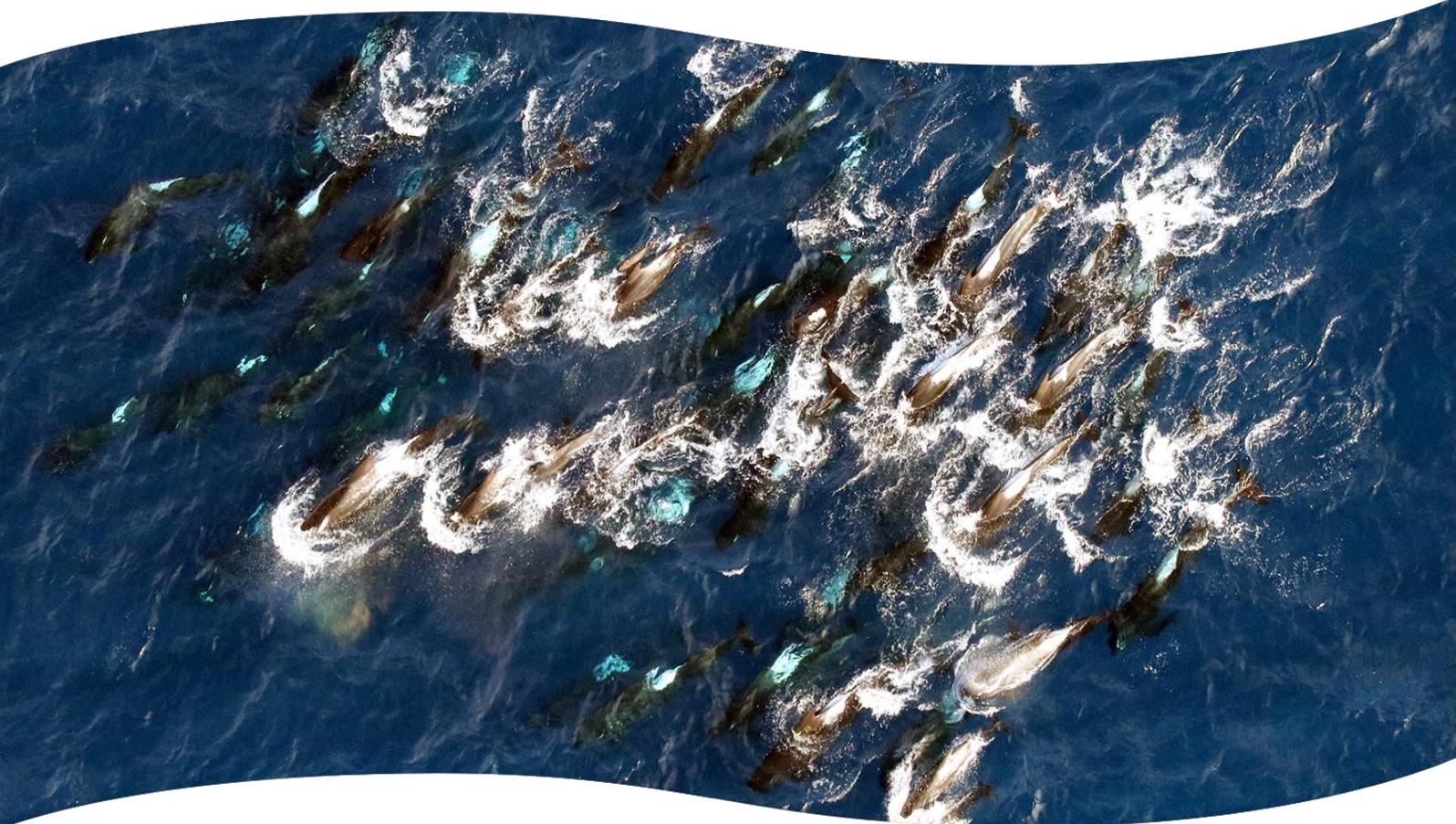


AERIAL VISUAL SURVEY OF CETACEANS AND OTHER MEGAFAUNA IN THE BREMER MARINE PARK AND SURROUNDING AREAS

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Australian Government



**Marine
Biodiversity
Hub**

National Environmental Science Programme



**Australian
Marine Parks**

Background

Cetaceans are some of the most iconic animals on the planet, yet few of the 45 species of whales, dolphins and porpoises known to occur in Australian waters have been extensively studied to date. Historical commercial whaling records and recent modelling studies suggest that the submarine canyons within and around the [Bremer Marine Park](#) provide favourable habitats for a number of cetaceans, including sperm, beaked, and killer whales. The latter have been reported to concentrate in unprecedented numbers in the Bremer Sub-Basin over the austral summer months, forming what is likely the largest seasonal aggregation of the species in the Southern Hemisphere. However, little data on the animals' ecology, population abundance, or movements currently exist, and while the majority of killer whale encounters have occurred around the heads of the Knob and Henry Canyons to date, it remains unclear whether this area represents a discrete and unique hotspot or whether the Bremer Marine Park may support additional aggregations.

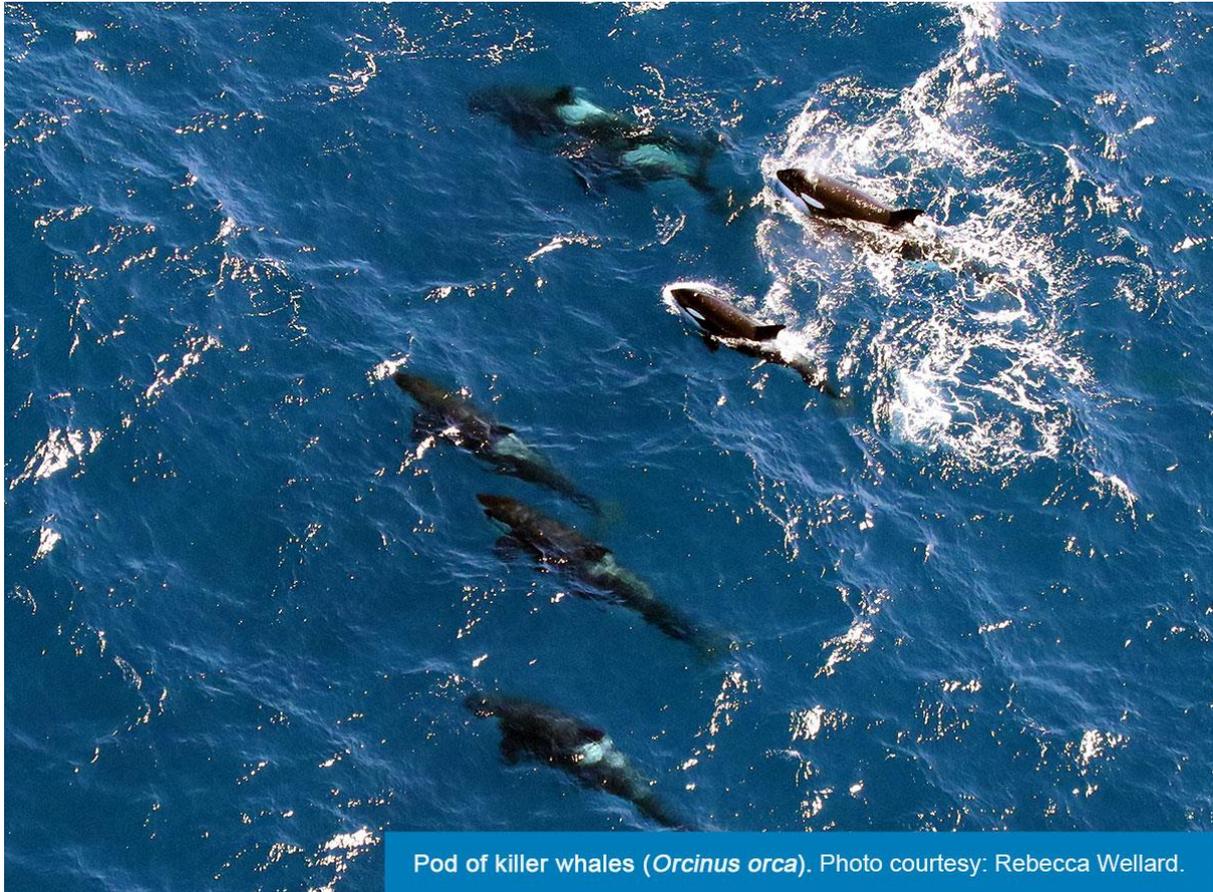
Under the [NESP Emerging Priorities](#) scheme, the Minister for the Environment and Energy, the Honourable Josh Frydenberg MP, accordingly committed research funds to the [Marine Biodiversity Hub](#) (MBH) to assess the extent and likely drivers of the Bremer megafauna hotspot, which is currently fuelling a rapidly growing tourism industry. As part of the programme, aerial surveys were implemented to assess the presence, numbers, behaviour and distribution of large air-breathing vertebrates throughout the region. The resulting data provide a critical baseline for understanding when and how cetaceans and other charismatic predators use the Bremer Marine Park. Such knowledge is key to helping managers and policy-makers meet national legislative requirements regarding the adequate conservation of Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) listed species

Aerial survey

A series of six aerial visual surveys were undertaken in March 2017 aboard a twin-engine over-head wing Cessna 337 aircraft fitted with bubble windows. The survey transects covered a large section of ocean both within and outside the Bremer Marine Park. Additional search effort was also concentrated on the known killer whale aggregation site located to the west of the park (see Figure 1 below). Two observers logged all sightings of megafauna species observed during the flight, including their GPS positions and any available information on animal numbers, behaviour, and group composition (presence of calves or sub-adults).

Results

A total of four cetacean species were reliably identified: the killer whale (*Orcinus orca*), the long-finned pilot whale (*Globicephala melas*), the sperm whale (*Physeter macrocephalus*) and the bottlenose dolphin (*Tursiops sp.*). More than two-thirds of sightings (70%) consisted of single animals or pairs, although several larger groups of pilot whales and bottlenose dolphins comprising between 10 and 60 individuals were also seen. The distribution of both pilot and sperm whales was fairly widespread throughout the region, with the latter recorded on virtually every transect. In contrast, killer whales were only detected west of 119.75°E, in pod sizes up to 30 animals strong. Young calves were present in 11% of groups, and rarely exceeded a total of number of two. Several unidentified sharks and cetaceans were also recorded.



Pod of killer whales (*Orcinus orca*). Photo courtesy: Rebecca Wellard.

Conclusion

Aerial surveys confirmed the presence of multiple species of marine megavertebrates (incl. sharks and cetaceans) in the Bremer Sub-Basin, providing a preliminary snapshot of wildlife distribution throughout the region. Many of the animals encountered are highly mobile and/or migratory, meaning that their use of the Bremer Marine Park may vary through space and time, likely in response to fluctuating environmental conditions and prey resources. For example, increased killer whale foraging activity has been documented in the canyon during the austral summer months. Repeat surveys will therefore be critical to refining our understanding of species occurrence and abundance across seasons and years.

Project page

<https://www.nespmarine.edu.au/project/ep2-surveying-marine-life-canyons-bremer-bay>

Acknowledgements

This work was a collaborative effort between the University of Western Australia (Phil Bouchet, Jessica Meeuwig) and Curtin University (Rebecca Wellard, Christine Erbe). This project was supported through funding from the Australian Government's National Environmental Science Programme and Parks Australia. Visual data were collected under Australian Government Department of the Environment Research Permit No. 2017/0001. Flights were chartered from Norwest Air Work Pty Ltd. Thanks go to pilot Conor and marine wildlife consultant Verity Steptoe for assistance with field work.

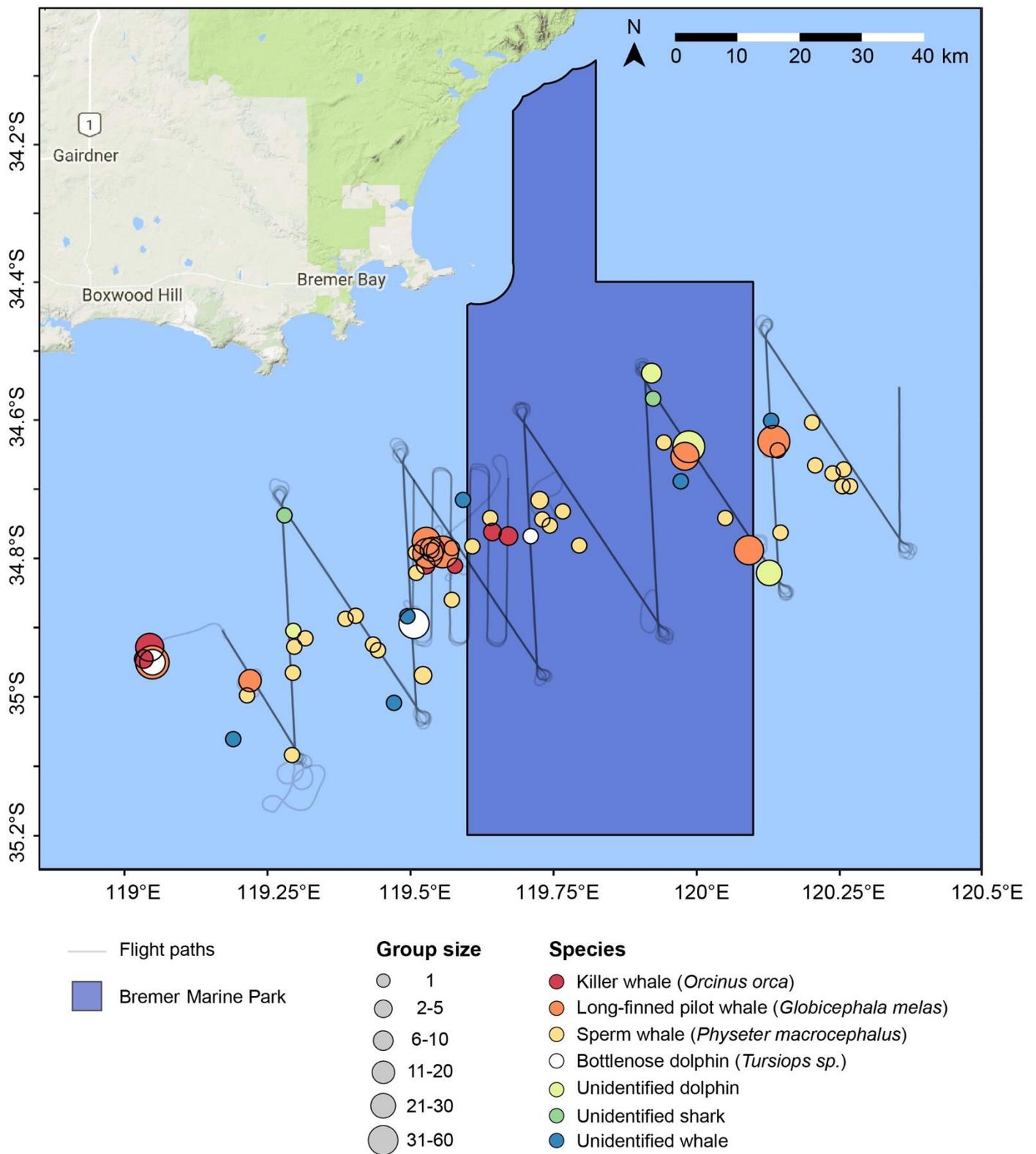


Figure 1. Visual sightings of marine megafauna during aerial surveys of the Bremer Marine Park and adjacent regions. Aerial transects are shown in semi-transparent grey, such that they appear darker (black) in areas where they overlap.



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