Status, trends, and threats to cetaceans in the Pacific Islands Region

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25 species (and counting!) in the central and western Pacific
A large share of NMFS cetacean stocks occur in the PIR. Few are adequately assessed.

- 38% of all NMFS stocks are in the PIR
- 59% of PIR stocks are Tier 0 (No data) and 38% Tier 1 (Minimum or outdated assessment)
- This represents only stocks we know to exist
Cetaceans in the Pacific Islands Region

- 1.5M nmi² of U.S. EEZ
- 121 stocks of 25 species known to occur, including migratory, pelagic, and insular “island-associated” populations
- Most stocks transboundary
PIR Assessment Surveys

- Ship surveys provide insight into pelagic distribution and abundance
- Small vessel surveys yield greatest insights into insular populations
• Long-term monitoring since 2007 at some sites

• Primarily dataset to examine occurrence for several baleen whales, beaked whales, and Kogia species.
## Pacific Islands Region Cetacean Stocks

<table>
<thead>
<tr>
<th>EEZ</th>
<th>No. Stocks Known</th>
<th>Stocks with Current Abundance Estimate</th>
<th>Stocks with Human-caused Mortality Estimate</th>
<th># SARs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii</td>
<td>39</td>
<td>26&lt;sup&gt;1&lt;/sup&gt;</td>
<td>18</td>
<td>39&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Guam &amp; CNMI</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Palmyra</td>
<td>18</td>
<td>0</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Johnston</td>
<td>15</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>American Samoa</td>
<td>12</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Wake</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Howland/Baker</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jarvis</td>
<td>1</td>
<td>0</td>
<td>0</td>
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</table>

2. Minimum estimates from observed fisheries and Response Networks
3. Humpback whale SAR managed by AKR
Stock Structure

- 98 of 121 (81%) of PIR stocks are recognized as an EEZ-wide stock
- Island ecosystems support insular populations
  - When data are available to test for structure, it is usually found
  - All stocks with finer levels of stock structure are island-associated
- “Pelagic” stock designated by default to account for offshore individuals

Marine Mammal Commission, 21 May 2019
Pacific Marine Assessment Program for Protected Species (PacMAPS)

Partnership between NMFS, Navy, and BOEM

- NMFS provides the ship time & survey expertise
- Other agencies provide funds to conduct surveys
- Initial 5-yr agreement includes survey effort & modeled density

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<td>Hawaiian Archipelago (summer-fall)</td>
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<td>US west coast</td>
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<tr>
<td>2020</td>
<td>Mariana Archipelago</td>
<td>Main Hawaiian Islands</td>
</tr>
<tr>
<td>2021</td>
<td>Eastern Gulf of Alaska</td>
<td>Mariana Archipelago</td>
</tr>
<tr>
<td>2022</td>
<td></td>
<td>Gulf of Alaska</td>
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Timing of each survey based on data needs of partner agencies.
# Pacific Marine Assessment Program for Protected Species (PacMAPS)

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Surveys complete. Analyses underway.

Timing of each survey based on data needs of partner agencies.
New assessment tools: Drifting Acoustic Spar Buoy Recorders (DASBRs)

Deployed as part of recent Hawaii and Mariana survey efforts.
Known & Potential Threats to Cetaceans in the PIR

Military testing & training

Bycatch in the Hawaii longline fisheries

Hooking & entanglement in “near shore” fisheries

Vessel strikes

Bycatch in international fisheries

Swim-with dolphin programs

Others: Ocean noise, Prey competition, Run-off/pollutants, Geophysical research, Seafloor mining

Bycatch in the American Samoa longline fishery

American Samoa

CNMI

Guam

Wake

Hawaii

Jarvis

Howland & Baker

Johnston

Palmyra & Kingman

Howland & Baker

American Samoa

Guam

Wake

Hawaii
Response Network Reports

- Reports of injured cetacean in Hawaiian waters made each year to the PIR-MMRN and the HIERN
- Largely involve humpback whales entangled in fishing gear or marine debris or struck by a vessel

Vessel strikes 2007-2017:
- 63 vessel-strikes reported
- 16 considered serious injuries, 12 of those were calves
Threats to cetacean populations in the Pacific Islands Region

• Bycatch in Hawaii & American Samoa longline fisheries-
  • Data from PIRO Observer Program
  • Primarily impacts false killer whales, though other species are also hooked and entangled (short-finned pilot whales, Risso’s dolphins, rough-toothed dolphins)

• Interactions with near-shore fisheries
  • Hook-and-line trolling, handline, short-line, and charter fisheries interact with cetaceans to varying degrees
  • No observer programs for insular fisheries

• Swim-with dolphin programs
  • Common in the main Hawaiian Islands, and increasing in resting bays off Guam.
  • Spinners in some regions not susceptible due to differences in habitat preferences.

Baird et al. 2015
Threats to cetacean populations in the Pacific Islands Region

- Navy Testing and Training activities
  - Testing & training activities in Hawaii and the Marianas
  - Include mid-frequency active sonar (and low-frequency active sonar in the MITT) and underwater detonations

Marine Mammal Commission, 21 May 2019
Cetacean Management Concerns that Require Better Science

- Hawaiian False Killer Whales
  - Mitigating high bycatch in the Hawaii longline fishery
  - Impacts of nearshore fisheries
  - Abundance & trends of insular and pelagic stocks
  - Demographic rates

- Population structure & status for ESA-listed large whales

- Hawaii spinner dolphin abundance & health
Assessment Summary

For the 121 known stocks in 8 PIR areas, only 47 (39%) are accounted for in SARs

- **Major successes:**
  - Delineated and assessed 38 stocks of 23 species in HI
  - Using robust quantitative approaches for overcoming sample size limitations in abundance estimation
  - Processing previously unaccounted for information on human-caused mortality and incorporating it in SARs

- **Major challenges:**
  - Assessment approaches strained in PIR given size, high cetacean diversity, and low cetacean density
  - Balancing needs for assessing poorly-known stocks with updating assessments of high priority stocks