

Pacific Island cetaceans: diversity & threats

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me and my coworkers logging into all of our meetings remotely for the next couple of weeks



Order Cetacea



Fin whale (*Balaenoptera physalus*)



Sperm whale (*Physeter macrocephalus*)



Cuvier's beaked whale (*Ziphius cavirostris*)



Long finned pilot whale (*Globicephala melas*)



Risso's dolphin (*Grampus griseus*)



Bottlenose dolphin (*Tursiops truncatus*)

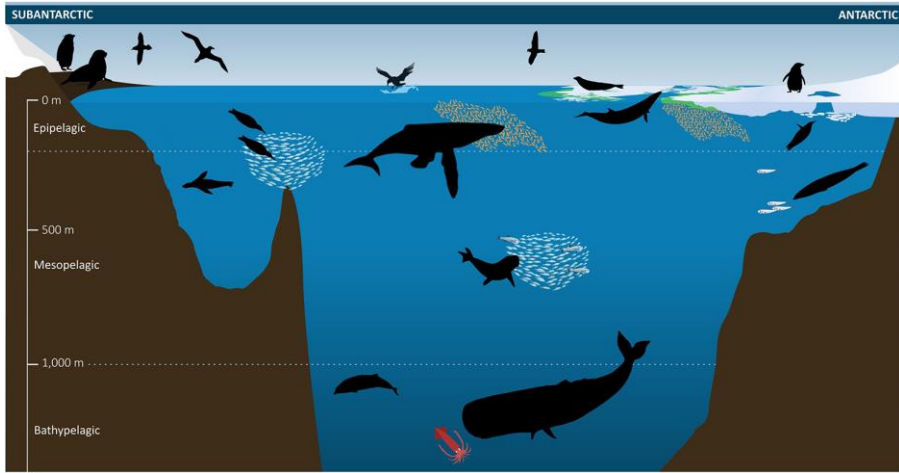


Striped dolphin (*Stenella coeruleoalba*)



Short-beaked common dolphin (*Delphinus delphis*)

Value



Cetacean diversity in the PIR

Relatively common

- Spinner dolphin
- Sperm whale
- Bottlenose dolphin
- Short-finned pilot whale
- Humpback whale
- Minke whale

Rarer

- Longman's beaked whale
- Australian humpback dolphin
- Snubfin dolphin
- Diminutive sperm whale

Cetacean threats

Broadly defined under the following headings (following Avila et al. 2018):

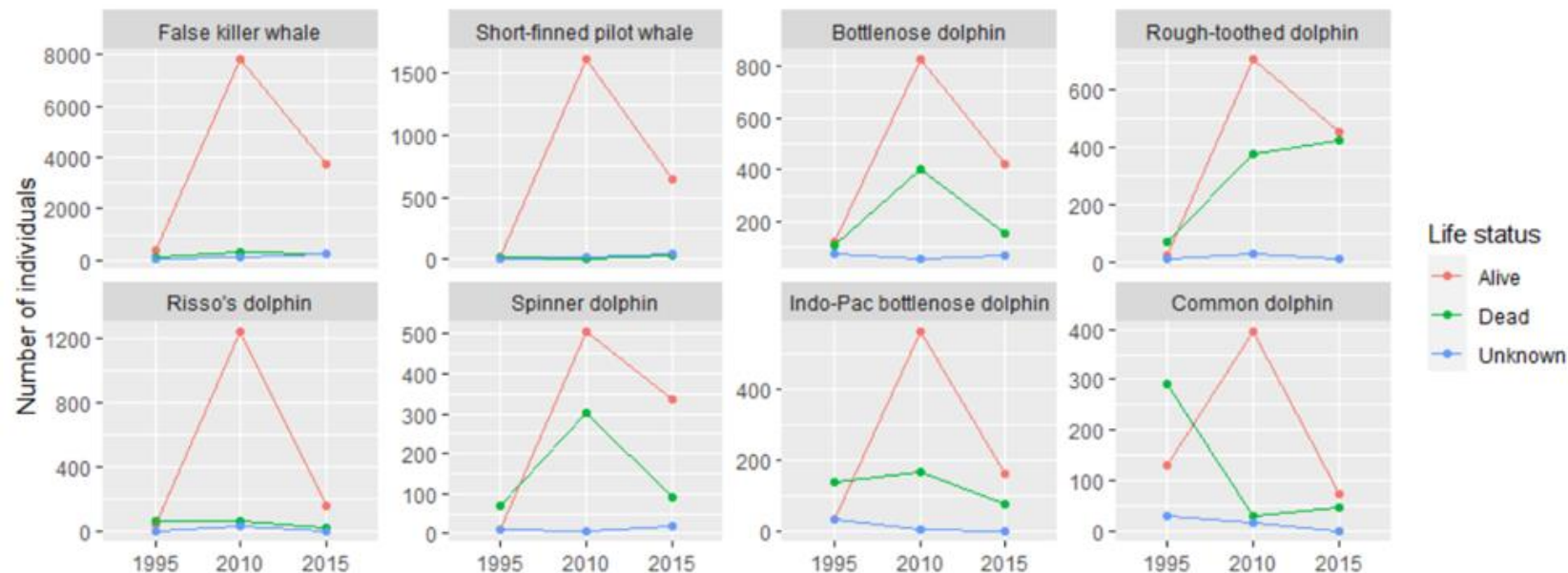
- Incidental catch and fishing gear interactions (BYCA)
- Direct harvesting (DHAR)
- Pollution (POLL)
- Traffic (TRAF)
- Pathogens and introduced species (INFE)
- Resources depletion (HABI)
- Ocean-physics alteration (OCEA)



Incidental catch and fishing gear interactions (BYCA)

Includes by-catch, shield-net, ghost-net, and other interactions

- Observer records reported within the WCPFC (LL & PS)
- Williams et al. 2020
 - LL (2015 – 2019) ~ 300 interactions, 27 species
 - PS (1995 – 2019) ~ 2100 interactions, 20 species



Incidental catch and fishing gear interactions (BYCA)

Other sources

- Peatman
- IUU?
- Kikori delta – small dolphins (Beasley)
- Temple et al (2021)
 - Bycatch risk for odontocetes in small-scale fisheries
 - Pacific = “high risk”
 - Australian humpback dolphin & snubfin dolphin listed
- Incidental reports

Direct harvesting (DHAR)

Includes commercial, subsistence, control, research and alive captured

- Historical commercial whaling took a very heavy toll on whales in the SH
- Migratory species to Southern Ocean waters may be taken in research permit whaling (300+ minke whales / year)
- Traditional dolphin drive hunts in the Solomon Islands. Oremus et al. (2015) reported ~ 1500 pantropical spotted dolphins, 150 spinner dolphins and 15 bottlenose dolphins (2013 season).
- Exports of bottlenose dolphins from SI prior to 2012.
- Captive facilities – Palau, French Polynesia
- Incidental catches in various locations

Pollution (POLL)

Includes liquid wastes, solid wastes, noise, radioactive, and thermal

- Localised pollution issues due to poor waste management practices in more populated/commercial locations
- Deep sea mining – multiple, potentially synergistic and somewhat unknown impacts for the marine ecosystem.
 - Clarion-Clipperton Zone (CCZ): polymetallic nodules (manganese) – borders Cook Islands, Tonga, Nauru, and Kiribati
 - “Solwara 1” – world’s first commercial deep sea mining site: copper – located in PNG

Traffic (TRAF)

Includes boat without collision, boat with collision, pedestrians/swimmers, and aircraft.

- Key shipping routes and ports
- Ferry schedules
- Tourism hotspots – ecotourism, fishing, snorkelling
- Swim-with cetaceans operations
 - Humpback whales (Tonga, French Polynesia)
 - Spinner dolphins (Guam, Niue, French Polynesia)

Pathogens and introduced species (INFE)

Includes include infections, algal blooms and introduced species.

Resources depletion (HABI)

Includes food limitation and habitat removal.

- Competition for marine resources – depredation?
- Reduction in habitat quality

Ocean-physics alteration (OCEA)

Includes storms, temperature, ENSO, ice cover and sea level, and geomagnetic field.

- Potential responses: (i) direct (must change geographic location), or (ii) indirect (impacts on prey, distribution etc.)
- van Weelden et al. (2021)
 - SST and sea-ice extent
 - Baleen whales such as humpback, Bryde's, fin and Antarctic minke to reduce their time in warmer, tropical waters (southward contraction). SST & prey assemblages in the Southern Ocean.
- Derville et al. (2018) reviewed almost 20 years of survey data and found a negative correlation between encounter rates and SST.

Threat category	Level of concern
Incidental catch and fishing gear interactions (BYCA)	High
Direct harvesting (DHAR)	High
Pollution (POLL)	High
Traffic (TRAF)	Medium
Pathogens and introduced species (INFE)	Medium
Resources depletion (HABI)	Medium
Ocean-physics alteration (OCEA)	Medium

Gaps in knowledge and understanding

Species perspective:

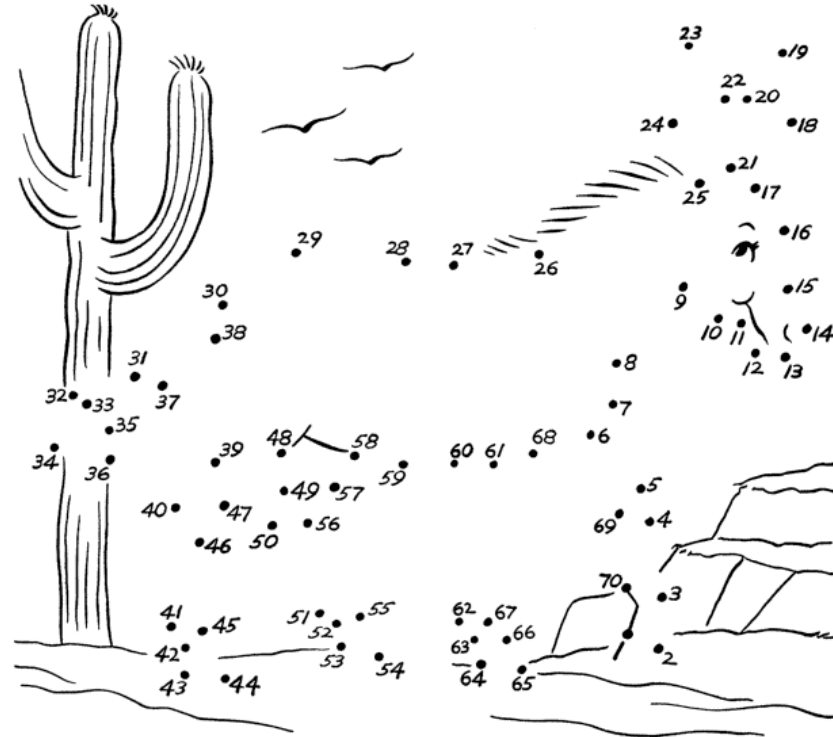
- Diversity
- Distribution / density
- Demographics

Threats

- Noted gaps
- *Absence of evidence it not evidence of absence*



What's missing?



Corrections, comments & suggestions

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