Identifying critical habitat for dolphins in North Western Australia

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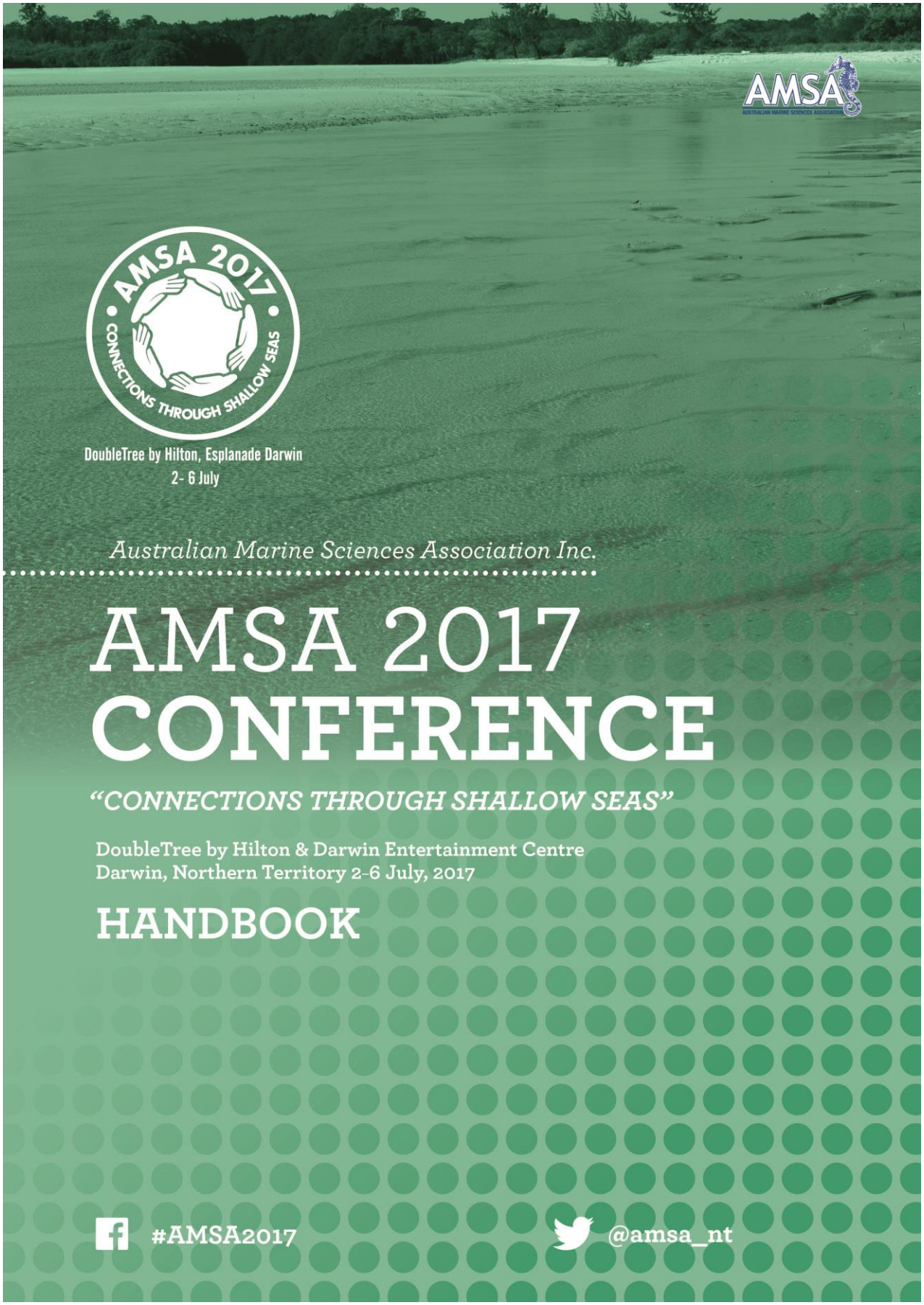
The population status and habitat needs for tropical dolphins in north Western Australia are unknown across most of their range. We used broad-scale manned aerial surveys to estimate abundance and distribution of three tropical dolphin species that occur in the Pilbara region of Western Australia. In 2015 the survey design included transects across the region 5km apart and extending offshore to the 20-metre depth contour. We estimated a minimum abundance of 2846 (CI 1549-5230) bottlenose dolphins (*Tursiops aduncus*) over a 18950 km2 survey area uncorrected for availability bias. The best distance sampling model included the factors distance, time of day, observer fatigue, glare angle, dolphin group size and group size/observer fatigue interaction. There were too few sightings of humpback dolphins (*Sousa sahulensis*) in the 2015 survey to estimate abundance using mark-recapture distance sampling (MRDS) modelling and no snubfin dolphins were sighted. In 2016 we adapted the survey design to increase survey effort where humpback dolphins had been sighted previously and increased sampling intensity by reducing the transect spacing to 2.5 km. We also added two new areas (Montebello Islands and Exmouth Gulf) based on reported sightings of humpback and snubfin dolphins at these sites. The 2016 survey recorded adequate sightings to produce a minimum abundance estimate for humpback dolphins of 273 (CI 184-405) over the 9050 km^2 surveyed area, uncorrected for availability bias. The best MRDS model for humpback dolphins included the factors distance, time of day, observer fatigue and dolphin group size. While the few sightings of snubfin dolphins have precluded a population estimate of this species, consistent repeated sightings in Exmouth Gulf suggests this may be the only habitat for snubfins in the Pilbara region supporting a local population. Future research will include targeted boat surveys in Exmouth Gulf to better understand the snubfin population potentially present there, assessment of surface availability of these species to improve confidence around population estimates and modelling species distribution where there are adequate sightings for these tropical dolphin species across the Pilbara region. This information will feed into assessments of their conservation status and help inform the siting of future coastal developments.



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