Cetacean necropsy protocol - update

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Why a protocol?

- Monitoring health in cetaceans critical to identify and quantify the role of disease, trauma, and environmental and ecological factors affecting these populations.

- Strandings can give an indication of the composition of the cetacean fauna in an area.

- For some species, it may even be the only source of information available.

- Coherent investigation of carcasses can assist in
  - assess health status of individuals
  - identify existing and emerging threats
  - providing tissues and data for subsequent analysis.
Why a protocol?

• Standardise and synergise:
  – Measurements
  – Data collection
  – Sampling protocol
  – Methodology for the diagnostics

• Workshop aims:
  – Review the existing standardised protocol of the post mortem examination of cetaceans;
  – Update the existing protocol on tissue sampling for microbiology, parasitological, virology, toxicology and histopathology.
Why an update?

Proceedings of the first ECS workshop on CETACEAN PATHOLOGY: DISSECTION TECHNIQUE AND TISSUE SAMPLING

Leiden, The Netherlands, 13-14 September 1991
Editors: Thijs Kruken and Manuel Garcia Hartmann

CETACEAN PATHOLOGY: NECROPSY TECHNIQUE & TISSUE SAMPLING
Based on proceedings of the ECS workshop on cetacean pathology, Funchal Madeira, April 2016

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August 2018

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Necropsy protocol

• This protocol is not designed to supplant existing protocols of established laboratories or stranding networks.

• It serves two aims:
  – 1) Highlighting areas where harmonisation of data from existing networks can allow for analysis and inference to be made between networks
  – 2) Offer a technical framework for those planning to develop or expand new strandings monitoring networks.

• Sample triage
Tier One

- **Tier One**: Basic morphometric and descriptive data - “what-where-when?”, assessment of body condition, carcase condition, sex and age determination, and collection of samples for genetic analysis.

- **Morphometric studies and imaging:**
  - Condition scoring
  - Photographs
  - Body measurements

Images: Charlie Philips (A,C) and Mariel ten Doeschate (B)
Tier two

- **Tier Two**: Post mortem investigation: a thorough pathological necropsy, involving the visualisation and gross inspection of all organ systems and appropriate subsequent diagnostic testing.

- **Gross post mortem examination**:
  - Freezing
  - External and subcutaneous examination
  - Body condition state
  - Examination of internal organs
  - Examination of abdominal organs (except GIT, spleen and pancreas)
  - Examination of head and neck region, and thoracic organs
  - Examination of GIT, spleen and pancreas
Tier three

- **Tier Three**: Ancillary tests and population-level analysis: additional and more detailed analysis of the data and samples collected by post mortem.

- **Sampling and storage:**
  - Labelling of samples
  - Tissue archive
  - Life history samples
    - Age determination
    - Diet analysis and micro-plastics
    - Genomic (DNA) studies
    - Reproduction studies
  - Histology samples
  - Virology samples
  - Microbiology samples
  - Parasitology samples
  - Toxicology samples
Additional content

• Interpretation and biases of strandings
• Social media
• Health and Safety

• But all = basic and short
What’s next?

- **Document:**
  - Online platform? Peer-review?
  - ASCOBANS endorsement?

- Scope to extend the protocol to aid additional research and include protocols currently used to diagnose specific causes of death

- Total 25 specific ‘best practices’ identified, including those of anthropogenic origin, e.g.
  - Bycatch
  - (Micro)plastics
  - Noise

- Provide stranding and necropsy guidance for mass mortalities and large whale strandings
Questions?