



Cetacean necropsy protocol - update

Lonneke L. IJsseldijk & Andrew C. Brownlow

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



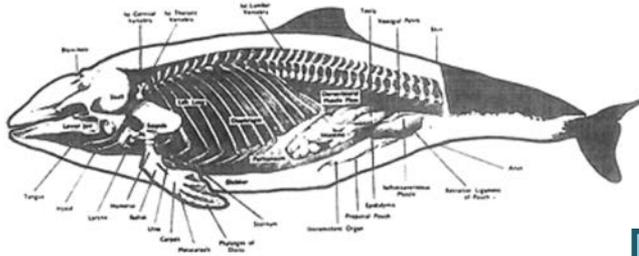
Why a protocol?

- 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.



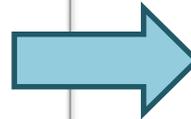
Why an update?

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



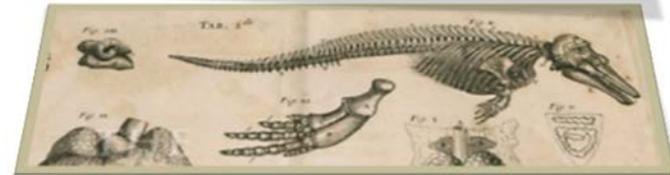
Leiden, The Netherlands, 13-14 September 1991
 Editors: Thijs Kuiken and Manuel Garcia Hartmann

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**CETACEAN PATHOLOGY: NECROPSY
 TECHNIQUE & TISSUE SAMPLING**

Based on proceedings of the ECS workshop on cetacean
 pathology, Funchal Madeira, April 2016



Editors

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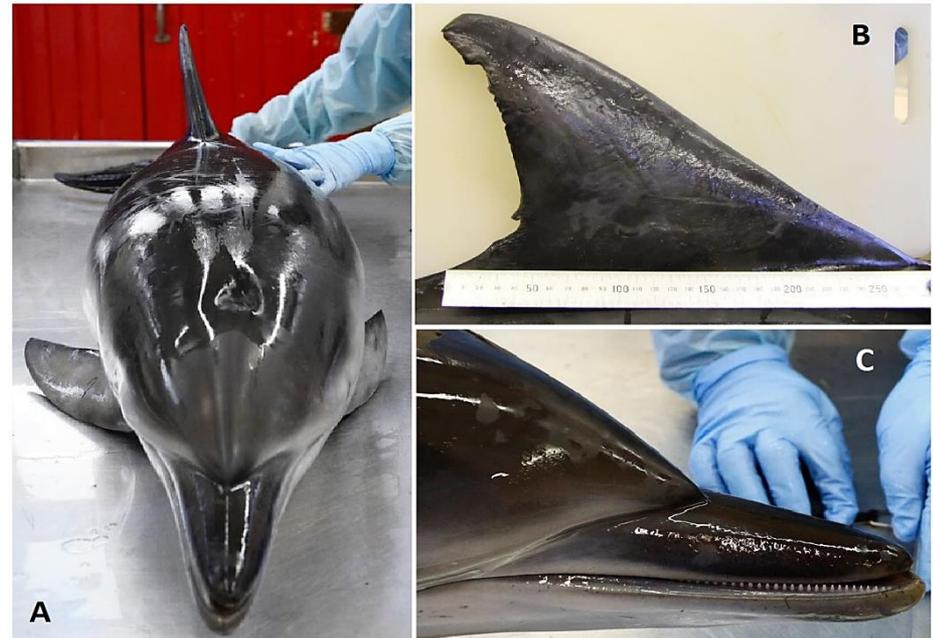
Necropsy protocol

- 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

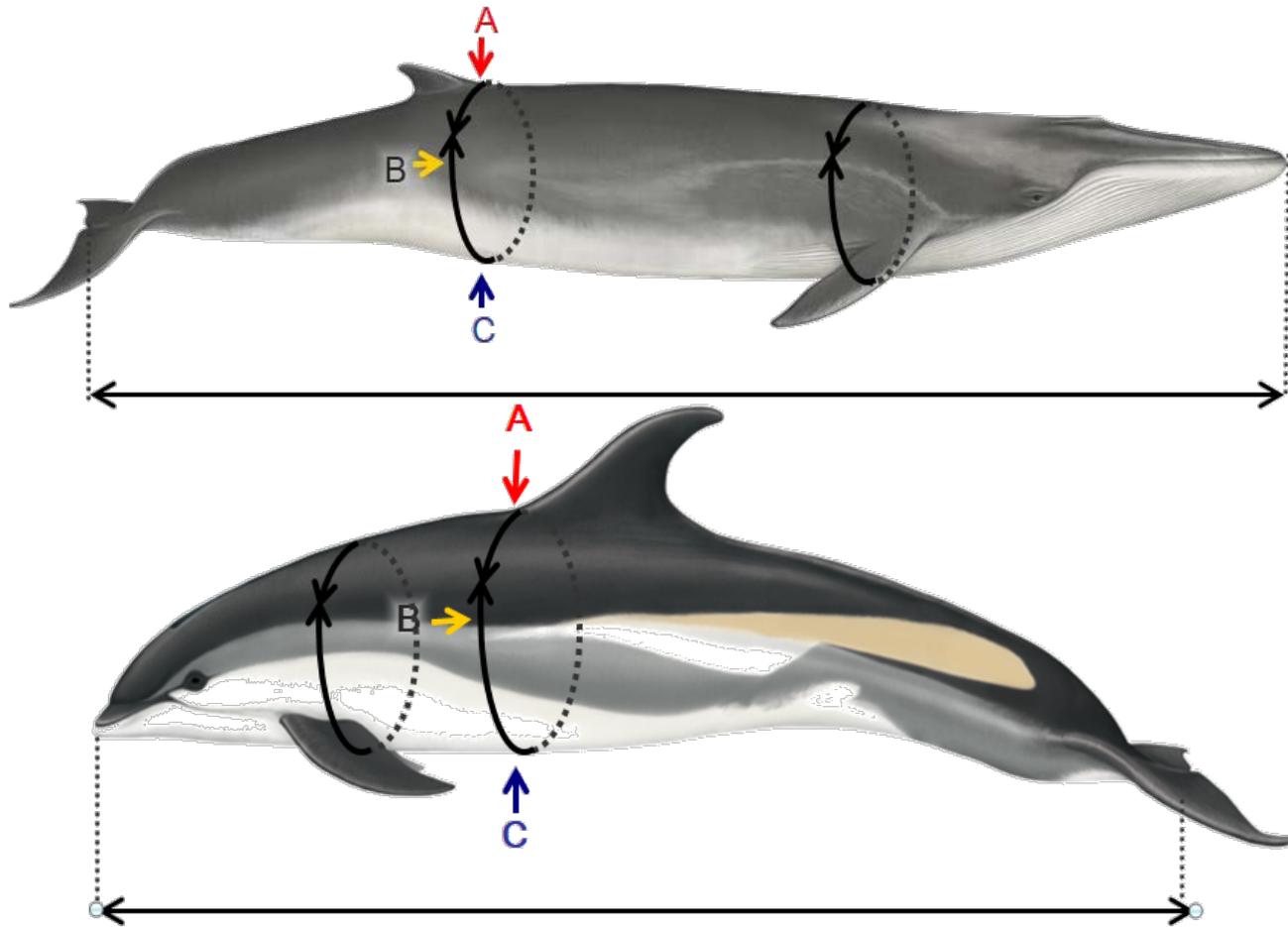


Tier One

- **Tier One:** Basic morphometric and descriptive data- “what-where-when?”, assessment of body condition, carcasse condition, sex and age determination, and collection of samples for genetic analysis.
- **Morphometric studies and imaging:**
 - Condition scoring
 - Photographs
 - Body measurements







Images: © CSIP/Lucy Molleson (top) and WDC/Lucy Molleson (bottom)



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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





Images: Utrecht University



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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?

