Table 5b. Annual abundance estimates of Chinese White Dolphins from each survey area in western waters of Hong Kong in 2003-22
(figures in red derived from biennial estimates; figures in blue indicate no or only one on-effort sighting made in that area for that year)

Year	*Combined*	NE Lantau	NW Lantau	W Lantau	SW Lantau
2003	*188*	18	84	56	30
2004	*143*	9	62	51	21
2005	*128*	7	58	42	21
2006	*113*	9	54	44	6
2007	*130*	10	60	54	6
2008	*108*	11	42	43	12
2009	*100*	5	40	43	12
2010	*86*	7	35	33	11
2011	*88*	11	39	28	10
2012	*80*	4	40	17	19
2013	*73*	3	36	23	11
2014	*87*	1	24	36	26
2015	*65*	0	10	31	24
2016	*47*	0	11	27	9
2017	*47*	0	21	16	10
2018	*32*	0	6	19	7
2019	*52*	0	4	29	19
2020	*37*	0	3	19	15
2021	*40*	0	4	24	12
2022	*34*	0	1	24	9

Table 6. Range use (50%/25% UD core areas and sighting coverage) and residency patterns of 87 individuals with 15+ sightings and appeared in 2022

(abbreviations: SR=Seasonal Resident; YR=Year-round Resident; SV=Seasonal Visitor; UD= Utilization Distribution; LKC = Lung Kwu Chau Marine Park; CLK= northeast corner of airport; BR= Brothers Islands; TO= Tai O; PH= Peaked Hill; FL= Fan Lau; SL= South Lantau; WL= West Lantau; DB= Deep Bay; EL= East Lantau; NEL= Notheast Lantau; NWL= Northwest Lantau; SWL= Southwest Lantau; SEL= Southeast Lantau; CH=Chinese waters; * denotes individuals that have their gender determined by biopsy sampling)

				Primary	Occurrence in Survey Areas								50% UD Core Area						25% UD Core Area					
ID#	# STG	Gender	Residency	Range	DB	EL	NEL	NWL	WL	SWL	SEL	CH	LKC	BR	TO	PH	FL	SL	LKC	BR	TO	PH	FL	SL
CH38	136	?	YR	WL					√	√		√				√	√					√	√	
CH108	149	F	YR	WL				√	√	√		√				√	√						√	
CH112	22	?	SR	WL				√	√	√		√			√	√	√					√	√	
CH113	69	F	SR	WL				√	√	√		√			√	√						√		
CH141	54	F	YR	WL					√	√		√				√	√					√	√	
CH153	29	?	SR	WL				√	√	√		√			√	√					√			
EL01	136	M*	SR	NL		√	√	√	√	√		√		√						√				
NL33	164	F*	YR	NL			√	√	√	√			√	√						√				
NL37	81	?	SR	NL		√	√	√	√	√		√	√		√				√					
NL46	99	F*	SR	NL				√	√	√		√	√						√					
NL98	187	F*	YR	NL			√	√	√	√		√	√	√					√	√				
NL103	63	?	SR	NL	√			√	√			√	√						√					
NL104	145	F	YR	NL	√		√	√	√	√		√	√						√					
NL123	198	F	YR	NL/WL	√		√	√	√	√		√	√	√					√	√				
NL156	83	?	YR	NL/WL				√	√	√		√			√	√	√				√	√		
NL202	164	F	YR	NL	√		√	√	√			√	√						√					
NL242	106	F*	YR	NL/WL			√	√	√	√		√	√						√					
NL247	40	?	SR	WL				√	√			√			√	√					√	√		
NL259	104	?	YR	NL/WL			√	√	√				√		√				√		√			
NL261	121	M?	YR	NL/WL	√		√	√	√	√		√	√						√					
NL269	78	?	YR	NL/WL				√	√	√		√				√	√					√		
NL293	49	?	SR	WL				√	√			√			√						√			
NL296	80	F?	SR	NL/WL			√	√	√	√		√	√		√	√			√			√		
NL301	35	?	SR	NL/WL	√			√	√			√	√						√					
NL306	50	?	YR	WL				√	√	√	√						√	√					√	√
NL311	39	?	YR	WL				√	√	√		√			√	√	√				√	√	√	
NL317	20	?	SR	NL/WL				√	√			√	√		√	√			√		√	√		
NL321	42	?	YR	NL	√			√	√	√		√	√						√					
SL40	127	F	YR	WL					√	√		√					√						√	
SL44	85	?	YR	WL					√	√		√			√	√	√					√	√	
SL58	25	?	YR	WL					√	√					√	√					√	√		
SL59	38	?	YR	WL				√	√	√		√			√	√	√				√	√	√	
SL60	85	?	YR	WL					√	√		√					√						√	
WL05	122	F?	YR	NL/WL			√	√	√	√		√	√		√				√		√			
WL11	74	F*	YR	NL/WL			√	√	√			√	√		√				√					
WL17	55	?	YR	NL/WL			√	√	√	√	√	√	√		√	√	√		√		√	√	√	
WL21	83	F	SR	WL				√	√	√		√			√	√	√				√	√		
WL28	44	F	YR	WL				√	√	√		√			√						√			
WL29	60	F	SR	WL					√	√		√				√						√		
WL42	170	?	YR	WL				√	√	√		√				√	√					√	√	
WL46	100	?	YR	WL			√	√	√	√		√			√	√					√			
WL61	139	?	YR	WL				√	√	√		√				√	√						√	
WL66	31	F	SR	WL					√			√			√	√					√			
WL72	153	F	YR	WL				√	√	√		√				√	√					√	√	
WL79	134	?	YR	WL				√	√			√			√	√					√			
WL91	133	?	YR	WL					√	√	√	√				√	√					√	√	
WL92	60	?	YR	WL					√	√		√				√	√						√	
WL94	95	F	YR	WL					√	√		√				√	√						√	
WL109	137	F	YR	WL				√	√	√		√			√	√	√					√	√	
WL114	103	F?	YR	WL				√	√	√		√				√	√					√	√	
WL118	88	F	YR	WL					√	√		√				√	√					√		

Table 6. (cont'd)

ID#	# STG	Gender	Residency	Primary Range	Occurrence in Survey Areas								50% UD Core Area						25% UD Core Area					
					DB	EL	NEL	NWL	WL	SWL	SEL	CH	LKC	BR	TO	PH	FL	SL	LKC	BR	TO	PH	FL	SL
WL123	186	F?	YR	WL				√	√	√		√				√	√						√	
WL128	64	?	SR	WL					√	√		√				√	√					√	√	
WL129	42	F	SR	WL					√	√		√				√	√					√	√	
WL130	129	?	YR	WL				√	√	√							√						√	
WL131	176	F?	YR	WL				√	√	√		√				√	√					√	√	
WL142	97	?	YR	WL					√	√		√					√						√	
WL145	63	F	YR	WL				√	√	√		√			√						√			
WL152	155	F?	YR	WL				√	√	√						√	√						√	
WL166	33	?	SR	WL					√	√						√	√					√		
WL167	21	F	SR	NL/WL				√	√			√			√						√			
WL168	83	?	YR	WL					√	√		√			√	√	√					√	√	
WL169	20	F	SR	WL					√	√		√				√	√					√		
WL171	41	F	SR	WL					√	√		√				√	√					√	√	
WL179	63	F	YR	NL/WL				√	√	√		√	√		√	√	√					√	√	
WL180	135	F?	YR	WL					√	√		√				√	√						√	
WL206	15	?	SR	WL				√	√	√		√			√	√						√		
WL208	59	F	YR	WL				√	√	√					√	√	√					√	√	
WL210	40	F?	YR	WL					√	√		√			√	√	√					√	√	
WL213	30	F	SR	WL				√	√						√	√						√		
WL216	48	?	SR	WL				√	√	√		√			√	√						√		
WL220	103	?	YR	WL					√	√		√				√	√					√	√	
WL221	86	?	YR	WL				√	√	√		√			√	√	√	√					√	
WL229	36	?	YR	WL					√	√		√			√	√	√					√	√	
WL236	18	?	SR	WL					√	√		√			√	√						√		
WL243	63	?	YR	WL				√	√	√	√				√			√			√			√
WL250	60	F	YR	WL					√	√	√	√					√	√					√	
WL254	40	F	YR	WL					√	√		√				√	√					√		
WL256	24	?	SR	WL					√	√		√				√	√					√		
WL272	17	?	YR	WL					√	√					√	√	√					√		
WL273	45	F?	YR	WL				√	√	√		√				√	√						√	
WL283	21	?	SR	WL				√	√			√			√	√					√			
WL291	22	F?	YR	WL				√	√	√		√			√	√					√	√		
WL294	29	?	YR	WL				√	√	√		√			√	√	√	√			√	√	√	
WL295	16	?	SR	WL					√	√		√				√						√		
WL304	21	?	SR	WL				√	√	√						√						√		
WL305	24	?	YR	WL					√	√						√	√					√	√	

Table 7. Number of individual dolphins involved in movements across different survey areas around Lantau in the past 13 mointoring periods

Monitoring Period	Total No. of Ind.	NEL-NWL	NWL-WL	WL-SWL	NEL-NWL-WL	NWL-WL-SWL	NEL-NWL-WL-SWL
2010-11	169	29	23	14	9	1	0
2011-12	217	50	66	40	16	8	1
2012-13	200	39	50	34	18	3	1
2013-14	199	19	52	52	12	9	2
2014-15	227	6	62	72	5	14	0
2015-16	210	1	35	87	1	9	0
2016-17	208	0	50	81	0	20	0
2017-18	185	5	48	65	2	17	1
2018-19	172	0	37	52	0	9	0
2019-20	168	0	19	69	0	8	0
2020-21	135	0	25	61	0	13	0
2021-22	111	0	12	31	0	4	0
2022-23	117	0	18	41	0	9	0

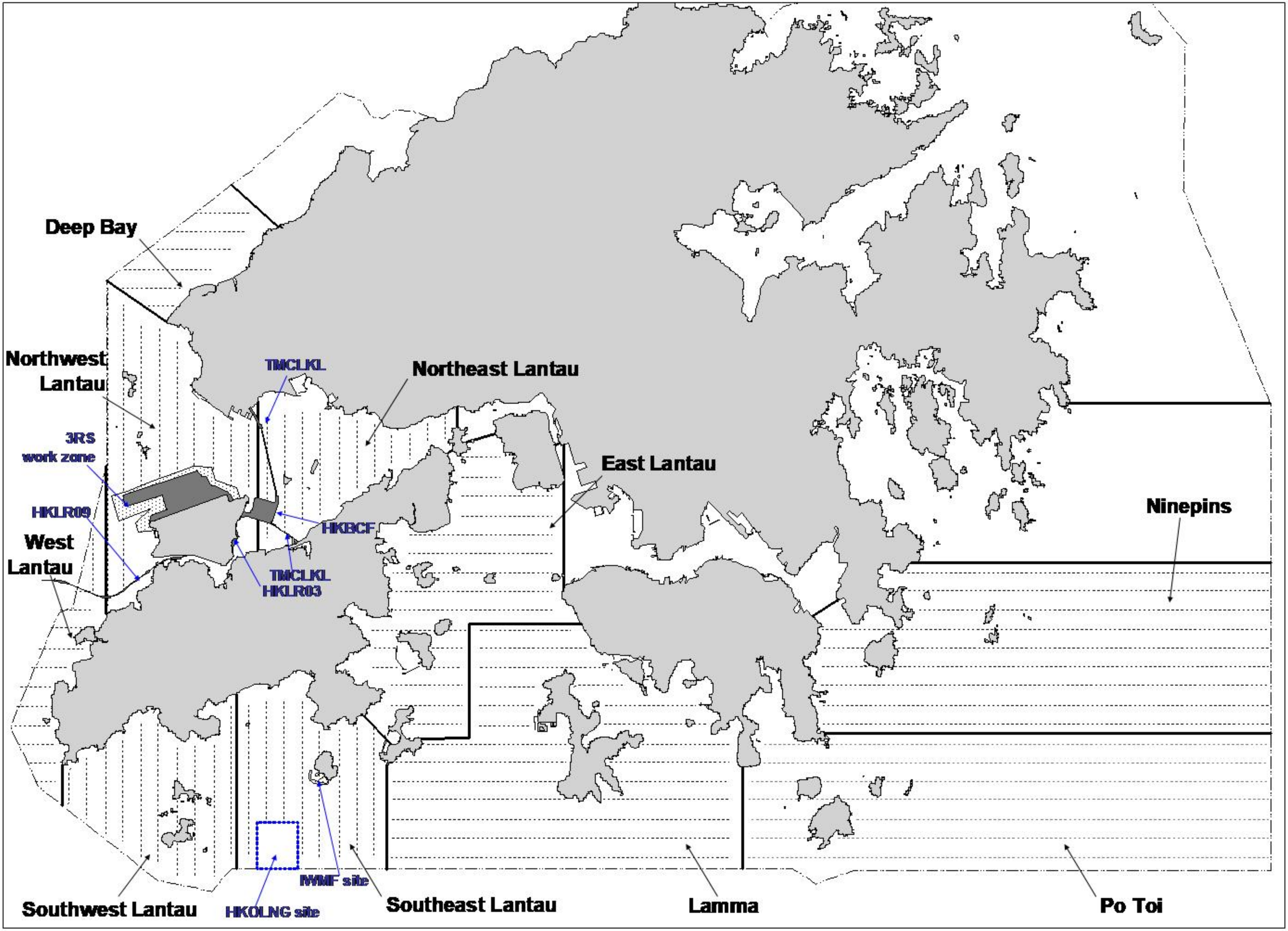


Figure 1. Ten Line-Transect Survey Areas within the Study Area chosen for the 2022-23 AFCD Monitoring Study

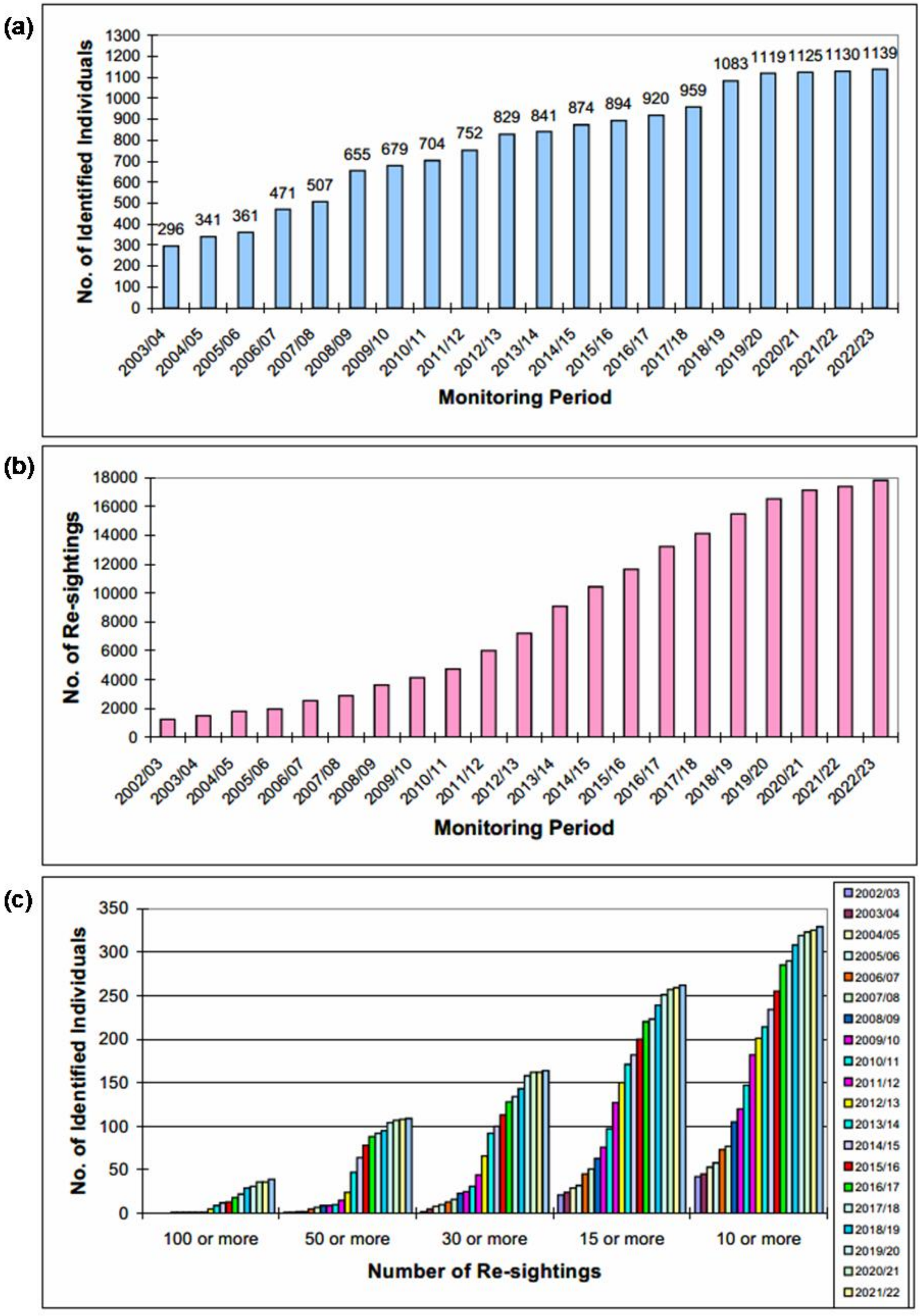


Figure 2. Temporal trends of (a) cumulative number of identified individuals; (b) total number of re-sightings made; and (c) number of identified individuals within several categories of number of re-sightings in the past 21 monitoring periods (2002-2023)

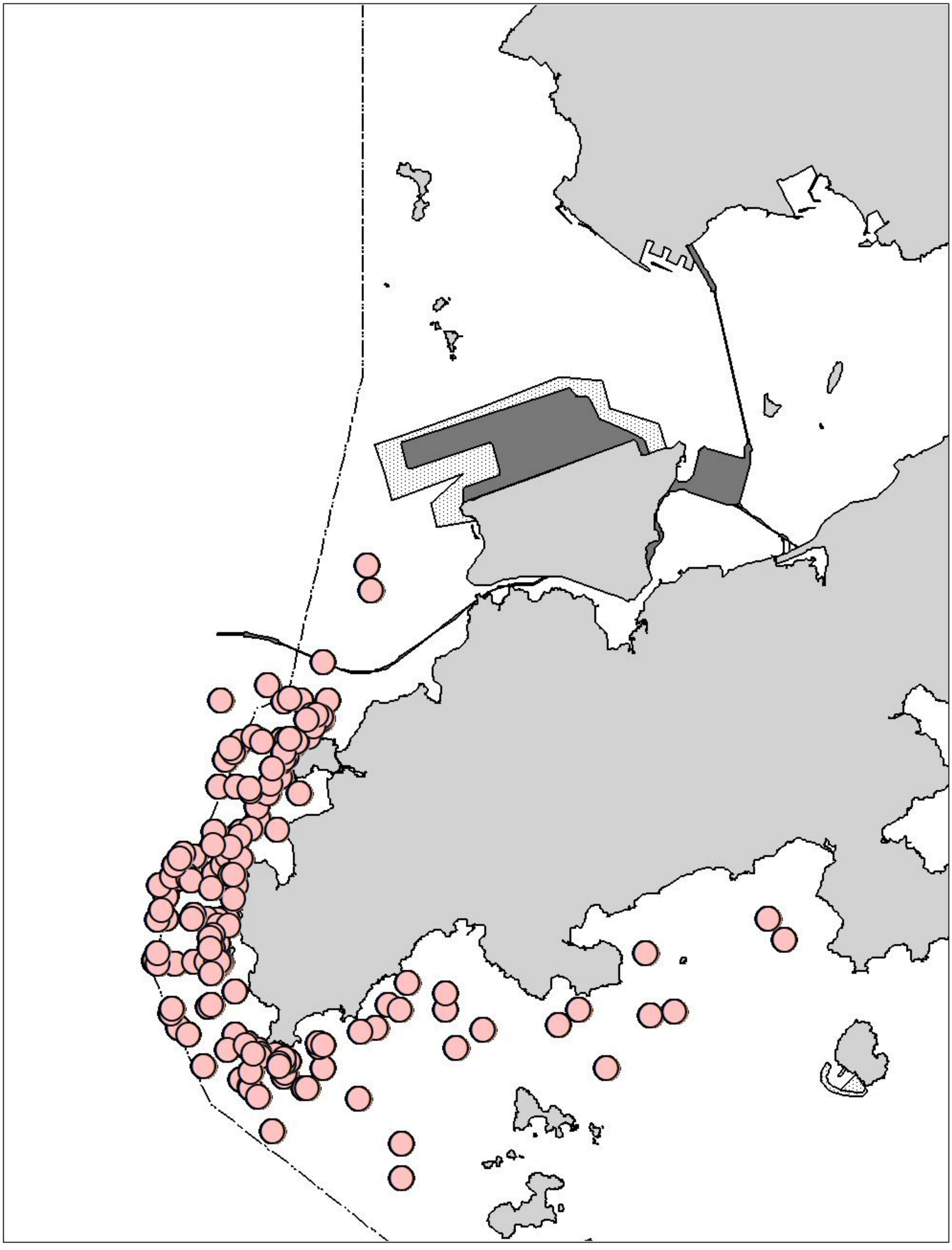


Figure 3. Distribution of CWD sightings in Hong Kong waters during AFCD monitoring surveys (April 2022 – March 2023)

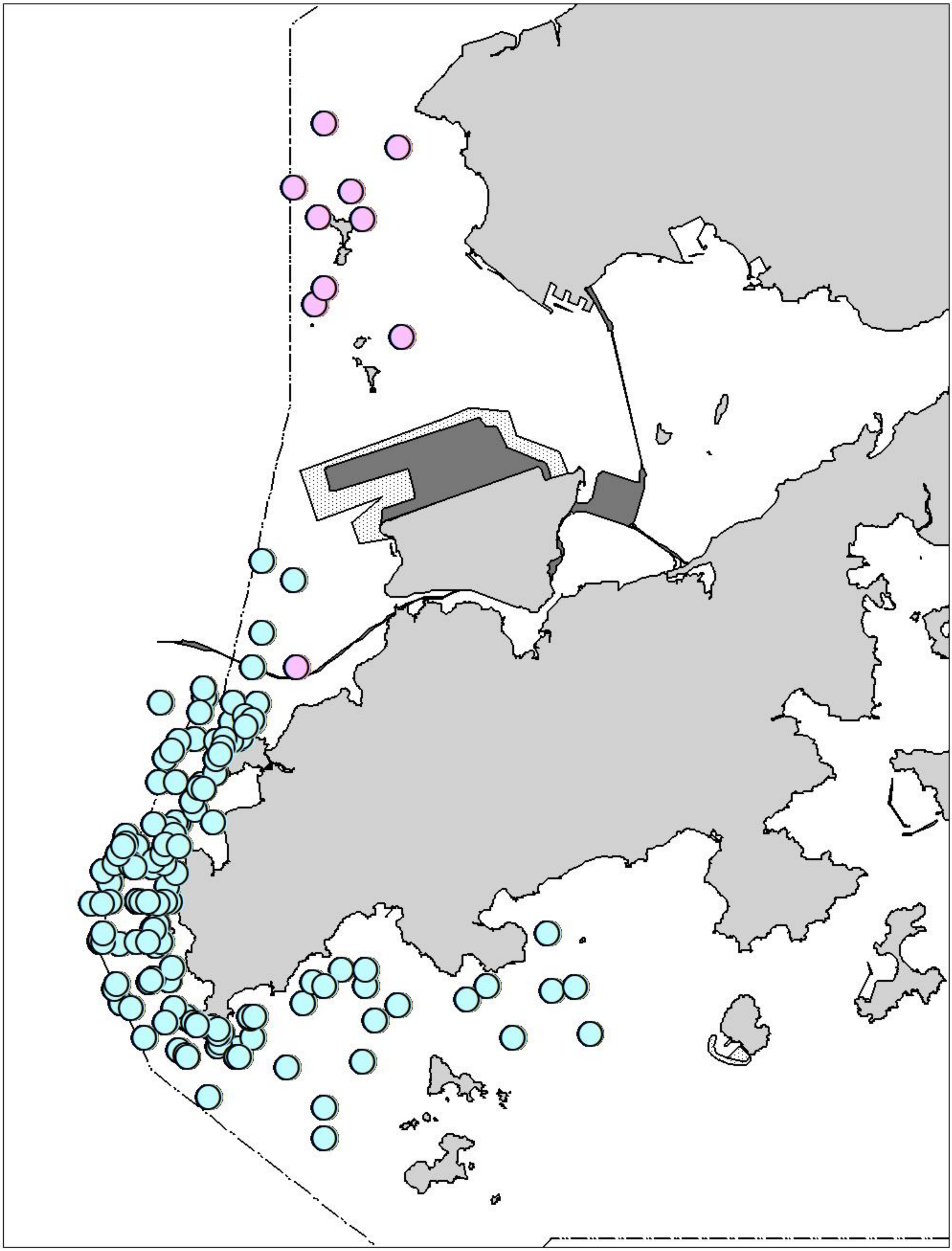


Figure 4. Distribution of all CWD sightings in Hong Kong waters in 2022
(blue dots: AFCD survey sightings; purple dots: HZMB survey sightings)

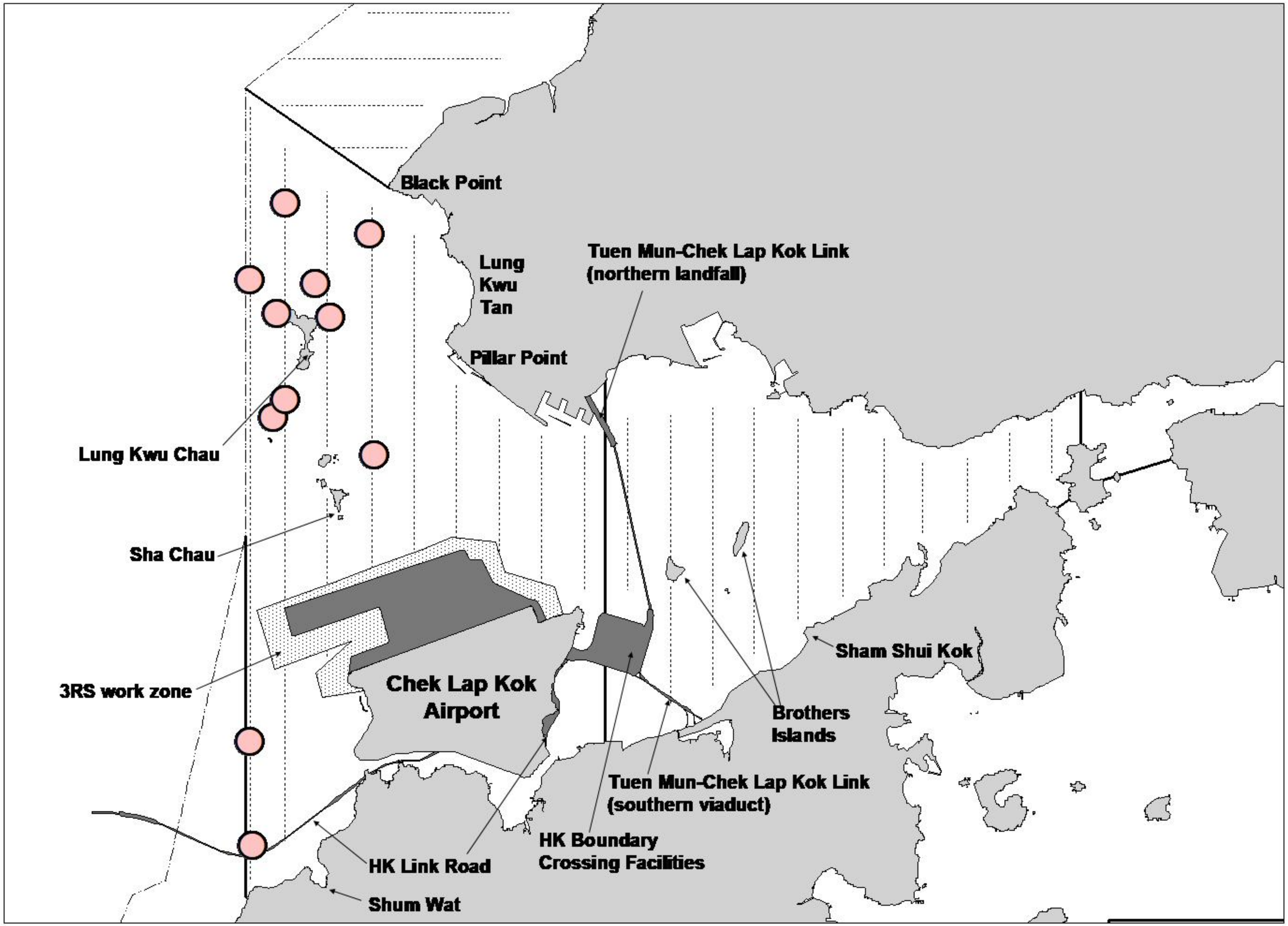


Figure 5. Distribution of Chinese White Dolphin sightings in North Lantau (2022)

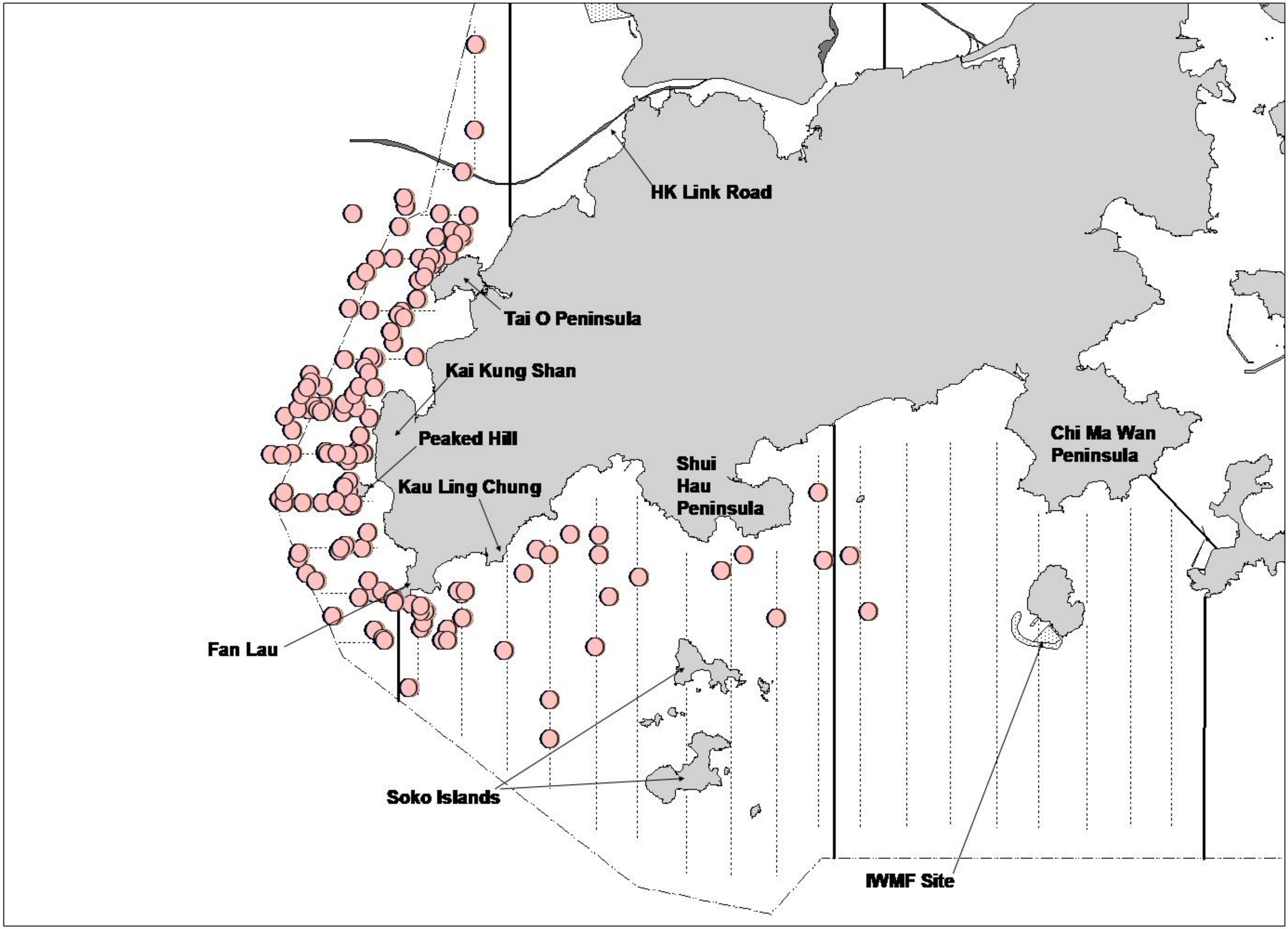


Figure 6. Distribution of Chinese White Dolphin sightings in West and South Lantau waters (2022)

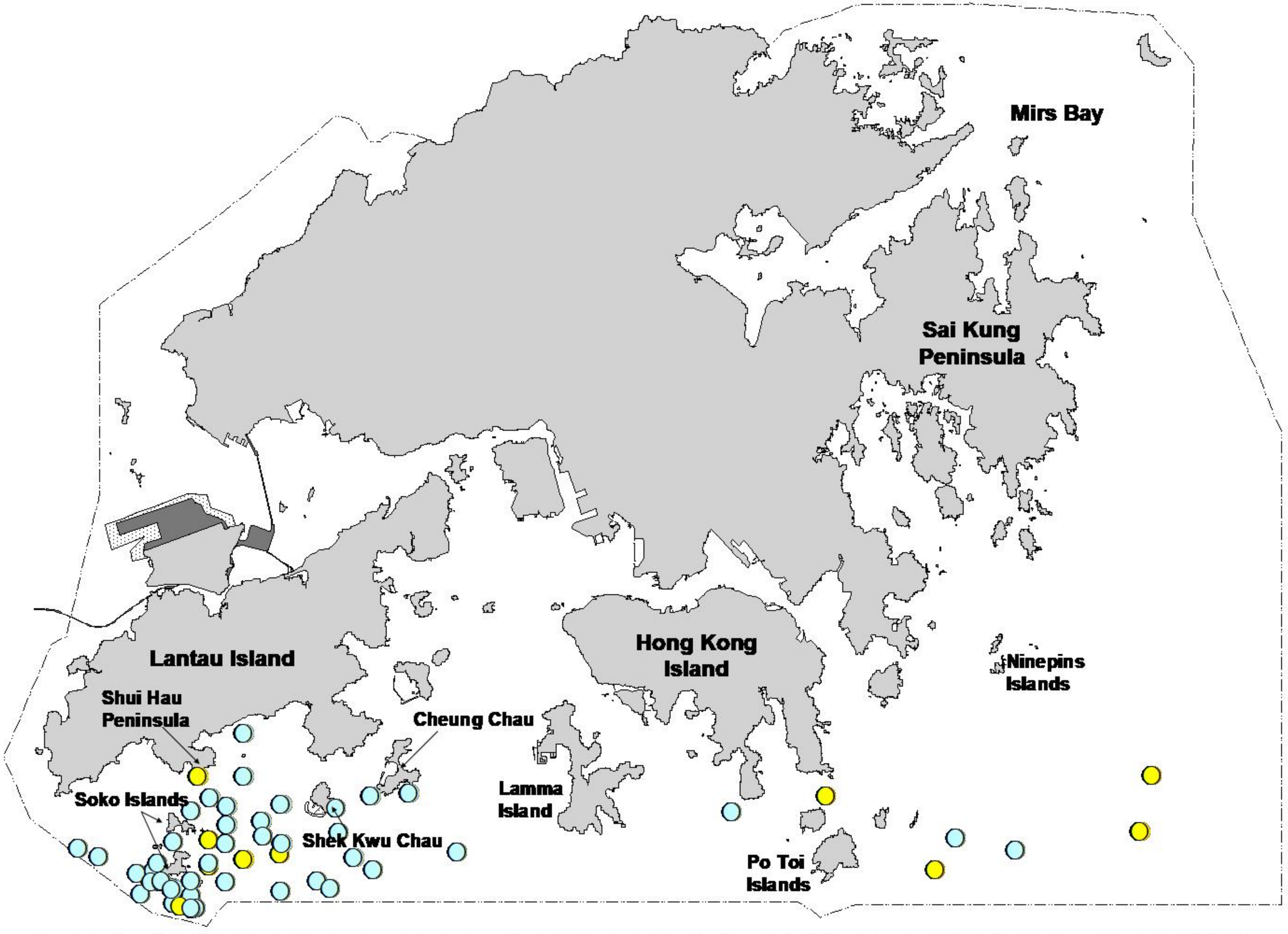


Figure 7. Distribution of finless porpoise sightings made during AFCD surveys (April 2022 – March 2023)
(blue dots: sightings made during winter/spring months; yellow dots: sightings made during summer/autumn months)

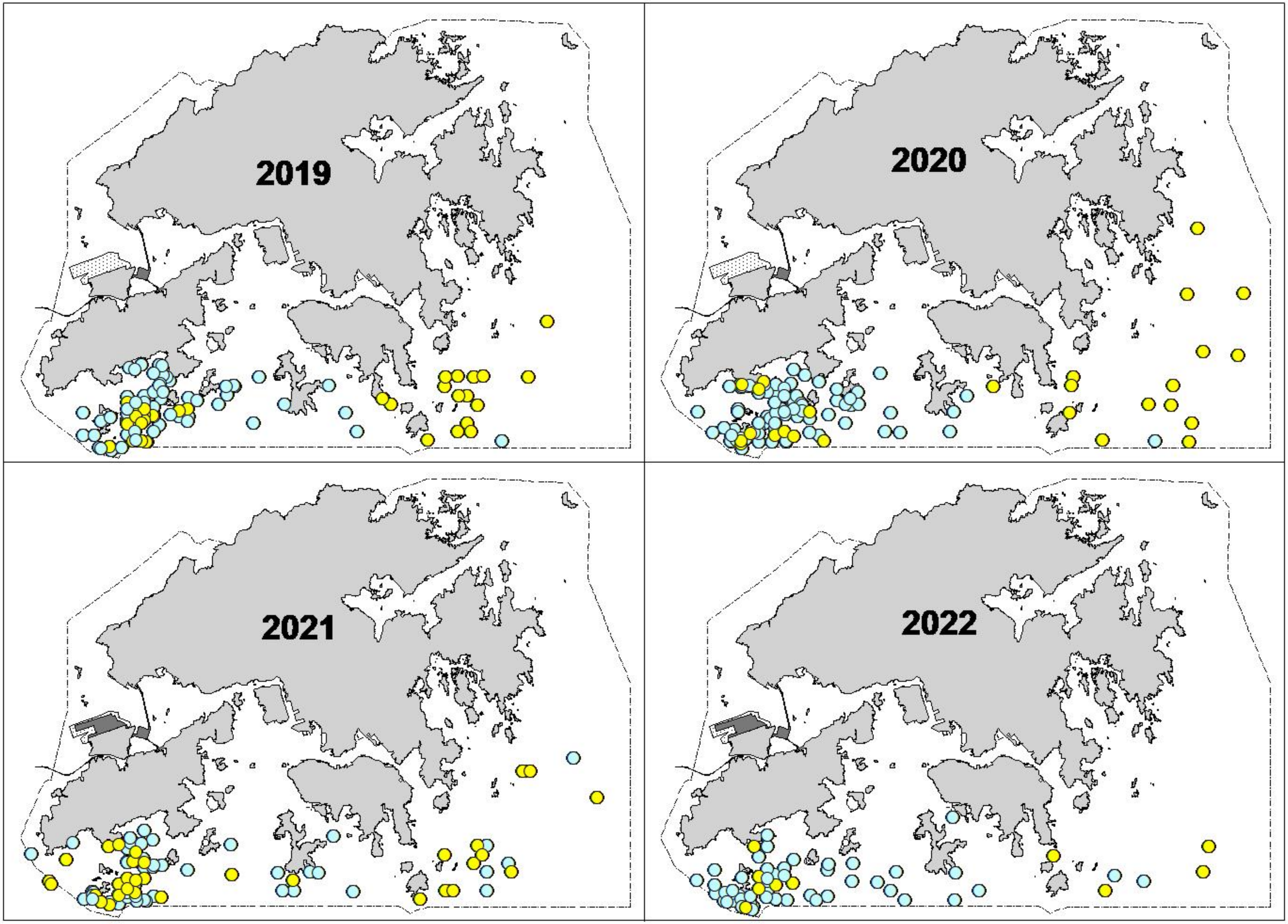
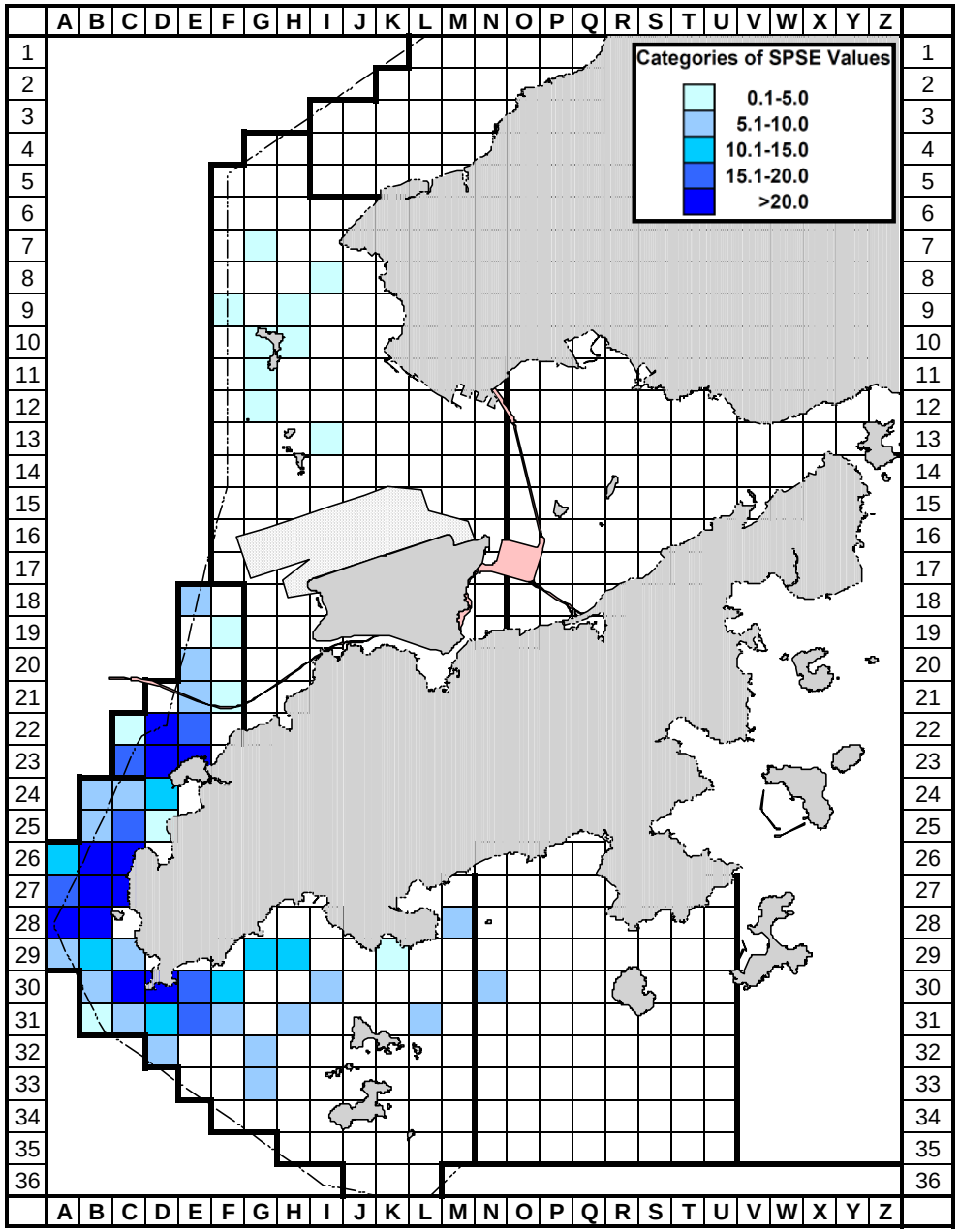


Figure 8. Comparison of annual porpoise distribution patterns from 2019-22
(blue dots: sightings made during winter/spring months; yellow dots: sightings made during summer/autumn months)



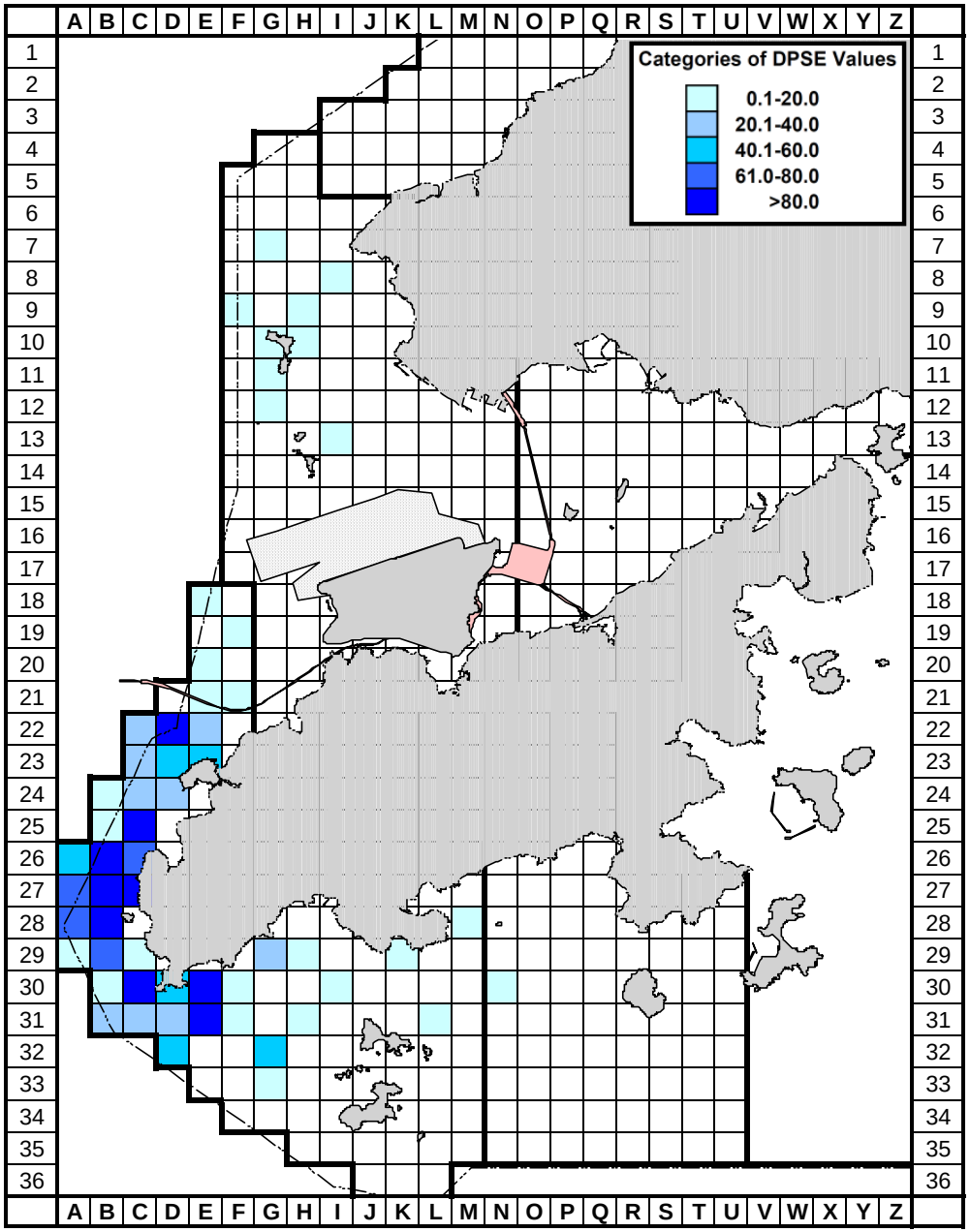


Figure 9. (left) Sighting density of Chinese white dolphins with corrected survey effort per km^2 in waters around Lantau Island (number within grids represent "SPSE" no. of on-effort dolphin sightings per 100 units of survey effort) (using data from January - December 2022)

(right) Density of Chinese white dolphins with corrected survey effort per km^2 in waters around Lantau Island (number within grids represent "DPSE" = no. o dolphins per 100 units of survey effort) (using data from January - December 2022)

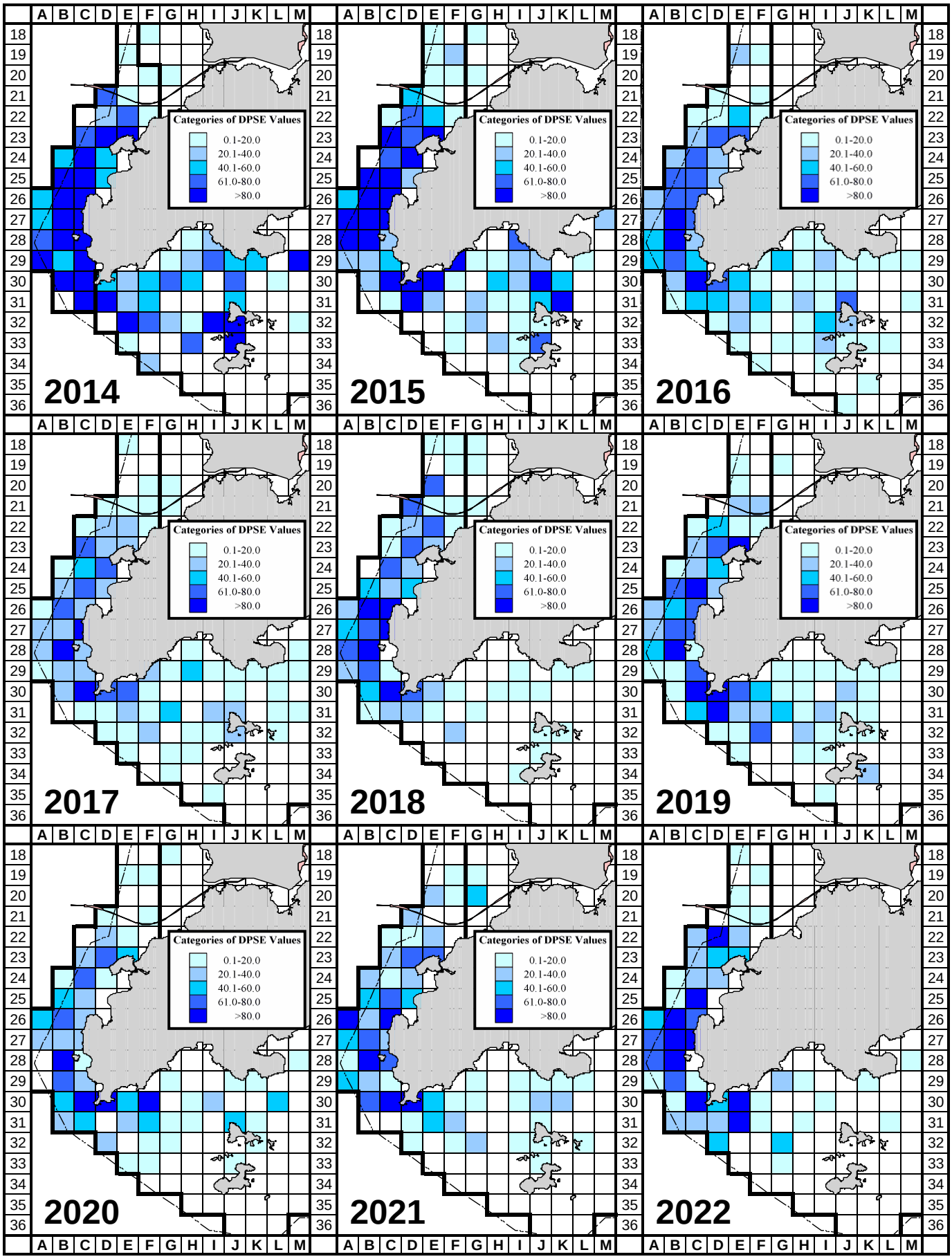


Figure 10. Comparison of Chinese White Dolphin densities with corrected survey effort per km^2 in West and Southwest Lantau Waters in 2014-22 (number within grids represent "DPSE" = no. of dolphins per 100 units of survey effort)

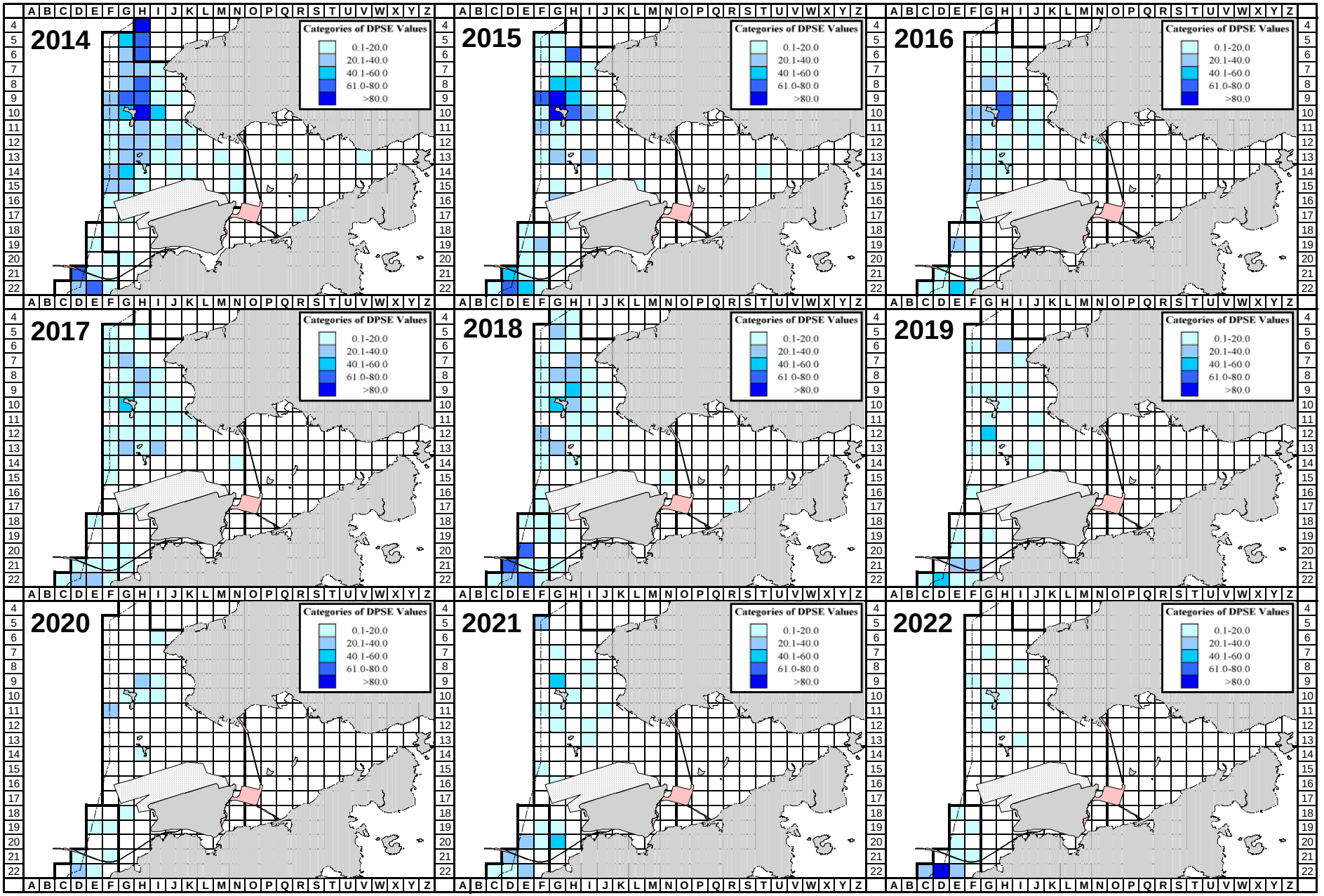


Figure 11. Comparison of dolphin densities with corrected survey effort per km^2 in North Lantau waters in 2014-22 (number within grids represent "DPSE" = no. of dolphins per 100 units of survey effort)

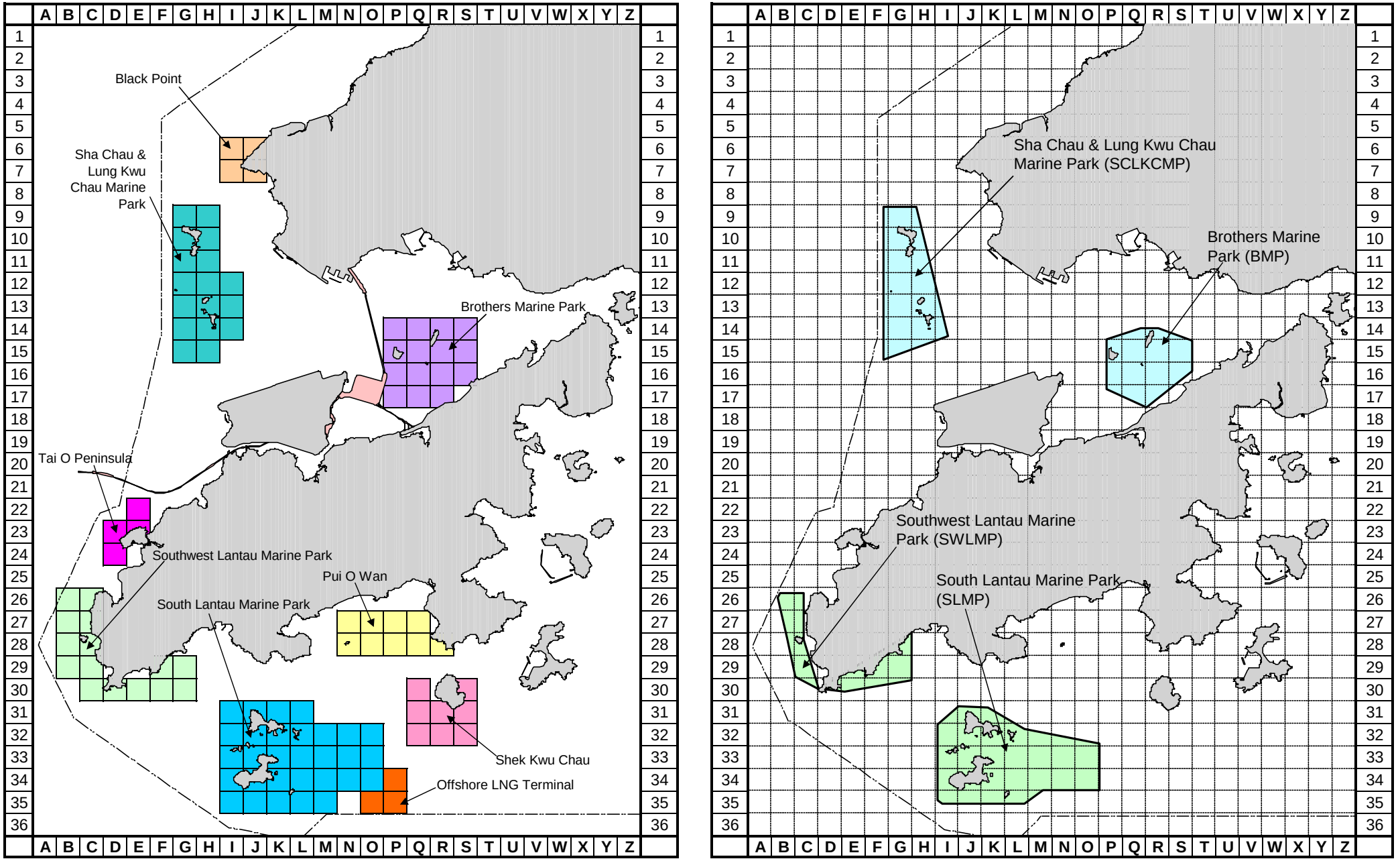


Figure 12. Grids of key marine mammal habitats in western HK waters that were examined for temporal trend in dolphin and porpoise densities

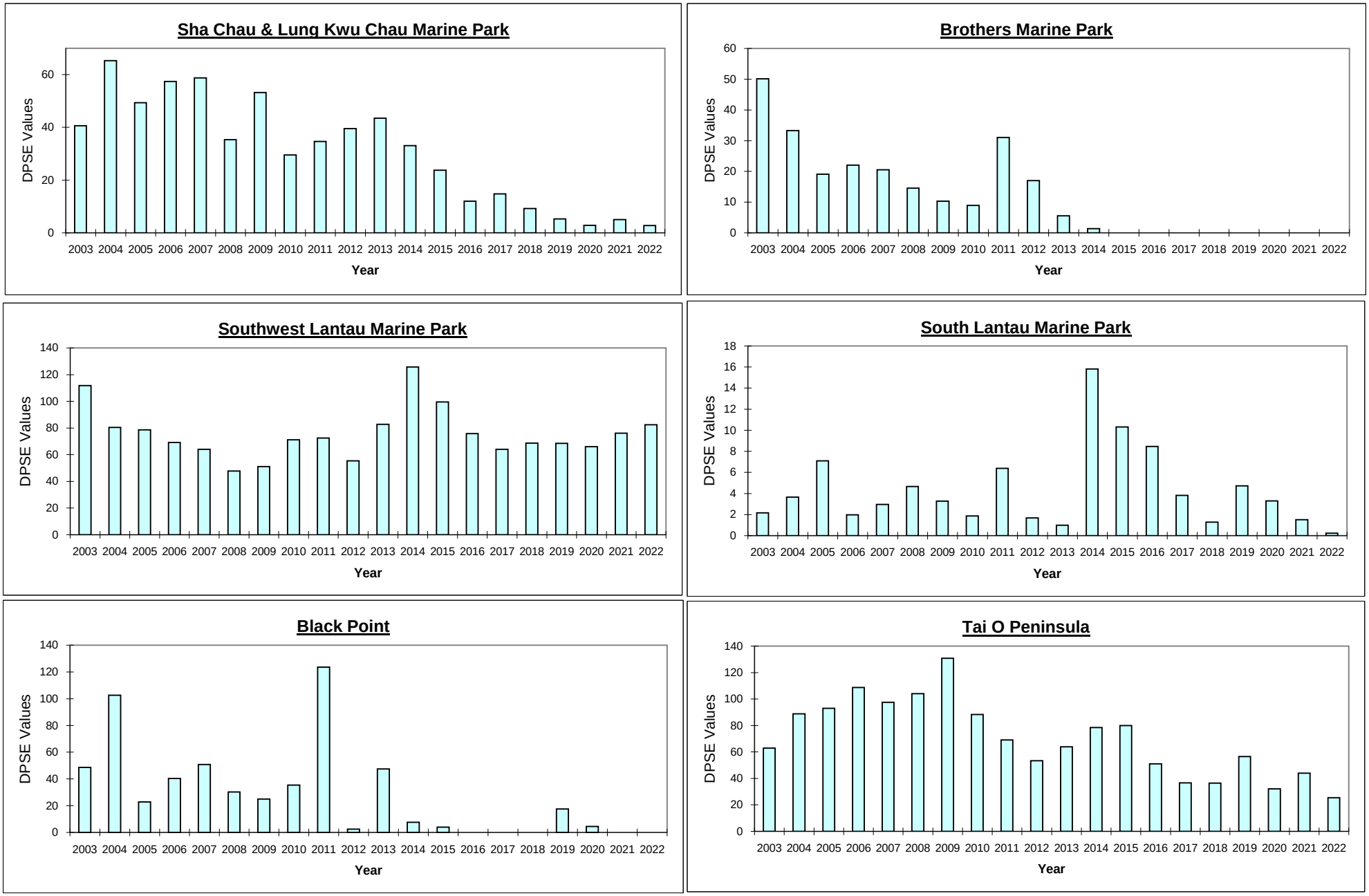


Figure 13. Temporal trend of dolphin densities (DPSE Values) at six key dolphin habitats in Lantau waters

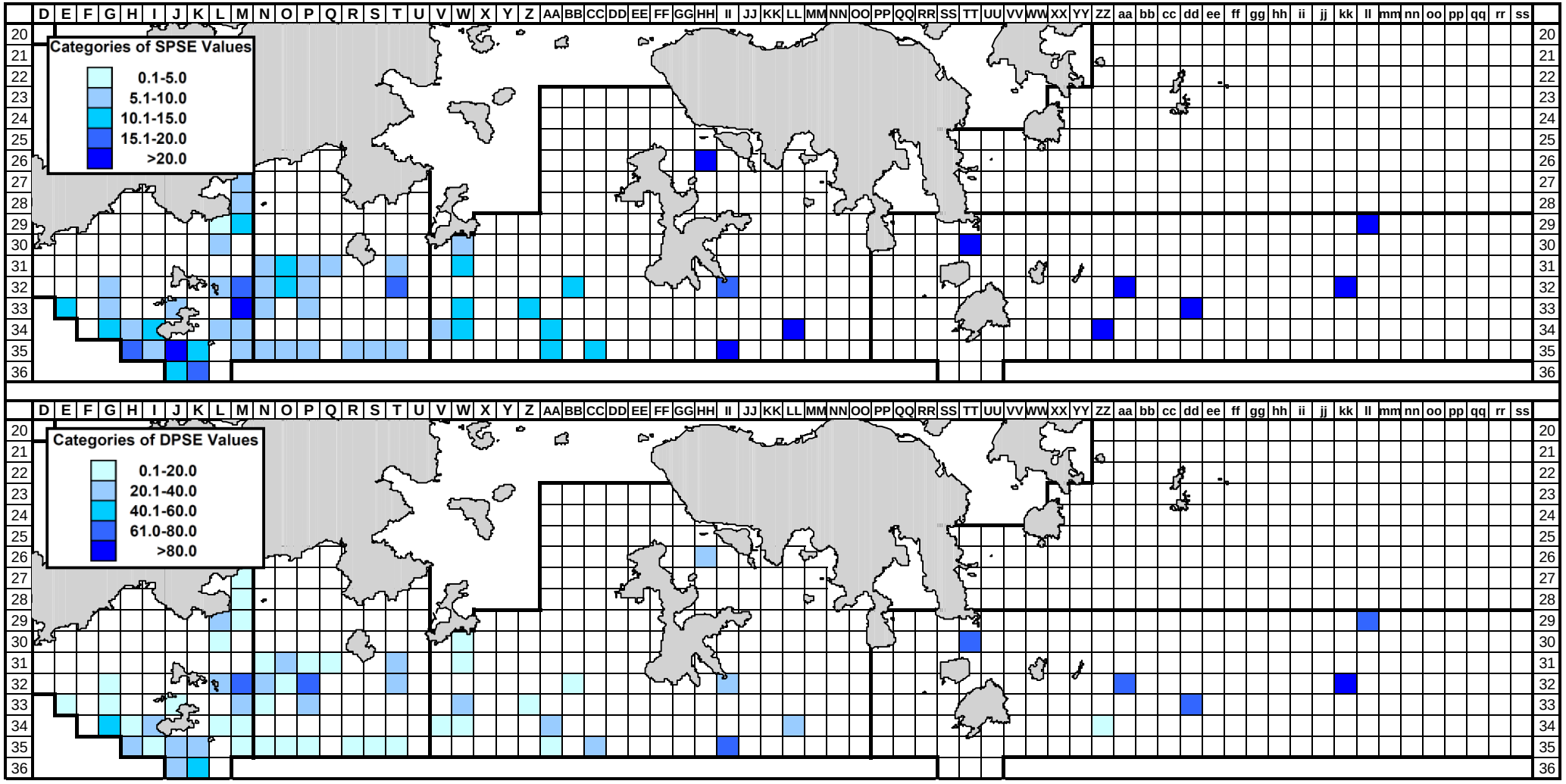


Figure 14. (top) Sighting density of finless porpoises with corrected survey effort per km^2 in southern waters of Hong Kong (number within grids represent "SPSE" = no. of on-effort porpoise sightings per 100 units of survey effort) (using data from January - December 2022)

(bottom) Density of finless porpoises with corrected survey effort per km^2 in southern waters of Hong Kong (number within grids represents "DPSE" = no. of porpoises per 100 units of survey effort) (using data from January - December 2022)

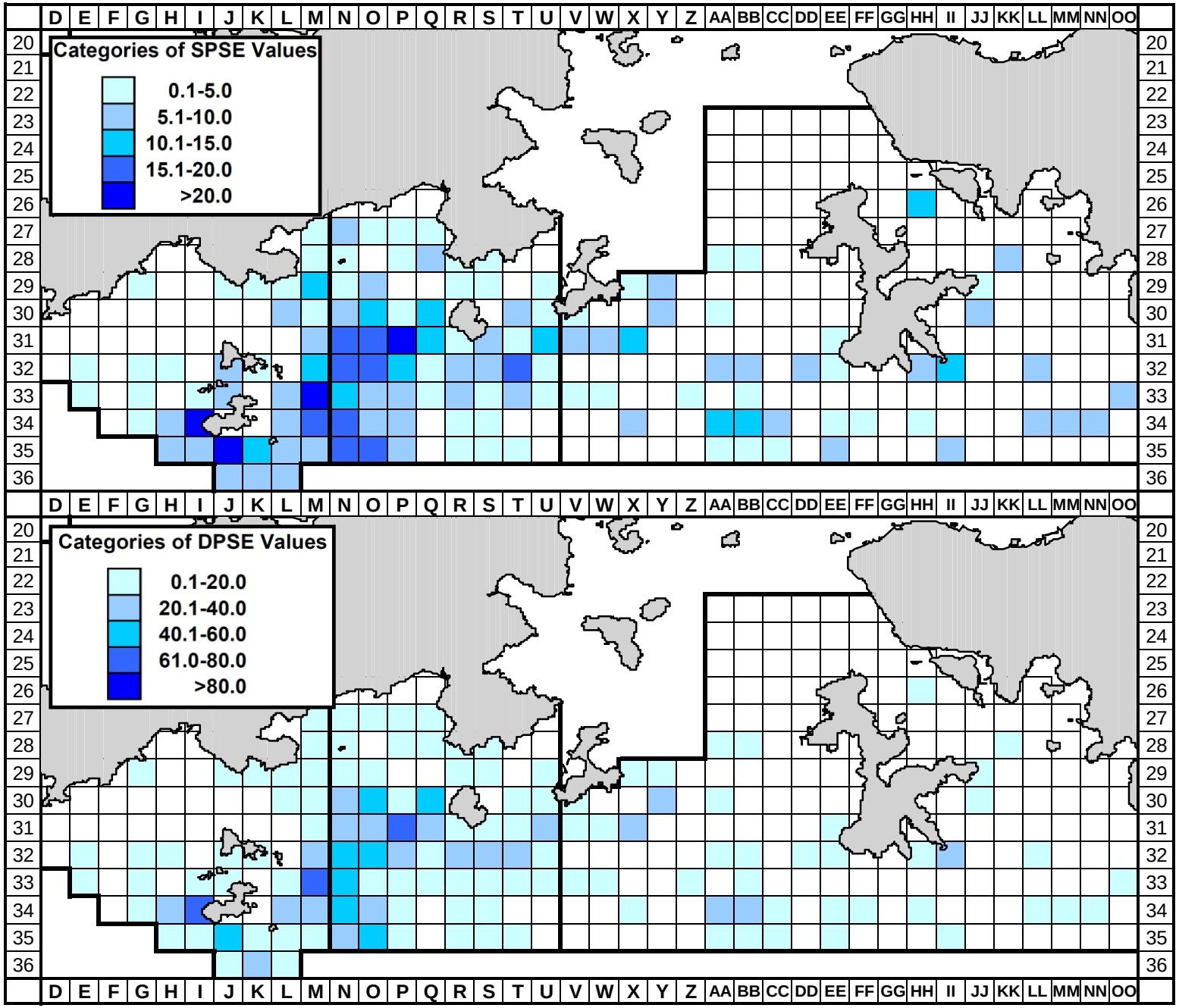


Figure 15. Density of finless porpoises with corrected survey effort per km^2 in southern waters of Hong Kong during dry season (December to May), using data collected during 2018-22 (SPSE = no. of on-effort porpoise sightings per 100 units of survey effort; DPSE = no. of porpoises per 100 units of survey effort)

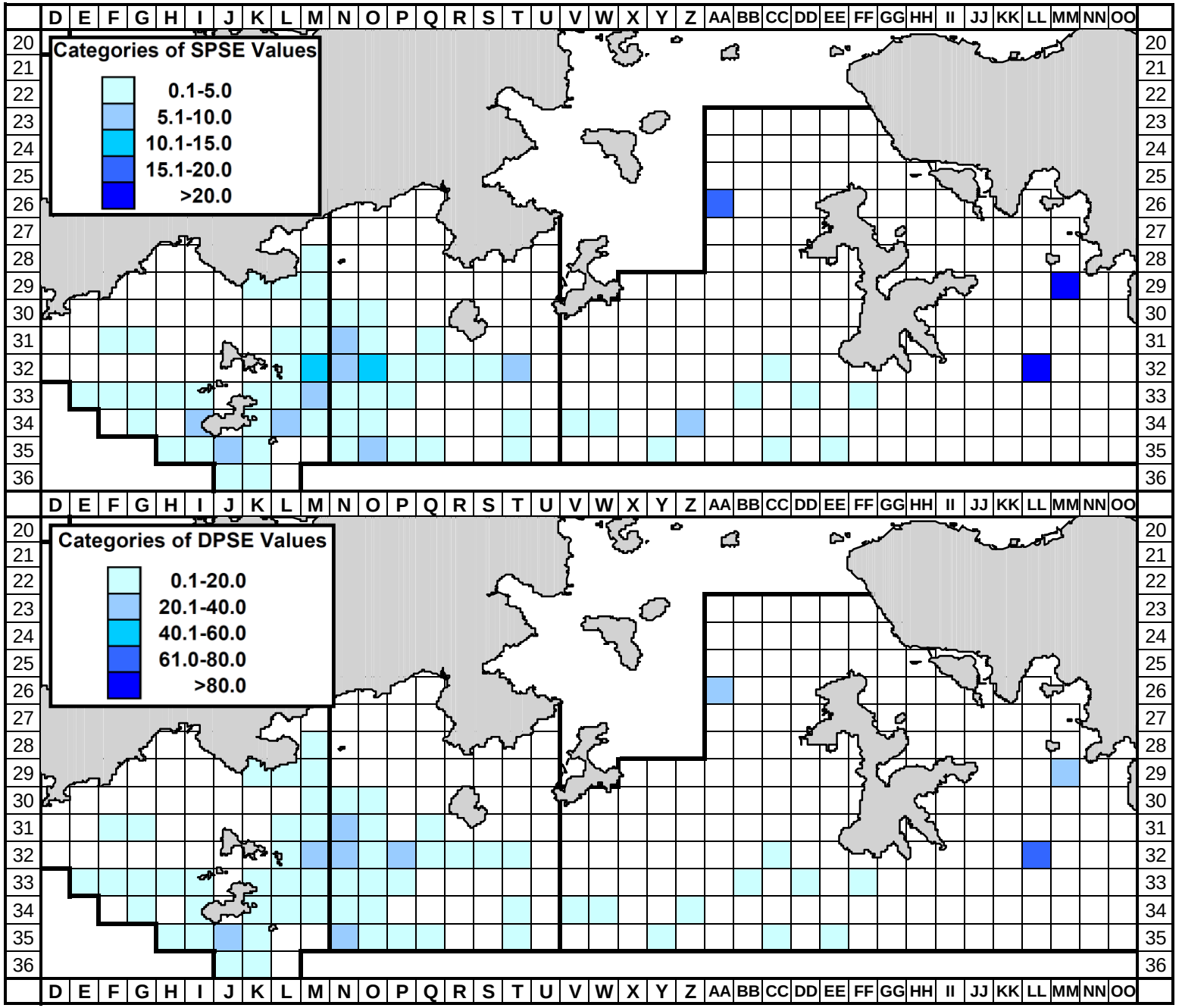


Figure 16. Density of finless porpoises with corrected survey effort per km^2 in southern waters of Hong Kong during wet season (June-November), using data collected during 2018-22 (SPSE = no. of on-effort porpoise sightings per 100 units of survey effort; DPSE = no. of porpoises per 100 units of survey effort)

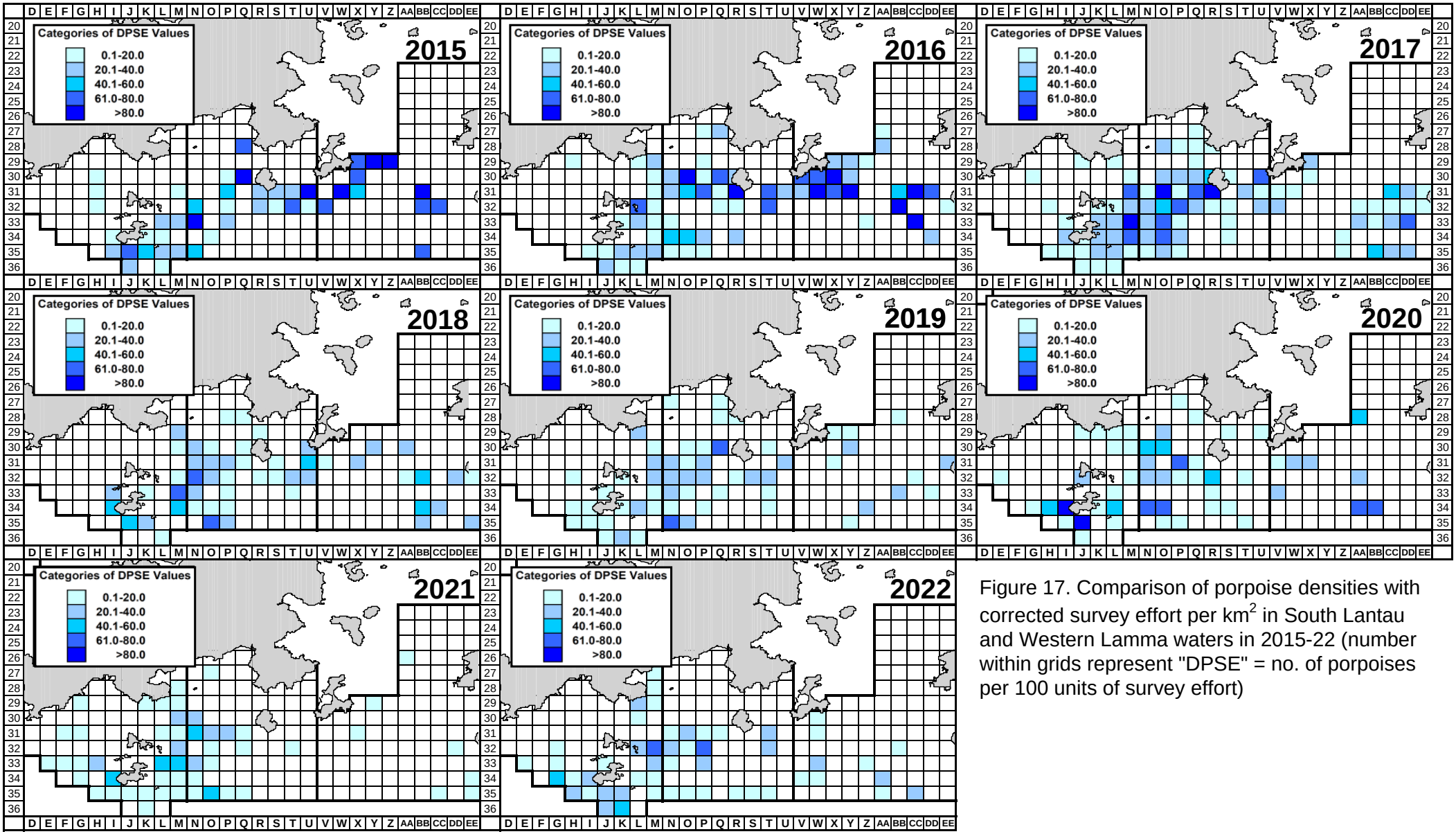


Figure 17. Comparison of porpoise densities with corrected survey effort per km^2 in South Lantau and Western Lamma waters in 2015-22 (number within grids represent "DPSE" = no. of porpoises per 100 units of survey effort)

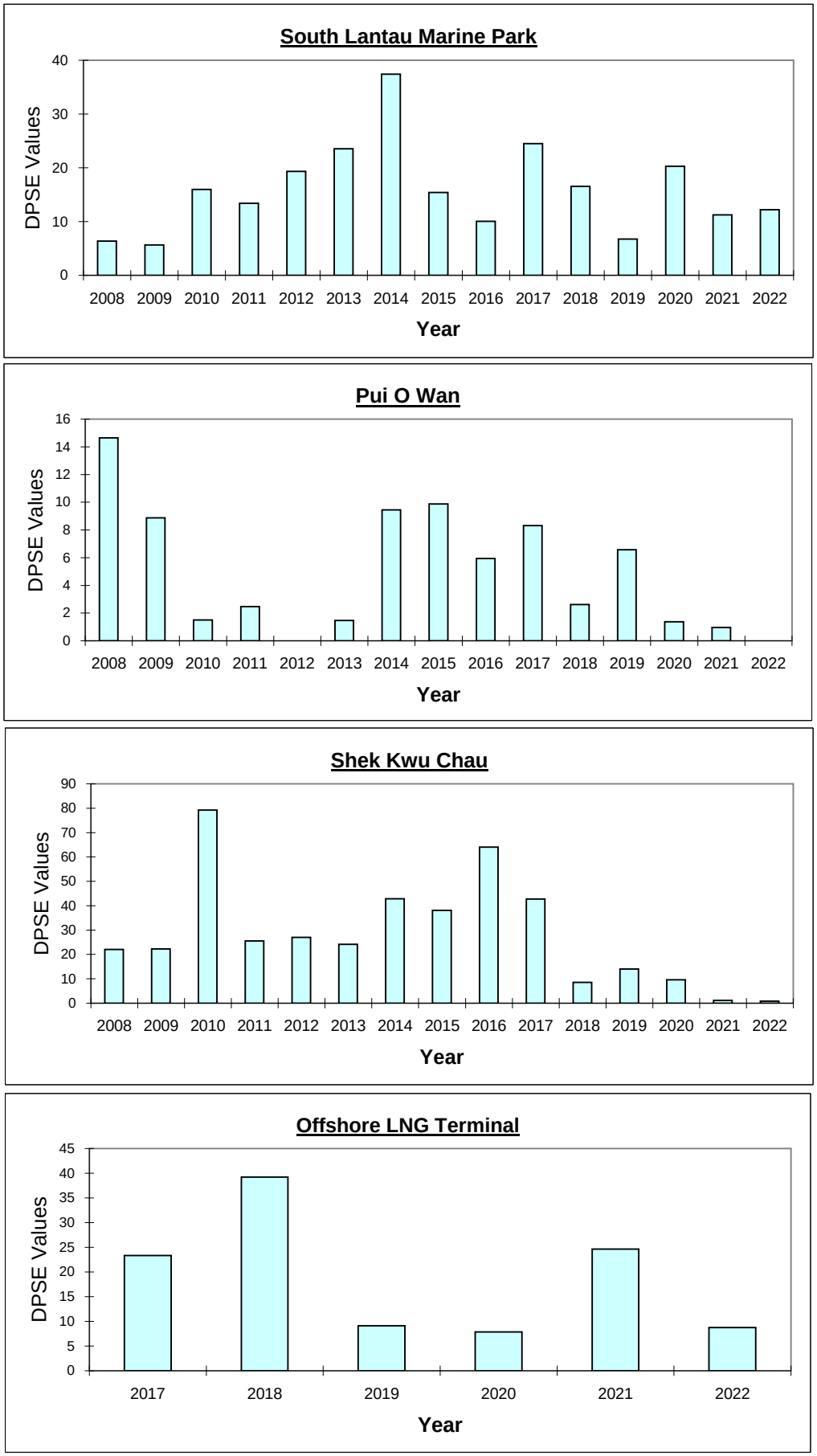


Figure 18. Temporal trend of porpoise densities (DPSE Values) at three key porpoise habitats and a recent infrasructure project area in South Lantau waters

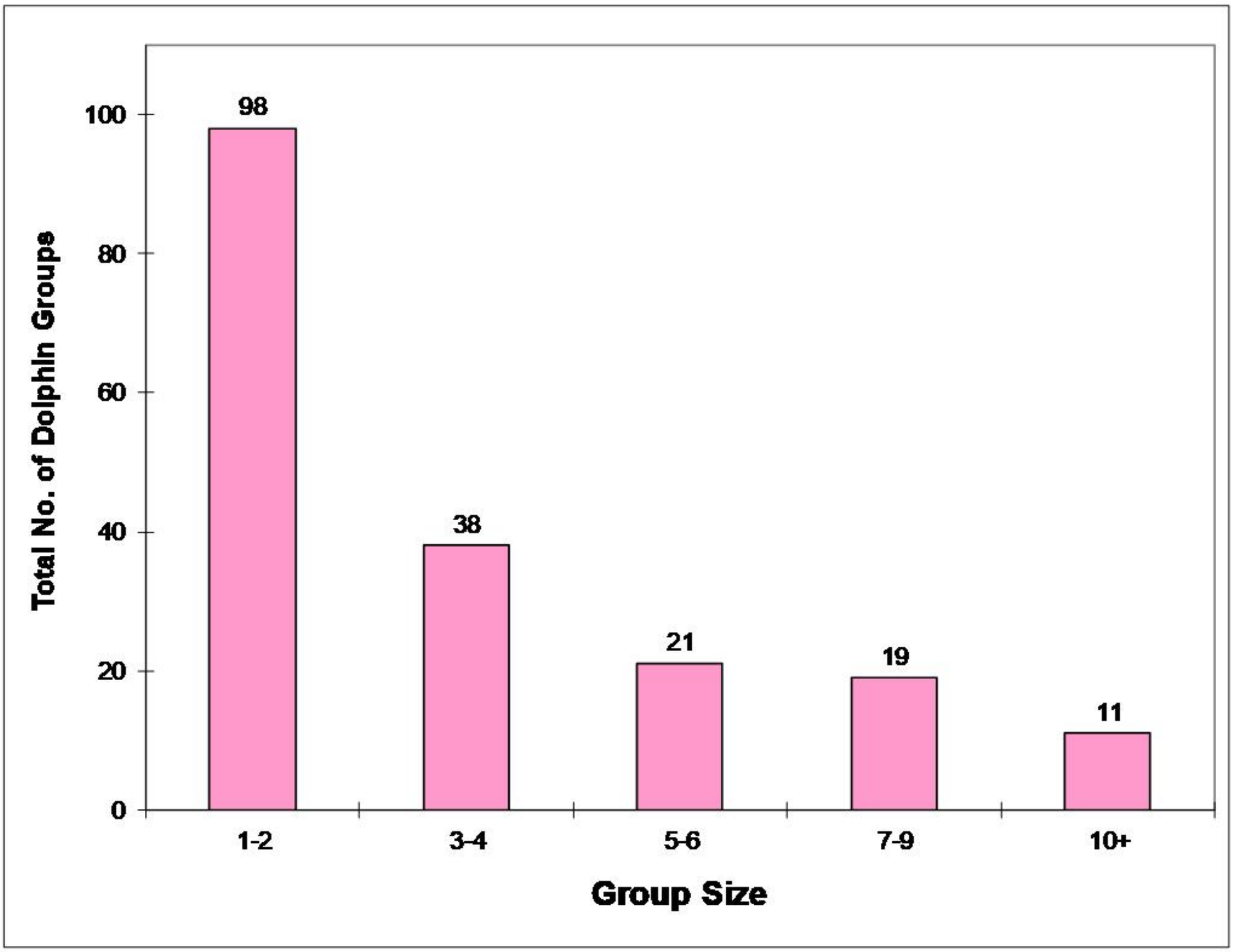


Figure 19. Total number of dolphin groups with different group sizes during April 2022 to March 2023

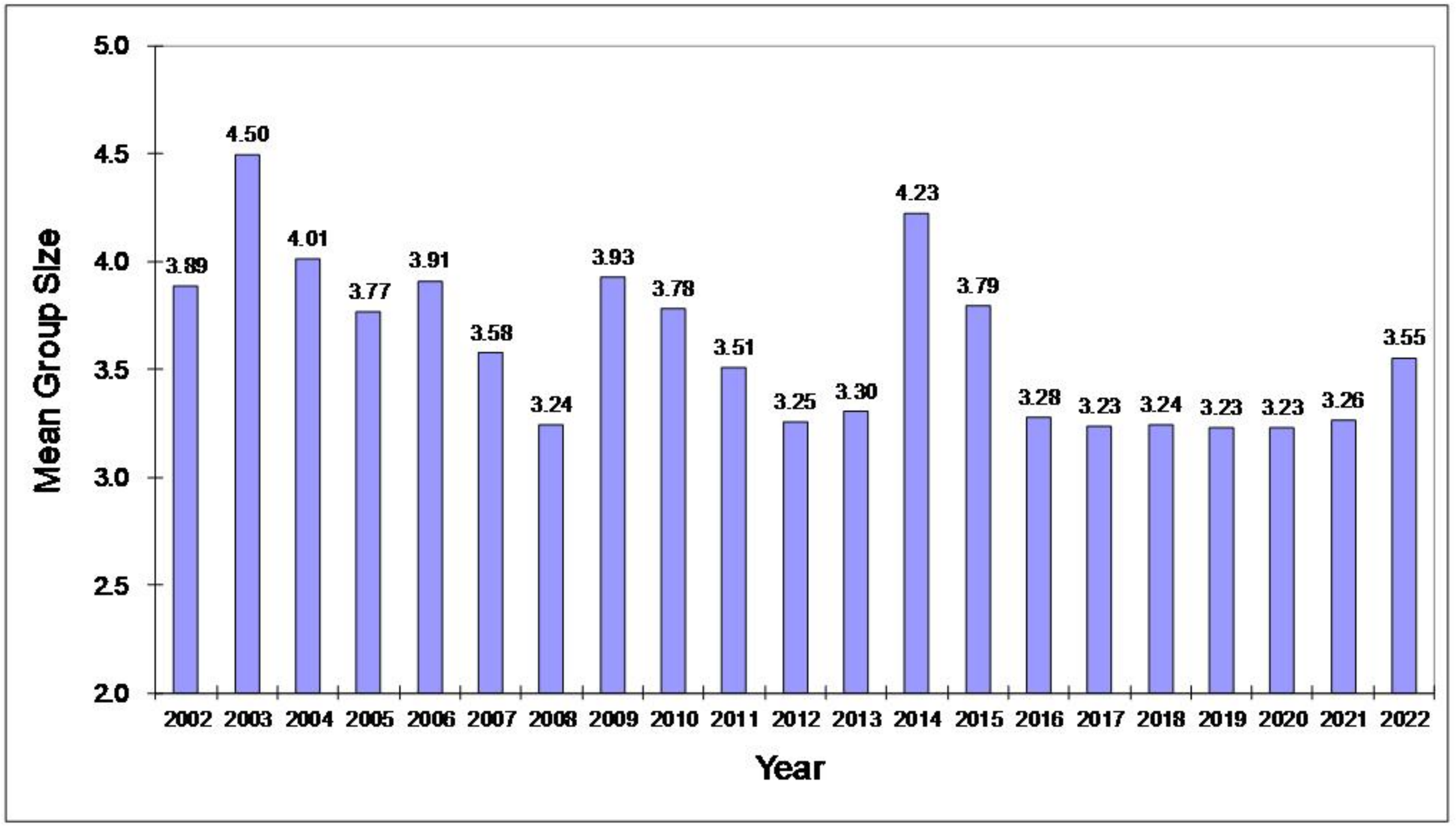


Figure 20. Temporal trend of mean dolphin group size in 2002-22

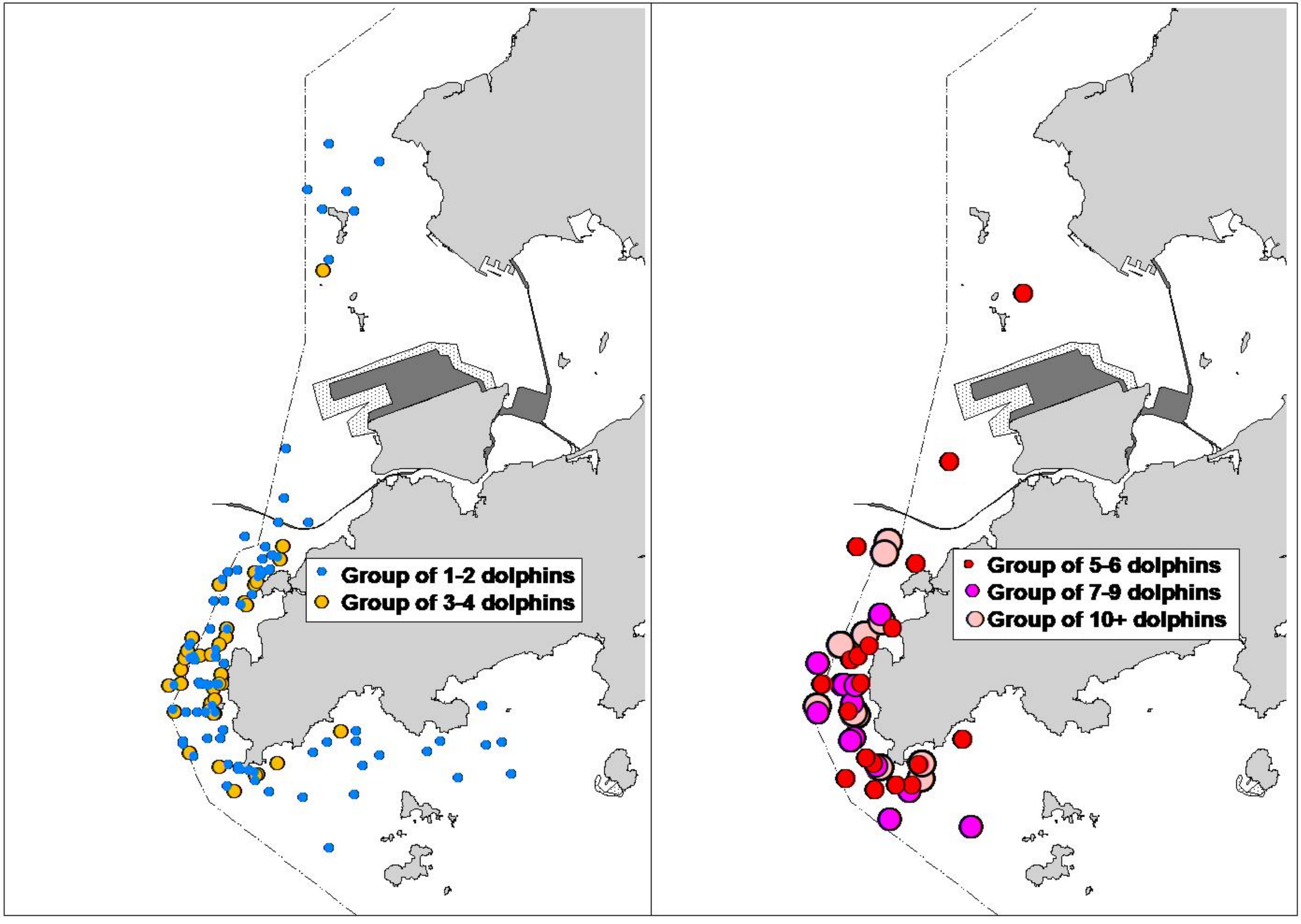


Figure 21. Distribution of Chinese White Dolphins with different group sizes in 2022

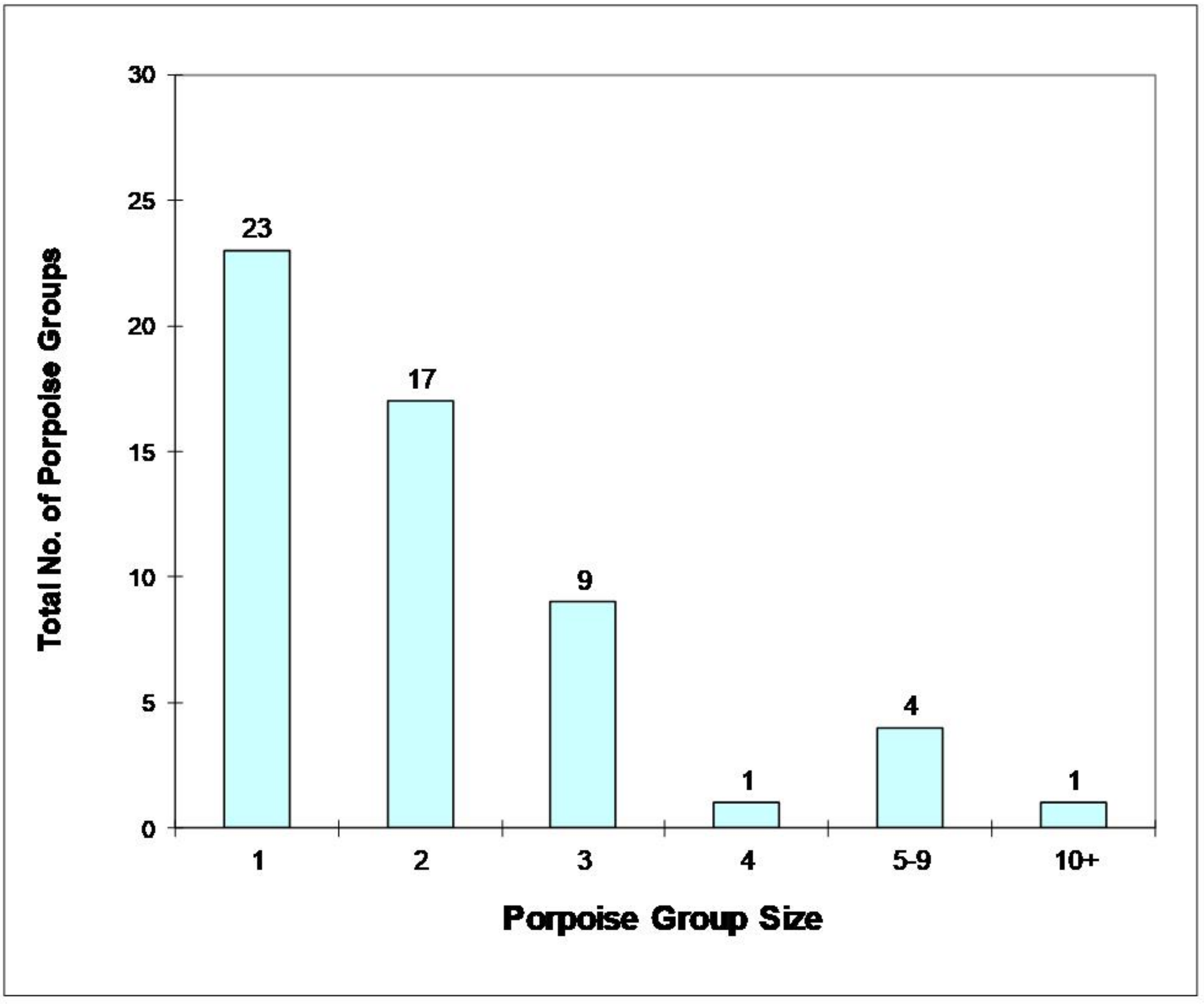


Figure 22. Total number of porpoise groups with different group sizes during April 2022 to March 2023

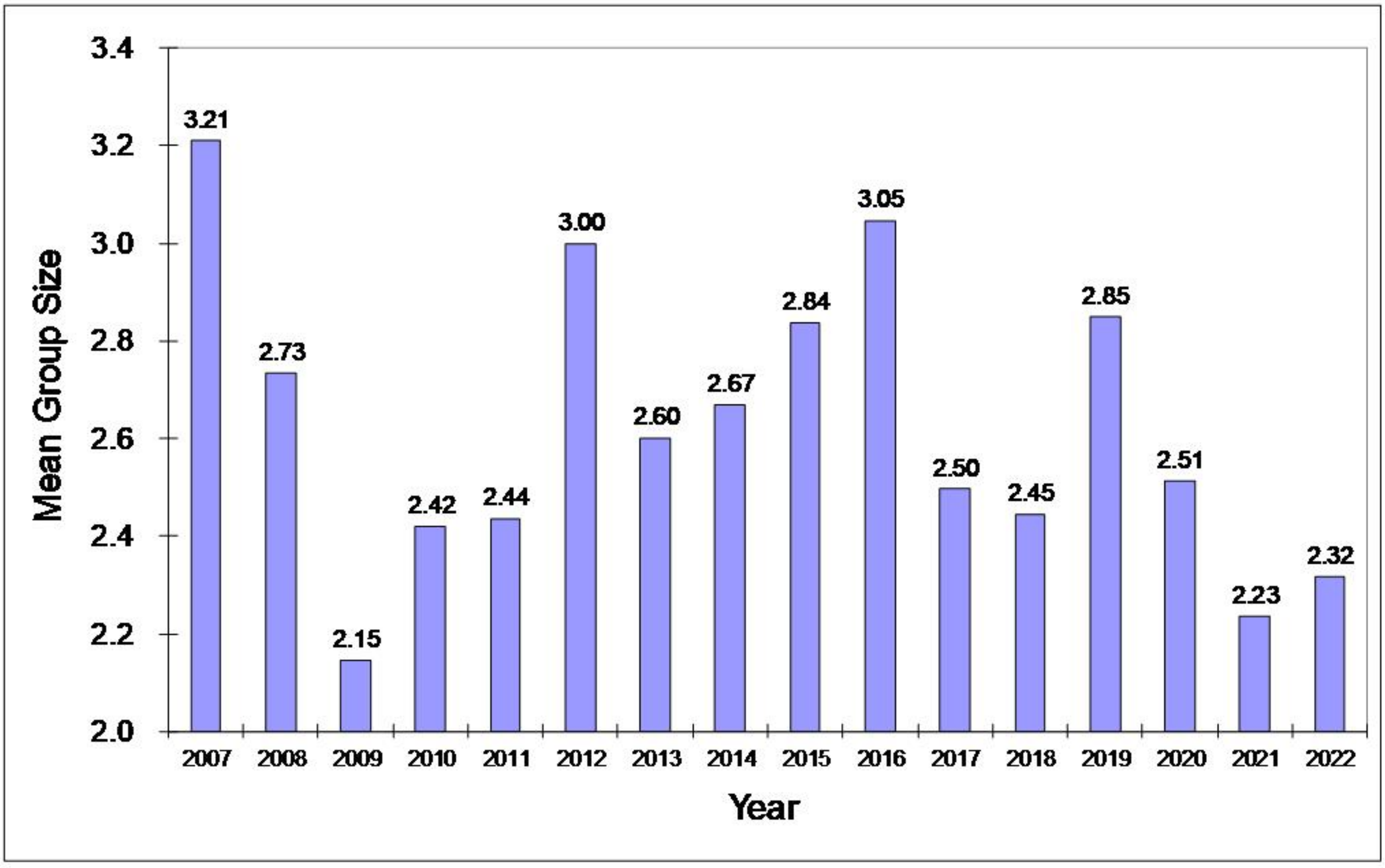


Figure 23. Temporal trend of mean porpoise group size in 2007-22

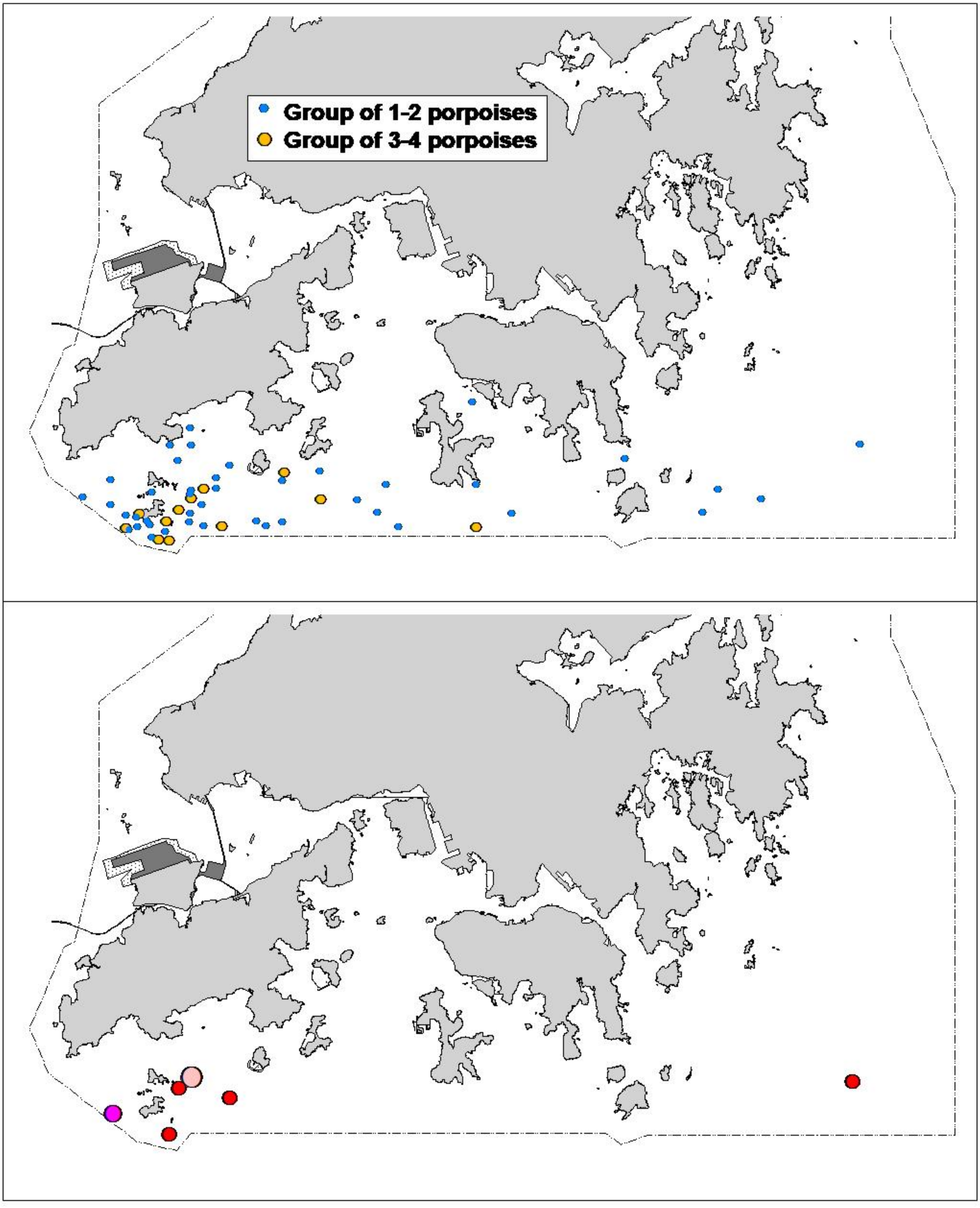


Figure 24. Distribution of finless porpoises with different group sizes in 2022

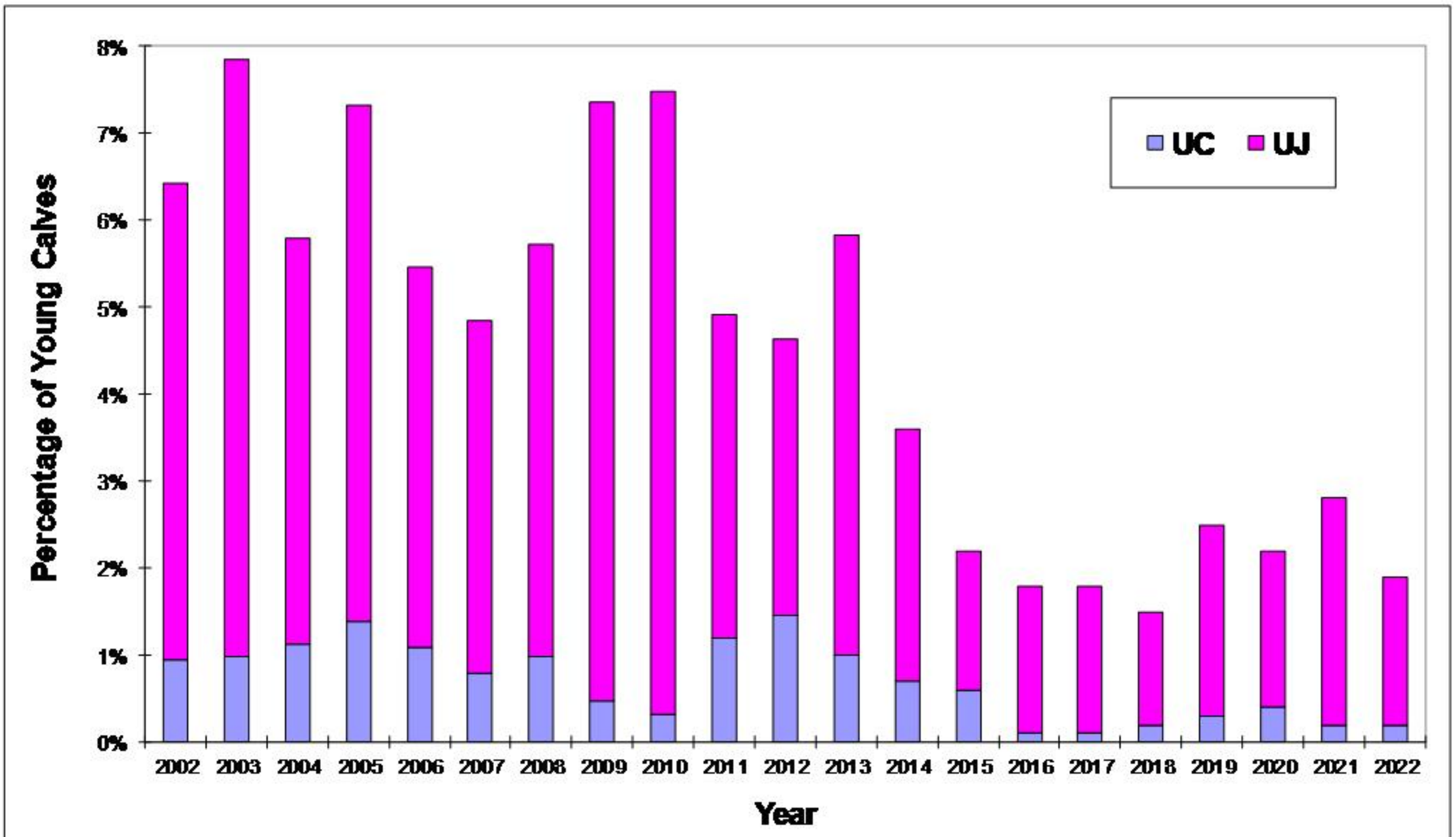


Figure 25. Percentages of young calves (i.e. Unspotted Calves (UC) and Unspotted Juveniles (UJ)) among all dolphin groups during 2002-22

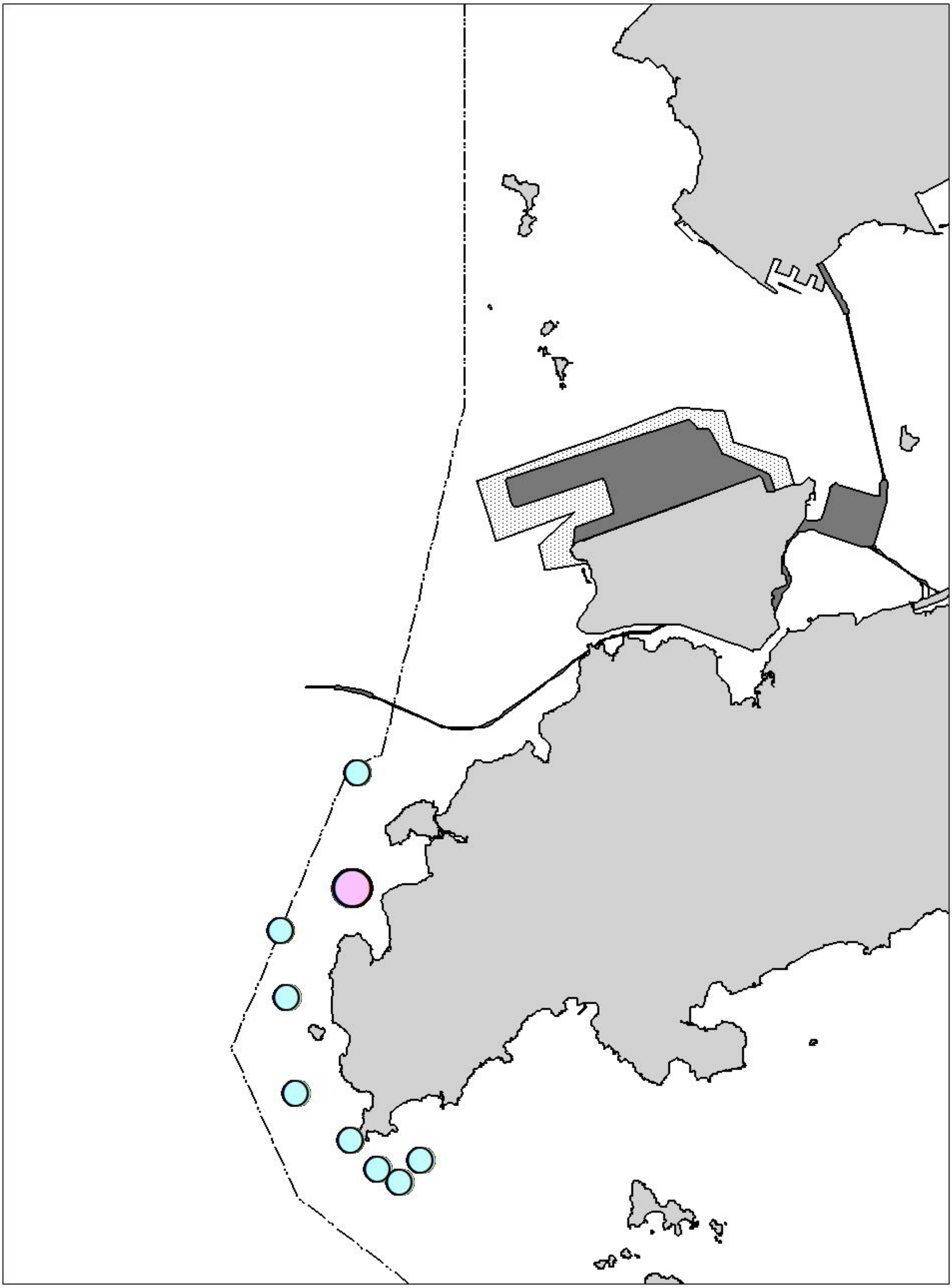


Figure 26. Distribution of Unspotted Calves (purple dots) & Unspotted Juveniles (blue dots) in 2022

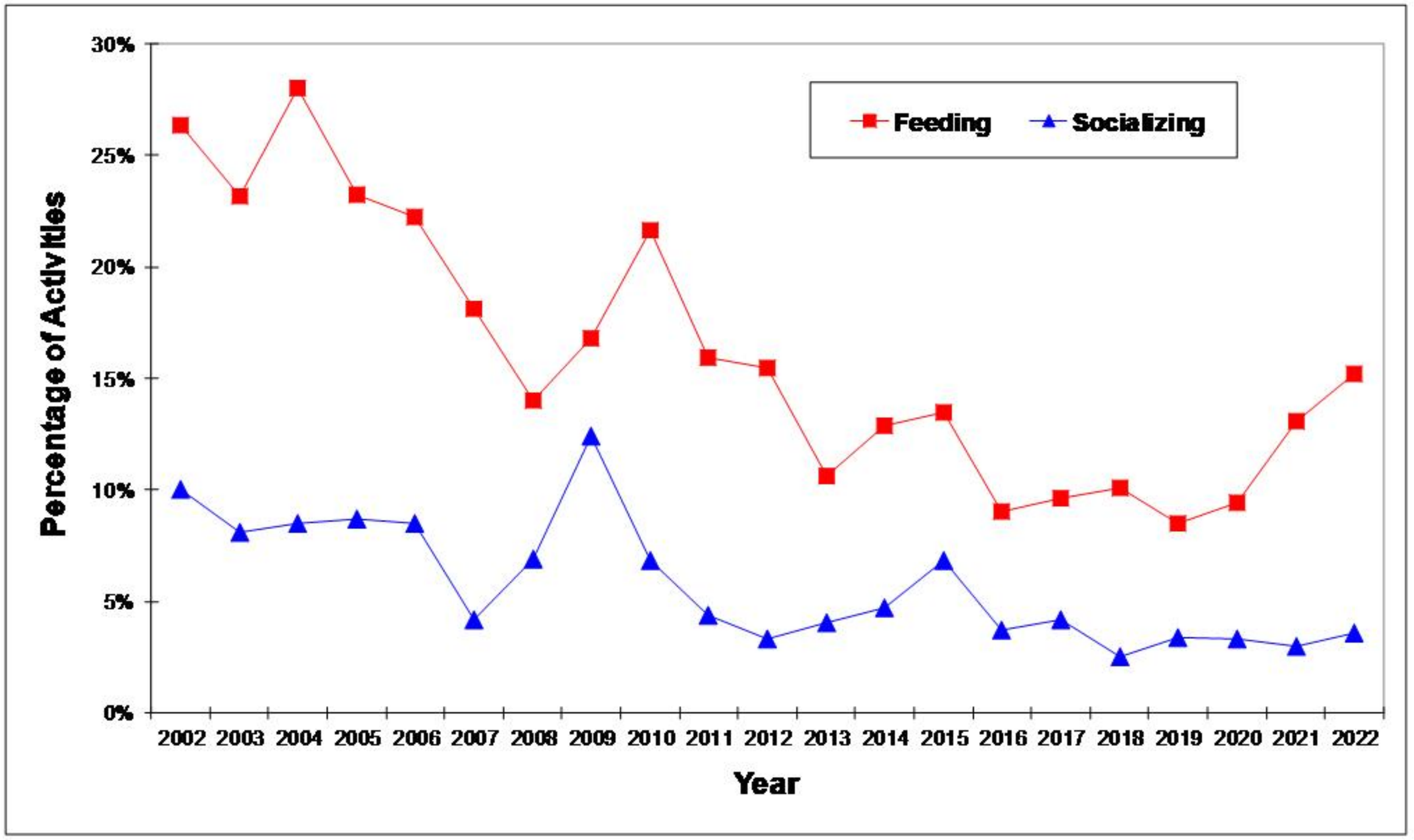


Figure 27. Percentages of feeding and socializing activities among all dolphin groups sighted in Hong Kong during 2002-22

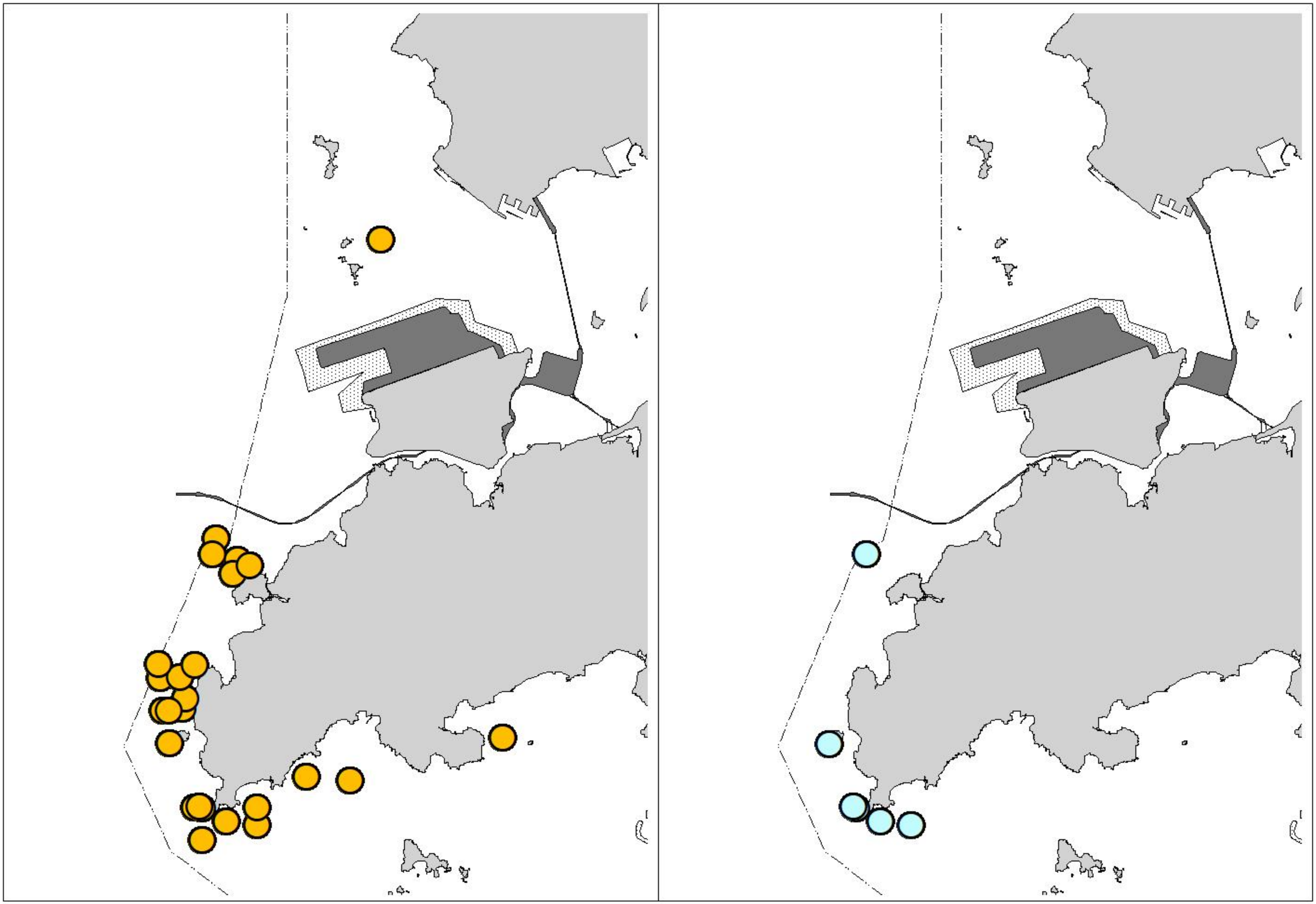


Figure 28. Distribution of Chinese white dolphins engaged in feeding (orange dots) and socializing (blue dots) activities in 2022

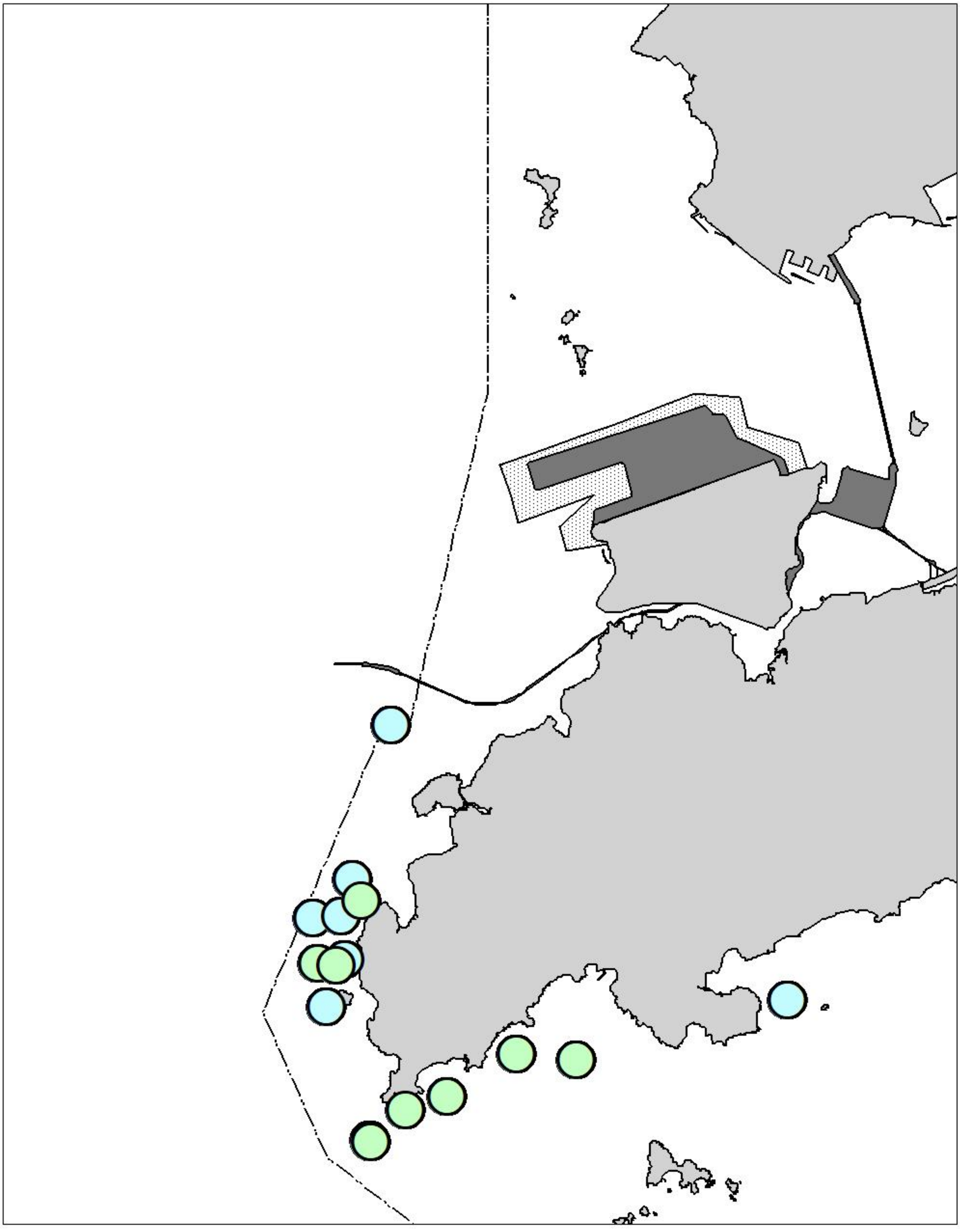


Figure 29. Distribution of dolphin sightings associated with fishing boats (green dots: purse-seiners; blue dots: gill-netters) in 2022

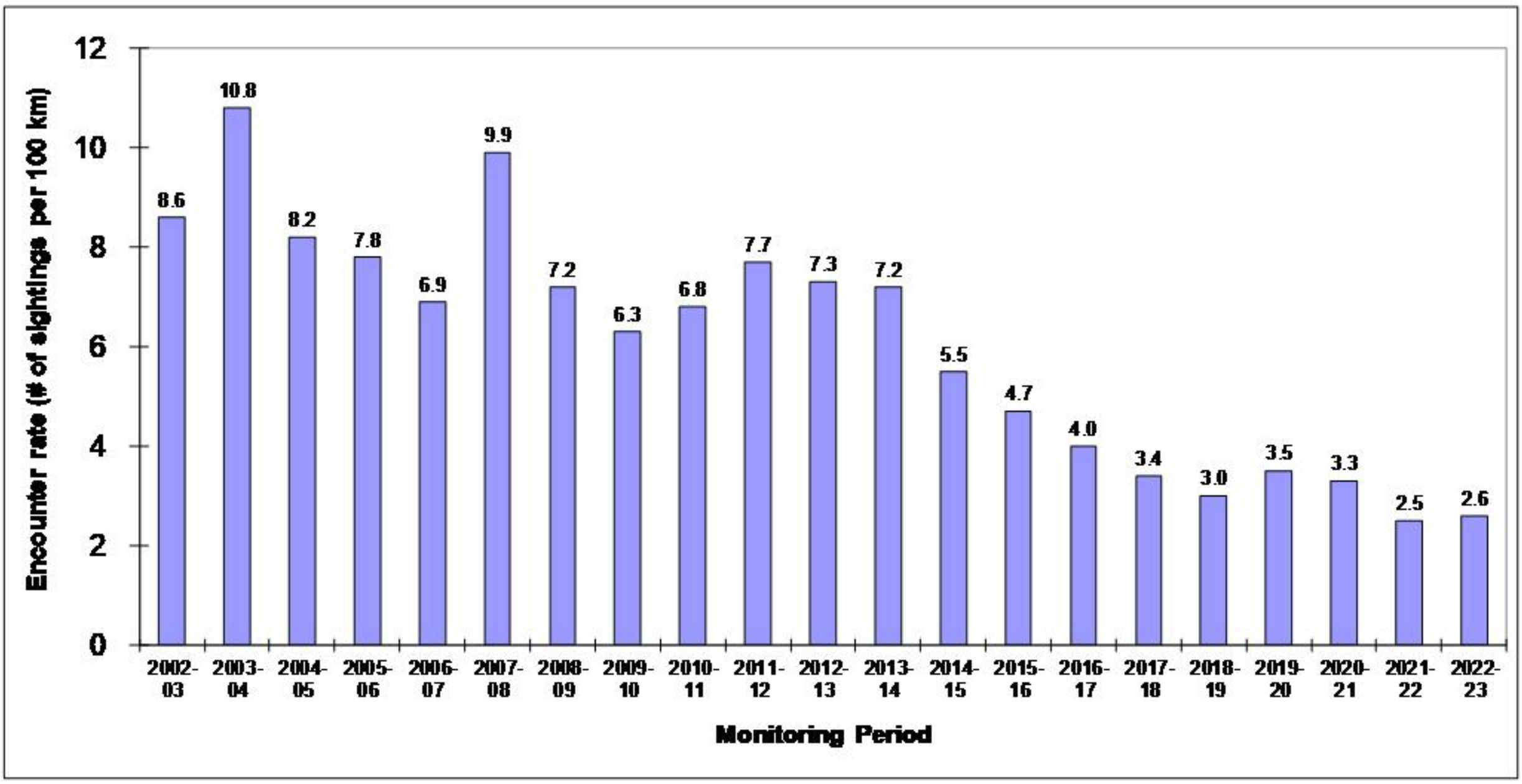


Figure 30a. Temporal trend in encounter rates of Chinese White Dolphins (combined from WL, NWL, NEL and SWL survey areas) in the past 21 monitoring periods from 2002/03 to 2022/23

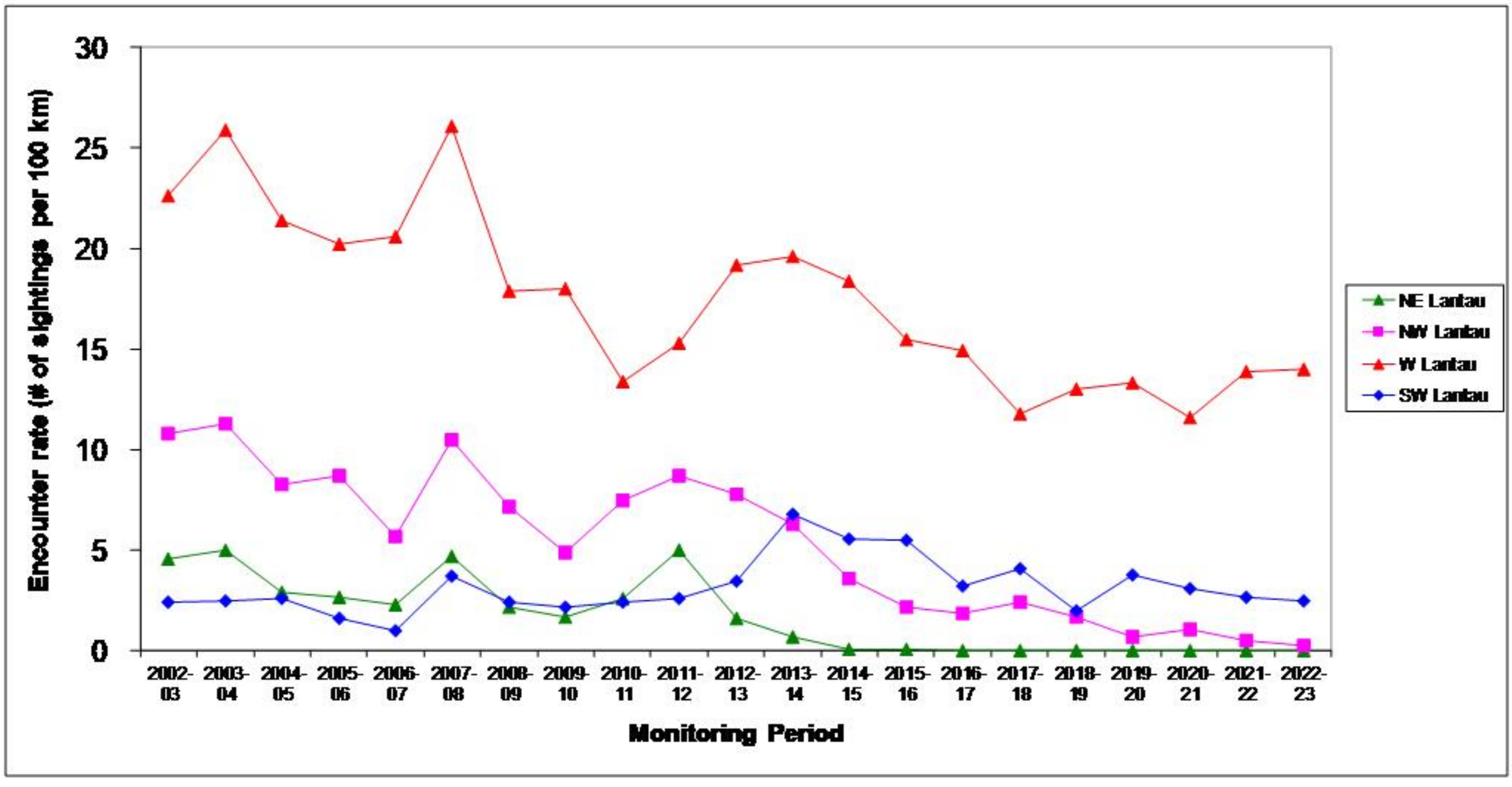


Figure 30b. Temporal trend in encounter rates of Chinese White Dolphins in each of the survey areas in WL, NWL, NEL and SWL waters in the past 21 monitoring periods from 2002/03 to 2022/23

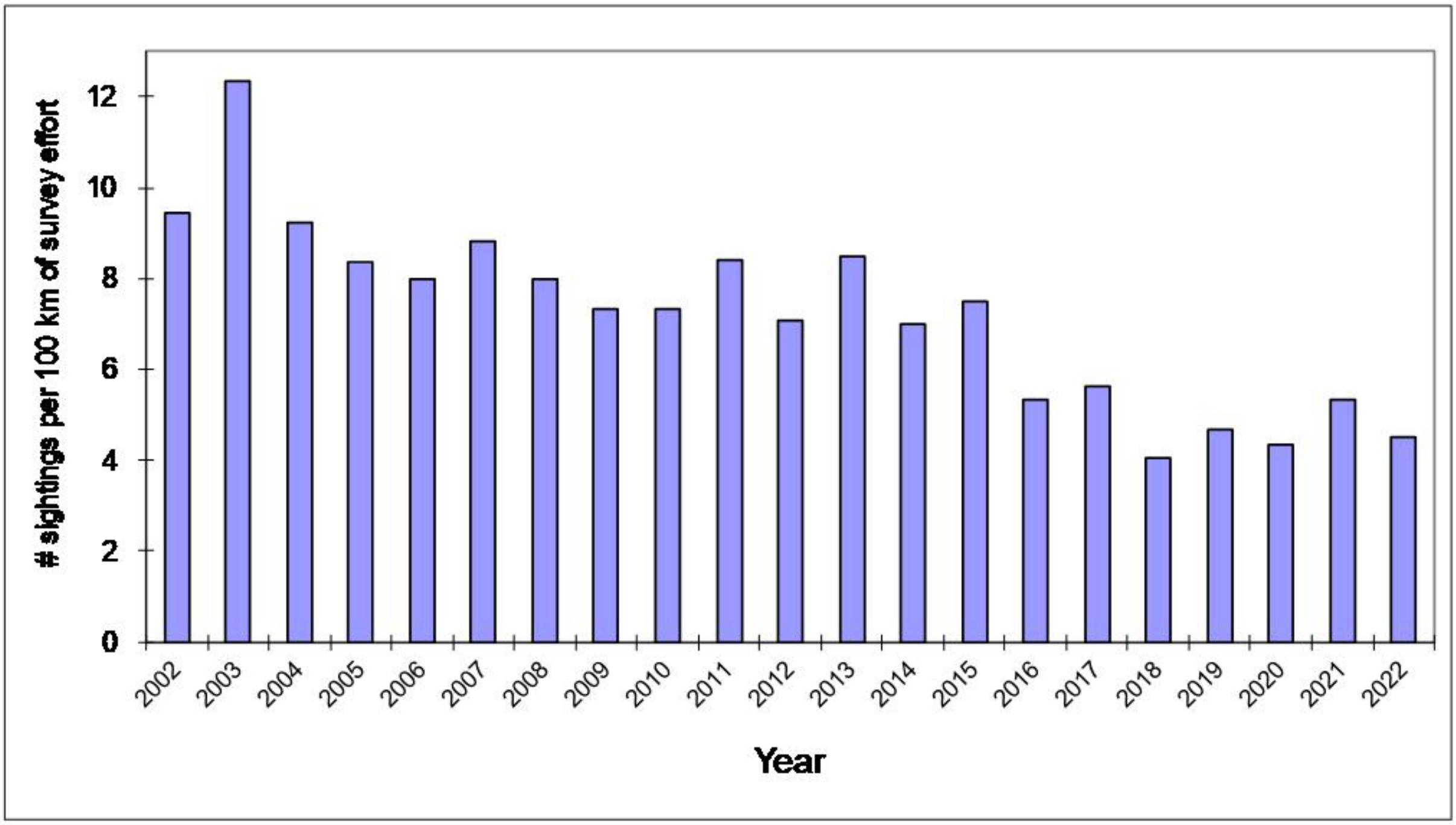


Figure 31a. Temporal trends in combined annual dolphin encounter rates from four survey areas in NEL, NWL, WL and SWL

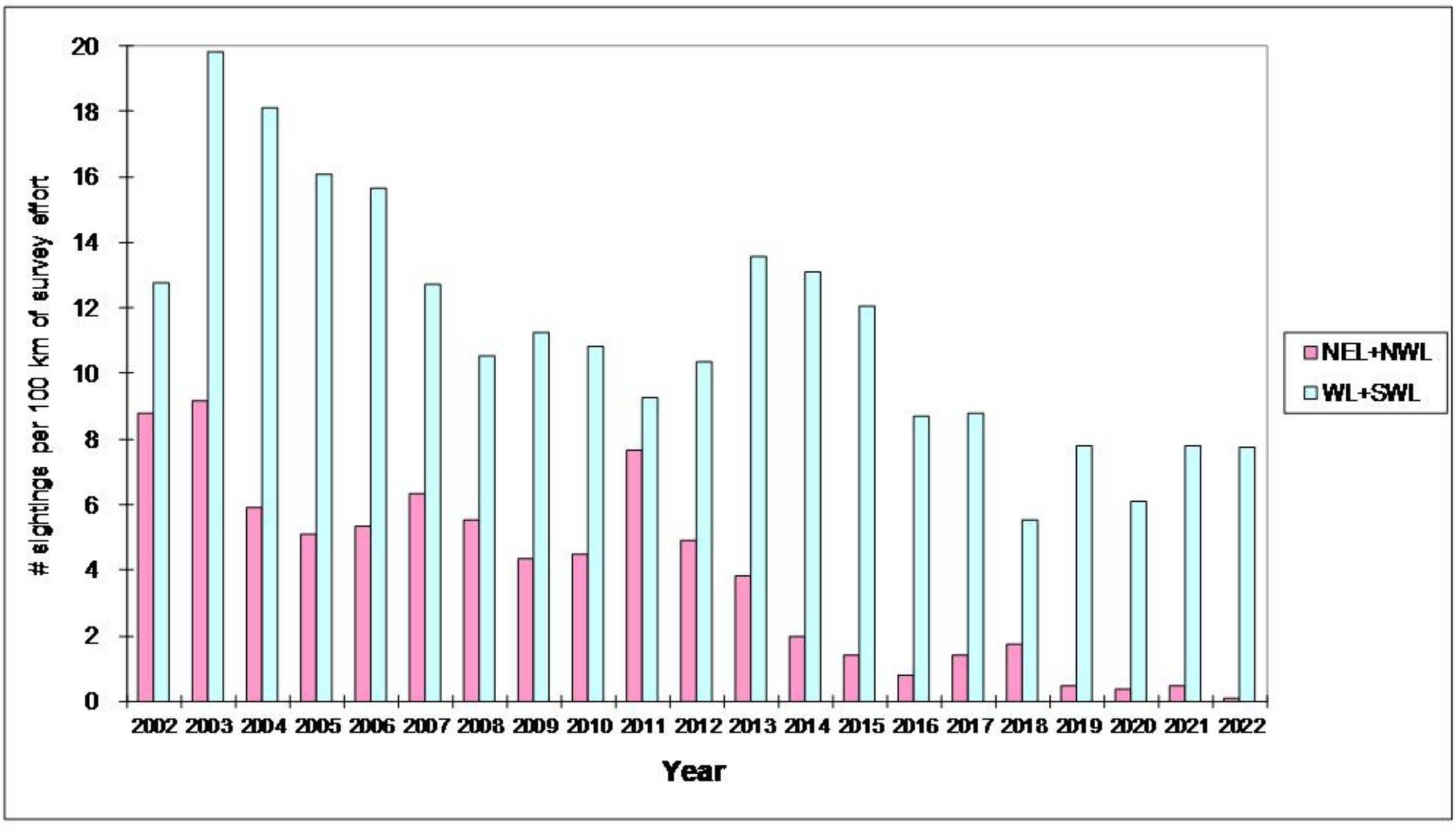


Figure 31b. Temporal trends in annual dolphin encounter rates in North Lantau and West/Southwest Lantau regions

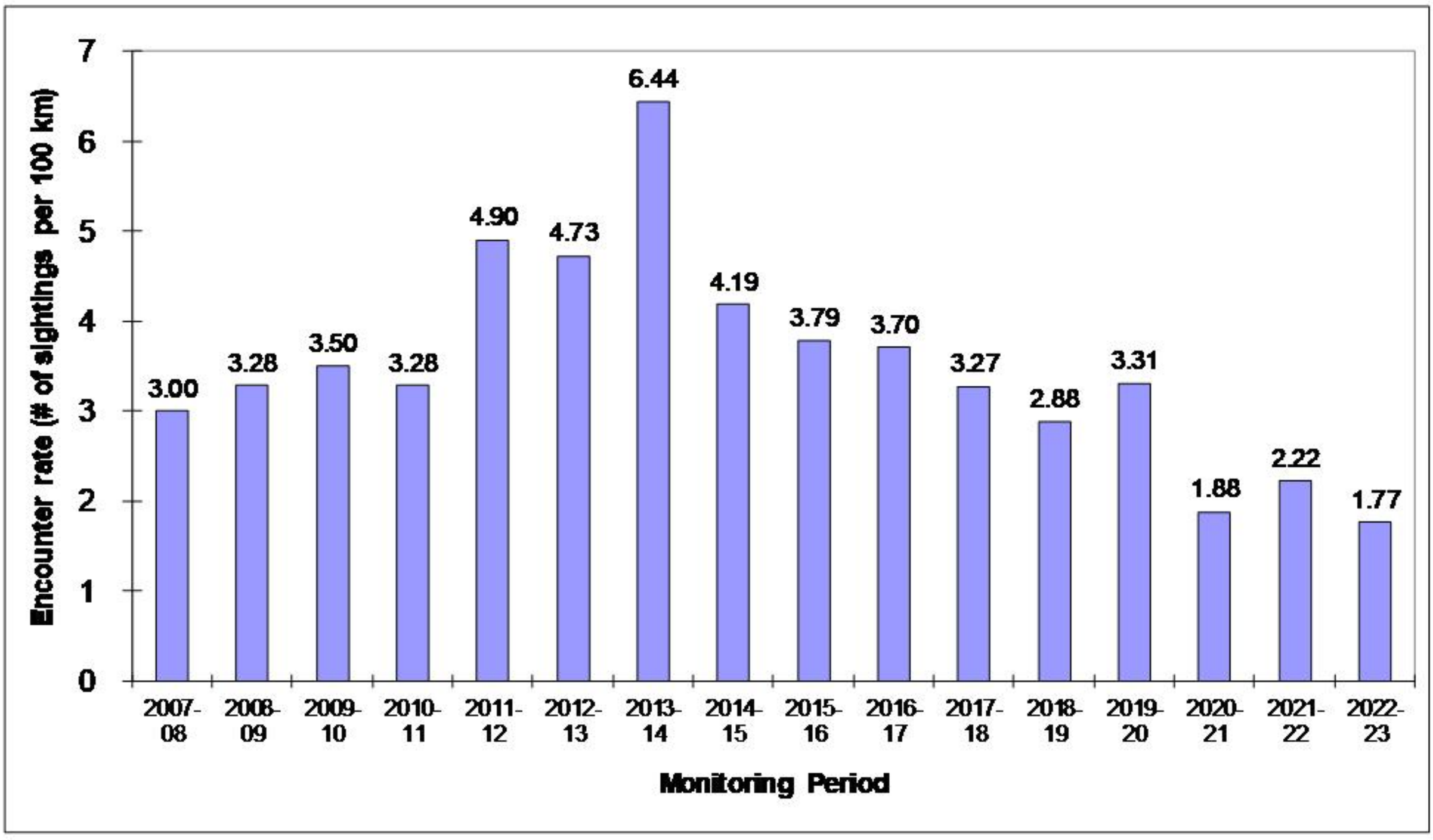


Figure 32. Temporal trend in encounter rates of finless porpoises (combined from SWL, SEL, LM and PT survey areas) in the past 16 monitoring periods from 2007/08 to 2022/23

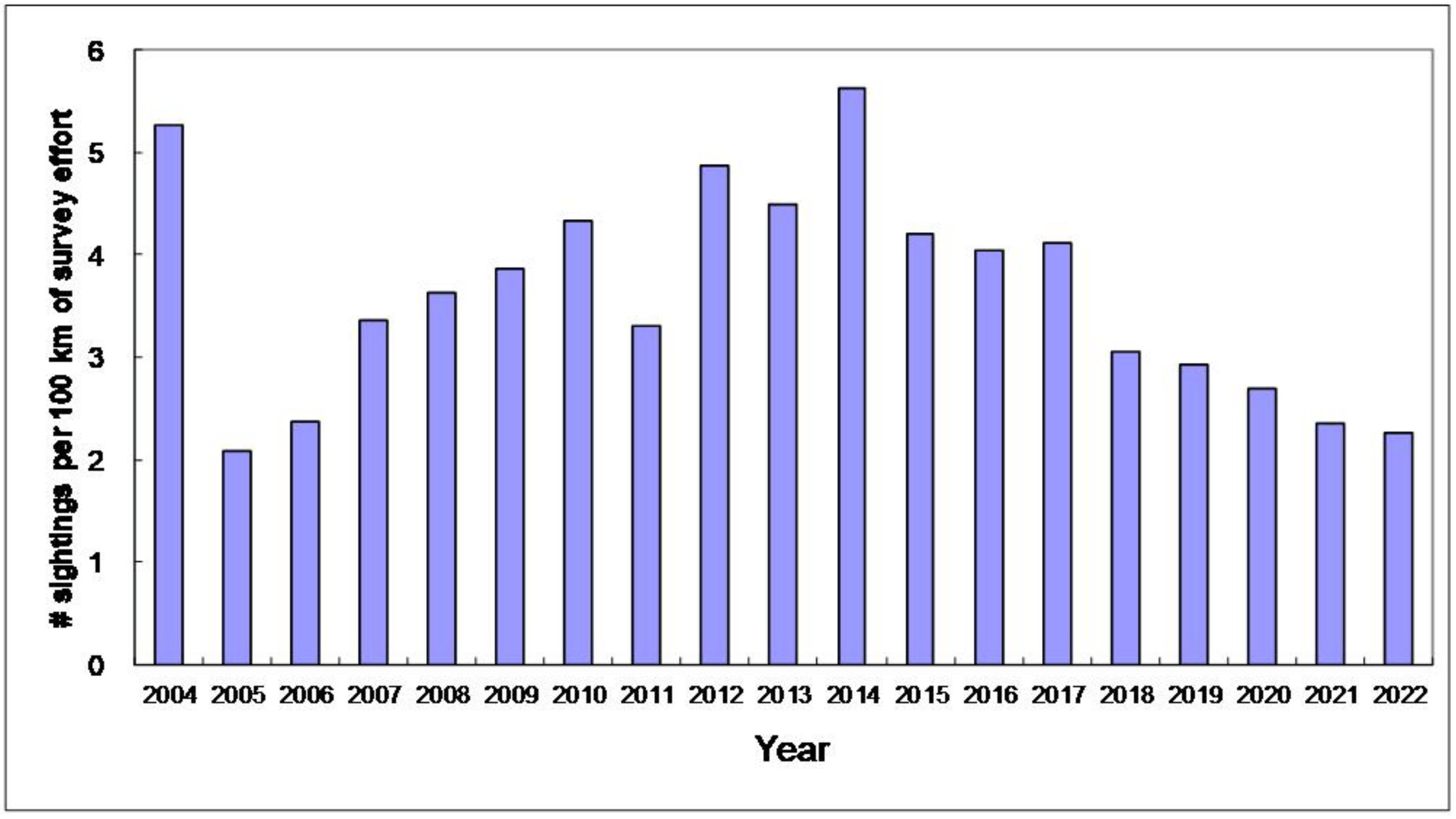


Figure 33a. Temporal trend of annual encounter rates of finless porpoises (combined from SWL, SEL, LM and PT survey areas)

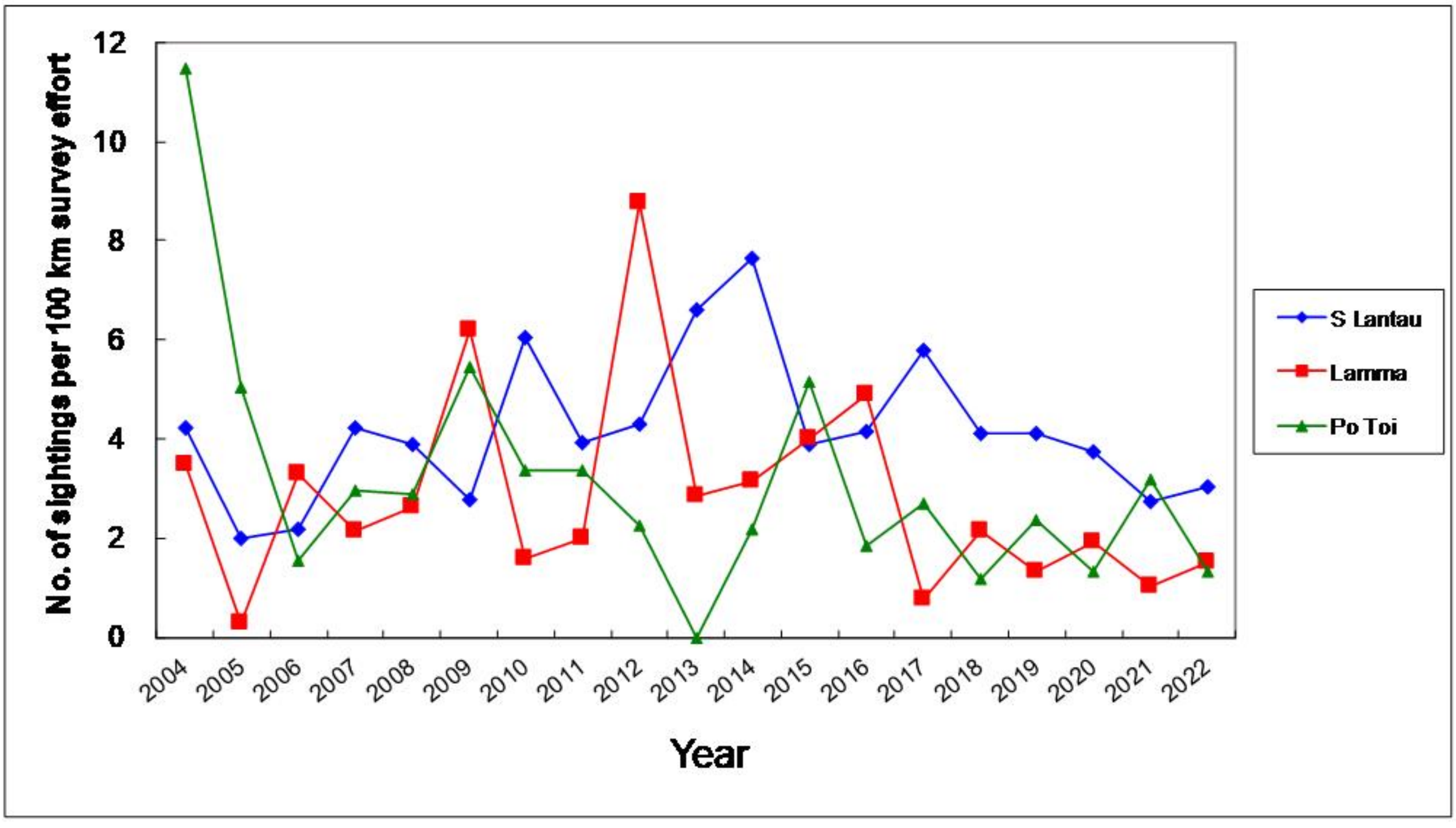


Figure 33b. Temporal trend of annual porpoise encounter rates in South Lantau, Lamma and Po Toi survey areas respectively

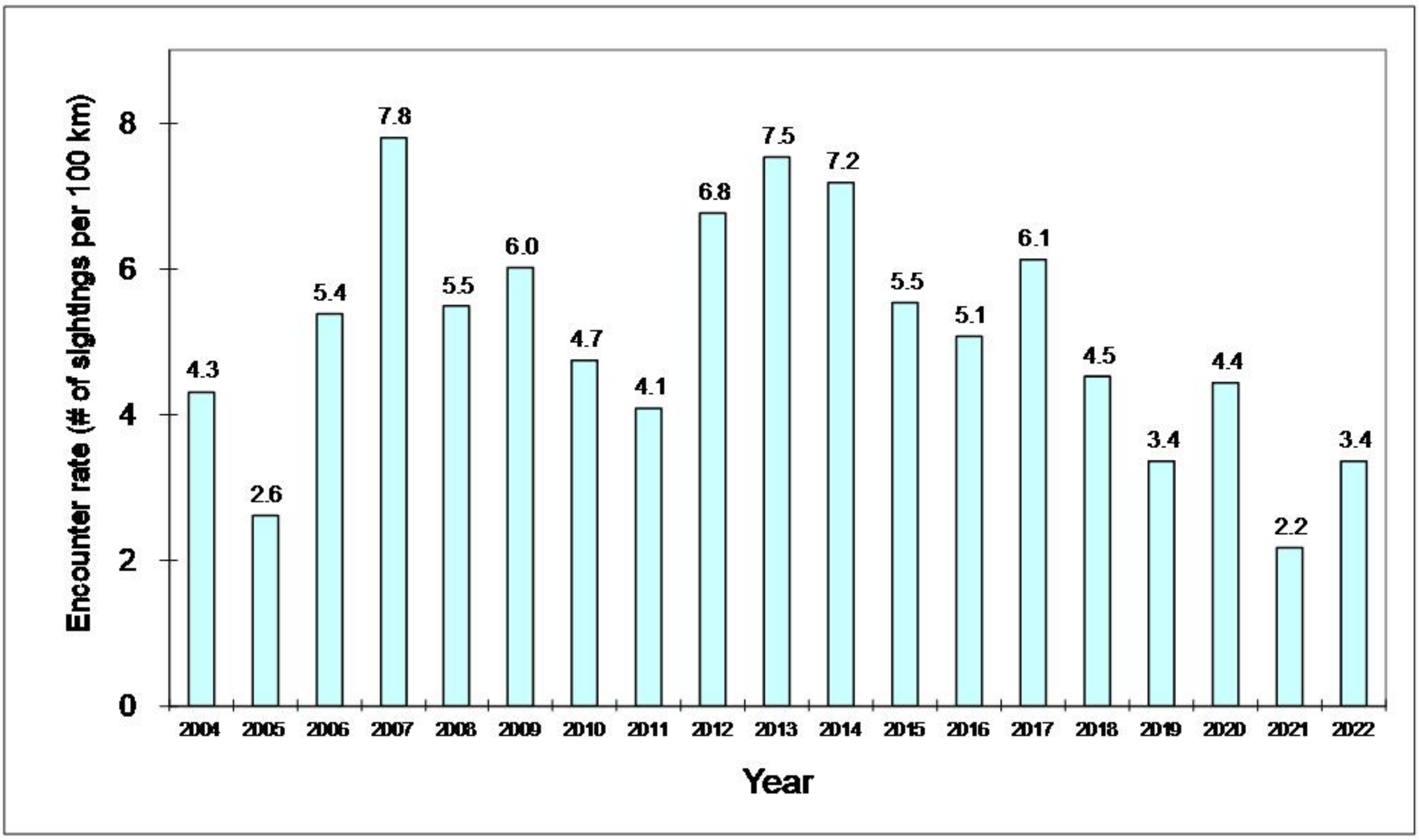


Figure 34. Temporal trends of annual encounter rates of finless porpoises combined from SWL, SEL and LM survey areas and from winter/spring months only)

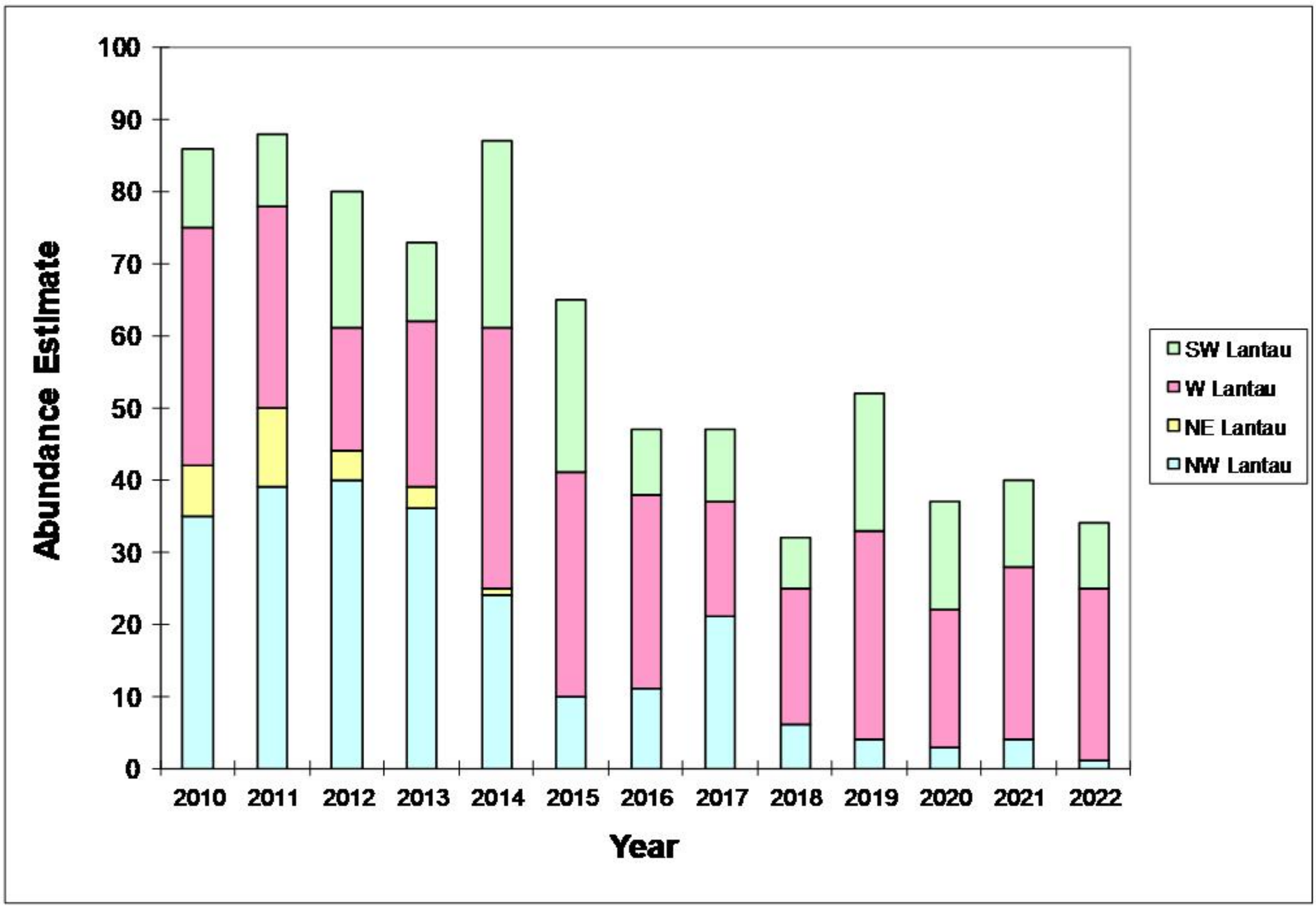


Figure 35. Temporal trends in combined abundance estimates of Chinese White Dolphins in SWL, WL, NWL and NEL from 2010-22

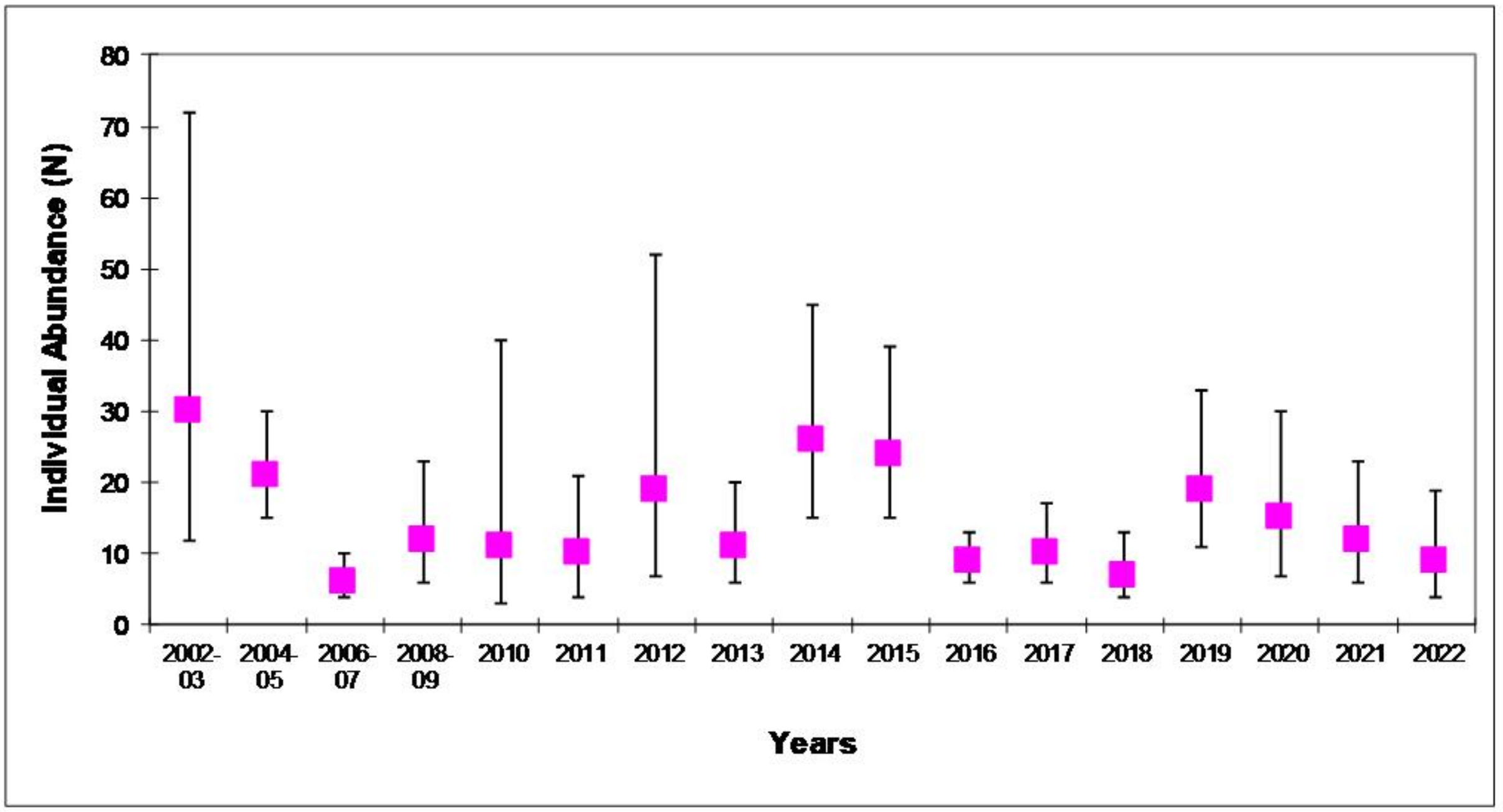


Figure 36. Temporal trend in abundance estimates of Chinese White Dolphins in Southwest Lantau from 2002-22 (error bars: 95% confidence interval of abundance estimates)

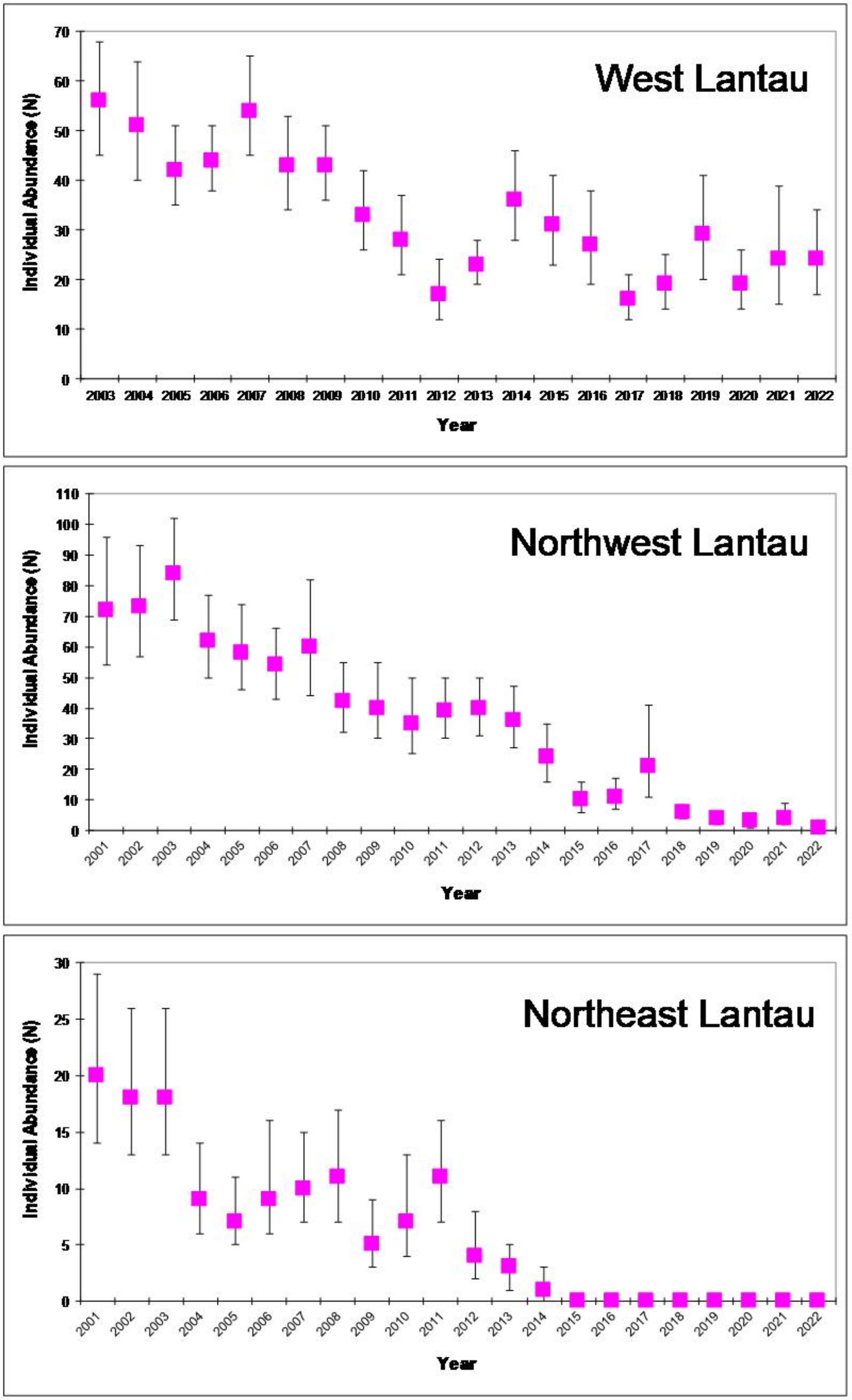


Figure 37. Temporal trends in annual abundance estimates of Chinese White Dolphins in WL (since 2003) & NWL/NEL (since 2001) (error bars: 95% confidence interval of abundance estimates)

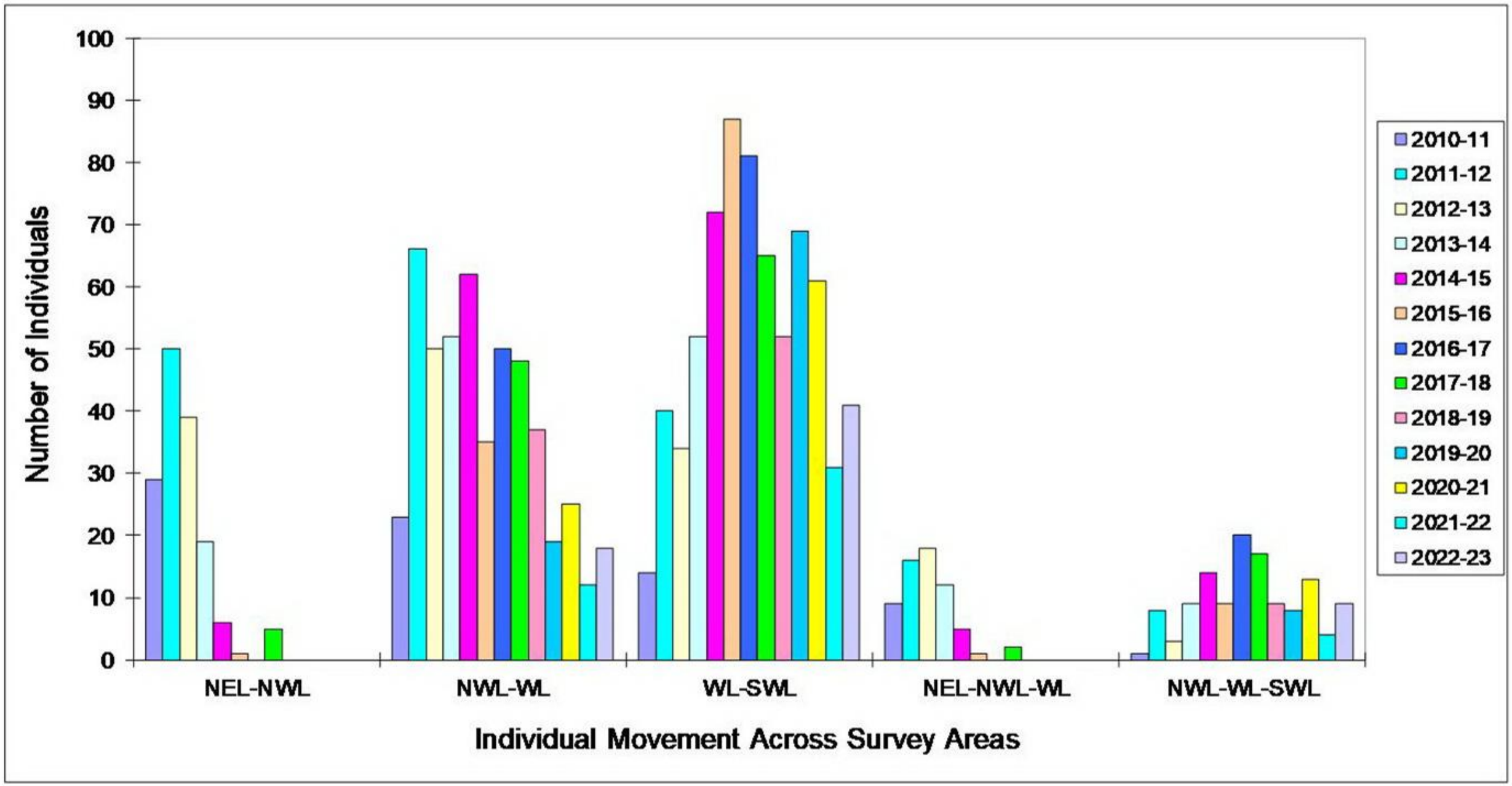


Figure 38. Temporal trends in number of individual dolphins involved in movements across different survey areas around Lantau in the past 13 monitoring periods

Appendix I. HKCRP-AFCD Survey Effort Database (April 2022 - March 2023)

(Note: P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
4-Apr-22	NW LANTAU	2	16.92	SPRING	STANDARD36826	P
4-Apr-22	NW LANTAU	3	11.23	SPRING	STANDARD36826	P
4-Apr-22	NW LANTAU	2	8.65	SPRING	STANDARD36826	S
4-Apr-22	NW LANTAU	3	1.2	SPRING	STANDARD36826	S
4-Apr-22	DEEP BAY	2	6.69	SPRING	STANDARD36826	P
4-Apr-22	DEEP BAY	3	1.35	SPRING	STANDARD36826	P
4-Apr-22	DEEP BAY	2	6.76	SPRING	STANDARD36826	S
4-Apr-22	NE LANTAU	2	30.41	SPRING	STANDARD36826	P
4-Apr-22	NE LANTAU	2	10.82	SPRING	STANDARD36826	S
6-Apr-22	W LANTAU	2	9.93	SPRING	STANDARD36826	S
6-Apr-22	SW LANTAU	2	14.26	SPRING	STANDARD36826	P
6-Apr-22	SW LANTAU	3	7.79	SPRING	STANDARD36826	P
6-Apr-22	SW LANTAU	2	8.47	SPRING	STANDARD36826	S
6-Apr-22	SW LANTAU	3	5.09	SPRING	STANDARD36826	S
6-Apr-22	SE LANTAU	2	1.6	SPRING	STANDARD36826	P
6-Apr-22	SE LANTAU	3	19.79	SPRING	STANDARD36826	P
6-Apr-22	SE LANTAU	2	1.9	SPRING	STANDARD36826	S
6-Apr-22	SE LANTAU	3	7.01	SPRING	STANDARD36826	S
7-Apr-22	SE LANTAU	2	15.13	SPRING	STANDARD36826	P
7-Apr-22	SE LANTAU	2	2.17	SPRING	STANDARD36826	S
7-Apr-22	SW LANTAU	2	5.06	SPRING	STANDARD36826	P
7-Apr-22	SW LANTAU	3	1.57	SPRING	STANDARD36826	P
7-Apr-22	SW LANTAU	2	4.2	SPRING	STANDARD36826	S
7-Apr-22	SW LANTAU	3	5.14	SPRING	STANDARD36826	S
7-Apr-22	W LANTAU	2	12.87	SPRING	STANDARD36826	P
7-Apr-22	W LANTAU	3	6.9	SPRING	STANDARD36826	P
7-Apr-22	W LANTAU	2	7.48	SPRING	STANDARD36826	S
7-Apr-22	W LANTAU	3	3.2	SPRING	STANDARD36826	S
11-Apr-22	PO TOI	1	24.42	SPRING	STANDARD36826	P
11-Apr-22	PO TOI	2	57.15	SPRING	STANDARD36826	P
11-Apr-22	PO TOI	1	4.1	SPRING	STANDARD36826	S
11-Apr-22	PO TOI	2	10.43	SPRING	STANDARD36826	S
14-Apr-22	E LANTAU	2	19.11	SPRING	STANDARD36826	P
14-Apr-22	E LANTAU	3	16.45	SPRING	STANDARD36826	P
14-Apr-22	E LANTAU	2	15.95	SPRING	STANDARD36826	S
14-Apr-22	E LANTAU	3	4.49	SPRING	STANDARD36826	S
14-Apr-22	LAMMA	2	15.79	SPRING	STANDARD36826	P
14-Apr-22	LAMMA	3	6.6	SPRING	STANDARD36826	P
14-Apr-22	LAMMA	2	5.3	SPRING	STANDARD36826	S
14-Apr-22	LAMMA	3	3.31	SPRING	STANDARD36826	S
20-Apr-22	W LANTAU	2	20.32	SPRING	STANDARD36826	P
20-Apr-22	W LANTAU	2	9.95	SPRING	STANDARD36826	S
20-Apr-22	SW LANTAU	2	11.51	SPRING	STANDARD36826	P
20-Apr-22	SW LANTAU	3	14.52	SPRING	STANDARD36826	P
20-Apr-22	SW LANTAU	2	5.33	SPRING	STANDARD36826	S
20-Apr-22	SW LANTAU	3	5.46	SPRING	STANDARD36826	S
22-Apr-22	LAMMA	2	14.5	SPRING	STANDARD36826	P
22-Apr-22	LAMMA	3	25.1	SPRING	STANDARD36826	P
22-Apr-22	LAMMA	2	5.9	SPRING	STANDARD36826	S
22-Apr-22	LAMMA	3	5	SPRING	STANDARD36826	S
22-Apr-22	SE LANTAU	2	18.05	SPRING	STANDARD36826	P
22-Apr-22	SE LANTAU	3	5.41	SPRING	STANDARD36826	P
22-Apr-22	SE LANTAU	2	3.82	SPRING	STANDARD36826	S
22-Apr-22	SE LANTAU	3	1.9	SPRING	STANDARD36826	S
22-Apr-22	SW LANTAU	2	1.33	SPRING	STANDARD36826	P

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
22-Apr-22	SW LANTAU	3	3.7	SPRING	STANDARD36826	P
27-Apr-22	LAMMA	1	9.6	SPRING	STANDARD36826	P
27-Apr-22	LAMMA	2	24.66	SPRING	STANDARD36826	P
27-Apr-22	LAMMA	2	9.64	SPRING	STANDARD36826	S
27-Apr-22	SE LANTAU	1	9.7	SPRING	STANDARD36826	P
27-Apr-22	SE LANTAU	2	16.92	SPRING	STANDARD36826	P
27-Apr-22	SE LANTAU	1	4.41	SPRING	STANDARD36826	S
27-Apr-22	SE LANTAU	2	6.24	SPRING	STANDARD36826	S
27-Apr-22	SW LANTAU	2	3.48	SPRING	STANDARD36826	P
29-Apr-22	LAMMA	2	30.98	SPRING	STANDARD36826	P
29-Apr-22	LAMMA	3	3.5	SPRING	STANDARD36826	P
29-Apr-22	LAMMA	2	9.52	SPRING	STANDARD36826	S
29-Apr-22	PO TOI	1	7	SPRING	STANDARD36826	P
29-Apr-22	PO TOI	2	36.38	SPRING	STANDARD36826	P
29-Apr-22	PO TOI	1	0.5	SPRING	STANDARD36826	S
29-Apr-22	PO TOI	2	10.32	SPRING	STANDARD36826	S
6-May-22	W LANTAU	2	12.96	SPRING	STANDARD140232	P
6-May-22	W LANTAU	3	8.12	SPRING	STANDARD140232	P
6-May-22	W LANTAU	2	8.24	SPRING	STANDARD140232	S
6-May-22	W LANTAU	3	3.11	SPRING	STANDARD140232	S
6-May-22	SW LANTAU	2	1.1	SPRING	STANDARD140232	P
6-May-22	SW LANTAU	3	15.2	SPRING	STANDARD140232	P
6-May-22	SW LANTAU	4	1.13	SPRING	STANDARD140232	P
6-May-22	SW LANTAU	2	2.8	SPRING	STANDARD140232	S
6-May-22	SW LANTAU	3	8.48	SPRING	STANDARD140232	S
6-May-22	SW LANTAU	4	1.42	SPRING	STANDARD140232	S
23-May-22	NW LANTAU	2	7.76	SPRING	STANDARD138716	P
23-May-22	NW LANTAU	3	38.19	SPRING	STANDARD138716	P
23-May-22	NW LANTAU	2	1.4	SPRING	STANDARD138716	S
23-May-22	NW LANTAU	3	7.05	SPRING	STANDARD138716	S
23-May-22	DEEP BAY	3	9.05	SPRING	STANDARD138716	P
23-May-22	DEEP BAY	2	1.64	SPRING	STANDARD138716	S
23-May-22	DEEP BAY	3	4.41	SPRING	STANDARD138716	S
23-May-22	NE LANTAU	2	2.1	SPRING	STANDARD138716	P
23-May-22	NE LANTAU	3	16.54	SPRING	STANDARD138716	P
23-May-22	NE LANTAU	2	1.3	SPRING	STANDARD138716	S
23-May-22	NE LANTAU	3	11.06	SPRING	STANDARD138716	S
30-May-22	E LANTAU	2	35.99	SPRING	STANDARD138716	P
30-May-22	E LANTAU	3	3.4	SPRING	STANDARD138716	P
30-May-22	E LANTAU	2	22.61	SPRING	STANDARD138716	S
30-May-22	E LANTAU	3	1	SPRING	STANDARD138716	S
30-May-22	LAMMA	2	29.97	SPRING	STANDARD138716	P
30-May-22	LAMMA	3	6.52	SPRING	STANDARD138716	P
30-May-22	LAMMA	2	11.17	SPRING	STANDARD138716	S
30-May-22	LAMMA	3	0.34	SPRING	STANDARD138716	S
31-May-22	SE LANTAU	2	22.19	SPRING	STANDARD36826	P
31-May-22	SE LANTAU	3	8.1	SPRING	STANDARD36826	P
31-May-22	SE LANTAU	2	5.4	SPRING	STANDARD36826	S
31-May-22	SE LANTAU	3	2.08	SPRING	STANDARD36826	S
31-May-22	SW LANTAU	2	19.63	SPRING	STANDARD36826	P
31-May-22	SW LANTAU	2	4.61	SPRING	STANDARD36826	S
13-Jun-22	NW LANTAU	2	0.2	SUMMER	STANDARD138716	P
13-Jun-22	NW LANTAU	3	28.45	SUMMER	STANDARD138716	P
13-Jun-22	NW LANTAU	4	4.81	SUMMER	STANDARD138716	P
13-Jun-22	NW LANTAU	2	2	SUMMER	STANDARD138716	S
13-Jun-22	NW LANTAU	3	7.54	SUMMER	STANDARD138716	S
13-Jun-22	DEEP BAY	3	7.62	SUMMER	STANDARD138716	P
13-Jun-22	DEEP BAY	4	2.3	SUMMER	STANDARD138716	P

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
13-Jun-22	DEEP BAY	3	6.08	SUMMER	STANDARD138716	S
13-Jun-22	NE LANTAU	2	22.43	SUMMER	STANDARD138716	P
13-Jun-22	NE LANTAU	3	7.39	SUMMER	STANDARD138716	P
13-Jun-22	NE LANTAU	2	7.7	SUMMER	STANDARD138716	S
13-Jun-22	NE LANTAU	3	2.88	SUMMER	STANDARD138716	S
23-Jun-22	W LANTAU	2	18.77	SUMMER	STANDARD138716	P
23-Jun-22	W LANTAU	3	1.86	SUMMER	STANDARD138716	P
23-Jun-22	W LANTAU	2	10.48	SUMMER	STANDARD138716	S
23-Jun-22	SW LANTAU	2	13.84	SUMMER	STANDARD138716	P
23-Jun-22	SW LANTAU	2	8.03	SUMMER	STANDARD138716	S
24-Jun-22	PO TOI	1	30.08	SUMMER	STANDARD138716	P
24-Jun-22	PO TOI	2	23.79	SUMMER	STANDARD138716	P
24-Jun-22	PO TOI	1	4.06	SUMMER	STANDARD138716	S
24-Jun-22	PO TOI	2	3.07	SUMMER	STANDARD138716	S
24-Jun-22	NINEPINS	2	13.4	SUMMER	STANDARD138716	P
24-Jun-22	NINEPINS	3	11.4	SUMMER	STANDARD138716	P
30-Jun-22	W LANTAU	2	12.84	SUMMER	STANDARD138716	P
30-Jun-22	W LANTAU	3	8.16	SUMMER	STANDARD138716	P
30-Jun-22	W LANTAU	2	13.84	SUMMER	STANDARD138716	S
30-Jun-22	W LANTAU	3	6.96	SUMMER	STANDARD138716	S
30-Jun-22	NW LANTAU	2	5.85	SUMMER	STANDARD138716	P
30-Jun-22	NW LANTAU	3	9.33	SUMMER	STANDARD138716	P
30-Jun-22	NW LANTAU	2	9.88	SUMMER	STANDARD138716	S
30-Jun-22	NW LANTAU	3	1.44	SUMMER	STANDARD138716	S
30-Jun-22	NE LANTAU	2	3.89	SUMMER	STANDARD138716	P
30-Jun-22	NE LANTAU	3	1.91	SUMMER	STANDARD138716	P
30-Jun-22	NE LANTAU	2	3.41	SUMMER	STANDARD138716	S
4-Jul-22	NW LANTAU	3	11.09	SUMMER	STANDARD138716	P
4-Jul-22	NW LANTAU	4	3.02	SUMMER	STANDARD138716	P
4-Jul-22	NW LANTAU	3	7.69	SUMMER	STANDARD138716	S
4-Jul-22	NE LANTAU	2	3.8	SUMMER	STANDARD138716	P
4-Jul-22	NE LANTAU	3	32.75	SUMMER	STANDARD138716	P
4-Jul-22	NE LANTAU	2	5.65	SUMMER	STANDARD138716	S
4-Jul-22	NE LANTAU	3	6.9	SUMMER	STANDARD138716	S
4-Jul-22	E LANTAU	2	6.06	SUMMER	STANDARD138716	P
4-Jul-22	E LANTAU	3	3.43	SUMMER	STANDARD138716	P
4-Jul-22	E LANTAU	4	1.4	SUMMER	STANDARD138716	P
4-Jul-22	E LANTAU	3	5.11	SUMMER	STANDARD138716	S
4-Jul-22	E LANTAU	4	1.1	SUMMER	STANDARD138716	S
7-Jul-22	SE LANTAU	2	18.92	SUMMER	STANDARD138716	P
7-Jul-22	SE LANTAU	3	8.21	SUMMER	STANDARD138716	P
7-Jul-22	SE LANTAU	2	10.77	SUMMER	STANDARD138716	S
7-Jul-22	SW LANTAU	2	1.1	SUMMER	STANDARD138716	P
7-Jul-22	SW LANTAU	3	19.5	SUMMER	STANDARD138716	P
7-Jul-22	SW LANTAU	2	3.5	SUMMER	STANDARD138716	S
7-Jul-22	SW LANTAU	3	11.2	SUMMER	STANDARD138716	S
8-Jul-22	PO TOI	2	11.5	SUMMER	STANDARD138716	P
8-Jul-22	PO TOI	3	22.49	SUMMER	STANDARD138716	P
8-Jul-22	PO TOI	2	4	SUMMER	STANDARD138716	S
8-Jul-22	PO TOI	3	6.21	SUMMER	STANDARD138716	S
8-Jul-22	LAMMA	2	8.59	SUMMER	STANDARD138716	P
8-Jul-22	LAMMA	3	34.24	SUMMER	STANDARD138716	P
8-Jul-22	LAMMA	2	4.2	SUMMER	STANDARD138716	S
8-Jul-22	LAMMA	3	5.57	SUMMER	STANDARD138716	S
12-Jul-22	W LANTAU	2	11.33	SUMMER	STANDARD36826	P
12-Jul-22	W LANTAU	3	9.69	SUMMER	STANDARD36826	P

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
12-Jul-22	W LANTAU	2	5.28	SUMMER	STANDARD36826	S
12-Jul-22	W LANTAU	3	5.21	SUMMER	STANDARD36826	S
12-Jul-22	SW LANTAU	2	8.83	SUMMER	STANDARD36826	P
12-Jul-22	SW LANTAU	3	3.25	SUMMER	STANDARD36826	P
12-Jul-22	SW LANTAU	2	2.01	SUMMER	STANDARD36826	S
12-Jul-22	SW LANTAU	3	2.17	SUMMER	STANDARD36826	S
13-Jul-22	NW LANTAU	2	33.09	SUMMER	STANDARD138716	P
13-Jul-22	NW LANTAU	2	11.01	SUMMER	STANDARD138716	S
13-Jul-22	W LANTAU	2	6.39	SUMMER	STANDARD138716	P
13-Jul-22	W LANTAU	3	1.7	SUMMER	STANDARD138716	P
13-Jul-22	W LANTAU	2	8.17	SUMMER	STANDARD138716	S
13-Jul-22	W LANTAU	3	1.86	SUMMER	STANDARD138716	S
13-Jul-22	SW LANTAU	2	0.67	SUMMER	STANDARD138716	P
15-Jul-22	NINEPINS	2	46.1	SUMMER	STANDARD138716	P
15-Jul-22	NINEPINS	3	22.7	SUMMER	STANDARD138716	P
15-Jul-22	NINEPINS	2	6.4	SUMMER	STANDARD138716	S
15-Jul-22	NINEPINS	3	3.7	SUMMER	STANDARD138716	S
18-Jul-22	SE LANTAU	2	7.24	SUMMER	STANDARD140232	P
18-Jul-22	SE LANTAU	3	22.63	SUMMER	STANDARD140232	P
18-Jul-22	SE LANTAU	2	2.7	SUMMER	STANDARD140232	S
18-Jul-22	SE LANTAU	3	4.03	SUMMER	STANDARD140232	S
18-Jul-22	SW LANTAU	2	13.11	SUMMER	STANDARD140232	P
18-Jul-22	SW LANTAU	3	13.5	SUMMER	STANDARD140232	P
18-Jul-22	SW LANTAU	2	6.1	SUMMER	STANDARD140232	S
18-Jul-22	SW LANTAU	3	4.29	SUMMER	STANDARD140232	S
25-Jul-22	DEEP BAY	2	6.17	SUMMER	STANDARD138716	P
25-Jul-22	DEEP BAY	3	3.07	SUMMER	STANDARD138716	P
25-Jul-22	DEEP BAY	2	5.56	SUMMER	STANDARD138716	S
25-Jul-22	NE LANTAU	2	19.14	SUMMER	STANDARD138716	P
25-Jul-22	NE LANTAU	2	10.06	SUMMER	STANDARD138716	S
27-Jul-22	W LANTAU	2	2	SUMMER	STANDARD138716	P
27-Jul-22	W LANTAU	3	7.57	SUMMER	STANDARD138716	P
27-Jul-22	W LANTAU	2	5.13	SUMMER	STANDARD138716	S
27-Jul-22	W LANTAU	3	4.43	SUMMER	STANDARD138716	S
28-Jul-22	W LANTAU	1	1.57	SUMMER	STANDARD138716	P
28-Jul-22	W LANTAU	2	4.14	SUMMER	STANDARD138716	P
28-Jul-22	W LANTAU	1	1.35	SUMMER	STANDARD138716	S
28-Jul-22	W LANTAU	2	2.19	SUMMER	STANDARD138716	S
1-Aug-22	SE LANTAU	1	3.07	SUMMER	STANDARD138716	P
1-Aug-22	SE LANTAU	2	24.9	SUMMER	STANDARD138716	P
1-Aug-22	SE LANTAU	2	10.33	SUMMER	STANDARD138716	S
1-Aug-22	SW LANTAU	1	1.46	SUMMER	STANDARD138716	P
1-Aug-22	SW LANTAU	2	19.38	SUMMER	STANDARD138716	P
1-Aug-22	SW LANTAU	1	2.09	SUMMER	STANDARD138716	S
1-Aug-22	SW LANTAU	2	12.7	SUMMER	STANDARD138716	S
2-Aug-22	PO TOI	1	25.05	SUMMER	STANDARD36826	P
2-Aug-22	PO TOI	2	37.87	SUMMER	STANDARD36826	P
2-Aug-22	PO TOI	1	1.4	SUMMER	STANDARD36826	S
2-Aug-22	PO TOI	2	6.68	SUMMER	STANDARD36826	S
2-Aug-22	NINEPINS	2	19	SUMMER	STANDARD36826	P
11-Aug-22	DEEP BAY	2	2.97	SUMMER	STANDARD36826	P
11-Aug-22	DEEP BAY	3	6.08	SUMMER	STANDARD36826	P
11-Aug-22	DEEP BAY	2	6.23	SUMMER	STANDARD36826	S
11-Aug-22	NE LANTAU	2	21.44	SUMMER	STANDARD36826	P
11-Aug-22	NE LANTAU	3	0.3	SUMMER	STANDARD36826	P
11-Aug-22	NE LANTAU	2	4.52	SUMMER	STANDARD36826	S
11-Aug-22	NE LANTAU	3	1.8	SUMMER	STANDARD36826	S
16-Aug-22	SE LANTAU	1	8.83	SUMMER	STANDARD138716	P
16-Aug-22	SE LANTAU	2	14.38	SUMMER	STANDARD138716	P
16-Aug-22	SE LANTAU	1	1.34	SUMMER	STANDARD138716	S
16-Aug-22	SE LANTAU	2	2.55	SUMMER	STANDARD138716	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
16-Aug-22	SW LANTAU	1	2.2	SUMMER	STANDARD138716	P
16-Aug-22	SW LANTAU	2	19.22	SUMMER	STANDARD138716	P
16-Aug-22	SW LANTAU	3	1.1	SUMMER	STANDARD138716	P
16-Aug-22	SW LANTAU	1	1.4	SUMMER	STANDARD138716	S
16-Aug-22	SW LANTAU	2	8.28	SUMMER	STANDARD138716	S
17-Aug-22	W LANTAU	2	5.06	SUMMER	STANDARD138716	P
17-Aug-22	W LANTAU	3	12.36	SUMMER	STANDARD138716	P
17-Aug-22	W LANTAU	2	2.66	SUMMER	STANDARD138716	S
17-Aug-22	W LANTAU	3	7.97	SUMMER	STANDARD138716	S
22-Aug-22	W LANTAU	2	9.68	SUMMER	STANDARD138716	P
22-Aug-22	W LANTAU	3	5	SUMMER	STANDARD138716	P
22-Aug-22	W LANTAU	2	6.17	SUMMER	STANDARD138716	S
22-Aug-22	W LANTAU	3	3.07	SUMMER	STANDARD138716	S
23-Aug-22	W LANTAU	1	2.72	SUMMER	STANDARD138716	P
23-Aug-22	W LANTAU	2	2.86	SUMMER	STANDARD138716	P
23-Aug-22	W LANTAU	1	2.23	SUMMER	STANDARD138716	S
23-Aug-22	W LANTAU	2	6.27	SUMMER	STANDARD138716	S
23-Aug-22	SW LANTAU	2	6.05	SUMMER	STANDARD138716	P
23-Aug-22	SW LANTAU	2	1.29	SUMMER	STANDARD138716	S
30-Aug-22	W LANTAU	2	2.43	SUMMER	STANDARD36826	S
30-Aug-22	W LANTAU	3	7.26	SUMMER	STANDARD36826	S
30-Aug-22	SW LANTAU	2	8.29	SUMMER	STANDARD36826	P
30-Aug-22	SW LANTAU	2	9.01	SUMMER	STANDARD36826	S
1-Sep-22	PO TOI	2	89.23	AUTUMN	STANDARD138716	P
1-Sep-22	PO TOI	3	4.88	AUTUMN	STANDARD138716	P
1-Sep-22	PO TOI	2	8.16	AUTUMN	STANDARD138716	S
2-Sep-22	DEEP BAY	2	1.9	AUTUMN	STANDARD138716	P
2-Sep-22	DEEP BAY	3	6.89	AUTUMN	STANDARD138716	P
2-Sep-22	DEEP BAY	2	4.46	AUTUMN	STANDARD138716	S
2-Sep-22	DEEP BAY	3	2.65	AUTUMN	STANDARD138716	S
2-Sep-22	NE LANTAU	2	7.02	AUTUMN	STANDARD138716	P
2-Sep-22	NE LANTAU	3	1.9	AUTUMN	STANDARD138716	P
2-Sep-22	NE LANTAU	2	11.83	AUTUMN	STANDARD138716	S
2-Sep-22	NE LANTAU	3	1.85	AUTUMN	STANDARD138716	S
6-Sep-22	E LANTAU	1	2.7	AUTUMN	STANDARD36826	P
6-Sep-22	E LANTAU	2	28.73	AUTUMN	STANDARD36826	P
6-Sep-22	E LANTAU	3	6.39	AUTUMN	STANDARD36826	P
6-Sep-22	E LANTAU	1	5.1	AUTUMN	STANDARD36826	S
6-Sep-22	E LANTAU	2	12.53	AUTUMN	STANDARD36826	S
6-Sep-22	E LANTAU	3	1.01	AUTUMN	STANDARD36826	S
6-Sep-22	LAMMA	2	9.93	AUTUMN	STANDARD36826	P
6-Sep-22	LAMMA	3	21.42	AUTUMN	STANDARD36826	P
6-Sep-22	LAMMA	2	0.59	AUTUMN	STANDARD36826	S
6-Sep-22	LAMMA	3	13.96	AUTUMN	STANDARD36826	S
13-Sep-22	PO TOI	1	1.29	AUTUMN	STANDARD36826	P
13-Sep-22	PO TOI	2	45.91	AUTUMN	STANDARD36826	P
13-Sep-22	PO TOI	2	12.85	AUTUMN	STANDARD36826	S
13-Sep-22	NINEPINS	2	28.72	AUTUMN	STANDARD36826	P
13-Sep-22	NINEPINS	2	2.88	AUTUMN	STANDARD36826	S
22-Sep-22	W LANTAU	2	4.38	AUTUMN	STANDARD138716	P
22-Sep-22	W LANTAU	3	7.05	AUTUMN	STANDARD138716	P
22-Sep-22	W LANTAU	4	0.3	AUTUMN	STANDARD138716	P
22-Sep-22	W LANTAU	2	5.92	AUTUMN	STANDARD138716	S
22-Sep-22	W LANTAU	3	3.33	AUTUMN	STANDARD138716	S
22-Sep-22	W LANTAU	4	1	AUTUMN	STANDARD138716	S
22-Sep-22	SW LANTAU	3	12	AUTUMN	STANDARD138716	P
22-Sep-22	SW LANTAU	3	4.5	AUTUMN	STANDARD138716	S
23-Sep-22	W LANTAU	1	1.06	AUTUMN	STANDARD138716	P
23-Sep-22	W LANTAU	2	18.46	AUTUMN	STANDARD138716	P
23-Sep-22	W LANTAU	1	0.96	AUTUMN	STANDARD138716	S
23-Sep-22	W LANTAU	2	9.65	AUTUMN	STANDARD138716	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
23-Sep-22	SW LANTAU	2	6.22	AUTUMN	STANDARD138716	P
23-Sep-22	SW LANTAU	1	1.69	AUTUMN	STANDARD138716	S
23-Sep-22	SW LANTAU	2	6.43	AUTUMN	STANDARD138716	S
23-Sep-22	SE LANTAU	1	2.3	AUTUMN	STANDARD138716	P
23-Sep-22	SE LANTAU	2	12.62	AUTUMN	STANDARD138716	P
23-Sep-22	SE LANTAU	2	5.16	AUTUMN	STANDARD138716	S
29-Sep-22	DEEP BAY	2	9.74	AUTUMN	STANDARD138716	P
29-Sep-22	DEEP BAY	2	4.43	AUTUMN	STANDARD138716	S
29-Sep-22	NW LANTAU	2	11.69	AUTUMN	STANDARD138716	P
29-Sep-22	NW LANTAU	3	14.96	AUTUMN	STANDARD138716	P
29-Sep-22	NW LANTAU	3	8.65	AUTUMN	STANDARD138716	S
29-Sep-22	NE LANTAU	2	0.4	AUTUMN	STANDARD138716	P
29-Sep-22	NE LANTAU	3	20.82	AUTUMN	STANDARD138716	P
29-Sep-22	NE LANTAU	3	11.18	AUTUMN	STANDARD138716	S
29-Sep-22	E LANTAU	2	2.05	AUTUMN	STANDARD138716	P
29-Sep-22	E LANTAU	3	1.87	AUTUMN	STANDARD138716	P
29-Sep-22	E LANTAU	2	0.94	AUTUMN	STANDARD138716	S
30-Sep-22	NW LANTAU	2	3.56	AUTUMN	STANDARD138716	P
30-Sep-22	NW LANTAU	3	2.3	AUTUMN	STANDARD138716	P
30-Sep-22	NW LANTAU	2	4.18	AUTUMN	STANDARD138716	S
30-Sep-22	NW LANTAU	3	1.56	AUTUMN	STANDARD138716	S
30-Sep-22	W LANTAU	1	3.13	AUTUMN	STANDARD138716	P
30-Sep-22	W LANTAU	2	12.12	AUTUMN	STANDARD138716	P
30-Sep-22	W LANTAU	3	6.31	AUTUMN	STANDARD138716	P
30-Sep-22	W LANTAU	1	3.66	AUTUMN	STANDARD138716	S
30-Sep-22	W LANTAU	2	11.74	AUTUMN	STANDARD138716	S
30-Sep-22	W LANTAU	3	3.26	AUTUMN	STANDARD138716	S
3-Oct-22	SE LANTAU	2	18.63	AUTUMN	STANDARD140232	P
3-Oct-22	SE LANTAU	3	11.62	AUTUMN	STANDARD140232	P
3-Oct-22	SE LANTAU	2	3	AUTUMN	STANDARD140232	S
3-Oct-22	SE LANTAU	3	3.95	AUTUMN	STANDARD140232	S
3-Oct-22	SW LANTAU	3	14.47	AUTUMN	STANDARD140232	P
3-Oct-22	SW LANTAU	3	10.93	AUTUMN	STANDARD140232	S
3-Oct-22	W LANTAU	1	2.03	AUTUMN	STANDARD140232	P
3-Oct-22	W LANTAU	2	5.2	AUTUMN	STANDARD140232	P
3-Oct-22	W LANTAU	3	2.93	AUTUMN	STANDARD140232	P
3-Oct-22	W LANTAU	1	0.55	AUTUMN	STANDARD140232	S
3-Oct-22	W LANTAU	2	7.44	AUTUMN	STANDARD140232	S
3-Oct-22	W LANTAU	3	1.88	AUTUMN	STANDARD140232	S
5-Oct-22	W LANTAU	2	4.61	AUTUMN	STANDARD36826	P
5-Oct-22	W LANTAU	3	3.99	AUTUMN	STANDARD36826	P
5-Oct-22	W LANTAU	2	12.39	AUTUMN	STANDARD36826	S
5-Oct-22	W LANTAU	3	5.64	AUTUMN	STANDARD36826	S
5-Oct-22	NW LANTAU	3	27.1	AUTUMN	STANDARD36826	P
5-Oct-22	NW LANTAU	4	1.1	AUTUMN	STANDARD36826	P
5-Oct-22	NW LANTAU	3	6.6	AUTUMN	STANDARD36826	S
5-Oct-22	NW LANTAU	4	2.3	AUTUMN	STANDARD36826	S
5-Oct-22	NE LANTAU	2	1.44	AUTUMN	STANDARD36826	P
5-Oct-22	NE LANTAU	3	0.72	AUTUMN	STANDARD36826	P
5-Oct-22	NE LANTAU	2	0.57	AUTUMN	STANDARD36826	S
7-Oct-22	W LANTAU	2	3.9	AUTUMN	STANDARD138716	P
7-Oct-22	W LANTAU	3	2.48	AUTUMN	STANDARD138716	P
7-Oct-22	W LANTAU	4	0.99	AUTUMN	STANDARD138716	P
7-Oct-22	W LANTAU	2	6.27	AUTUMN	STANDARD138716	S
7-Oct-22	W LANTAU	3	1.28	AUTUMN	STANDARD138716	S
7-Oct-22	W LANTAU	4	1.85	AUTUMN	STANDARD138716	S
7-Oct-22	SW LANTAU	2	3.6	AUTUMN	STANDARD138716	P
7-Oct-22	SW LANTAU	3	3.13	AUTUMN	STANDARD138716	P
7-Oct-22	SW LANTAU	4	5.4	AUTUMN	STANDARD138716	P
7-Oct-22	SW LANTAU	3	8.32	AUTUMN	STANDARD138716	S
7-Oct-22	SW LANTAU	4	1.05	AUTUMN	STANDARD138716	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
12-Oct-22	DEEP BAY	2	1.5	AUTUMN	STANDARD138716	P
12-Oct-22	DEEP BAY	3	6.99	AUTUMN	STANDARD138716	P
12-Oct-22	DEEP BAY	2	5.07	AUTUMN	STANDARD138716	S
12-Oct-22	DEEP BAY	3	2.04	AUTUMN	STANDARD138716	S
12-Oct-22	NE LANTAU	2	26.6	AUTUMN	STANDARD138716	P
12-Oct-22	NE LANTAU	3	2.05	AUTUMN	STANDARD138716	P
12-Oct-22	NE LANTAU	2	6.85	AUTUMN	STANDARD138716	S
13-Oct-22	NE LANTAU	2	8.75	AUTUMN	STANDARD138716	P
13-Oct-22	NE LANTAU	2	4.45	AUTUMN	STANDARD138716	S
13-Oct-22	E LANTAU	2	22.95	AUTUMN	STANDARD138716	P
13-Oct-22	E LANTAU	3	8.91	AUTUMN	STANDARD138716	P
13-Oct-22	E LANTAU	2	15.44	AUTUMN	STANDARD138716	S
13-Oct-22	LAMMA	2	21.7	AUTUMN	STANDARD138716	P
13-Oct-22	LAMMA	3	12	AUTUMN	STANDARD138716	P
13-Oct-22	LAMMA	2	4.29	AUTUMN	STANDARD138716	S
13-Oct-22	LAMMA	3	2	AUTUMN	STANDARD138716	S
8-Nov-22	W LANTAU	2	3.7	AUTUMN	STANDARD36826	P
8-Nov-22	W LANTAU	3	7.9	AUTUMN	STANDARD36826	P
8-Nov-22	W LANTAU	2	2.82	AUTUMN	STANDARD36826	S
8-Nov-22	W LANTAU	3	6.81	AUTUMN	STANDARD36826	S
10-Nov-22	SW LANTAU	2	24.19	AUTUMN	STANDARD138716	P
10-Nov-22	SW LANTAU	2	22.14	AUTUMN	STANDARD138716	S
10-Nov-22	SE LANTAU	2	25.96	AUTUMN	STANDARD138716	P
10-Nov-22	SE LANTAU	2	9.34	AUTUMN	STANDARD138716	S
11-Nov-22	W LANTAU	2	8.08	AUTUMN	STANDARD138716	S
11-Nov-22	W LANTAU	3	3.2	AUTUMN	STANDARD138716	S
14-Nov-22	NW LANTAU	2	12.1	AUTUMN	STANDARD138716	P
14-Nov-22	NW LANTAU	3	11.44	AUTUMN	STANDARD138716	P
14-Nov-22	NW LANTAU	2	6.4	AUTUMN	STANDARD138716	S
14-Nov-22	NW LANTAU	3	4.46	AUTUMN	STANDARD138716	S
14-Nov-22	W LANTAU	2	13.15	AUTUMN	STANDARD138716	P
14-Nov-22	W LANTAU	3	8.28	AUTUMN	STANDARD138716	P
14-Nov-22	W LANTAU	2	8.23	AUTUMN	STANDARD138716	S
14-Nov-22	W LANTAU	3	3.45	AUTUMN	STANDARD138716	S
15-Nov-22	DEEP BAY	2	8.39	AUTUMN	STANDARD36826	P
15-Nov-22	DEEP BAY	2	7.41	AUTUMN	STANDARD36826	S
15-Nov-22	NE LANTAU	2	10.1	AUTUMN	STANDARD36826	P
15-Nov-22	NE LANTAU	3	13.25	AUTUMN	STANDARD36826	P
15-Nov-22	NE LANTAU	2	2.3	AUTUMN	STANDARD36826	S
15-Nov-22	NE LANTAU	3	3.45	AUTUMN	STANDARD36826	S
15-Nov-22	W LANTAU	1	2.41	AUTUMN	STANDARD138716	S
15-Nov-22	W LANTAU	2	6.28	AUTUMN	STANDARD138716	S
16-Nov-22	E LANTAU	2	11.19	AUTUMN	STANDARD36826	P
16-Nov-22	E LANTAU	3	56.55	AUTUMN	STANDARD36826	P
16-Nov-22	E LANTAU	2	5.98	AUTUMN	STANDARD36826	S
16-Nov-22	E LANTAU	3	19.68	AUTUMN	STANDARD36826	S
18-Nov-22	W LANTAU	1	1.27	AUTUMN	STANDARD138716	P
18-Nov-22	W LANTAU	2	20.1	AUTUMN	STANDARD138716	P
18-Nov-22	W LANTAU	1	1.14	AUTUMN	STANDARD138716	S
18-Nov-22	W LANTAU	2	9.84	AUTUMN	STANDARD138716	S
18-Nov-22	SW LANTAU	1	1.73	AUTUMN	STANDARD138716	P
18-Nov-22	SW LANTAU	2	4.71	AUTUMN	STANDARD138716	P
18-Nov-22	SW LANTAU	3	9.67	AUTUMN	STANDARD138716	P
18-Nov-22	SW LANTAU	4	6.1	AUTUMN	STANDARD138716	P
18-Nov-22	SW LANTAU	2	0.87	AUTUMN	STANDARD138716	S
18-Nov-22	SW LANTAU	3	3.32	AUTUMN	STANDARD138716	S
18-Nov-22	SW LANTAU	4	5.7	AUTUMN	STANDARD138716	S
24-Nov-22	NW LANTAU	2	2.1	AUTUMN	STANDARD138716	P
24-Nov-22	NW LANTAU	3	34.32	AUTUMN	STANDARD138716	P
24-Nov-22	NW LANTAU	2	4.8	AUTUMN	STANDARD138716	S
24-Nov-22	NW LANTAU	3	10.18	AUTUMN	STANDARD138716	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
24-Nov-22	NE LANTAU	2	13.4	AUTUMN	STANDARD138716	P
24-Nov-22	NE LANTAU	3	23.09	AUTUMN	STANDARD138716	P
24-Nov-22	NE LANTAU	2	7.94	AUTUMN	STANDARD138716	S
24-Nov-22	NE LANTAU	3	4.87	AUTUMN	STANDARD138716	S
25-Nov-22	W LANTAU	1	0.7	AUTUMN	STANDARD138716	P
25-Nov-22	W LANTAU	2	15.1	AUTUMN	STANDARD138716	P
25-Nov-22	W LANTAU	3	5.63	AUTUMN	STANDARD138716	P
25-Nov-22	W LANTAU	1	1.4	AUTUMN	STANDARD138716	S
25-Nov-22	W LANTAU	2	8.46	AUTUMN	STANDARD138716	S
25-Nov-22	W LANTAU	3	2.39	AUTUMN	STANDARD138716	S
25-Nov-22	SW LANTAU	2	5.24	AUTUMN	STANDARD138716	P
25-Nov-22	SW LANTAU	3	6.4	AUTUMN	STANDARD138716	P
25-Nov-22	SW LANTAU	2	10.46	AUTUMN	STANDARD138716	S
25-Nov-22	SW LANTAU	3	2.2	AUTUMN	STANDARD138716	S
25-Nov-22	SE LANTAU	1	5.1	AUTUMN	STANDARD138716	P
25-Nov-22	SE LANTAU	2	10.6	AUTUMN	STANDARD138716	P
25-Nov-22	SE LANTAU	2	2.7	AUTUMN	STANDARD138716	S
28-Nov-22	LAMMA	1	3	AUTUMN	STANDARD138716	P
28-Nov-22	LAMMA	2	32.02	AUTUMN	STANDARD138716	P
28-Nov-22	LAMMA	3	0.96	AUTUMN	STANDARD138716	P
28-Nov-22	LAMMA	2	9.92	AUTUMN	STANDARD138716	S
28-Nov-22	SE LANTAU	1	7.2	AUTUMN	STANDARD138716	P
28-Nov-22	SE LANTAU	2	34.24	AUTUMN	STANDARD138716	P
28-Nov-22	SE LANTAU	1	2.2	AUTUMN	STANDARD138716	S
28-Nov-22	SE LANTAU	2	7.86	AUTUMN	STANDARD138716	S
30-Nov-22	W LANTAU	3	1.6	AUTUMN	STANDARD138716	P
30-Nov-22	W LANTAU	4	14.25	AUTUMN	STANDARD138716	P
30-Nov-22	W LANTAU	3	7.29	AUTUMN	STANDARD138716	S
30-Nov-22	W LANTAU	4	13.66	AUTUMN	STANDARD138716	S
30-Nov-22	NW LANTAU	2	3.1	AUTUMN	STANDARD138716	P
30-Nov-22	NW LANTAU	3	21.92	AUTUMN	STANDARD138716	P
30-Nov-22	NW LANTAU	3	7.97	AUTUMN	STANDARD138716	S
30-Nov-22	NW LANTAU	4	1.82	AUTUMN	STANDARD138716	S
30-Nov-22	NW LANTAU	5	1.19	AUTUMN	STANDARD138716	S
30-Nov-22	NE LANTAU	2	3	AUTUMN	STANDARD138716	P
30-Nov-22	NE LANTAU	3	4.38	AUTUMN	STANDARD138716	P
30-Nov-22	NE LANTAU	2	8.09	AUTUMN	STANDARD138716	S
30-Nov-22	NE LANTAU	3	2.23	AUTUMN	STANDARD138716	S
2-Dec-22	W LANTAU	3	8.66	WINTER	STANDARD138716	S
2-Dec-22	W LANTAU	4	1.67	WINTER	STANDARD138716	S
5-Dec-22	DEEP BAY	3	8.32	WINTER	STANDARD36826	P
5-Dec-22	DEEP BAY	3	7.28	WINTER	STANDARD36826	S
6-Dec-22	W LANTAU	3	8.72	WINTER	STANDARD36826	S
6-Dec-22	SW LANTAU	2	3.9	WINTER	STANDARD36826	P
6-Dec-22	SW LANTAU	3	21.53	WINTER	STANDARD36826	P
6-Dec-22	SW LANTAU	4	1.43	WINTER	STANDARD36826	P
6-Dec-22	SW LANTAU	2	3.9	WINTER	STANDARD36826	S
6-Dec-22	SW LANTAU	3	7.94	WINTER	STANDARD36826	S
6-Dec-22	SE LANTAU	2	22.54	WINTER	STANDARD36826	P
6-Dec-22	SE LANTAU	2	8.18	WINTER	STANDARD36826	S
6-Dec-22	SE LANTAU	3	2.01	WINTER	STANDARD36826	S
7-Dec-22	LAMMA	2	8	WINTER	STANDARD138716	P
7-Dec-22	LAMMA	3	8.7	WINTER	STANDARD138716	P
7-Dec-22	LAMMA	2	3.4	WINTER	STANDARD138716	S
7-Dec-22	LAMMA	3	4.1	WINTER	STANDARD138716	S
9-Dec-22	LAMMA	2	6.42	WINTER	STANDARD140232	P
9-Dec-22	LAMMA	3	37.01	WINTER	STANDARD140232	P
9-Dec-22	LAMMA	2	3.85	WINTER	STANDARD140232	S
9-Dec-22	LAMMA	3	3.2	WINTER	STANDARD140232	S
9-Dec-22	SE LANTAU	2	20.17	WINTER	STANDARD140232	P
9-Dec-22	SE LANTAU	3	11.44	WINTER	STANDARD140232	P

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
9-Dec-22	SE LANTAU	2	7.96	WINTER	STANDARD140232	S
9-Dec-22	SE LANTAU	3	4.13	WINTER	STANDARD140232	S
13-Dec-22	W LANTAU	3	9.41	WINTER	STANDARD36826	S
13-Dec-22	W LANTAU	4	1.25	WINTER	STANDARD36826	S
14-Dec-22	W LANTAU	3	6.24	WINTER	STANDARD138716	P
14-Dec-22	W LANTAU	4	3.34	WINTER	STANDARD138716	P
14-Dec-22	W LANTAU	3	9.14	WINTER	STANDARD138716	S
14-Dec-22	W LANTAU	4	1.59	WINTER	STANDARD138716	S
14-Dec-22	SW LANTAU	2	5.08	WINTER	STANDARD138716	P
14-Dec-22	SW LANTAU	3	4.01	WINTER	STANDARD138716	P
14-Dec-22	SW LANTAU	2	2.3	WINTER	STANDARD138716	S
14-Dec-22	SW LANTAU	3	5.81	WINTER	STANDARD138716	S
16-Dec-22	NW LANTAU	2	18	WINTER	STANDARD138716	P
16-Dec-22	NW LANTAU	3	14.21	WINTER	STANDARD138716	P
16-Dec-22	NW LANTAU	2	9.5	WINTER	STANDARD138716	S
16-Dec-22	NW LANTAU	3	7.33	WINTER	STANDARD138716	S
16-Dec-22	NE LANTAU	2	29.29	WINTER	STANDARD138716	P
16-Dec-22	NE LANTAU	2	11.21	WINTER	STANDARD138716	S
20-Dec-22	SW LANTAU	2	8.4	WINTER	STANDARD36826	P
20-Dec-22	SW LANTAU	3	17	WINTER	STANDARD36826	P
20-Dec-22	SW LANTAU	2	6.47	WINTER	STANDARD36826	S
20-Dec-22	SW LANTAU	3	3.9	WINTER	STANDARD36826	S
20-Dec-22	SE LANTAU	2	15.22	WINTER	STANDARD36826	P
20-Dec-22	SE LANTAU	3	6.1	WINTER	STANDARD36826	P
20-Dec-22	SE LANTAU	2	7.08	WINTER	STANDARD36826	S
20-Dec-22	SE LANTAU	3	2.8	WINTER	STANDARD36826	S
21-Dec-22	NW LANTAU	3	20	WINTER	STANDARD138716	P
21-Dec-22	NW LANTAU	2	2.33	WINTER	STANDARD138716	S
21-Dec-22	NW LANTAU	3	9.87	WINTER	STANDARD138716	S
21-Dec-22	W LANTAU	3	3.98	WINTER	STANDARD138716	P
21-Dec-22	W LANTAU	4	6.79	WINTER	STANDARD138716	P
21-Dec-22	W LANTAU	3	5.71	WINTER	STANDARD138716	S
21-Dec-22	W LANTAU	4	3.92	WINTER	STANDARD138716	S
21-Dec-22	SW LANTAU	2	4.37	WINTER	STANDARD138716	P
21-Dec-22	SW LANTAU	3	15.36	WINTER	STANDARD138716	P
21-Dec-22	SW LANTAU	2	3.22	WINTER	STANDARD138716	S
21-Dec-22	SW LANTAU	3	6.65	WINTER	STANDARD138716	S
3-Jan-23	W LANTAU	3	10.27	WINTER	STANDARD36826	S
3-Jan-23	SW LANTAU	3	15	WINTER	STANDARD36826	P
3-Jan-23	SW LANTAU	2	2.9	WINTER	STANDARD36826	S
3-Jan-23	SW LANTAU	3	4.48	WINTER	STANDARD36826	S
4-Jan-23	NW LANTAU	2	12.84	WINTER	STANDARD36826	P
4-Jan-23	NW LANTAU	3	9.1	WINTER	STANDARD36826	P
4-Jan-23	NW LANTAU	2	1.45	WINTER	STANDARD36826	S
4-Jan-23	NW LANTAU	3	4.21	WINTER	STANDARD36826	S
4-Jan-23	W LANTAU	2	3.09	WINTER	STANDARD36826	P
4-Jan-23	W LANTAU	3	14.96	WINTER	STANDARD36826	P
4-Jan-23	W LANTAU	2	3.74	WINTER	STANDARD36826	S
4-Jan-23	W LANTAU	3	7.62	WINTER	STANDARD36826	S
5-Jan-23	W LANTAU	2	10.27	WINTER	STANDARD36826	S
6-Jan-23	LAMMA	1	2.6	WINTER	STANDARD138716	P
6-Jan-23	LAMMA	2	28.6	WINTER	STANDARD138716	P
6-Jan-23	LAMMA	3	6.8	WINTER	STANDARD138716	P
6-Jan-23	LAMMA	2	14.4	WINTER	STANDARD138716	S
6-Jan-23	LAMMA	3	4	WINTER	STANDARD138716	S
6-Jan-23	SE LANTAU	1	3.48	WINTER	STANDARD138716	P
6-Jan-23	SE LANTAU	2	13.41	WINTER	STANDARD138716	P
6-Jan-23	SE LANTAU	3	4.92	WINTER	STANDARD138716	P
6-Jan-23	SE LANTAU	1	1.65	WINTER	STANDARD138716	S
6-Jan-23	SE LANTAU	2	2.74	WINTER	STANDARD138716	S
6-Jan-23	SE LANTAU	3	7.01	WINTER	STANDARD138716	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
9-Jan-23	W LANTAU	2	1.07	WINTER	STANDARD138716	P
9-Jan-23	W LANTAU	3	11.38	WINTER	STANDARD138716	P
9-Jan-23	W LANTAU	2	2.4	WINTER	STANDARD138716	S
9-Jan-23	W LANTAU	3	9.25	WINTER	STANDARD138716	S
9-Jan-23	SW LANTAU	2	26.61	WINTER	STANDARD138716	P
9-Jan-23	SW LANTAU	3	3.15	WINTER	STANDARD138716	P
9-Jan-23	SW LANTAU	2	9.91	WINTER	STANDARD138716	S
9-Jan-23	SW LANTAU	3	2.05	WINTER	STANDARD138716	S
9-Jan-23	SE LANTAU	2	8.42	WINTER	STANDARD138716	P
9-Jan-23	SE LANTAU	2	4.98	WINTER	STANDARD138716	S
10-Jan-23	LAMMA	2	22.7	WINTER	STANDARD36826	P
10-Jan-23	LAMMA	2	13.1	WINTER	STANDARD36826	S
10-Jan-23	E LANTAU	1	7.9	WINTER	STANDARD36826	P
10-Jan-23	E LANTAU	2	25.06	WINTER	STANDARD36826	P
10-Jan-23	E LANTAU	3	7.4	WINTER	STANDARD36826	P
10-Jan-23	E LANTAU	1	2.3	WINTER	STANDARD36826	S
10-Jan-23	E LANTAU	2	20.24	WINTER	STANDARD36826	S
12-Jan-23	W LANTAU	3	10.76	WINTER	STANDARD138716	S
12-Jan-23	DEEP BAY	2	8.25	WINTER	STANDARD36826	P
12-Jan-23	DEEP BAY	2	6.45	WINTER	STANDARD36826	S
12-Jan-23	NE LANTAU	2	16.89	WINTER	STANDARD36826	P
12-Jan-23	NE LANTAU	3	10.22	WINTER	STANDARD36826	P
12-Jan-23	NE LANTAU	2	3.13	WINTER	STANDARD36826	S
12-Jan-23	NE LANTAU	3	5.86	WINTER	STANDARD36826	S
17-Jan-23	W LANTAU	3	7.57	WINTER	STANDARD36826	P
17-Jan-23	W LANTAU	4	1.57	WINTER	STANDARD36826	P
17-Jan-23	W LANTAU	3	8.92	WINTER	STANDARD36826	S
17-Jan-23	SW LANTAU	2	2.9	WINTER	STANDARD36826	P
17-Jan-23	SW LANTAU	3	21.63	WINTER	STANDARD36826	P
17-Jan-23	SW LANTAU	2	1.6	WINTER	STANDARD36826	S
17-Jan-23	SW LANTAU	3	13.51	WINTER	STANDARD36826	S
30-Jan-23	SE LANTAU	2	30.57	WINTER	STANDRAD140232	P
30-Jan-23	SE LANTAU	2	6.93	WINTER	STANDRAD140232	S
30-Jan-23	SW LANTAU	2	1.52	WINTER	STANDRAD140232	P
30-Jan-23	SW LANTAU	3	26.46	WINTER	STANDRAD140232	P
30-Jan-23	SW LANTAU	2	0.55	WINTER	STANDRAD140232	S
30-Jan-23	SW LANTAU	3	9.11	WINTER	STANDRAD140232	S
6-Feb-23	W LANTAU	1	10.47	WINTER	STANDARD140232	S
8-Feb-23	W LANTAU	2	17.27	WINTER	STANDARD140232	P
8-Feb-23	W LANTAU	3	1.70	WINTER	STANDARD140232	P
8-Feb-23	W LANTAU	2	10.53	WINTER	STANDARD140232	S
8-Feb-23	W LANTAU	3	1.30	WINTER	STANDARD140232	S
8-Feb-23	SW LANTAU	3	6.78	WINTER	STANDARD140232	P
8-Feb-23	SW LANTAU	3	2.11	WINTER	STANDARD140232	S
9-Feb-23	W LANTAU	2	9.03	WINTER	STANDARD36826	P
9-Feb-23	W LANTAU	3	12.06	WINTER	STANDARD36826	P
9-Feb-23	W LANTAU	2	5.23	WINTER	STANDARD36826	S
9-Feb-23	W LANTAU	3	6.24	WINTER	STANDARD36826	S
9-Feb-23	SW LANTAU	3	12.64	WINTER	STANDARD36826	P
9-Feb-23	SW LANTAU	3	11.06	WINTER	STANDARD36826	S
15-Feb-23	W LANTAU	3	9.07	WINTER	STANDARD36826	P
15-Feb-23	W LANTAU	4	1.53	WINTER	STANDARD36826	P
15-Feb-23	W LANTAU	3	9.61	WINTER	STANDARD36826	S
15-Feb-23	SW LANTAU	2	17.80	WINTER	STANDARD36826	P
15-Feb-23	SW LANTAU	3	4.56	WINTER	STANDARD36826	P
15-Feb-23	SW LANTAU	2	7.32	WINTER	STANDARD36826	S
15-Feb-23	SW LANTAU	3	2.14	WINTER	STANDARD36826	S
15-Feb-23	SE LANTAU	2	6.62	WINTER	STANDARD36826	P
15-Feb-23	SE LANTAU	3	2.41	WINTER	STANDARD36826	P

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
15-Feb-23	SE LANTAU	2	1.39	WINTER	STANDARD36826	S
15-Feb-23	SE LANTAU	3	1.94	WINTER	STANDARD36826	S
16-Feb-23	DEEP BAY	2	4.33	WINTER	STANDARD36826	P
16-Feb-23	DEEP BAY	3	4.20	WINTER	STANDARD36826	P
16-Feb-23	DEEP BAY	2	4.06	WINTER	STANDARD36826	S
16-Feb-23	DEEP BAY	3	2.31	WINTER	STANDARD36826	S
16-Feb-23	NE LANTAU	2	13.19	WINTER	STANDARD36826	P
16-Feb-23	NE LANTAU	2	2.86	WINTER	STANDARD36826	S
17-Feb-23	W LANTAU	1	1.26	WINTER	STANDARD36826	P
17-Feb-23	W LANTAU	2	19.90	WINTER	STANDARD36826	P
17-Feb-23	W LANTAU	2	21.86	WINTER	STANDARD36826	S
17-Feb-23	NW LANTAU	2	16.87	WINTER	STANDARD36826	P
17-Feb-23	NW LANTAU	2	12.03	WINTER	STANDARD36826	S
20-Feb-23	W LANTAU	3	9.38	WINTER	STANDARD36826	S
23-Feb-23	NW LANTAU	1	1.99	WINTER	STANDARD36826	P
23-Feb-23	NW LANTAU	2	32.37	WINTER	STANDARD36826	P
23-Feb-23	NW LANTAU	3	1.70	WINTER	STANDARD36826	P
23-Feb-23	NW LANTAU	2	13.74	WINTER	STANDARD36826	S
23-Feb-23	NE LANTAU	2	13.18	WINTER	STANDARD36826	P
23-Feb-23	NE LANTAU	3	9.96	WINTER	STANDARD36826	P
23-Feb-23	NE LANTAU	2	5.78	WINTER	STANDARD36826	S
23-Feb-23	NE LANTAU	3	7.58	WINTER	STANDARD36826	S
24-Feb-23	LAMMA	2	46.85	WINTER	STANDARD138716	P
24-Feb-23	LAMMA	3	20.04	WINTER	STANDARD138716	P
24-Feb-23	LAMMA	2	10.36	WINTER	STANDARD138716	S
24-Feb-23	LAMMA	3	11.15	WINTER	STANDARD138716	S
24-Feb-23	SE LANTAU	2	8.43	WINTER	STANDARD138716	P
24-Feb-23	SE LANTAU	3	1.74	WINTER	STANDARD138716	P
24-Feb-23	SE LANTAU	2	3.77	WINTER	STANDARD138716	S
28-Feb-23	E LANTAU	2	13.14	WINTER	STANDARD36826	P
28-Feb-23	E LANTAU	3	22.40	WINTER	STANDARD36826	P
28-Feb-23	E LANTAU	2	8.34	WINTER	STANDARD36826	S
28-Feb-23	E LANTAU	3	12.12	WINTER	STANDARD36826	S
28-Feb-23	SE LANTAU	2	4.66	WINTER	STANDARD36826	P
28-Feb-23	SE LANTAU	3	14.76	WINTER	STANDARD36826	P
28-Feb-23	SE LANTAU	4	0.71	WINTER	STANDARD36826	P
28-Feb-23	SE LANTAU	2	7.22	WINTER	STANDARD36826	S
28-Feb-23	SE LANTAU	3	9.34	WINTER	STANDARD36826	S
28-Feb-23	SE LANTAU	4	1.79	WINTER	STANDARD36826	S
2-Mar-23	NW LANTAU	2	25.18	SPRING	STANDARD36826	P
2-Mar-23	NW LANTAU	2	11.02	SPRING	STANDARD36826	S
2-Mar-23	NW LANTAU	3	2.00	SPRING	STANDARD36826	S
2-Mar-23	W LANTAU	2	5.56	SPRING	STANDARD36826	S
2-Mar-23	W LANTAU	3	4.99	SPRING	STANDARD36826	S
2-Mar-23	SW LANTAU	3	14.36	SPRING	STANDARD36826	P
2-Mar-23	SW LANTAU	4	0.77	SPRING	STANDARD36826	P
2-Mar-23	SW LANTAU	2	4.01	SPRING	STANDARD36826	S
2-Mar-23	SW LANTAU	3	3.12	SPRING	STANDARD36826	S
2-Mar-23	SW LANTAU	4	4.55	SPRING	STANDARD36826	S
7-Mar-23	W LANTAU	2	5.03	SPRING	STANDARD36826	S
7-Mar-23	W LANTAU	3	5.65	SPRING	STANDARD36826	S
7-Mar-23	SW LANTAU	3	14.28	SPRING	STANDARD36826	P
7-Mar-23	SW LANTAU	2	1.67	SPRING	STANDARD36826	S
7-Mar-23	SW LANTAU	3	14.83	SPRING	STANDARD36826	S
9-Mar-23	LAMMA	1	0.59	SPRING	STANDARD36826	P
9-Mar-23	LAMMA	2	57.33	SPRING	STANDARD36826	P
9-Mar-23	LAMMA	2	12.28	SPRING	STANDARD36826	S
9-Mar-23	SE LANTAU	2	17.57	SPRING	STANDARD36826	P
9-Mar-23	SE LANTAU	2	4.03	SPRING	STANDARD36826	S
15-Mar-23	W LANTAU	2	2.31	SPRING	STANDARD36826	S
15-Mar-23	W LANTAU	3	7.54	SPRING	STANDARD36826	S

Appendix I. (cont'd.)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	P/S
20-Mar-23	W LANTAU	3	8.89	SPRING	STANDARD36826	S
20-Mar-23	W LANTAU	4	0.66	SPRING	STANDARD36826	S
20-Mar-23	SW LANTAU	2	4.90	SPRING	STANDARD36826	P
20-Mar-23	SW LANTAU	3	22.59	SPRING	STANDARD36826	P
20-Mar-23	SW LANTAU	2	1.20	SPRING	STANDARD36826	S
20-Mar-23	SW LANTAU	3	11.01	SPRING	STANDARD36826	S
20-Mar-23	SE LANTAU	2	5.57	SPRING	STANDARD36826	P
20-Mar-23	SE LANTAU	3	3.90	SPRING	STANDARD36826	P
20-Mar-23	SE LANTAU	2	11.04	SPRING	STANDARD36826	S
23-Mar-23	W LANTAU	2	2.63	SPRING	STANDARD 36826	S
23-Mar-23	W LANTAU	3	7.27	SPRING	STANDARD 36826	S
24-Mar-23	DEEP BAY	2	8.29	SPRING	STANDARD 36826	P
24-Mar-23	DEEP BAY	2	6.31	SPRING	STANDARD 36826	S
24-Mar-23	NE LANTAU	2	11.80	SPRING	STANDARD 36826	P
24-Mar-23	NE LANTAU	3	8.98	SPRING	STANDARD 36826	P
24-Mar-23	NE LANTAU	2	13.48	SPRING	STANDARD 36826	S
24-Mar-23	NE LANTAU	3	1.44	SPRING	STANDARD 36826	S
31-Mar-23	LAMMA	2	7.18	SPRING	STANDARD 36826	P
31-Mar-23	LAMMA	3	73.39	SPRING	STANDARD 36826	P
31-Mar-23	LAMMA	4	6.20	SPRING	STANDARD 36826	P
31-Mar-23	LAMMA	2	2.20	SPRING	STANDARD 36826	S
31-Mar-23	LAMMA	3	20.93	SPRING	STANDARD 36826	S
31-Mar-23	LAMMA	4	1.10	SPRING	STANDARD 36826	S

Appendix II. HKCRP-AFCD Chinese White Dolphin Sighting Database (April 2022 - March 2023)

(Note: P = sightings made on primary lines; S = sightings made on secondary lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
6-Apr-22	1	1021	11	W LANTAU	2	503	ON	HKCRP	811258	801302	SPRING	GILLNET	S
6-Apr-22	2	1048	5	W LANTAU	2	1965	ON	HKCRP	810284	800784	SPRING	NONE	S
6-Apr-22	3	1057	3	W LANTAU	2	258	ON	HKCRP	808734	800802	SPRING	NONE	S
6-Apr-22	4	1119	1	SW LANTAU	2	28	ON	HKCRP	806228	802353	SPRING	NONE	S
6-Apr-22	6	1154	1	SW LANTAU	2	238	ON	HKCRP	806865	804860	SPRING	NONE	P
6-Apr-22	7	1216	1	SW LANTAU	2	4	ON	HKCRP	807293	806542	SPRING	PURSE-SEINE	P
7-Apr-22	1	1147	1	SW LANTAU	2	59	ON	HKCRP	808602	811483	SPRING	GILLNET	P
7-Apr-22	2	1340	12	W LANTAU	3	254	ON	HKCRP	808402	800873	SPRING	NONE	P
7-Apr-22	3	1434	1	W LANTAU	2	46	ON	HKCRP	811425	800839	SPRING	NONE	P
7-Apr-22	4	1457	3	W LANTAU	2	185	ON	HKCRP	812430	802130	SPRING	NONE	P
7-Apr-22	5	1518	1	W LANTAU	2	80	ON	HKCRP	813571	801926	SPRING	NONE	P
20-Apr-22	1	1039	1	W LANTAU	2	57	ON	HKCRP	814855	802186	SPRING	NONE	S
20-Apr-22	2	1101	1	W LANTAU	2	444	ON	HKCRP	813538	801524	SPRING	NONE	P
20-Apr-22	3	1105	3	W LANTAU	2	635	ON	HKCRP	813085	801141	SPRING	NONE	S
20-Apr-22	4	1117	1	W LANTAU	2	1396	ON	HKCRP	812477	800954	SPRING	NONE	P
20-Apr-22	5	1155	1	W LANTAU	2	52	ON	HKCRP	809420	801071	SPRING	NONE	P
20-Apr-22	6	1211	2	W LANTAU	2	503	ON	HKCRP	808371	799904	SPRING	NONE	P
20-Apr-22	7	1251	2	W LANTAU	2	342	ON	HKCRP	806473	801518	SPRING	NONE	P
6-May-22	1	1051	3	W LANTAU	2	759	ON	HKCRP	814475	803629	SPRING	NONE	P
6-May-22	2	1154	15	W LANTAU	2	867	ON	HKCRP	810850	800342	SPRING	NONE	P
6-May-22	3	1238	2	W LANTAU	2	0	ON	HKCRP	809431	801154	SPRING	NONE	S
6-May-22	4	1425	5	SW LANTAU	3	43	ON	HKCRP	807396	805150	SPRING	PURSE-SEINE	S
23-Jun-22	1	1131	1	W LANTAU	2	465	ON	HKCRP	810341	800022	SUMMER	NONE	P
23-Jun-22	2	1149	2	W LANTAU	2	135	ON	HKCRP	810183	801403	SUMMER	NONE	S
23-Jun-22	3	1210	7	W LANTAU	2	118	ON	HKCRP	809433	800411	SUMMER	NONE	P
23-Jun-22	4	1300	7	W LANTAU	2	190	ON	HKCRP	806440	801745	SUMMER	NONE	P
23-Jun-22	5	1319	8	W LANTAU	2	443	ON	HKCRP	804467	802297	SUMMER	NONE	P
23-Jun-22	6	1351	2	W LANTAU	2	ND	OFF	HKCRP	805665	801506	SUMMER	NONE	
23-Jun-22	7	1356	15	SW LANTAU	2	411	ON	HKCRP	805949	803507	SUMMER	NONE	S
23-Jun-22	8	1440	1	SW LANTAU	2	257	ON	HKCRP	803375	805462	SUMMER	NONE	P
23-Jun-22	9	1517	1	SW LANTAU	2	451	ON	HKCRP	805946	810541	SUMMER	NONE	S
30-Jun-22	1	1017	1	W LANTAU	2	375	ON	HKCRP	813436	802822	SUMMER	NONE	S
30-Jun-22	2	1021	1	W LANTAU	2	167	ON	HKCRP	812706	802470	SUMMER	NONE	S

Appendix II. (cont'd.)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
30-Jun-22	3	1025	16	W LANTAU	2	167	ON	HKCRP	811755	801932	SUMMER	NONE	S
30-Jun-22	4	1043	2	W LANTAU	2	55	ON	HKCRP	809354	800803	SUMMER	NONE	S
30-Jun-22	5	1138	3	W LANTAU	2	111	ON	HKCRP	808324	800986	SUMMER	NONE	P
30-Jun-22	6	1148	1	W LANTAU	2	20	ON	HKCRP	808634	800935	SUMMER	NONE	S
30-Jun-22	7	1212	5	W LANTAU	3	73	ON	HKCRP	810461	801074	SUMMER	NONE	P
7-Jul-22	1	1522	6	SW LANTAU	3	80	ON	HKCRP	805729	802548	SUMMER	NONE	P
12-Jul-22	1	1034	6	W LANTAU	2	319	ON	HKCRP	814492	801021	SUMMER	NONE	S
12-Jul-22	2	1202	3	W LANTAU	2	208	ON	HKCRP	808394	799388	SUMMER	NONE	S
12-Jul-22	3	1227	8	W LANTAU	3	199	ON	HKCRP	807361	800706	SUMMER	NONE	P
12-Jul-22	4	1305	5	W LANTAU	3	112	ON	HKCRP	806506	801663	SUMMER	NONE	P
12-Jul-22	5	1341	5	SW LANTAU	2	47	ON	HKCRP	806447	803457	SUMMER	NONE	P
12-Jul-22	6	1424	7	SW LANTAU	3	422	ON	HKCRP	804184	805443	SUMMER	NONE	P
12-Jul-22	7	1454	1	SW LANTAU	2	960	ON	HKCRP	807273	805428	SUMMER	NONE	P
12-Jul-22	8	1514	2	SW LANTAU	2	1448	ON	HKCRP	806804	807459	SUMMER	NONE	P
13-Jul-22	1	1356	3	W LANTAU	2	66	ON	HKCRP	809910	799649	SUMMER	NONE	S
13-Jul-22	2	1423	5	W LANTAU	2	719	ON	HKCRP	806717	801374	SUMMER	NONE	S
13-Jul-22	3	1454	6	W LANTAU	3	171	ON	HKCRP	805955	800568	SUMMER	NONE	S
13-Jul-22	4	1512	1	SW LANTAU	2	134	ON	HKCRP	805829	802600	SUMMER	NONE	P
13-Jul-22	5	1518	8	SW LANTAU	2	673	ON	HKCRP	805462	803042	SUMMER	NONE	P
13-Jul-22	6	1554	2	SW LANTAU	2	ND	OFF	HKCRP	806934	809325	SUMMER	NONE	
13-Jul-22	7	1603	2	SW LANTAU	2	ND	OFF	HKCRP	807151	811625	SUMMER	NONE	
13-Jul-22	8	1609	1	SE LANTAU	2	ND	OFF	HKCRP	807261	812213	SUMMER	NONE	
18-Jul-22	1	1523	4	SW LANTAU	2	260	ON	HKCRP	806513	803395	SUMMER	NONE	P
27-Jul-22	1	1357	1	W LANTAU	3	14	ON	HKCRP	810383	801094	SUMMER	NONE	P
27-Jul-22	2	1419	3	W LANTAU	3	766	ON	HKCRP	809276	800916	SUMMER	NONE	P
27-Jul-22	3	1454	13	W LANTAU	2	75	ON	HKCRP	806351	801920	SUMMER	NONE	S
27-Jul-22	4	1531	2	SW LANTAU	2	ND	OFF	HKCRP	805451	803135	SUMMER	NONE	
28-Jul-22	1	1014	2	W LANTAU	2	477	ON	HKCRP	813623	803173	SUMMER	NONE	S
28-Jul-22	2	1057	3	W LANTAU	1	ND	OFF	HKCRP	813071	802512	SUMMER	NONE	
1-Aug-22	2	1458	1	SW LANTAU	2	0	ON	HKCRP	805227	804434	SUMMER	NONE	P
1-Aug-22	3	1512	21	SW LANTAU	2	77	ON	HKCRP	806491	803539	SUMMER	PURSE-SEINE	S
1-Aug-22	4	1545	1	SW LANTAU	2	ND	OFF	HKCRP	806407	806808	SUMMER	NONE	
17-Aug-22	1	1313	1	W LANTAU	2	461	ON	HKCRP	812464	801398	SUMMER	NONE	P
17-Aug-22	2	1355	8	W LANTAU	3	143	ON	HKCRP	809421	800494	SUMMER	PURSE-SEINE	P

Appendix II. (cont'd.)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
17-Aug-22	3	1505	4	SW LANTAU	3	ND	OFF	HKCRP	806083	802672	SUMMER	NONE	
22-Aug-22	1	1412	1	W LANTAU	3	30	ON	HKCRP	810917	800085	SUMMER	NONE	S
22-Aug-22	2	1432	4	W LANTAU	2	21	ON	HKCRP	809409	801164	SUMMER	NONE	S
22-Aug-22	3	1503	4	W LANTAU	2	481	ON	HKCRP	806363	801157	SUMMER	NONE	P
23-Aug-22	1	1321	4	W LANTAU	2	580	ON	HKCRP	813547	802524	SUMMER	NONE	P
23-Aug-22	2	1403	4	W LANTAU	2	7	ON	HKCRP	808833	800946	SUMMER	NONE	S
23-Aug-22	3	1428	2	W LANTAU	1	265	ON	HKCRP	808460	799368	SUMMER	NONE	P
23-Aug-22	4	1447	4	W LANTAU	1	519	ON	HKCRP	806061	802559	SUMMER	NONE	P
30-Aug-22	1	1325	8	W LANTAU	3	374	ON	HKCRP	812009	801881	SUMMER	NONE	S
30-Aug-22	2	1356	1	W LANTAU	3	72	ON	HKCRP	806295	801992	SUMMER	NONE	S
22-Sep-22	1	1327	3	W LANTAU	3	51	ON	HKCRP	808435	800729	AUTUMN	NONE	P
23-Sep-22	1	1051	2	W LANTAU	2	ND	OFF	HKCRP	813535	802915	AUTUMN	NONE	
23-Sep-22	2	1059	2	W LANTAU	2	147	ON	HKCRP	813580	802761	AUTUMN	NONE	P
23-Sep-22	3	1132	5	W LANTAU	2	457	ON	HKCRP	811477	802416	AUTUMN	NONE	S
23-Sep-22	4	1214	1	W LANTAU	2	39	ON	HKCRP	809444	800401	AUTUMN	NONE	P
23-Sep-22	5	1224	5	W LANTAU	2	117	ON	HKCRP	809434	799659	AUTUMN	NONE	P
23-Sep-22	6	1238	3	W LANTAU	2	211	ON	HKCRP	808324	800893	AUTUMN	NONE	P
23-Sep-22	7	1304	3	W LANTAU	2	68	ON	HKCRP	806864	799972	AUTUMN	NONE	S
23-Sep-22	8	1407	1	W LANTAU	2	25	ON	HKCRP	807287	809821	AUTUMN	NONE	S
30-Sep-22	1	1030	3	W LANTAU	2	129	ON	HKCRP	811136	801374	AUTUMN	NONE	S
30-Sep-22	2	1140	1	W LANTAU	2	ND	OFF	HKCRP	808390	801017	AUTUMN	NONE	
30-Sep-22	3	1238	1	W LANTAU	1	ND	OFF	HKCRP	810430	800166	AUTUMN	NONE	
3-Oct-22	1	1438	1	W LANTAU	3	84	ON	HKCRP	807197	799787	AUTUMN	NONE	S
3-Oct-22	2	1506	9	W LANTAU	2	772	ON	HKCRP	810199	799485	AUTUMN	NONE	P
5-Oct-22	1	1042	7	W LANTAU	3	213	ON	HKCRP	808712	800832	AUTUMN	NONE	S
5-Oct-22	2	1138	4	W LANTAU	3	70	ON	HKCRP	809423	799648	AUTUMN	NONE	S
5-Oct-22	3	1202	4	W LANTAU	2	261	ON	HKCRP	810375	799795	AUTUMN	NONE	S
5-Oct-22	4	1212	3	W LANTAU	2	132	ON	HKCRP	810472	800836	AUTUMN	NONE	P
5-Oct-22	5	1244	2	W LANTAU	2	1900	ON	HKCRP	813273	801317	AUTUMN	NONE	S
5-Oct-22	6	1255	1	W LANTAU	3	127	ON	HKCRP	814499	802979	AUTUMN	NONE	P
7-Oct-22	1	1239	3	W LANTAU	2	102	ON	HKCRP	814010	803483	AUTUMN	NONE	S
7-Oct-22	2	1309	1	W LANTAU	2	89	ON	HKCRP	810330	800207	AUTUMN	NONE	P
7-Oct-22	3	1340	7	W LANTAU	3	7	ON	HKCRP	808383	799460	AUTUMN	NONE	P
8-Nov-22	1	1354	1	W LANTAU	3	38	ON	HKCRP	810319	800290	AUTUMN	NONE	P

Appendix II. (cont'd.)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
8-Nov-22	2	1444	2	W LANTAU	2	60	ON	HKCRP	806720	800199	AUTUMN	NONE	S
10-Nov-22	1	1112	2	SW LANTAU	2	22	ON	HKCRP	806172	802559	AUTUMN	PURSE-SEINE	S
11-Nov-22	1	1053	2	W LANTAU	2	333	ON	HKCRP	807725	801346	AUTUMN	NONE	S
14-Nov-22	1	1233	1	W LANTAU	2	16	ON	HKCRP	815383	803507	AUTUMN	NONE	P
14-Nov-22	2	1354	2	W LANTAU	2	223	ON	HKCRP	809421	800473	AUTUMN	NONE	P
14-Nov-22	3	1407	2	W LANTAU	3	176	ON	HKCRP	809368	799442	AUTUMN	NONE	S
15-Nov-22	1	1013	1	W LANTAU	1	782	ON	HKCRP	814155	803257	AUTUMN	NONE	S
15-Nov-22	2	1022	1	W LANTAU	2	350	ON	HKCRP	812341	802037	AUTUMN	NONE	S
15-Nov-22	3	1033	1	W LANTAU	2	105	ON	HKCRP	810671	801064	AUTUMN	NONE	S
15-Nov-22	4	1039	8	W LANTAU	2	141	ON	HKCRP	809376	800927	AUTUMN	PURSE-SEINE	S
18-Nov-22	1	1119	3	W LANTAU	2	34	ON	HKCRP	810652	799868	AUTUMN	NONE	S
18-Nov-22	2	1157	11	W LANTAU	2	357	ON	HKCRP	808604	799471	AUTUMN	NONE	S
18-Nov-22	3	1215	2	W LANTAU	2	130	ON	HKCRP	808392	800337	AUTUMN	NONE	P
18-Nov-22	4	1242	2	W LANTAU	2	235	ON	HKCRP	807405	800757	AUTUMN	NONE	P
18-Nov-22	5	1305	5	W LANTAU	2	286	ON	HKCRP	805521	801702	AUTUMN	PURSE-SEINE	S
25-Nov-22	1	1119	2	W LANTAU	2	953	ON	HKCRP	810829	800002	AUTUMN	NONE	S
25-Nov-22	2	1128	4	W LANTAU	2	532	ON	HKCRP	810859	801167	AUTUMN	NONE	P
25-Nov-22	3	1145	2	W LANTAU	2	122	ON	HKCRP	809432	800669	AUTUMN	NONE	P
25-Nov-22	4	1211	1	W LANTAU	2	414	ON	HKCRP	808402	800646	AUTUMN	NONE	P
30-Nov-22	1	1013	1	W LANTAU	3	291	ON	HKCRP	814088	803484	AUTUMN	NONE	S
2-Dec-22	1	1013	5	W LANTAU	3	34	ON	HKCRP	813878	803308	WINTER	NONE	S
6-Dec-22	1	1021	3	W LANTAU	3	33	ON	HKCRP	812308	802181	WINTER	NONE	S
6-Dec-22	2	1036	5	W LANTAU	3	534	ON	HKCRP	810825	801497	WINTER	PURSE-SEINE	S
6-Dec-22	3	1103	1	W LANTAU	3	41	ON	HKCRP	806273	801971	WINTER	NONE	S
6-Dec-22	4	1158	1	SW LANTAU	3	115	ON	HKCRP	807670	806563	WINTER	NONE	P
13-Dec-22	1	1015	1	W LANTAU	3	66	ON	HKCRP	813359	802699	WINTER	NONE	S
14-Dec-22	1	1319	4	W LANTAU	3	60	ON	HKCRP	813170	802626	WINTER	NONE	S
14-Dec-22	2	1421	1	W LANTAU	4	4	ON	HKCRP	807319	799819	WINTER	NONE	S
16-Dec-22	1	1035	5	NW LANTAU	3	69	ON	HKCRP	817618	804614	WINTER	NONE	S
21-Dec-22	1	1334	4	W LANTAU	4	86	ON	HKCRP	805465	801732	WINTER	PURSE-SEINE	P
3-Jan-23	1	1253	1	W LANTAU	2	11	ON	HKCRP	813558	802647	WINTER	NONE	S
3-Jan-23	2	1305	2	W LANTAU	3	23	ON	HKCRP	812364	801748	WINTER	NONE	S
3-Jan-23	3	1341	2	W LANTAU	3	183	ON	HKCRP	806195	801982	WINTER	NONE	S
3-Jan-23	4	1425	10	SW LANTAU	3	306	ON	HKCRP	806799	804468	WINTER	NONE	P

Appendix II. (cont'd.)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
4-Jan-23	1	1215	8	NW LANTAU	3	5	ON	HKCRP	817031	804716	WINTER	SHRIMP	P
4-Jan-23	2	1457	1	W LANTAU	3	28	ON	HKCRP	805864	801744	WINTER	NONE	S
5-Jan-23	1	1021	1	W LANTAU	2	51	ON	HKCRP	813137	802574	WINTER	NONE	S
5-Jan-23	2	1024	1	W LANTAU	2	1429	ON	HKCRP	812551	802254	WINTER	NONE	S
5-Jan-23	3	1038	3	W LANTAU	2	264	ON	HKCRP	809254	800916	WINTER	NONE	S
12-Jan-23	1	1023	1	W LANTAU	3	141	ON	HKCRP	813337	802585	WINTER	NONE	S
17-Jan-23	1	1207	3	W LANTAU	3	111	ON	HKCRP	809612	799535	WINTER	NONE	S
6-Feb-23	1	1015	1	W LANTAU	1	815	ON	HKCRP	814121	803360	WINTER	NONE	S
6-Feb-23	2	1028	8	W LANTAU	1	356	ON	HKCRP	811412	801529	WINTER	NONE	S
8-Feb-23	1	1453	1	SW LANTAU	3	ND	OFF	HKCRP	806062	802425	WINTER	NONE	
9-Feb-23	1	1049	9	W LANTAU	3	575	ON	HKCRP	814444	802546	WINTER	NONE	P
9-Feb-23	2	1124	5	W LANTAU	2	531	ON	HKCRP	813648	801823	WINTER	NONE	P
9-Feb-23	3	1148	2	W LANTAU	2	65	ON	HKCRP	812442	801717	WINTER	NONE	P
9-Feb-23	4	1228	2	W LANTAU	2	1726	ON	HKCRP	809884	801309	WINTER	NONE	S
9-Feb-23	5	1232	12	W LANTAU	2	70	ON	HKCRP	809265	801205	WINTER	NONE	S
9-Feb-23	6	1255	2	W LANTAU	2	172	ON	HKCRP	809499	800339	WINTER	NONE	P
9-Feb-23	7	1318	6	W LANTAU	3	60	ON	HKCRP	808446	800873	WINTER	NONE	P
15-Feb-23	1	1022	1	W LANTAU	3	102	ON	HKCRP	813384	801245	WINTER	NONE	S
15-Feb-23	2	1040	1	W LANTAU	3	478	ON	HKCRP	812339	802933	WINTER	NONE	S
15-Feb-23	3	1117	5	W LANTAU	4	114	ON	HKCRP	808412	800986	WINTER	NONE	P
15-Feb-23	4	1207	6	SW LANTAU	2	61	ON	HKCRP	805951	802445	WINTER	NONE	S
15-Feb-23	5	1317	1	SW LANTAU	2	138	ON	HKCRP	807893	805605	WINTER	NONE	S
15-Feb-23	11	1606	1	SE LANTAU	2	180	ON	HKCRP	809406	814537	WINTER	GILLNET	P
17-Feb-23	1	1026	1	W LANTAU	2	677	ON	HKCRP	813513	802864	WINTER	NONE	S
17-Feb-23	2	1040	8	W LANTAU	2	757	ON	HKCRP	811522	801736	WINTER	NONE	S
17-Feb-23	3	1054	1	W LANTAU	2	1463	ON	HKCRP	810118	800794	WINTER	NONE	S
17-Feb-23	4	1201	2	W LANTAU	2	248	ON	HKCRP	809422	800308	WINTER	NONE	P
17-Feb-23	5	1256	7	W LANTAU	2	207	ON	HKCRP	813537	802008	WINTER	NONE	P
17-Feb-23	6	1324	4	W LANTAU	2	178	ON	HKCRP	814532	802722	WINTER	NONE	P
20-Feb-23	1	1019	5	W LANTAU	3	221	ON	HKCRP	813292	802575	WINTER	NONE	S
20-Feb-23	2	1041	3	W LANTAU	3	276	ON	HKCRP	810405	801249	WINTER	NONE	S
2-Mar-23	1	1311	8	W LANTAU	3	383	ON	HKCRP	809011	800823	SPRING	NONE	S
7-Mar-23	1	1308	2	W LANTAU	2	306	ON	HKCRP	811302	801457	SPRING	NONE	S
7-Mar-23	2	1321	1	W LANTAU	3	137	ON	HKCRP	808933	800730	SPRING	NONE	S

Appendix II. (cont'd.)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
7-Mar-23	3	1335	5	W LANTAU	3	37	ON	HKCRP	806462	801642	SPRING	NONE	S
15-Mar-23	1	1029	4	W LANTAU	3	350	ON	HKCRP	810416	801321	SPRING	NONE	S
15-Mar-23	2	1043	1	W LANTAU	3	136	ON	HKCRP	808147	800769	SPRING	NONE	S
15-Mar-23	3	1059	3	SW LANTAU	2	ND	OFF	HKCRP	805265	801938	SPRING	NONE	
20-Mar-23	1	1032	1	W LANTAU	3	29	ON	HKCRP	813580	802720	SPRING	NONE	S
20-Mar-23	2	1050	2	W LANTAU	3	69	ON	HKCRP	811092	801240	SPRING	NONE	S
20-Mar-23	3	1103	1	W LANTAU	3	ND	OFF	HKCRP	811126	800807	SPRING	NONE	
20-Mar-23	4	1114	1	W LANTAU	3	34	ON	HKCRP	808701	800719	SPRING	NONE	S
20-Mar-23	5	1127	3	W LANTAU	3	50	ON	HKCRP	806262	801827	SPRING	NONE	S
20-Mar-23	7	1537	1	SE LANTAU	2	126	ON	HKCRP	808907	814907	SPRING	NONE	S
23-Mar-23	1	1019	11	W LANTAU	2	66	ON	HKCRP	814011	803123	SPRING	PURSE-SEINE	S
23-Mar-23	2	1031	1	W LANTAU	3	358	ON	HKCRP	812916	802296	SPRING	NONE	S

Appendix III. HKCRP-AFCD Finless Porpoise Sighting Database (April 2022 - March 2023)

(Note: P = sightings made on primary lines; S = sightings made on secondary lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	NORTHING	EASTING	SEASON	P/S
6-Apr-22	5	1134	2	SW LANTAU	2	159	ON	803646	803337	SPRING	S
6-Apr-22	8	1246	2	SW LANTAU	2	34	ON	802321	806594	SPRING	S
6-Apr-22	9	1254	1	SW LANTAU	2	234	ON	801247	806798	SPRING	S
6-Apr-22	10	1308	2	SW LANTAU	3	82	ON	801576	808491	SPRING	P
6-Apr-22	11	1519	1	SE LANTAU	3	168	ON	805896	814563	SPRING	P
11-Apr-22	1	1308	2	PO TOI	2	157	ON	803510	854960	SPRING	P
20-Apr-22	8	1452	2	SW LANTAU	3	181	ON	800745	808562	SPRING	S
20-Apr-22	9	1502	1	SW LANTAU	3	18	ON	801120	809553	SPRING	P
20-Apr-22	10	1507	3	SW LANTAU	3	170	ON	801906	809554	SPRING	P
22-Apr-22	1	1514	1	SE LANTAU	2	80	ON	805023	813447	SPRING	P
29-Apr-22	1	1340	2	PO TOI	2	127	ON	804182	851628	SPRING	S
6-May-22	5	1558	2	SW LANTAU	3	21	ON	806245	810593	SPRING	P
31-May-22	1	1349	11	SW LANTAU	2	45	ON	804837	811519	SPRING	P
31-May-22	2	1415	2	SW LANTAU	2	263	ON	801848	811452	SPRING	P
31-May-22	3	1432	3	SW LANTAU	2	315	ON	800521	809799	SPRING	S
24-Jun-22	1	1039	1	PO TOI	1	261	ON	802542	850546	SUMMER	P
1-Aug-22	1	1324	3	SW LANTAU	1	173	ON	800623	808984	SUMMER	S
2-Aug-22	1	1232	5	PO TOI	1	57	ON	804538	861797	SUMMER	P
23-Aug-22	5	1556	1	SW LANTAU	2	ND	OFF	807331	809955	SUMMER	
1-Sep-22	1	1451	1	PO TOI	2	36	ON	807396	862493	AUTUMN	P
1-Sep-22	2	1635	2	PO TOI	2	32	ON	806336	844552	AUTUMN	S
23-Sep-22	9	1426	6	SW LANTAU	2	48	ON	804042	810548	AUTUMN	P
23-Sep-22	10	1439	3	SW LANTAU	2	301	ON	802746	810535	AUTUMN	P
23-Sep-22	11	1504	1	SE LANTAU	2	385	ON	803053	812454	AUTUMN	P
25-Nov-22	5	1527	5	SE LANTAU	2	131	ON	803338	814466	AUTUMN	P
6-Dec-22	5	1520	1	SE LANTAU	2	534	ON	801929	816527	WINTER	P
6-Dec-22	6	1528	2	SE LANTAU	2	136	ON	801518	817218	WINTER	S
9-Dec-22	1	1206	1	LAMMA	3	141	ON	803449	824182	WINTER	P
9-Dec-22	2	1441	1	SE LANTAU	3	44	ON	804214	813498	WINTER	P
20-Dec-22	1	1205	3	SW LANTAU	2	78	ON	802475	807492	WINTER	S
20-Dec-22	2	1218	1	SW LANTAU	2	346	ON	803956	808598	WINTER	P
20-Dec-22	3	1332	1	SW LANTAU	3	224	ON	803852	811507	WINTER	P
6-Jan-23	1	1321	1	SE LANTAU	1	54	ON	802512	819602	WINTER	S
6-Jan-23	2	1336	2	SE LANTAU	2	143	ON	803155	818519	WINTER	P
6-Jan-23	3	1444	1	SE LANTAU	2	6	ON	801400	814546	WINTER	S
6-Jan-23	4	1456	1	SE LANTAU	2	299	ON	803847	814580	WINTER	P
9-Jan-23	1	1343	1	SW LANTAU	2	79	ON	800488	809644	WINTER	P
9-Jan-23	2	1416	1	SW LANTAU	2	197	ON	805560	809560	WINTER	P
17-Jan-23	2	1310	1	SW LANTAU	3	2	ON	803156	804492	WINTER	P
30-Jan-23	1	1309	3	SW LANTAU	3	60	ON	805845	811531	WINTER	P
15-Feb-23	6	1354	1	SW LANTAU	2	105	ON	801843	807418	WINTER	P
15-Feb-23	7	1409	2	SW LANTAU	3	74	ON	800544	809552	WINTER	S
15-Feb-23	8	1428	3	SW LANTAU	2	79	ON	802835	810525	WINTER	P
15-Feb-23	9	1516	1	SE LANTAU	2	59	ON	807349	812492	WINTER	S
15-Feb-23	10	1547	4	SE LANTAU	3	33	ON	805907	814501	WINTER	P
24-Feb-23	1	1413	3	SE LANTAU	2	413	ON	806344	819441	WINTER	P
24-Feb-23	2	1558	2	LAMMA	2	169	ON	806496	821607	WINTER	P
28-Feb-23	1	1347	1	SE LANTAU	4	20	ON	804452	817686	WINTER	S
2-Mar-23	2	1524	2	SW LANTAU	3	97	ON	801898	807945	SPRING	S
2-Mar-23	3	1532	6	SW LANTAU	2	10	ON	802851	807750	SPRING	S
7-Mar-23	4	1439	2	SW LANTAU	3	185	ON	801920	807945	SPRING	S
7-Mar-23	5	1448	2	SW LANTAU	3	28	ON	801487	808542	SPRING	P
9-Mar-23	1	1051	3	LAMMA	2	69	ON	805471	839323	SPRING	S
9-Mar-23	2	1531	1	SE LANTAU	2	42	ON	805726	817553	SPRING	P
20-Mar-23	6	1520	2	SE LANTAU	2	3	ON	809597	812485	SPRING	P

Appendix IV. Individual dolphins identified during AFCD surveys (April 2022 to March 2023)

(***in bold & italics: new individuals***)

DOLPHIN ID	DATE	STG#	AREA
CH38	06/04/22	2	WL
	17/08/22	2	WL
	23/09/22	3	WL
	03/10/22	2	WL
	15/11/22	2	WL
	15/11/22	4	WL
	18/11/22	1	WL
	18/11/22	3	WL
	09/02/23	2	WL
	17/02/23	2	WL
	20/02/23	1	WL
CH108	07/04/22	2	WL
	03/10/22	2	WL
	02/03/23	1	WL
	23/03/23	1	WL
CH112	05/10/22	2	WL
CH113	23/06/22	5	WL
	30/06/22	7	WL
	12/07/22	6	SWL
	13/07/22	3	WL
	30/08/22	1	WL
CH141	25/11/22	2	WL
	03/01/23	3	WL
	03/01/23	4	WL
	05/01/23	3	WL
	09/02/23	2	WL
CH153	13/07/22	5	SWL
CH259	27/07/22	3	WL
CH286	07/04/22	2	WL
CH320	30/08/22	1	WL
CH329	13/07/22	4	SWL
EL01	20/04/22	7	WL
	10/11/22	1	SWL
	11/11/22	1	WL
	18/11/22	5	WL
	03/01/23	4	WL
	09/02/23	5	WL
	09/02/23	7	WL
	15/02/23	4	SWL
	15/02/23	5	SWL
	07/03/23	3	WL
	15/03/23	3	SWL
	20/03/23	5	WL
NL33	27/07/22	3	WL
NL46	01/08/22	3	SWL
NL98	17/08/22	2	WL
	23/08/22	2	WL
NL103	17/08/22	2	WL
NL104	27/07/22	3	WL
	16/12/22	1	NWL
NL123	27/07/22	3	WL
NL156	07/04/22	2	WL
	07/04/22	3	WL
	06/05/22	3	WL
	06/05/22	3	WL
	01/08/22	3	SWL
	06/12/22	1	WL
	06/12/22	2	WL
	03/01/23	2	WL
	06/02/23	2	WL
	17/02/23	2	WL
	17/02/23	6	WL

DOLPHIN ID	DATE	STG#	AREA
NL202	06/05/22	2	WL
	23/06/22	2	WL
	16/12/22	1	NWL
NL242	01/08/22	3	SWL
NL247	23/06/22	3	WL
	30/06/22	7	WL
NL259	12/07/22	3	WL
	23/08/22	2	WL
NL261	27/07/22	1	WL
	22/09/22	1	WL
NL269	23/06/22	7	SWL
	23/09/22	7	WL
	15/02/23	3	SWL
NL293	23/06/22	4	WL
	14/11/22	1	WL
NL296	09/02/23	1	WL
NL301	27/07/22	3	WL
NL306	06/04/22	6	SWL
	06/04/22	7	SWL
	07/04/22	1	SWL
	23/09/22	8	WL
	15/02/23	11	SEL
	20/03/23	7	SEL
NL311	20/04/22	3	WL
	06/05/22	2	WL
	23/03/23	1	WL
NL317	12/07/22	1	WL
NL321	01/08/22	3	SWL
	16/12/22	1	NWL
NL332	23/06/22	4	WL
	23/06/22	7	SWL
	12/07/22	4	WL
	01/08/22	3	SWL
	04/01/23	1	NWL
SL40	07/04/22	2	WL
	06/05/22	4	SWL
	13/07/22	7	SWL
	27/07/22	3	WL
	27/07/22	4	SWL
	01/08/22	3	SWL
	07/10/22	1	WL
	18/11/22	5	WL
	25/11/22	3	WL
SL44	06/04/22	2	WL
	07/04/22	4	WL
	07/04/22	5	WL
	15/11/22	3	WL
	18/11/22	1	WL
	18/11/22	3	WL
	18/11/22	4	WL
	09/02/23	5	WL
	09/02/23	7	WL
SL58	23/06/22	7	SWL
	09/02/23	5	WL
SL59	07/07/22	1	SWL
	17/02/23	5	WL
	17/02/23	6	WL
SL60	23/06/22	8	SWL
	17/08/22	3	SWL
	30/08/22	2	WL
	07/03/23	3	WL
	15/03/23	3	SWL
	20/03/23	5	WL

DOLPHIN ID	DATE	STG#	AREA
SL66	23/06/22	3	WL
SL68	07/10/22	3	WL
	23/03/23	1	WL
WL05	28/07/22	1	WL
	23/08/22	3	WL
	23/09/22	1	WL
WL17	27/07/22	3	WL
	01/08/22	3	SWL
	16/12/22	1	NWL
WL28	12/07/22	5	SWL
WL28	13/07/22	3	WL
	23/06/22	5	WL
	04/01/23	1	NWL
WL29	06/05/22	2	WL
	23/06/22	5	WL
	07/10/22	3	WL
	02/03/23	1	WL
WL42	06/05/22	2	WL
	27/07/22	3	WL
	23/09/22	3	WL
	03/10/22	2	WL
	25/11/22	2	WL
	09/02/23	5	WL
	23/03/23	1	WL
WL46	12/07/22	1	WL
	13/07/22	3	WL
	28/07/22	2	WL
WL61	12/07/22	6	SWL
	27/07/22	2	WL
	01/08/22	3	SWL
	17/08/22	3	SWL
	15/11/22	4	WL
	06/12/22	1	WL
	06/12/22	2	WL
	06/02/23	2	WL
	15/02/23	2	SWL
	17/02/23	2	WL
	17/02/23	5	WL
	07/03/23	2	WL
	23/03/23	2	WL
WL66	30/06/22	3	WL
	30/06/22	7	WL
WL72	15/11/22	4	WL
	18/11/22	2	WL
	25/11/22	2	WL
	23/03/23	1	WL
WL79	20/04/22	1	WL
	06/05/22	1	WL
	07/07/22	1	SWL
	12/07/22	3	WL
	27/07/22	2	WL
	01/08/22	3	SWL
	17/08/22	2	WL
	23/09/22	1	WL
	02/12/22	1	WL
	04/01/23	1	NWL
	17/02/23	5	WL
	20/03/23	1	WL

Appendix IV. (cont'd)

(***in bold & italics: new individuals***)

DOLPHIN ID	DATE	STG#	AREA
WL91	12/07/22	8	SWL
	18/07/22	1	SWL
	01/08/22	3	SWL
	17/08/22	2	WL
	22/09/22	1	WL
	23/09/22	6	WL
	05/10/22	4	WL
	18/11/22	5	WL
	09/02/23	5	WL
	17/02/23	5	WL
	02/03/23	1	WL
	07/03/23	1	WL
	23/03/23	1	WL
WL92	12/07/22	6	SWL
	05/10/22	1	WL
	07/10/22	3	WL
	18/11/22	1	WL
WL94	07/04/22	2	WL
WL109	23/06/22	7	SWL
	27/07/22	3	WL
	18/11/22	2	WL
	03/01/23	4	WL
	06/02/23	2	WL
	09/02/23	5	WL
	15/02/23	3	SWL
WL114	06/04/22	3	WL
	18/07/22	1	SWL
	23/08/22	4	WL
	30/08/22	1	WL
	03/01/23	4	WL
	15/02/23	4	SWL
	02/03/23	1	WL
WL118	30/06/22	3	WL
WL123	06/05/22	4	SWL
	01/08/22	3	SWL
	17/08/22	2	WL
	05/10/22	4	WL
	21/12/22	1	WL
	09/02/23	5	WL
	17/02/23	4	WL
	07/03/23	1	WL
WL128	23/06/22	7	SWL
WL129	06/05/22	2	WL
	30/06/22	3	WL
	30/06/22	7	WL
WL130	06/04/22	3	WL
	06/05/22	2	WL
	27/07/22	3	WL
	01/08/22	3	SWL
	03/10/22	2	WL
	05/10/22	1	WL
	18/11/22	2	WL
	25/11/22	2	WL
	06/12/22	2	WL
	21/12/22	1	WL
	09/02/23	5	WL
	02/03/23	1	WL
WL131	23/06/22	3	WL
	27/07/22	3	WL
	15/11/22	4	WL
	18/11/22	2	WL
	15/02/23	3	SWL

DOLPHIN ID	DATE	STG#	AREA
WL142	23/06/22	4	WL
WL145	23/06/22	7	SWL
	23/09/22	2	WL
	07/10/22	1	WL
WL152	06/04/22	3	WL
	20/04/22	3	WL
	23/06/22	7	SWL
	27/07/22	3	WL
	22/08/22	3	WL
	23/08/22	4	WL
	18/11/22	2	WL
	03/01/23	4	WL
	09/02/23	5	WL
	09/02/23	7	WL
	17/02/23	2	WL
	17/02/23	6	WL
WL166	07/04/22	2	WL
WL168	06/04/22	1	WL
	07/04/22	4	WL
	20/04/22	5	WL
	20/04/22	6	WL
	06/05/22	4	SWL
	17/08/22	3	SWL
	03/10/22	1	WL
	05/10/22	2	WL
WL169	01/08/22	3	SWL
WL171	23/09/22	6	WL
	18/11/22	5	WL
WL176	01/08/22	3	SWL
WL179	30/06/22	6	WL
	30/08/22	1	WL
	30/09/22	1	WL
	03/10/22	2	WL
WL180	07/04/22	2	WL
WL200	04/01/23	2	WL
	09/02/23	3	WL
WL206	13/07/22	5	SWL
WL208	07/04/22	2	WL
	06/05/22	2	WL
	09/02/23	1	WL
WL210	20/02/23	1	WL
WL213	23/06/22	7	SWL
	30/06/22	3	WL
	30/06/22	5	WL
	07/07/22	1	SWL
	13/07/22	5	SWL
	02/12/22	1	WL
	20/02/23	1	WL
	23/03/23	1	WL
WL216	30/08/22	1	WL

DOLPHIN ID	DATE	STG#	AREA
WL220	07/04/22	2	WL
	06/05/22	3	WL
	06/05/22	4	SWL
	23/06/22	2	WL
	23/06/22	7	SWL
	13/07/22	7	SWL
	01/08/22	3	SWL
	25/11/22	3	WL
	06/12/22	2	WL
	03/01/23	4	WL
	05/01/23	1	WL
	09/02/23	5	WL
	09/02/23	7	WL
	15/02/23	4	SWL
	17/02/23	4	WL
	20/02/23	2	WL
WL221	06/04/22	4	SWL
	20/04/22	7	WL
	10/11/22	1	SWL
	03/01/23	4	WL
	09/02/23	7	WL
	20/02/23	2	WL
	07/03/23	3	WL
	15/03/23	3	SWL
	20/03/23	5	WL
WL229	05/10/22	4	WL
	07/10/22	3	WL
	17/01/23	1	WL
	23/03/23	1	WL
WL236	06/04/22	1	WL
	01/08/22	3	SWL
	07/10/22	3	WL
WL250	06/05/22	4	SWL
	13/07/22	8	SEL
	01/08/22	3	SWL
	30/09/22	1	WL
	21/12/22	1	WL
	20/02/23	2	WL
WL254	06/05/22	1	WL
	23/06/22	5	WL
	07/10/22	3	WL
WL256	23/06/22	5	WL
WL259	01/08/22	3	SWL
WL272	12/07/22	2	WL
	01/08/22	3	SWL
WL273	14/11/22	2	WL
	21/12/22	1	WL
	15/02/23	4	SWL
	23/03/23	1	WL
WL279	23/06/22	3	WL
WL283	12/07/22	2	WL
	06/02/23	2	WL
WL294	23/06/22	4	WL
	23/06/22	7	SWL
	12/07/22	5	SWL
	04/01/23	1	NWL
WL295	22/08/22	2	WL
WL298	13/07/22	5	SWL
WL299	06/05/22	2	WL
	02/03/23	1	WL

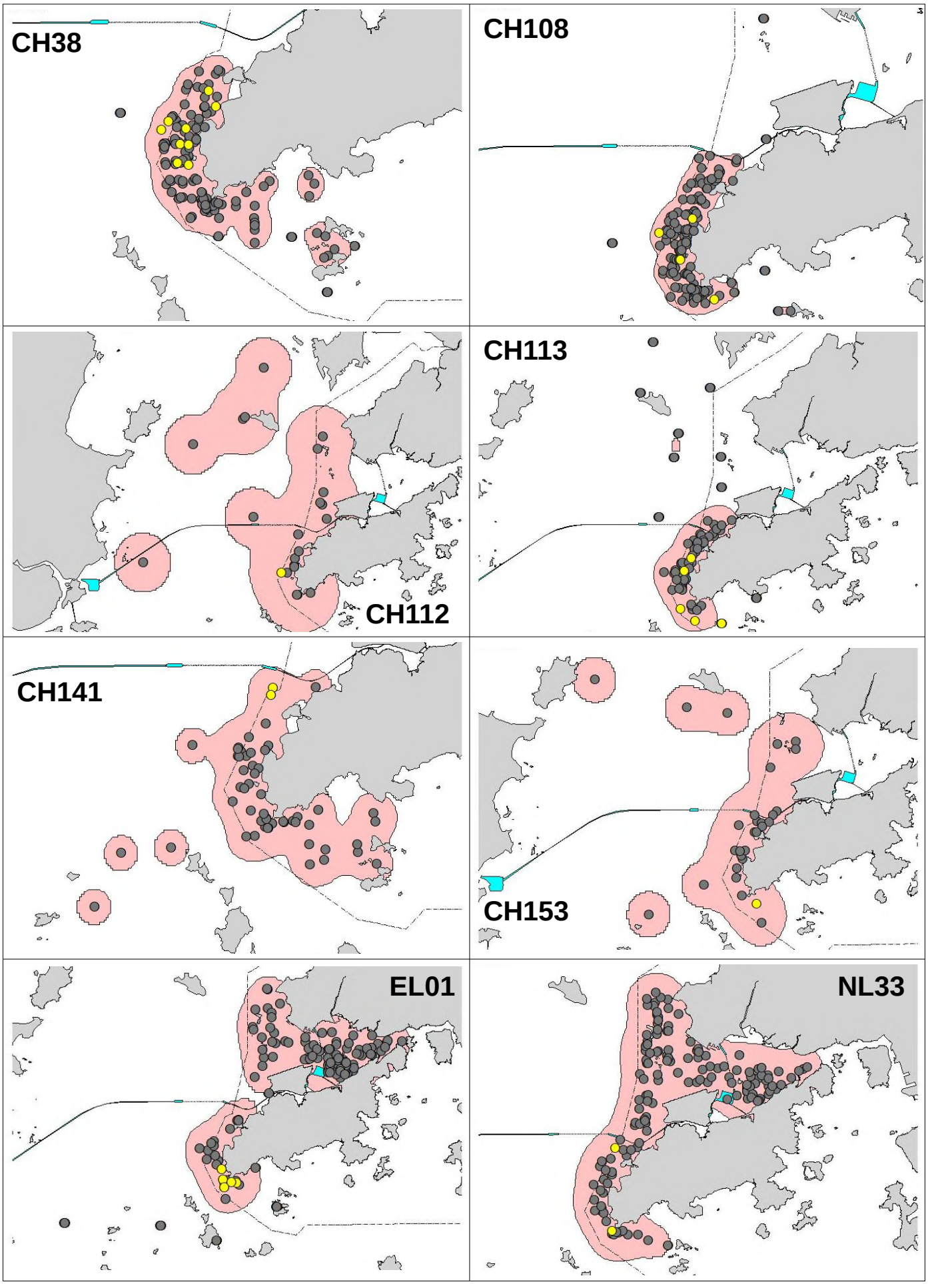
Appendix IV. (cont'd)

(***in bold & italics: new individuals***)

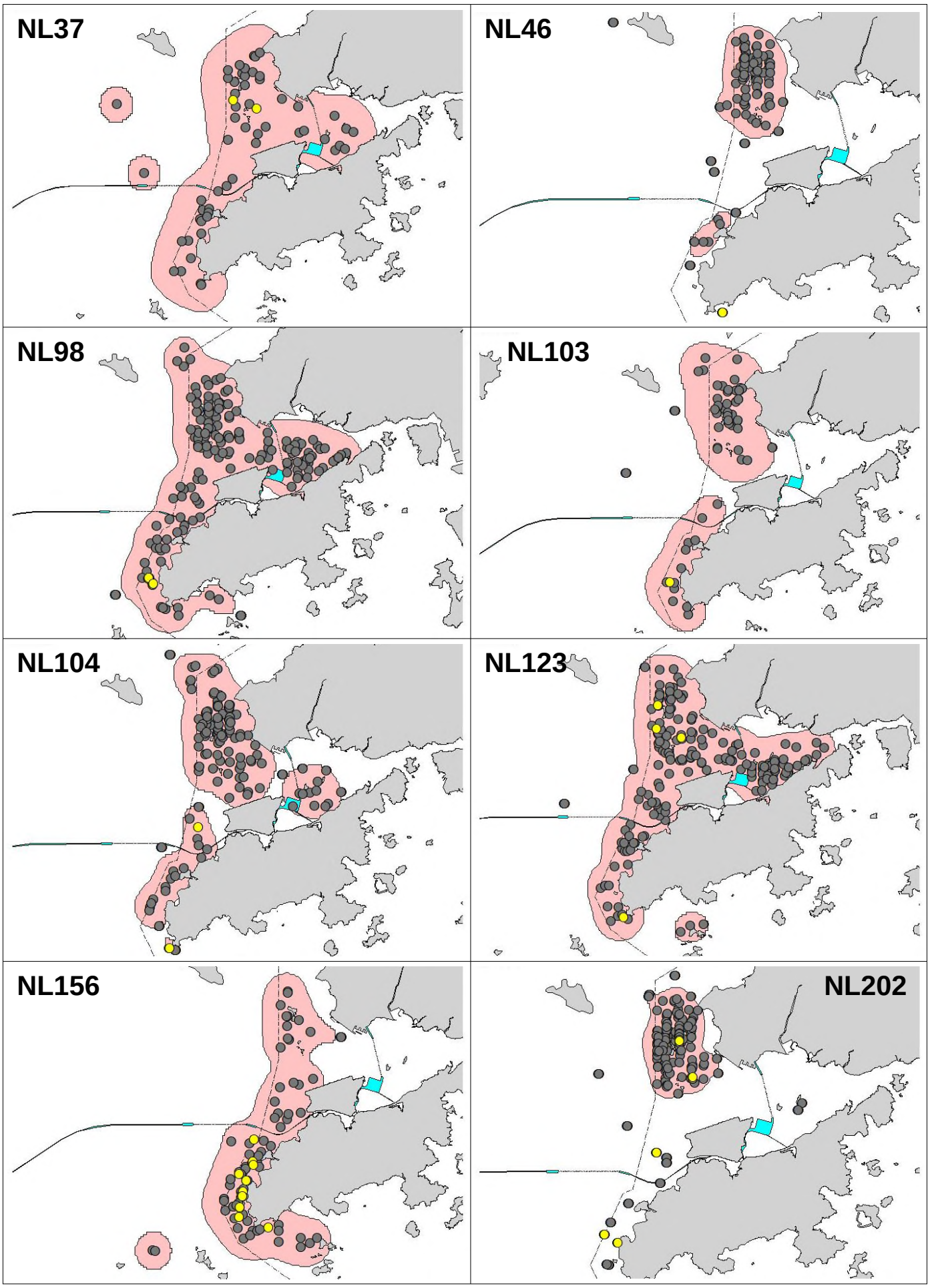
DOLPHIN ID	DATE	STG#	AREA
WL302	23/06/22	7	SWL
	09/02/23	5	WL
	09/02/23	7	WL
	15/02/23	3	SWL
	17/02/23	5	WL
	23/03/23	1	WL
WL304	23/06/22	4	WL
	13/07/22	6	SWL
	23/08/22	4	WL
	04/01/23	1	NWL
WL305	13/07/22	6	SWL
	23/08/22	4	WL
	23/09/22	3	WL
	04/01/23	1	NWL
WL307	22/08/22	2	WL
	04/01/23	1	NWL
WL310	23/06/22	7	SWL
	12/07/22	3	WL
	12/07/22	4	WL
	13/07/22	5	SWL
	18/11/22	2	WL
WL311	06/05/22	2	WL
WL312	01/08/22	3	SWL
WL313	09/02/23	1	WL
WL314	06/05/22	2	WL
	30/06/22	4	WL
	05/10/22	1	WL
	20/02/23	1	WL
	02/03/23	1	WL
WL315	20/04/22	3	WL
WL317	07/04/22	2	WL
	06/05/22	1	WL
	12/07/22	6	SWL
	23/09/22	7	WL
	03/10/22	2	WL
	03/01/23	3	WL
	09/02/23	1	WL
	15/02/23	4	SWL
WL318	07/04/22	2	WL
	09/02/23	1	WL
WL319	28/07/22	1	WL
	22/08/22	2	WL
	22/08/22	3	WL
	30/08/22	1	WL
WL320	***06/05/22***	***2***	***WL***
	13/07/22	***2***	***WL***
WL321	***12/07/22***	***5***	***SWL***
	13/07/22	***3***	***WL***
WL323	***23/06/22***	***7***	***SWL***
	23/09/22	***2***	***WL***
	07/10/22	***1***	***WL***
WL324	***06/05/22***	***2***	***WL***
	30/06/22	***3***	***WL***
WL325	***22/08/22***	***2***	***WL***
	23/08/22	***1***	***WL***
WL326	***09/02/23***	***1***	***WL***
WL327	***23/06/22***	***7***	***SWL***
	30/06/22	***3***	***WL***
	30/06/22	***5***	***WL***
	20/02/23	***1***	***WL***

DOLPHIN ID	DATE	STG#	AREA
WL328	***06/12/22***	***2***	***WL***
WL329	***06/05/22***	***2***	***WL***
	23/06/22	***5***	***WL***
	07/10/22	***3***	***WL***
	02/03/23	***1***	***WL***

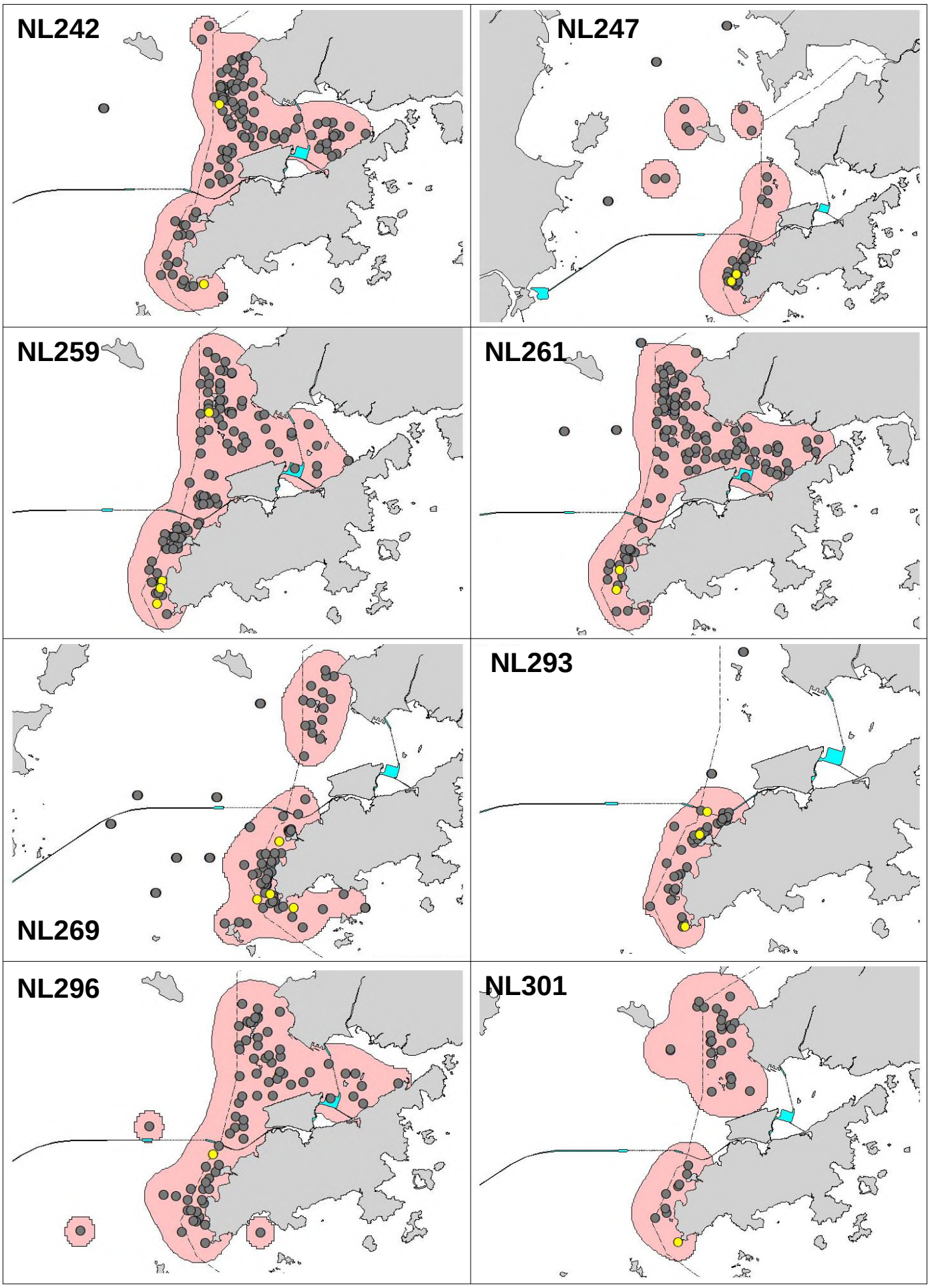
Appendix V. Ranging patterns (95% kernel ranges) of 95 individual dolphins with 10+ re-sightings that were sighted during 2022 (note: yellow dots indicates sightings made in 2022)



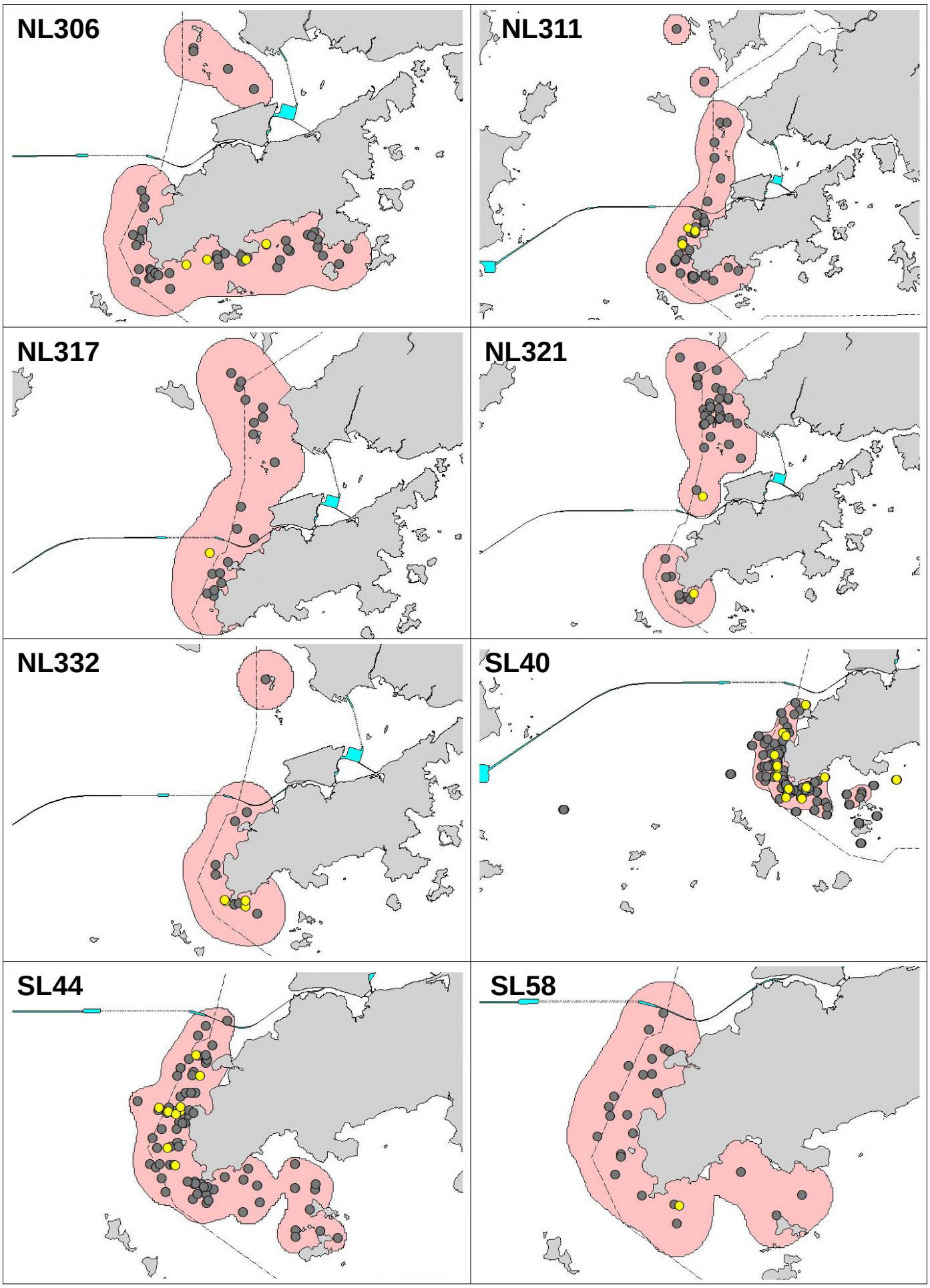
Appendix V. (cont'd).



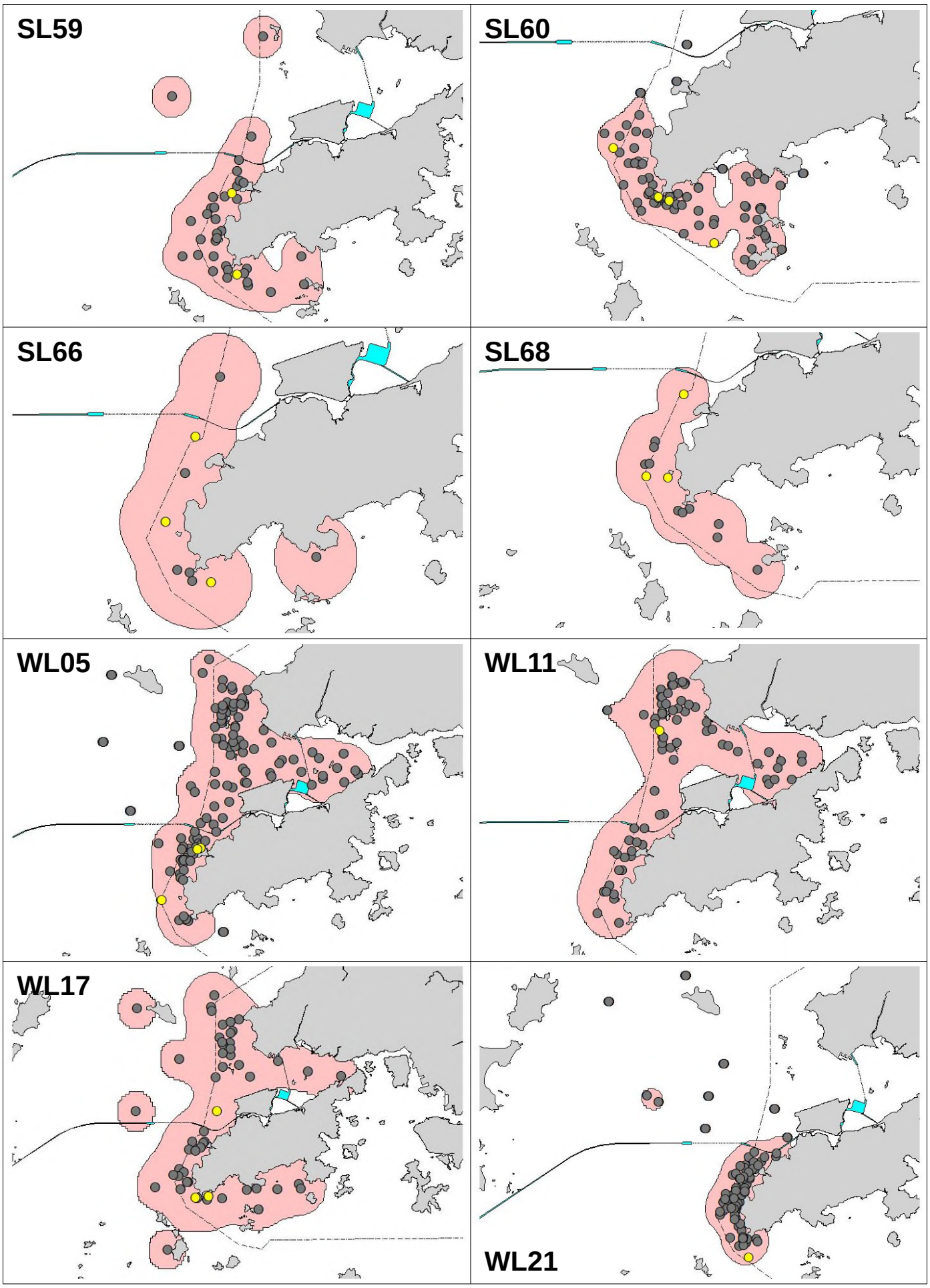
Appendix V. (cont'd).



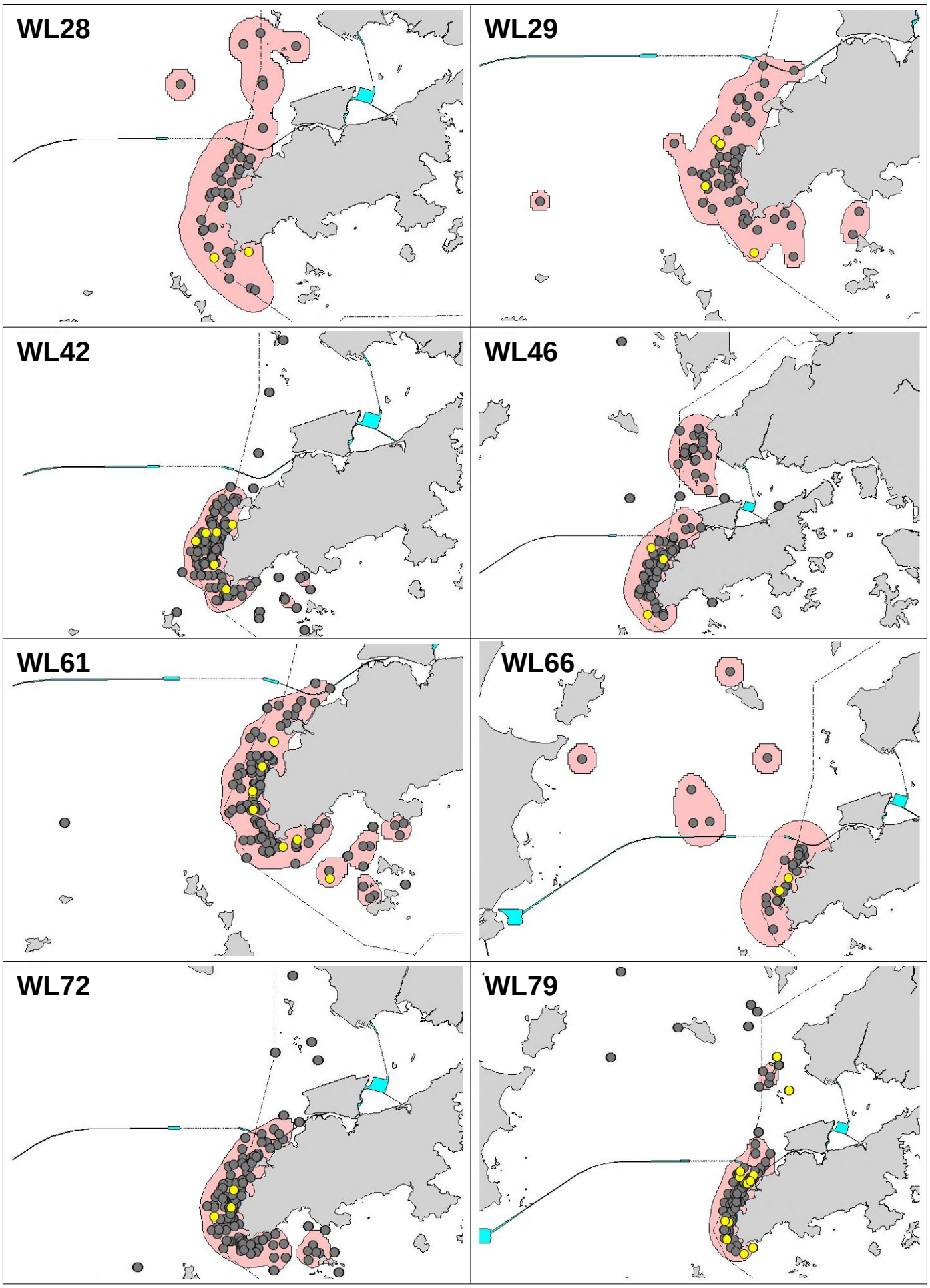
Appendix V. (cont'd).



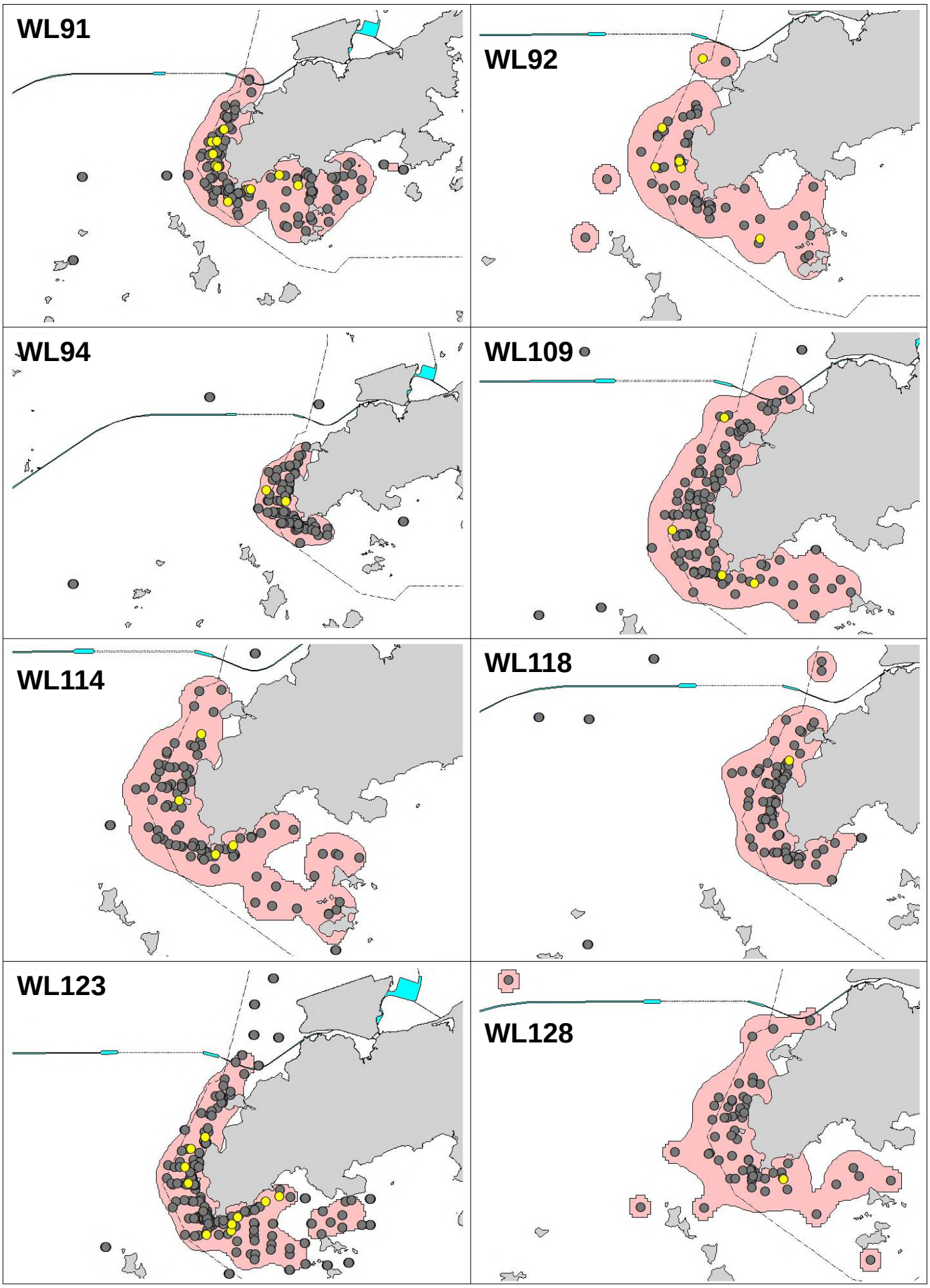
Appendix V. (cont'd).



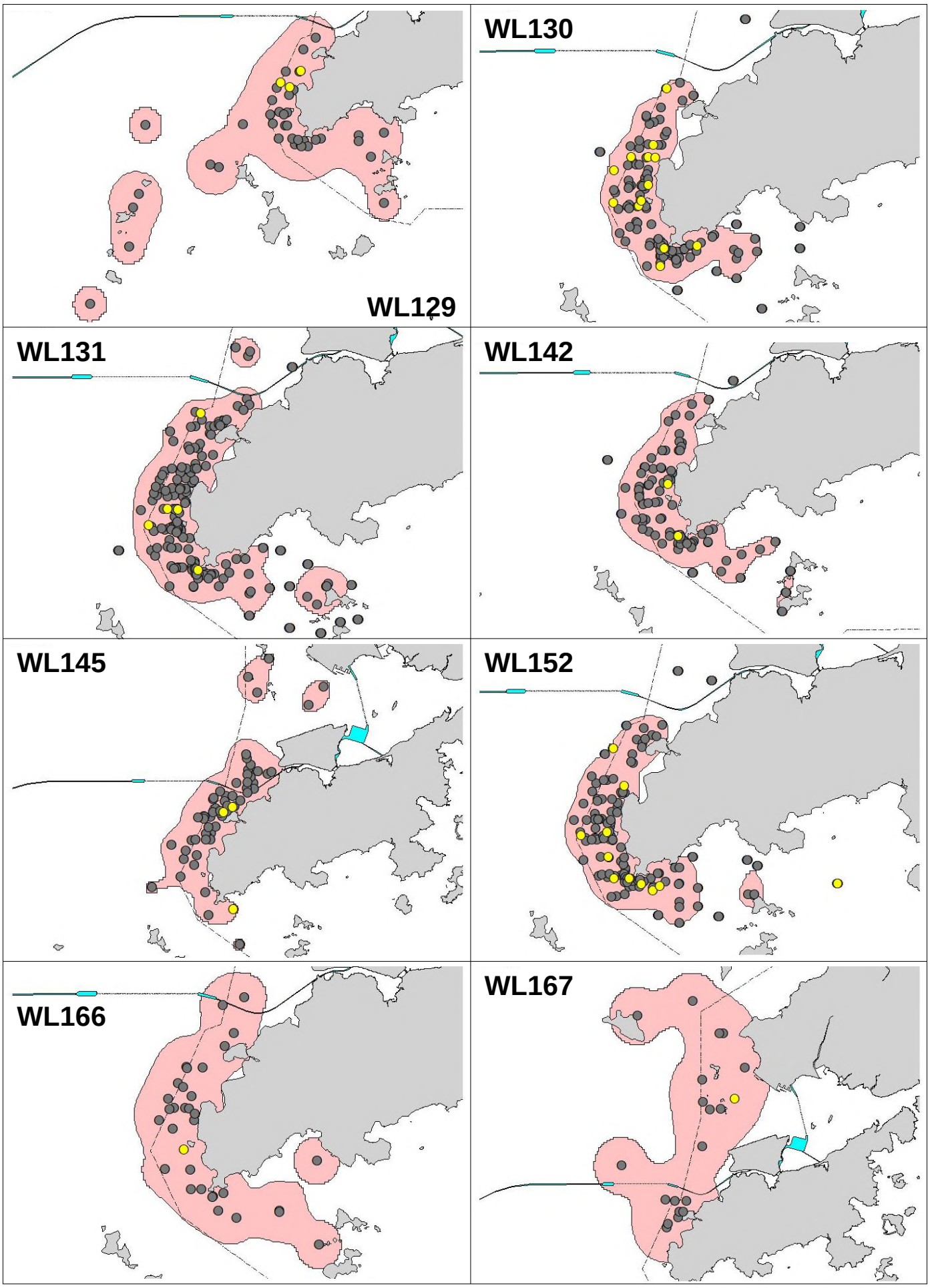
Appendix V. (cont'd).



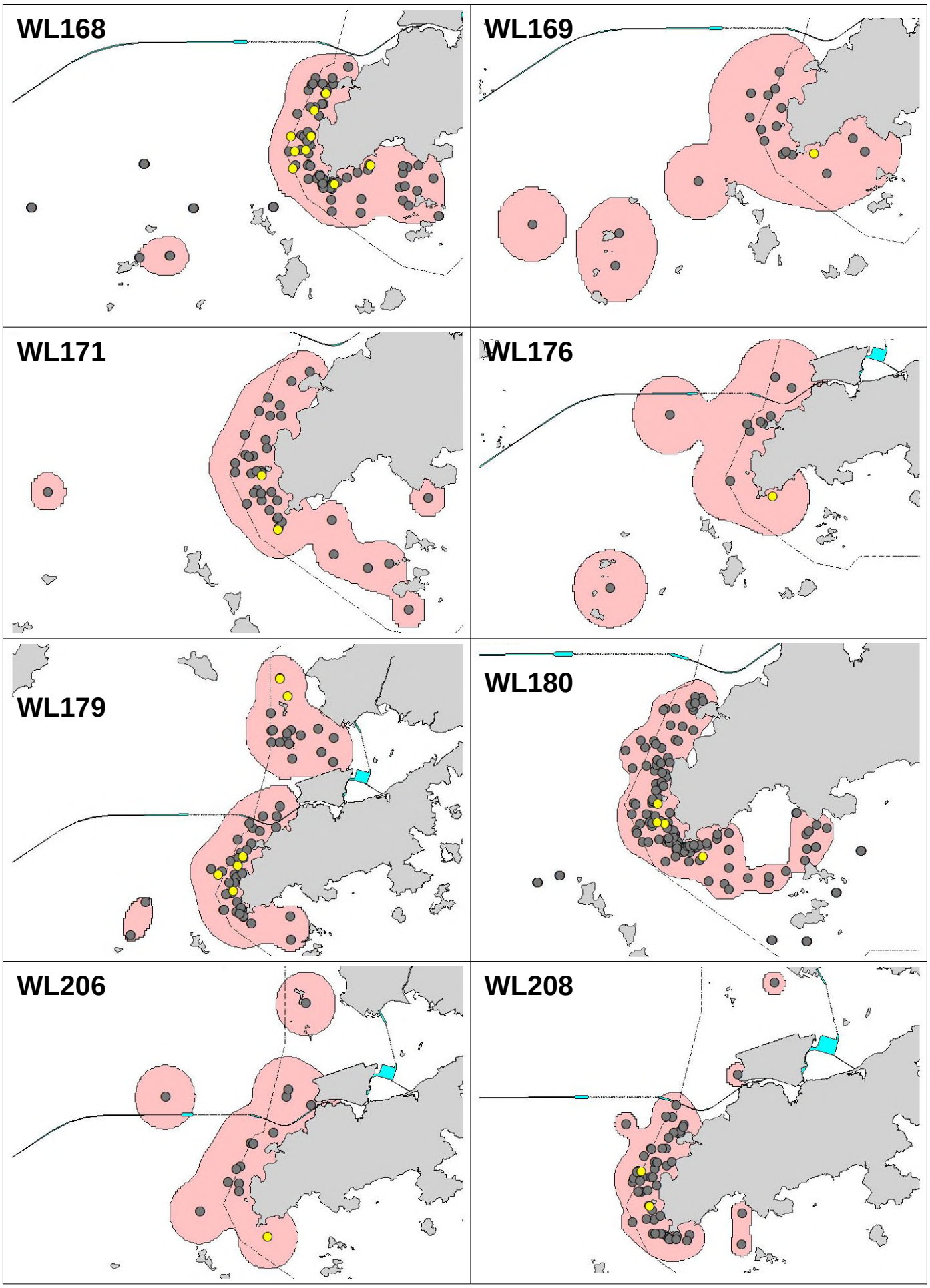
Appendix V. (cont'd).



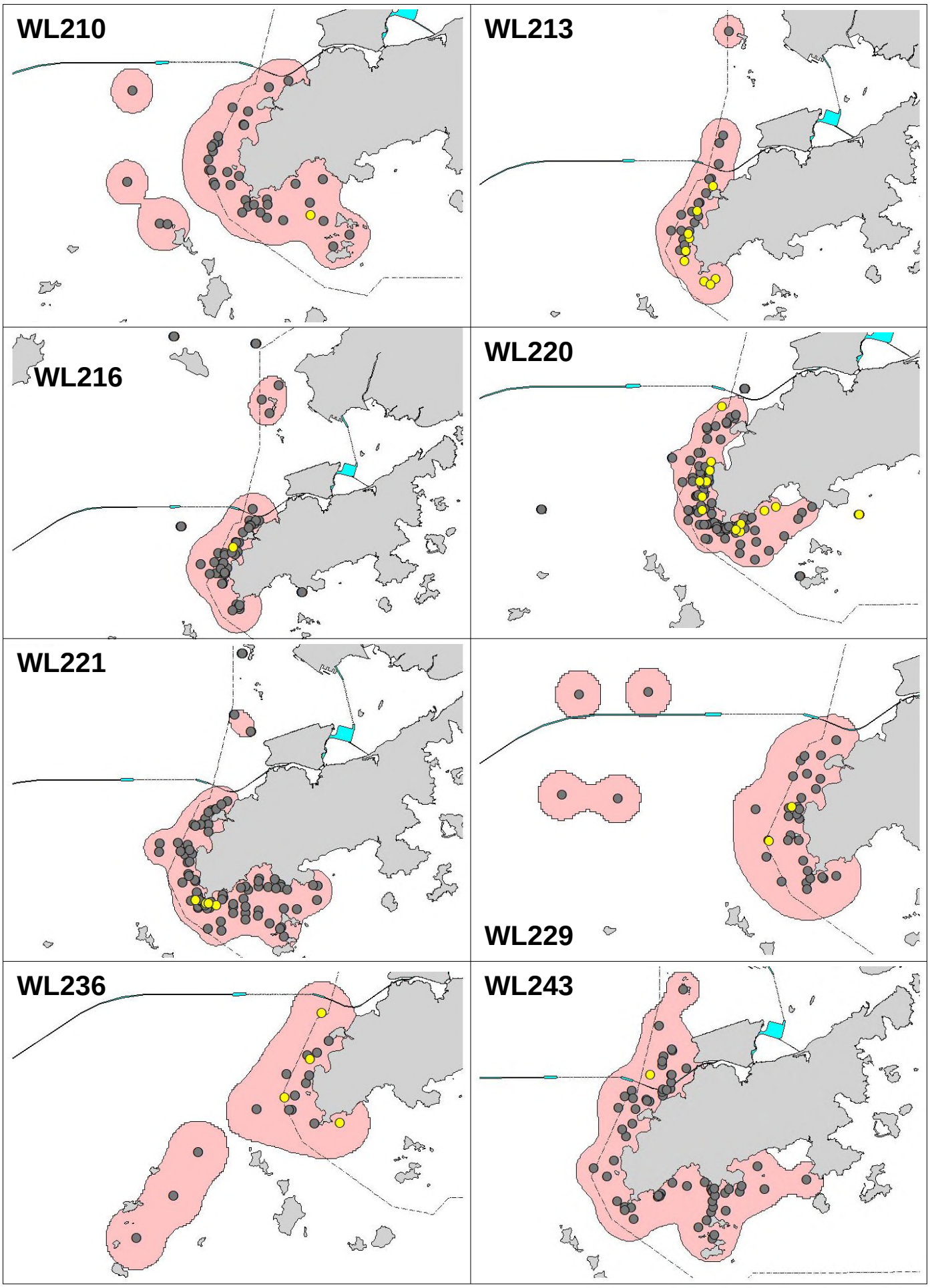
Appendix V. (cont'd).



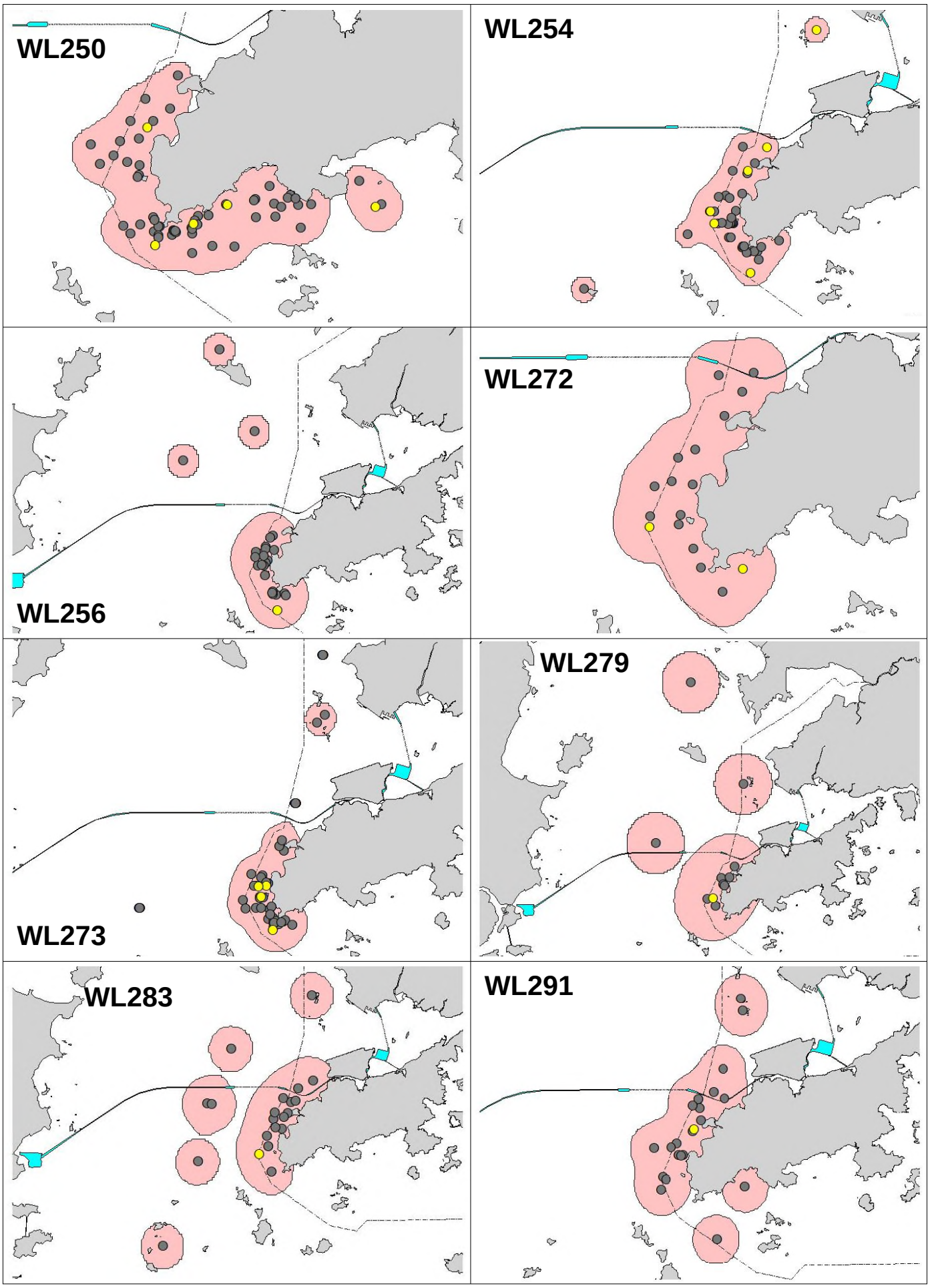
Appendix V. (cont'd).



Appendix V. (cont'd).



Appendix V. (cont'd).



Appendix V. (cont'd).