



Government of Western Australia
Department of Parks and Wildlife



Marine Mammal Research Wheatstone Offset C

Holly Raudino & Kelly Waples

“Add to the understanding and improved management of regionally critical habitat for humpback whales, dugongs, snubfin dolphins in Pilbara waters”

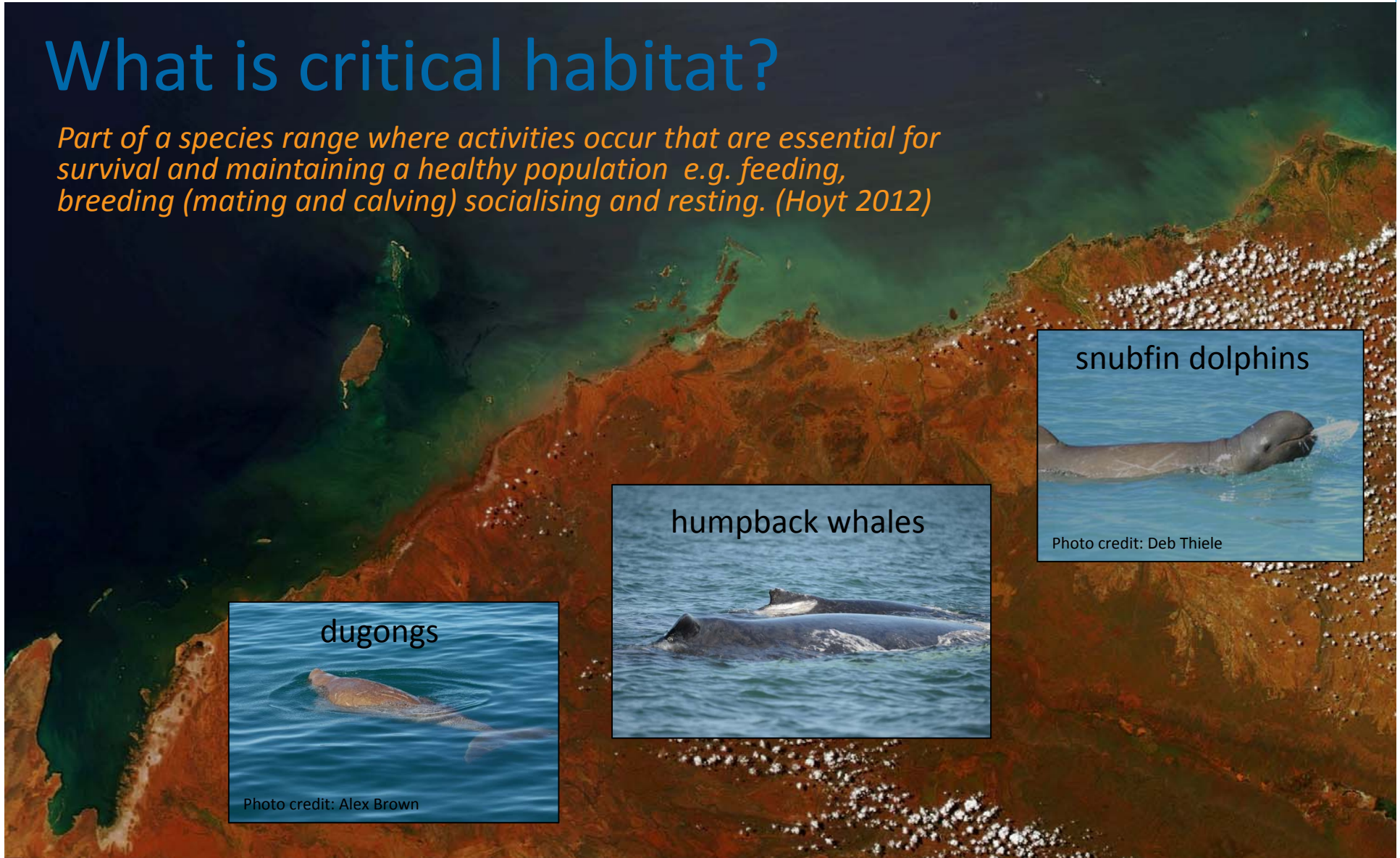
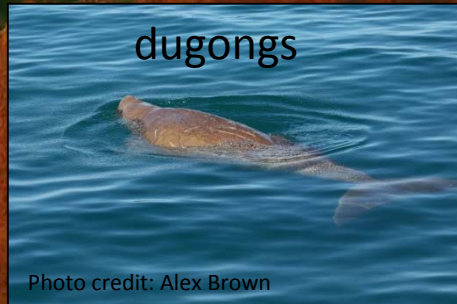
MS 873 30 August 2011
\$3.5 Million Research Program





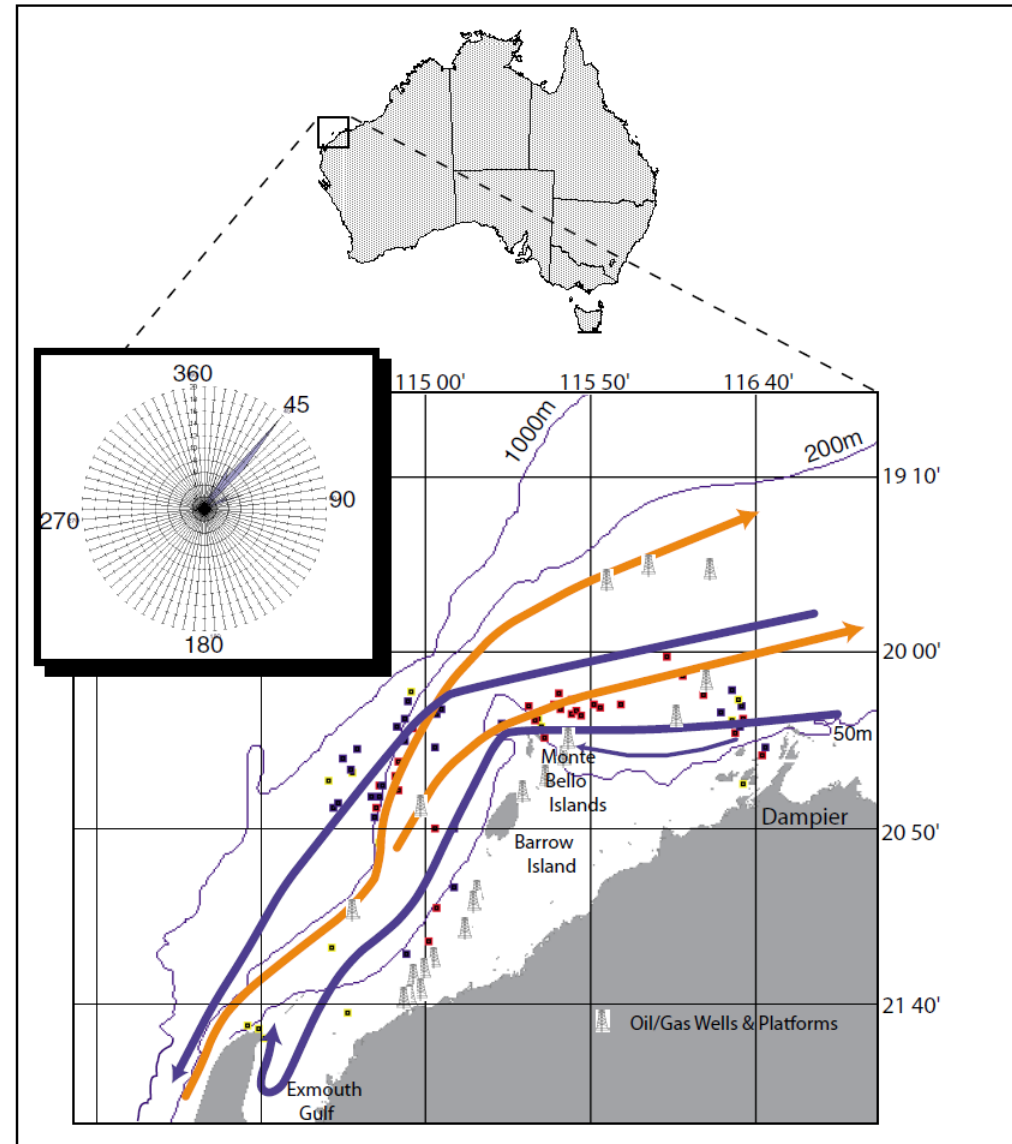
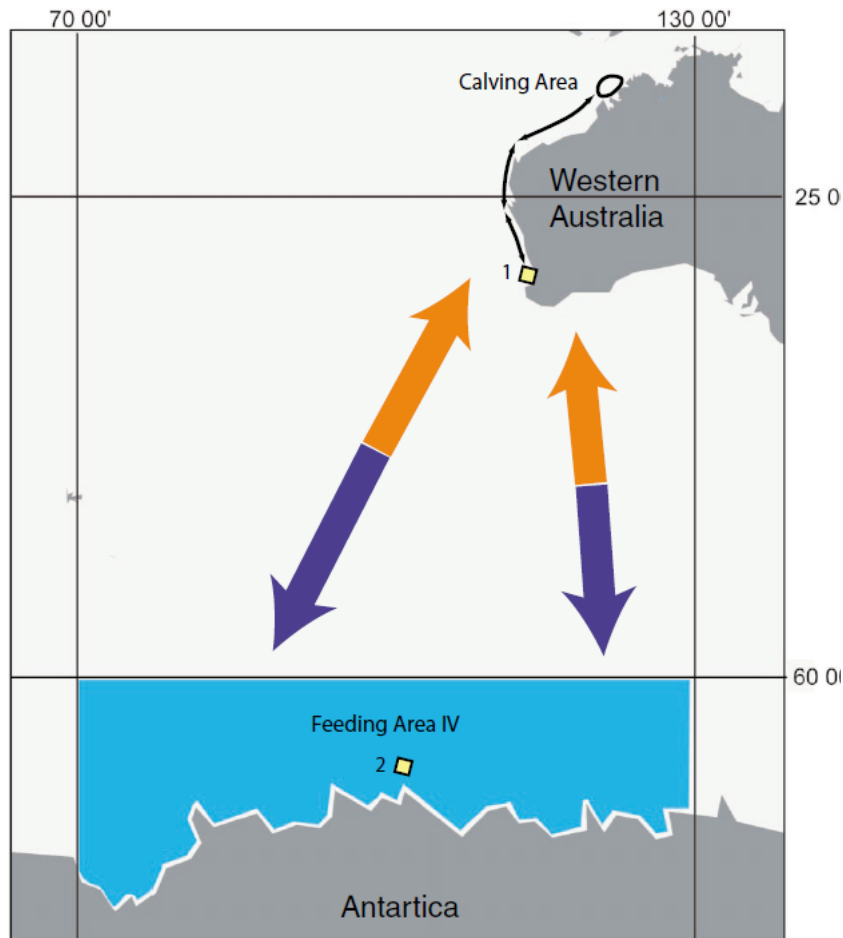
What is critical habitat?

Part of a species range where activities occur that are essential for survival and maintaining a healthy population e.g. feeding, breeding (mating and calving) socialising and resting. (Hoyt 2012)

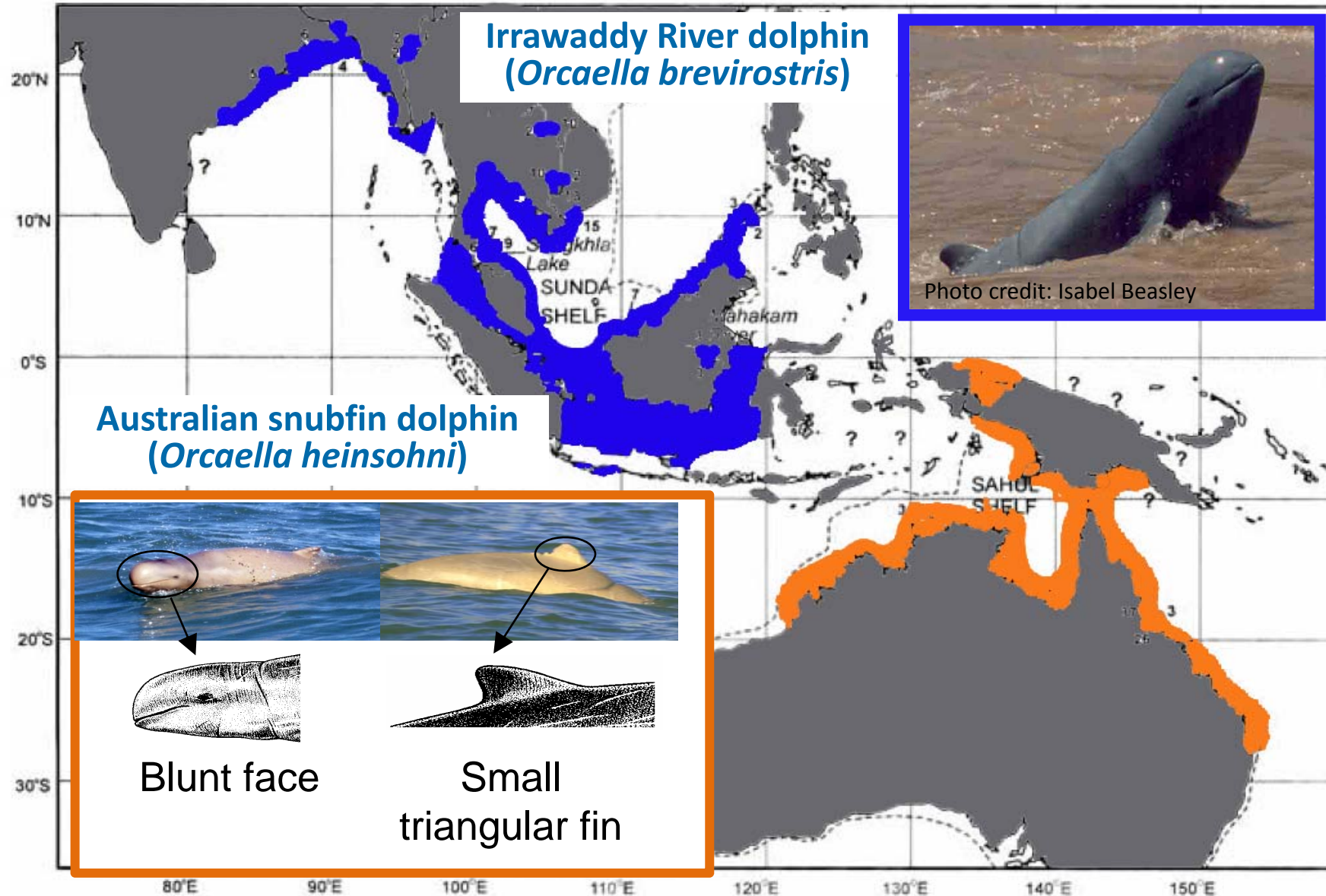




What do we know?



Jenner et al. 2001 Geographical and temporal movements of humpback whales in Western Australian waters

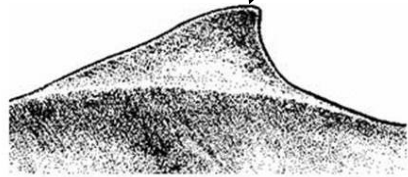
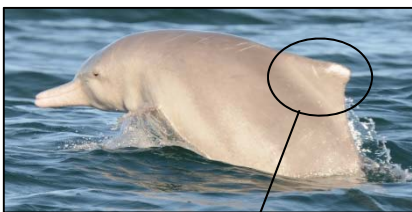




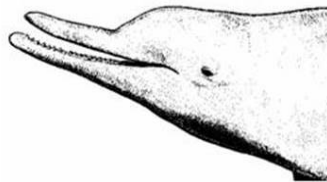
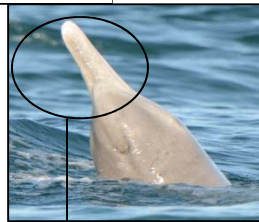
Indo-pacific humpback dolphin (*Sousa chinensis*)



Photo credit: Thomas Jefferson

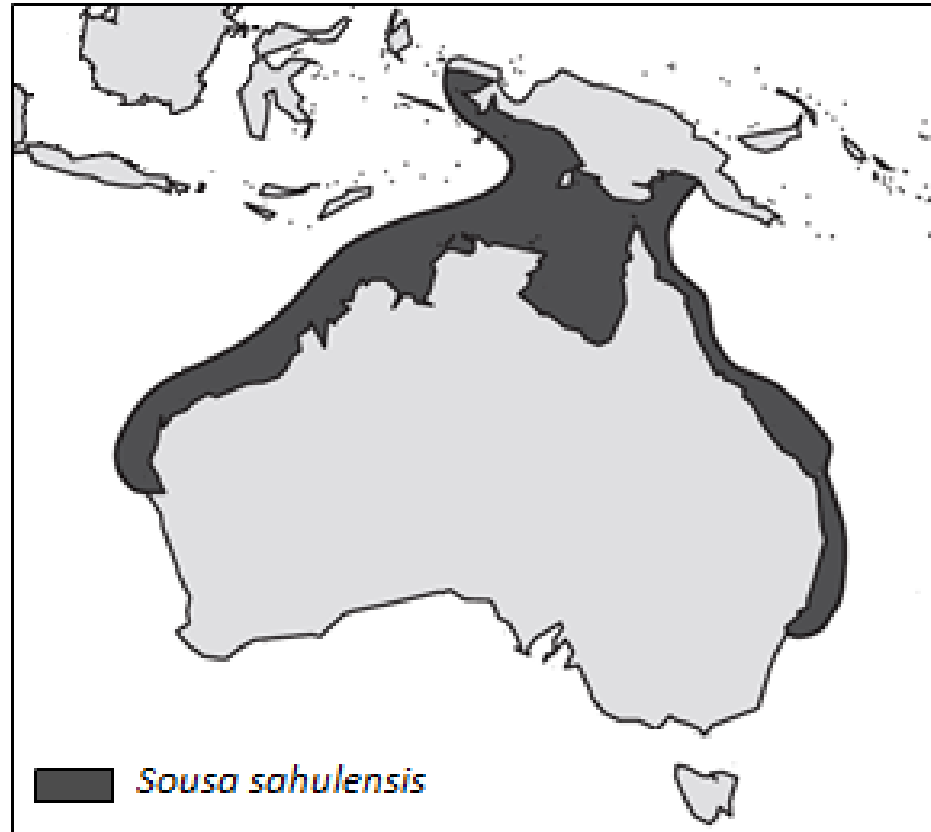


Tall triangular fin



Long pointed snout

Australian humpback dolphin (*Sousa sahulensis*)



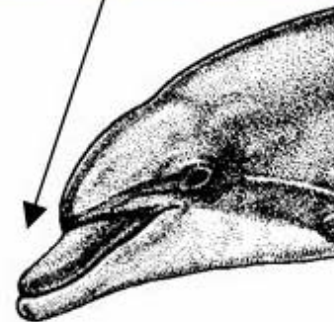
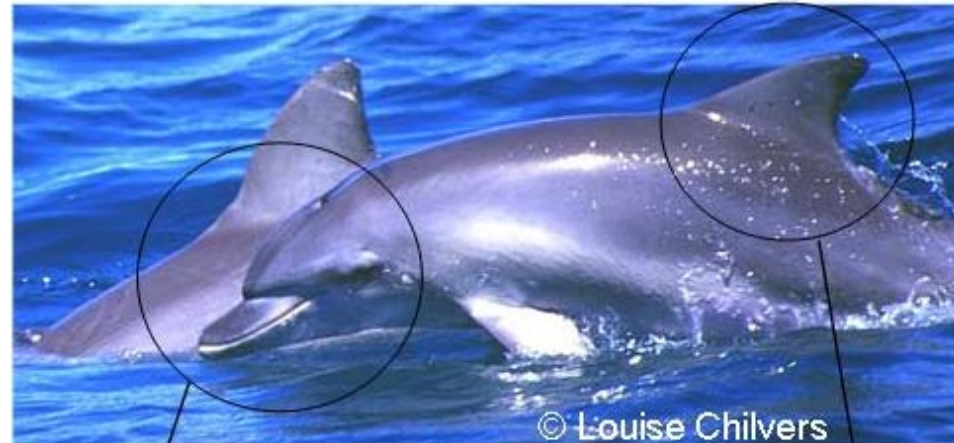
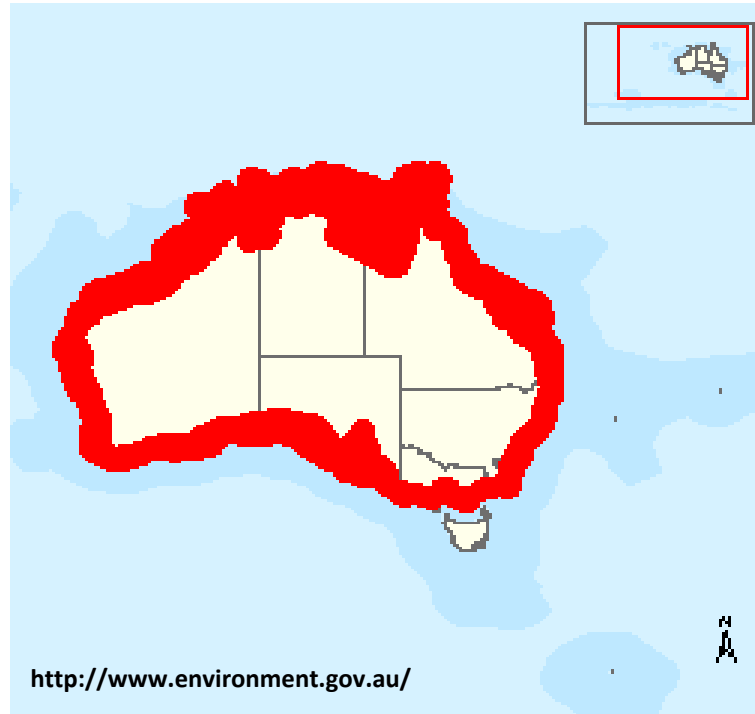
Jefferson & Rosenbaum (2014)



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Bottlenose dolphin (*Tursiops aduncus*)



Short pointed snout



Large curved fin



Marine Mammal Research Program

Broadscale



- **Aerial survey** – *distribution* and abundance, habitat use

Finescale



- **Boat survey** – *behaviour* and abundance, habitat use



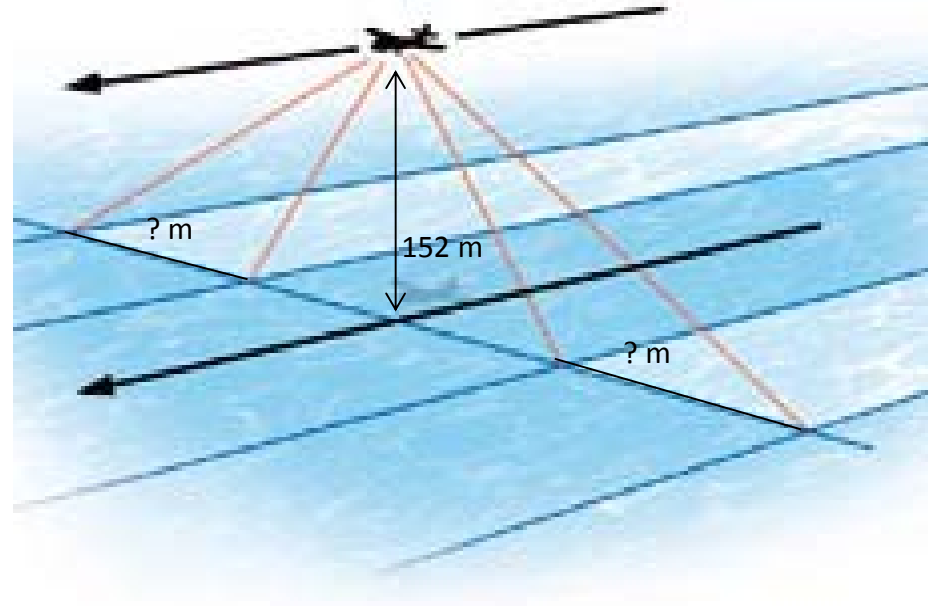
Distance sampling

Animals too deep
 Animal behaviour
 Turbidity

Availability bias

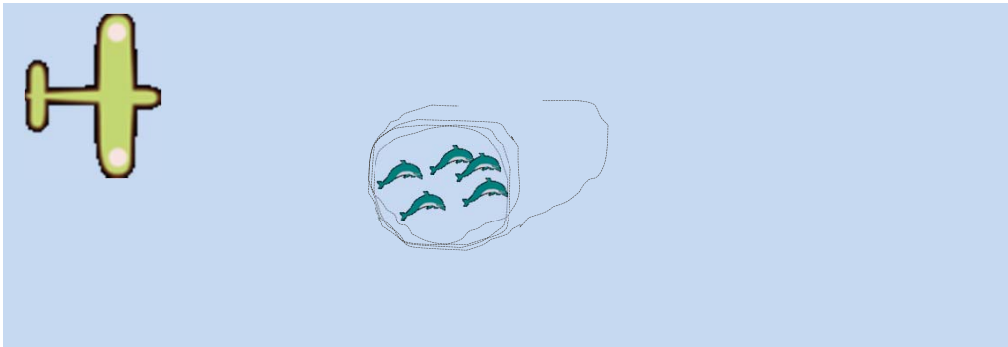
Glare
 Sea state
 Observer fatigue

Perception bias



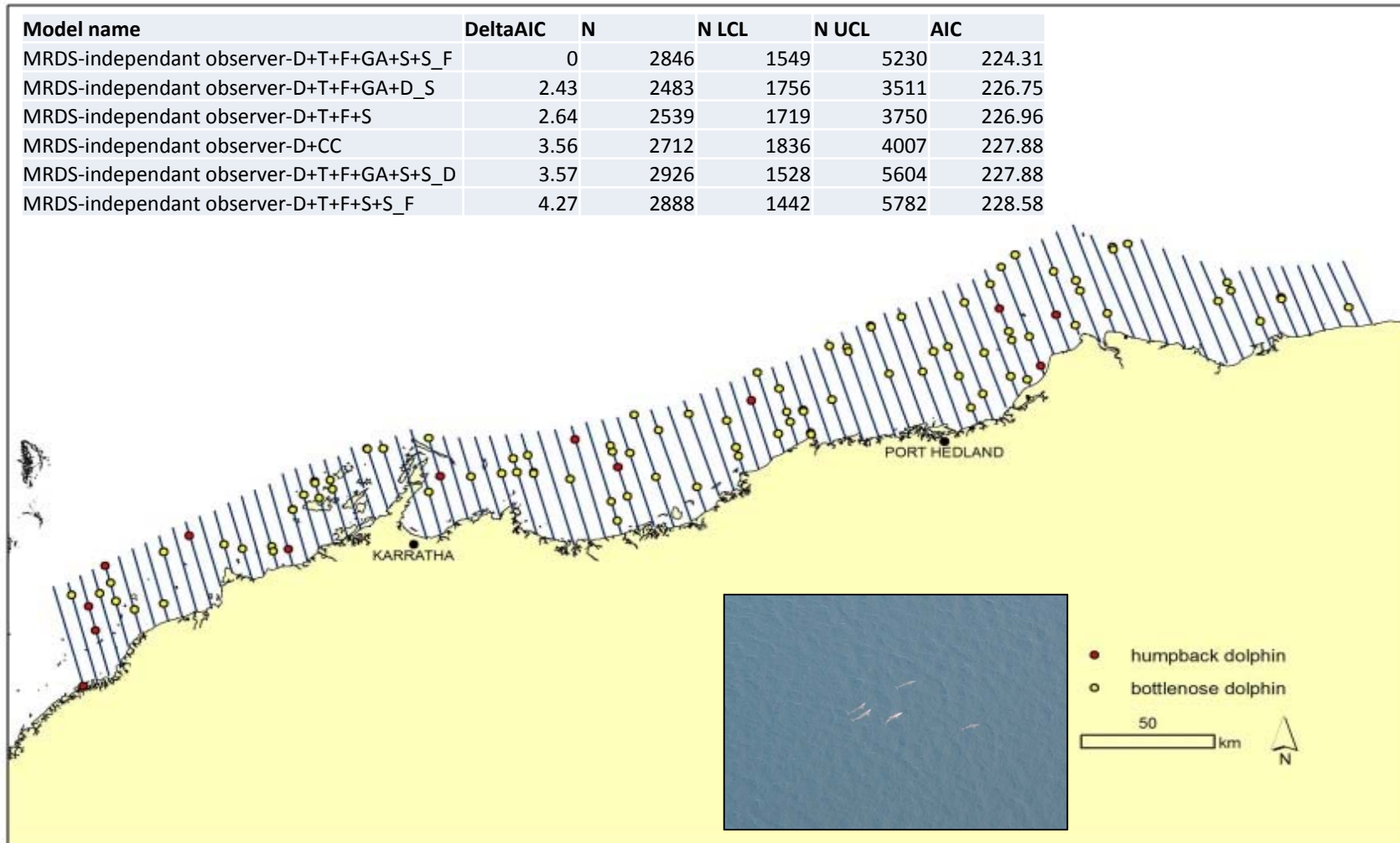
$$\hat{N} = \frac{nA}{2wL}$$

\hat{N} = estimate of pop'n size
 n = animals recorded
 A = total survey area
 w = width of sampled area
 L = length of transect



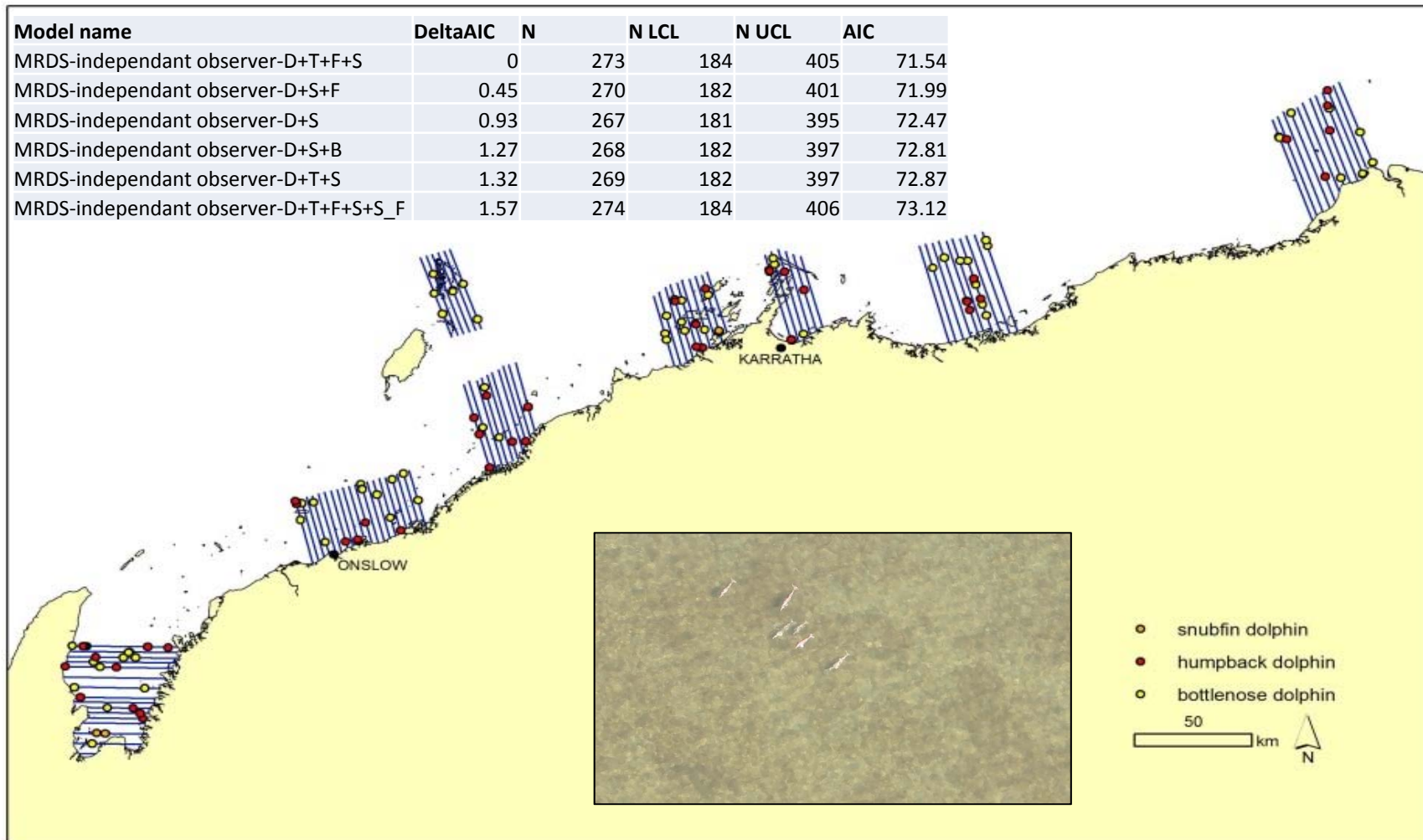


Broadscale survey – May/June 2015



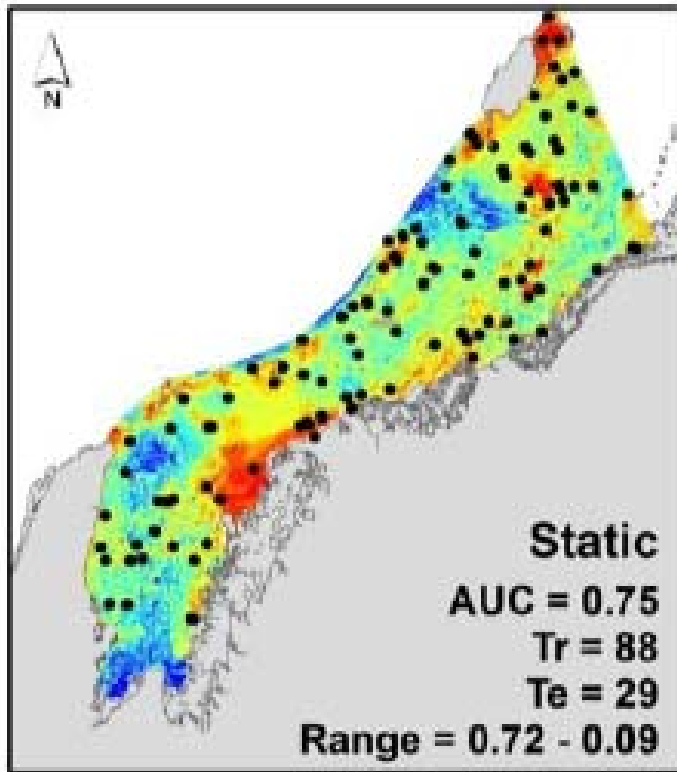


Targeted survey – May/June 2016

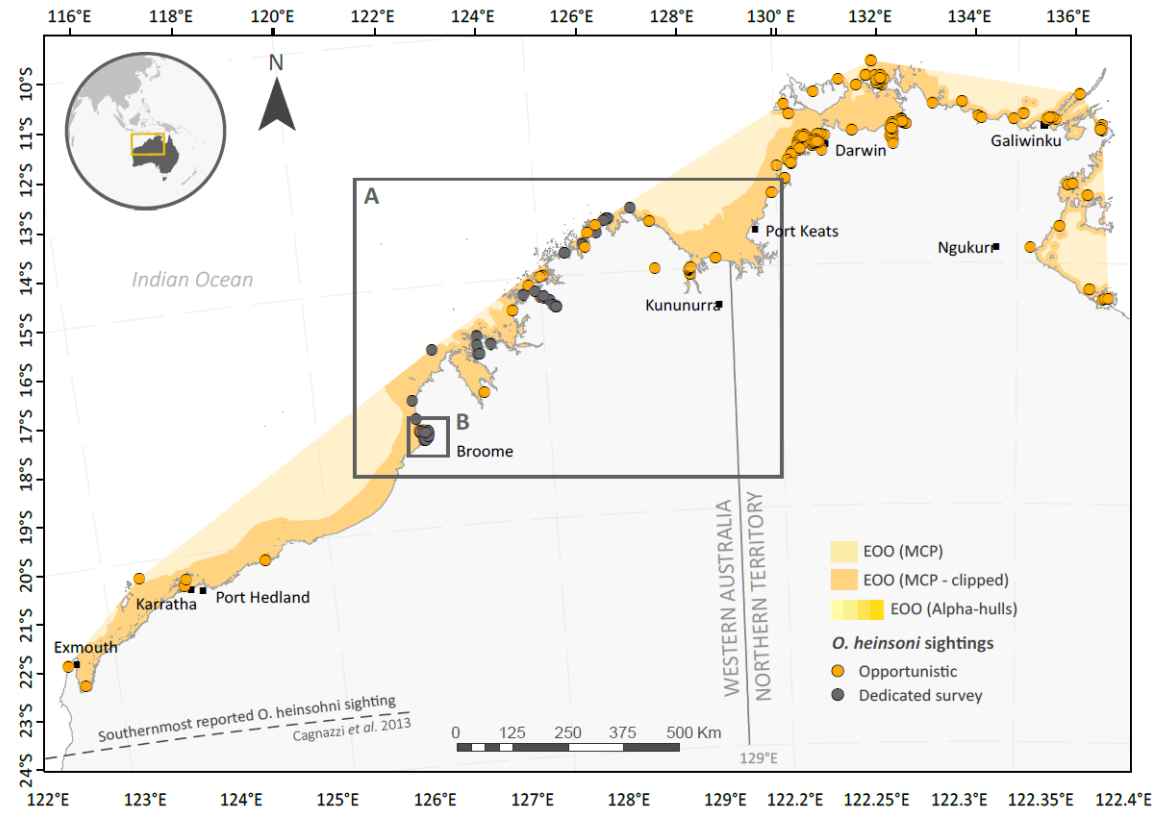




Species distribution & habitat modelling



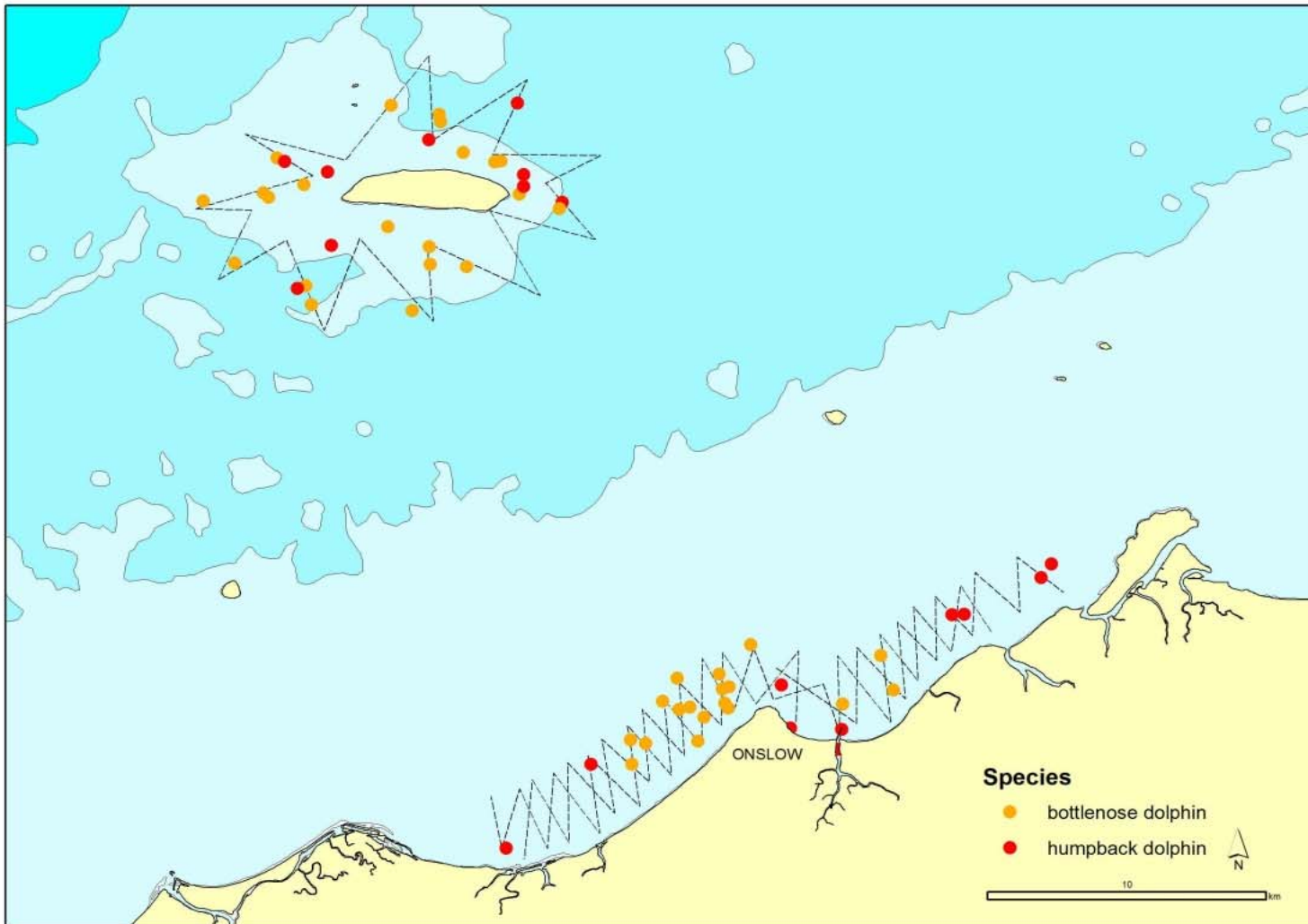
Hanf 2015



Bouchet et al. in prep



Fine-scale survey

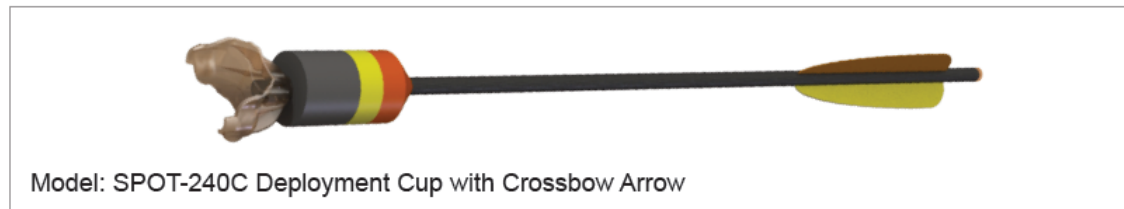




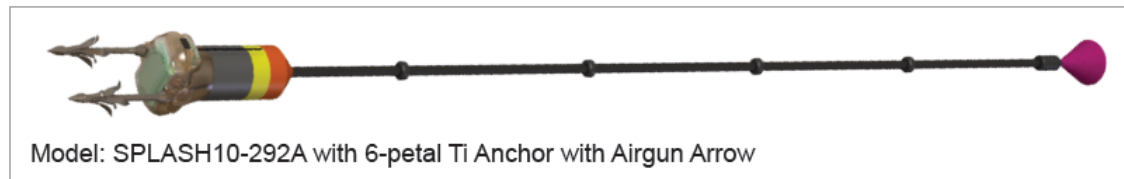
Mark-recapture



SPOT-240C



Model: SPOT-240C Deployment Cup with Crossbow Arrow



Model: SPLASH10-292A with 6-petal Ti Anchor with Airgun Arrow



Ti Dart Anchors:
6- and 3-petal

Satellite tagging - LIMPET



Dugong habitat characterisation

Improve our understanding of seagrass habitat across the Pilbara and the species that depend on it by addressing knowledge gaps on seagrass and dugong distribution and abundance

1. Determine seagrass habitat dynamics

(Edith Cowan University)

2. How does seagrass influence distribution and habitat use of dugongs?

(Murdoch University)

