A case study on the Arabian Sea Humpback Whale Research and Data

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Environment Society of Oman
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Unlocking EIA Data Workshop

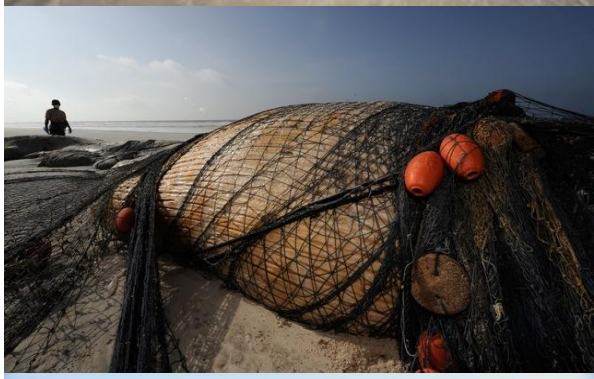
Whale and Dolphin Research

- Initiated in 2000; over 15 years of research and data collection
- **Aim**: To learn as much as possible about Oman's cetaceans in order to protect their habitats.
- Arabian Sea Humpback Whales

Monitoring

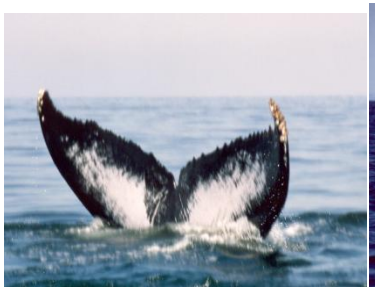
- Beach Use Surveys
- Stranding Monitoring and Response
- Small Vessel Surveys
- Passive Acoustic Monitoring
- Satellite tracking

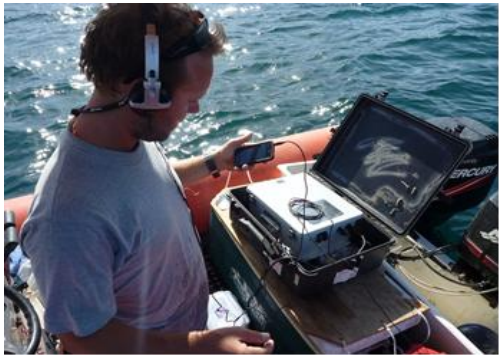
- Various collaborators over the years



Vessel Surveys

- Aims: Understand population identity, estimate relative abundance, distribution and seasonality, critical habitats and behavior
- Methods:
  - Photo ID
  - Genetics capture
  - Behavioral observations
  - Mobile hydrophone acoustic detection



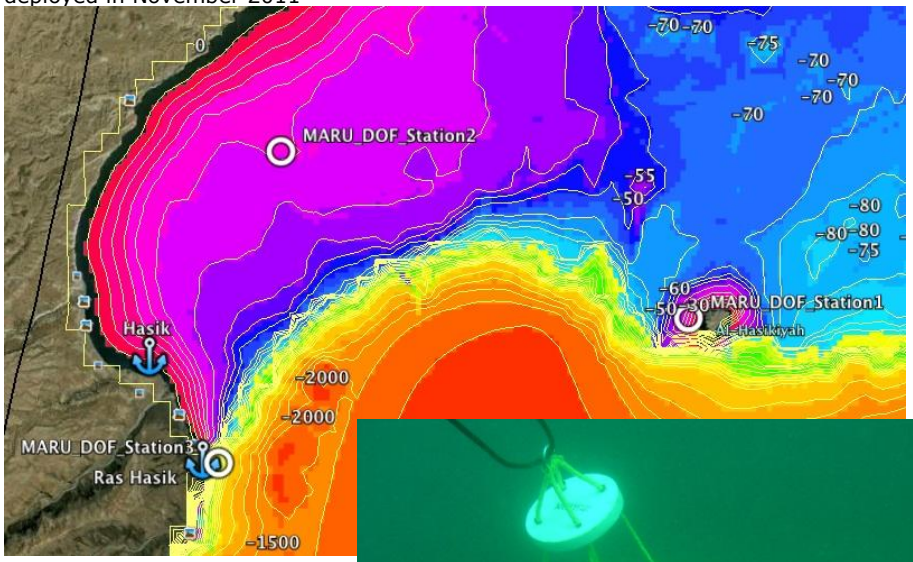


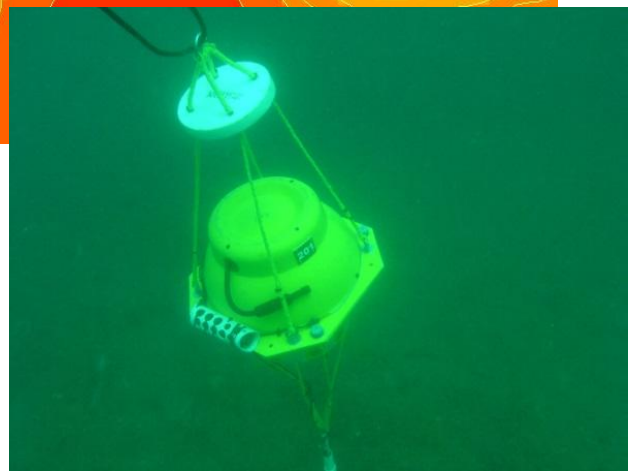
Outcomes

- 82 individuals (Minton et al. ,2008)
  - Endangered status (IUCN, 2008)
  - Further photos from range states to be incorporated
- Isolated subpopulation (Pomilla et al. ,2014)
  - 70,000 yrs ago from Southern Hemisphere origin
  - Recommends IUCN listing as critically endangered
- Distribution , Seasonality, Behavior (Minton et al., 2010 and Corkeron et al., 2011)
  - Hotspots - Gulf of Masirah (all year) ; Halaniyat Bay (Nov-March)
  - Breeding activities – Halaniyat

Passive Acoustic Monitoring

Figure 1 Chart showing the location of three Marine Acoustic Recording Units in the Dhofar area, deployed in November 2011

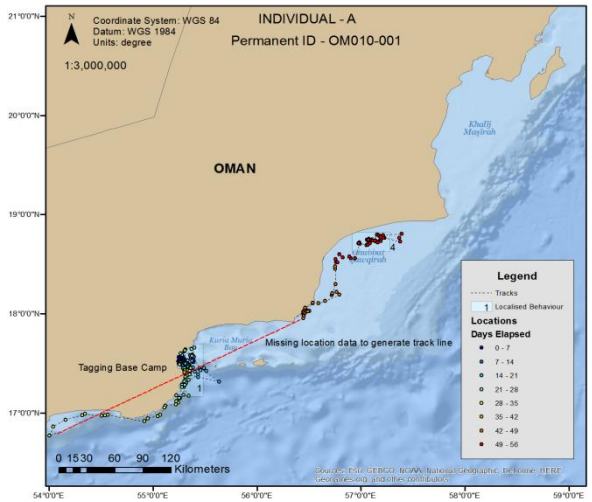


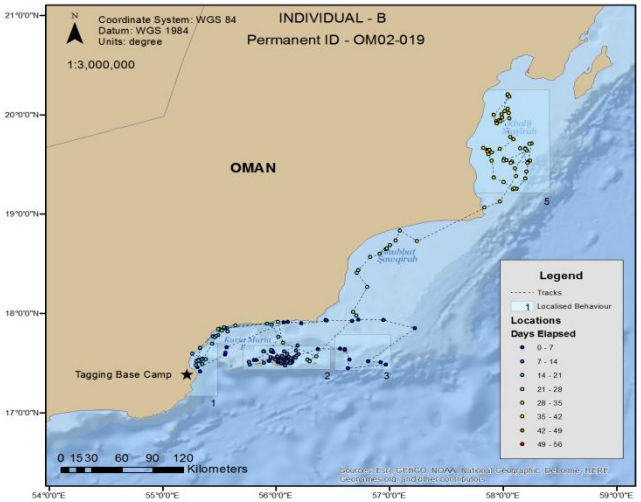


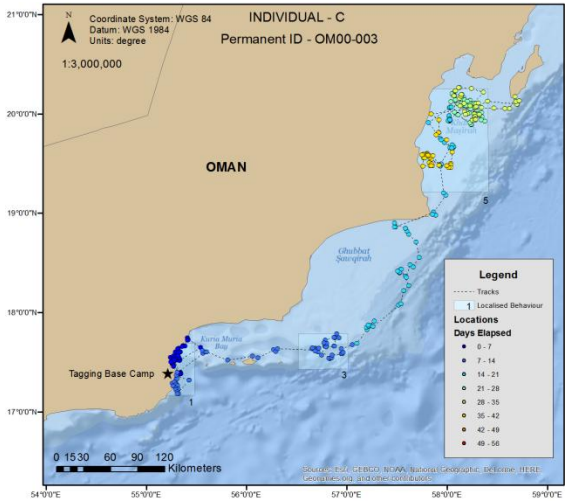
- Aims & Objectives: understand seasonal presence/absence around localized areas within hotspots
- Methods: deployment of 3 instrument array
  - Halaniyat Bay (2011-2012) deployed 1 year
  - Gulf of Masirah (2012 – 2013) deployed 1 year
- Analysis
  - Whale detection
  - Noise Analysis
  - Song Analysis

Satellite Tracking

- Objective is to investigate humpback whale movements and habitat use and behavior on regional scale; identify new sites of interest and pathways between important sites
- 3 tagged in 2014; 3 tagged in 2015
- Findings: localized behavior at Halaniyat, transient coast/ continental shelf towards Gulf of Masirah

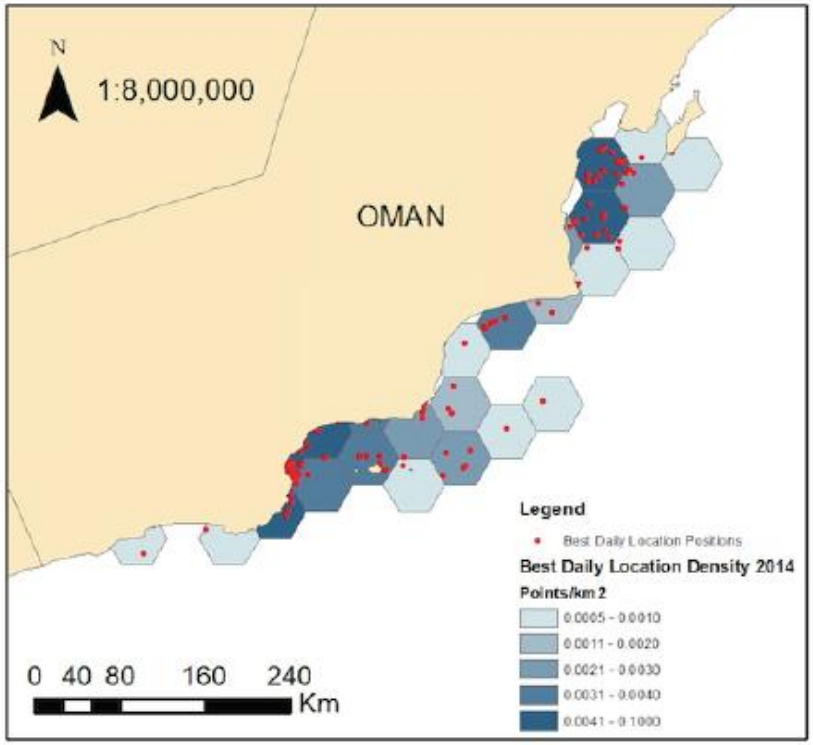




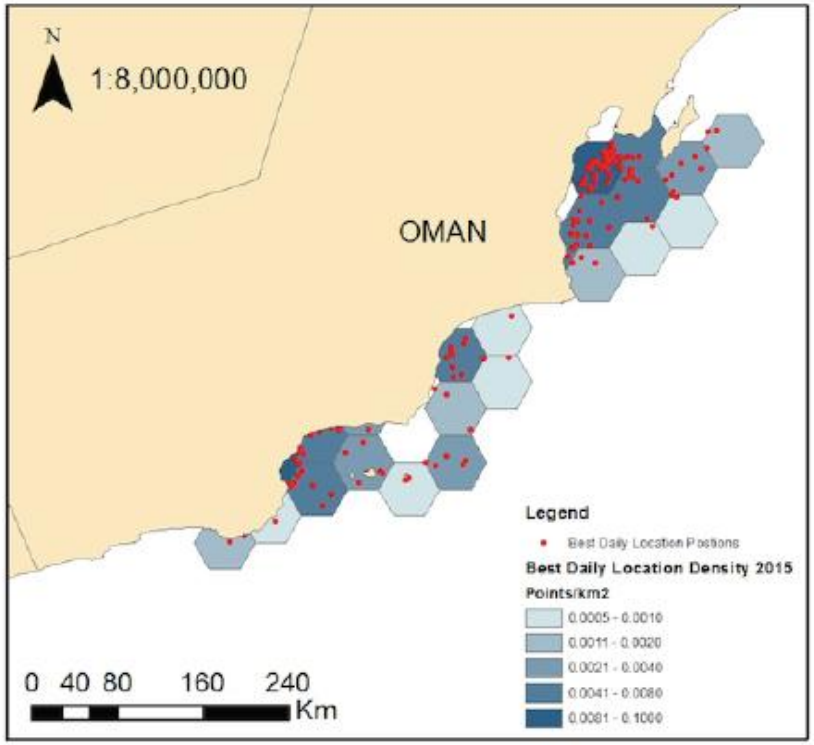


Willson et al. (2014). *Preliminary results and first insights from satellite tracking studies of male Arabian Sea Humpback Whales* . IWC.

Habitat Utilization Density Maps



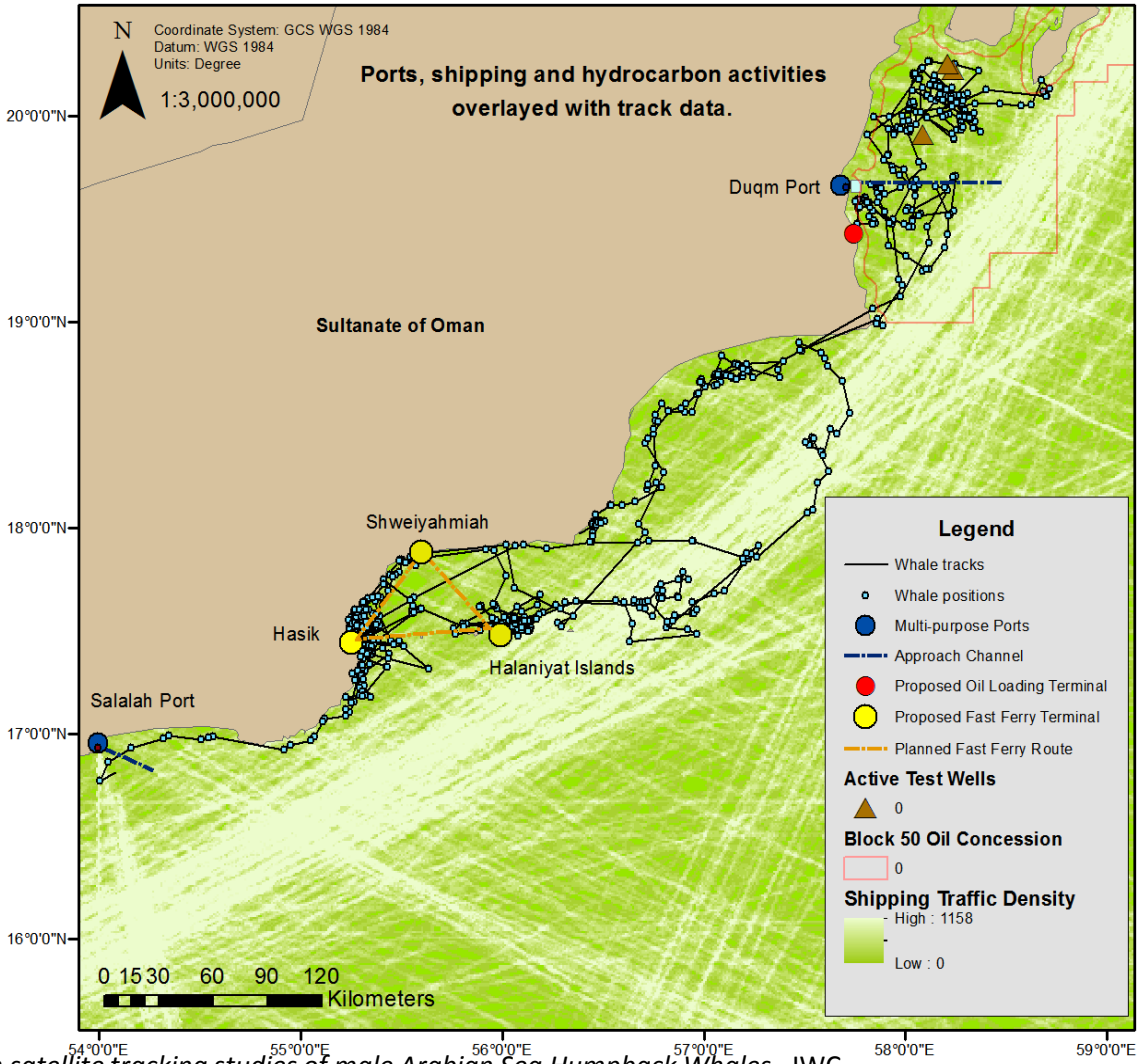
a) All satellite track plots from 2014



b) All satellite track plots from 2015

Overlap with Human Activities and Threats

- Gillnet and Driftnet Fishery
- Multi-purpose Ports (Salalah & Duqm)
- Seismic Surveys
- Oil & Gas Development
- Large Fishing Harbors (Gulf of Masirah & Halaniyat)
- Ferry Route (Halaniyat Bay)
- Marine and Coastal Construction Activities



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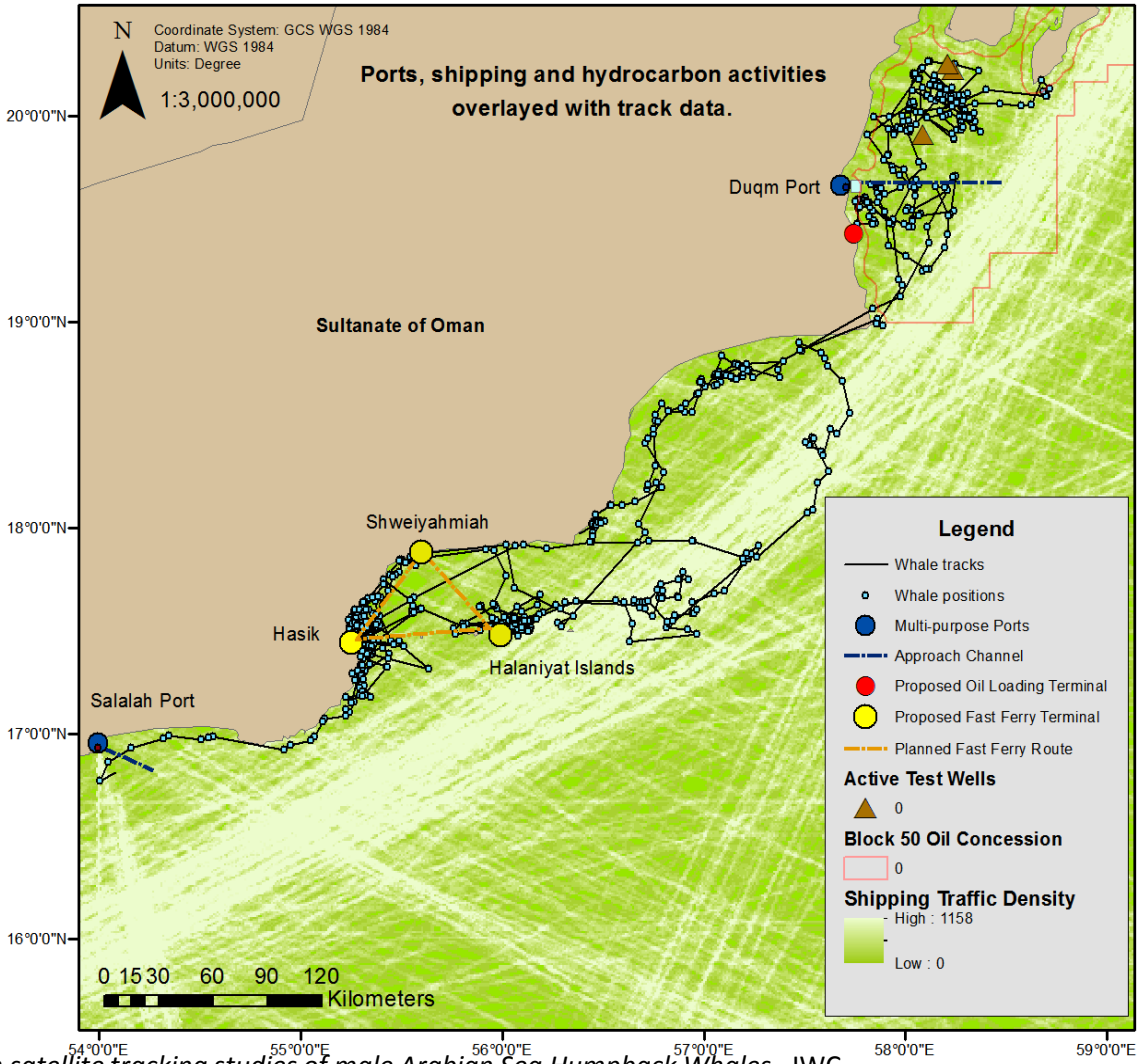
- Various threats (ship strikes, oil spills, fishing entaglement)
- Need for SEA, taking holistic approach and multiple cumulative impacts of all activities in the area
- IWC endorsement of Scientists to independently review EIAs and review management and mitigation measures



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Data Use for Conservation

- Locally
  - Awareness raising
    - Community outreach
    - Social media and online platforms
    - Whale and Dolphin Watching Guidelines

Data Use for Conservation

- Regionally
  - ASHW Regional Network
  - Platform for online collaboration
  - Research gaps/ support from other countries
- Internationally
  - IWC
    - Whale and Dolphin Watching Guidelines
    - Research recommendations and endorsements
    - Conservation management plans
  - IUCN
    - Species listing

Data – What? Where? Who?

New England Aquarium

Oman Cetacean Database

Independent Researchers

WD Survey Data

Passive Acoustic Data

Custodian Curating Ownership Analysis

Photo-ID Catalogue

Satellite Tracking Data

Tissue Sample Archive

Cetacean Stranding Database

Wildlife Conservation Society

Exeter University

5OES

ESO

MECA

Data Challenges

- Among collaborators
- Non-commercial Data requests/ media
  - Permission from collaborators
  - Data sharing , confidentiality and authorship agreements
- Commercial Data requests
  - Raw data
    - Misinterpretation
    - Publication
  - Processed data, reports
  - Free or fee?
- What should be publicly available?

Thank You

Acknowledgement

Project Team

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- Ghasi Al Farsi, Field Assistant
- Juma Al Araimi, Field Assistant
- Juma Al Humaidi, Field Assistant

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- Gianna Minton, University Malaysia Sarawak
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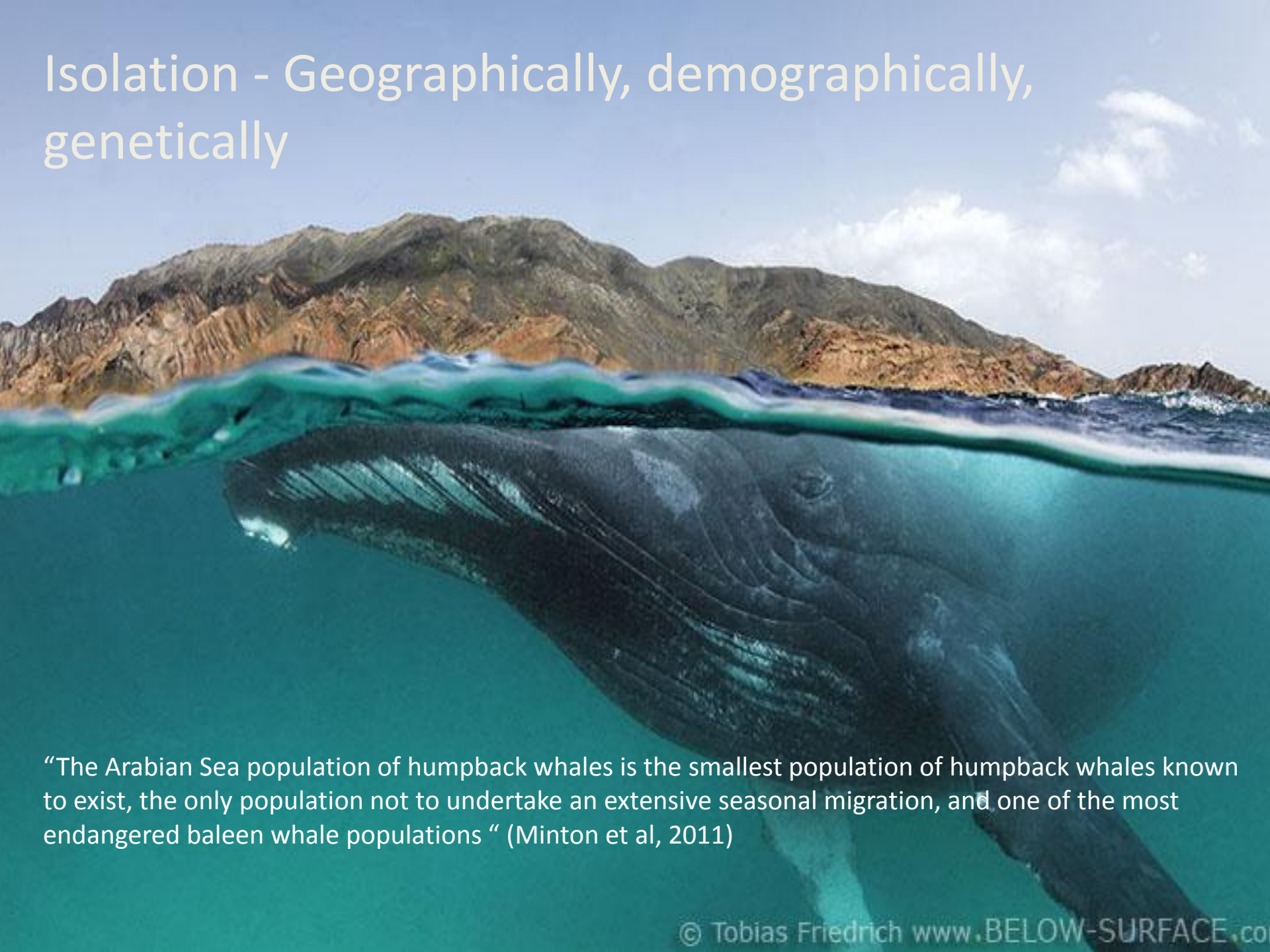
- Howard Grey, University of Durham, UK
- Ken Findlay, University of Cape Town, South Africa

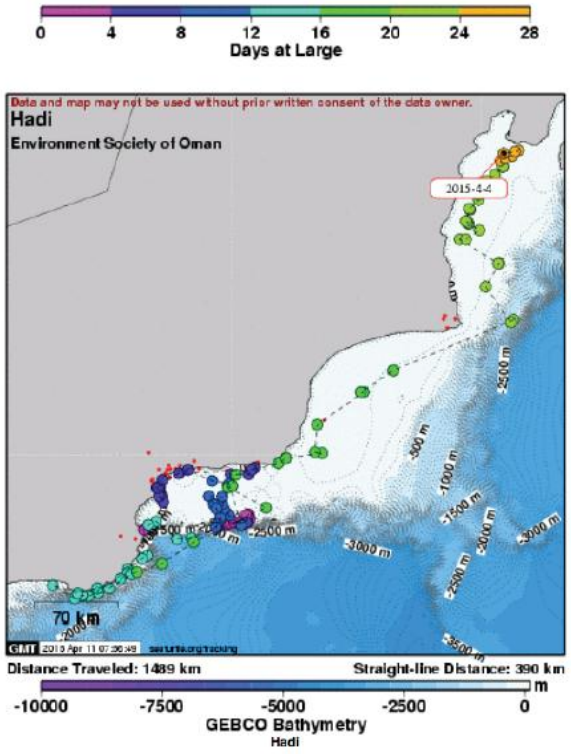
Isolation - Geographically, demographically, genetically



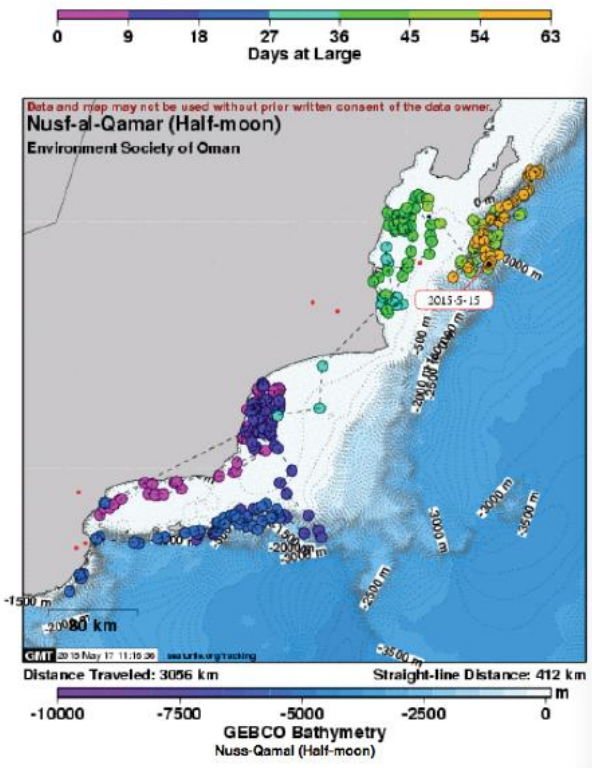
“The Arabian Sea population of humpback whales is the smallest population of humpback whales known to exist, the only population not to undertake an extensive seasonal migration, and one of the most endangered baleen whale populations “ (Minton et al, 2011)

2015 Satellite Tracking

Whale ID: OM01-014



Whale ID: OM02-019



Whale ID: OM01-006