

# 5<sup>th</sup> Conference on Cetacean Conservation in South Mediterranean Countries

*Online, 13 - 15 April 2021*

**Host Country : Lebanon**

**Best practice on post-mortem investigation and tissue sampling**

**Sandro Mazzariol - University of Padova**



*The designations employed in this document do not reflect any ACCOBAMS position concerning the legal status of any country, territory or area, or concerning the delimitation of their frontiers or boundaries.*



# BACKGROUND

2016: ASCOBANS Resolution 8.10 work on best practice guidelines for response to stranding events and in the establishment of an updated post-mortem protocol

2016: ACCOBAMS endorsed Resolution no. 6.22 and review the common definitions, common data collections and common post-mortem protocols during the triennium.

ASCOBANS & ACCOBAMS Resolutions recommended a joint work with IWC and ECS.

2018: during the 24th ASCOBANS AC and 12th ACCOBAMS SC a joint workshop was proposed to harmonize the existing initiatives.



REPORT OF THE JOINT ACCOBAMS/ASCOBANS/ECS/SPA-RAC WORKSHOP  
ON MARINE DEBRIS AND CETACEAN STRANDING





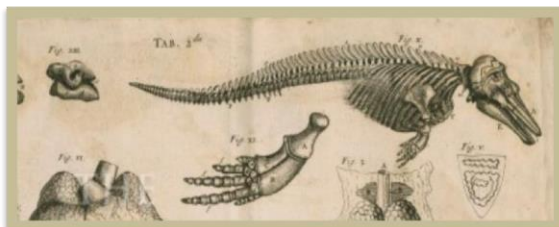
# Joint ACCOBAMS/ASCOBANS workshop

Workshop on harmonization of the best practices for necropsy of cetaceans and for the development of diagnostic frameworks

Padova, Italy, 2019

## Best practice on cetacean post mortem investigation and tissue sampling

Joint ACCOBAMS and ASCOBANS document



Editors:

Lonneke L. IJsseldijk • Andrew C. Brownlow • Sandro Mazzariol

September 2019

With contributions from:

**Agreement for the Conservation of Cetaceans of the Baltic Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)**

- Aviad Scheinin

**Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS)**

**Cetacean Strandings Investigation Program, Zoological Society of London, London, United Kingdom**

- Rob Deaville, Paul D. Jepson, Matthew W. Perkins

**Cornwall Wildlife Trust Marine Strandings Network, Cornwall, United Kingdom**

- James Barnett

**C.Re.Di.Ma. , Istituto Zooprofilattico Sperimentale del Piemonte, Liguria and Valle d'Aosta, Italy**

- Carla Grattarola, Cristina Caselone

**Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, Università degli Studi di Siena, Siena, Italy**

- Maria Cristina Fossi, Letizia Marsili

**Facoltà di Medicina Veterinaria, Università degli Studi di Teramo, Teramo, Italy**

- Giovanni Di Guardo

**Pathology Division, Faculty of Veterinary Medicine, Utrecht University**

- Andrea Gröne

**International Whaling Commission (IWC)**

- Karen Stockin

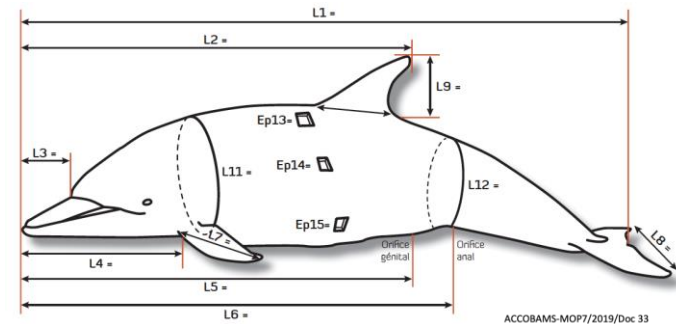
**Institute for Neurosciences of Montpellier (INSERM U1051), France**

- Maria Morell



## Keywords

- Glossary and review of parameters
- Multi-tier triage approach
- Evidenced based approach
- Cooperation and multidisciplinary approach
- Risks
- Carcass disposal
- Sampling



ACCOBAMS-MOP7/2019/Doc 33

Analytical procedure	D C C	D C C	D C C	D C C	D C C	Comments/recommendations
	1	2	3	4	5	
Genetics	✓	✓	✓	✓	✓	For DCC4 or 5: paleopathological procedures may be required on account of degraded DNA (eg extracting DNA from bone medulla)
Diet and marine debris	✓	✓	✓	✓	(✓)	If GIT is not intact, eg from post mortem scavenger damage, results are compromised
Age determination	✓	✓	✓	✓	(✓)	
Fatty acids and stable isotopes	✓	✓	✓	✓	(✓)	Depending on analysis planned
Parasitology	✓	✓	✓	✓	(✓)	Depending on analysis planned
Morphometrics	✓	✓	✓	(✓)	(✓)	Girth measurements can be disrupted by bloating due to autolysis in DCC4-5
Gross pathology	✓	✓	✓	(✓)	(✓)	Recommended for DCC4-5 in cases of forensic investigation
Reproductive studies	✓	✓	✓	(✓)	✗	
Toxicology	✓	✓	✓	(✓)	✗	Depending on pollutants. DCC1-2 for biomarker investigation.
Ear investigation	✓	✓	✓	✗	✗	Inner ear analysis specifically: DCC1, histopathology of fixed ears possible up to DCC3
Microbiology	✓	✓	(✓)	(✓)	✗	Depending on analysis planned. For DCC3-4 microbiology can still be worthwhile for detection of certain bacteria and fungi using specific culture methods. Should a septicemia be suspected in DCC3-4 animals, then microbiological investigations should be undertaken on the kidney, as this is resilient to microbial post mortem invasion using specific culture methods.
Histopathology	✓	✓	(✓)	(✓)	✗	Recommended for DCC4-5 in cases of forensic investigation
Virology	✓	✓	(✓)	✗	✗	Depending on analyses planned.
Biotoxins	✓	✓	(✓)	✗	✗	
Gas bubble analysis	✓	✓	✗	✗	✗	If this procedure is conducted: it should be done first, before undertaking further assessments and dissections, particularly prior opening any part of the vascular system or removing the head.
Serology	✓	(✓)	(✓)	✗	✗	Advisable both on blood serum and on cerebro-spinal fluid, the latter of which should be collected as soon as possible. In heavily autolyzed specimens, alternatives are "juice" obtained from skeletal muscle or lung, vitreous humour or pericardial fluid

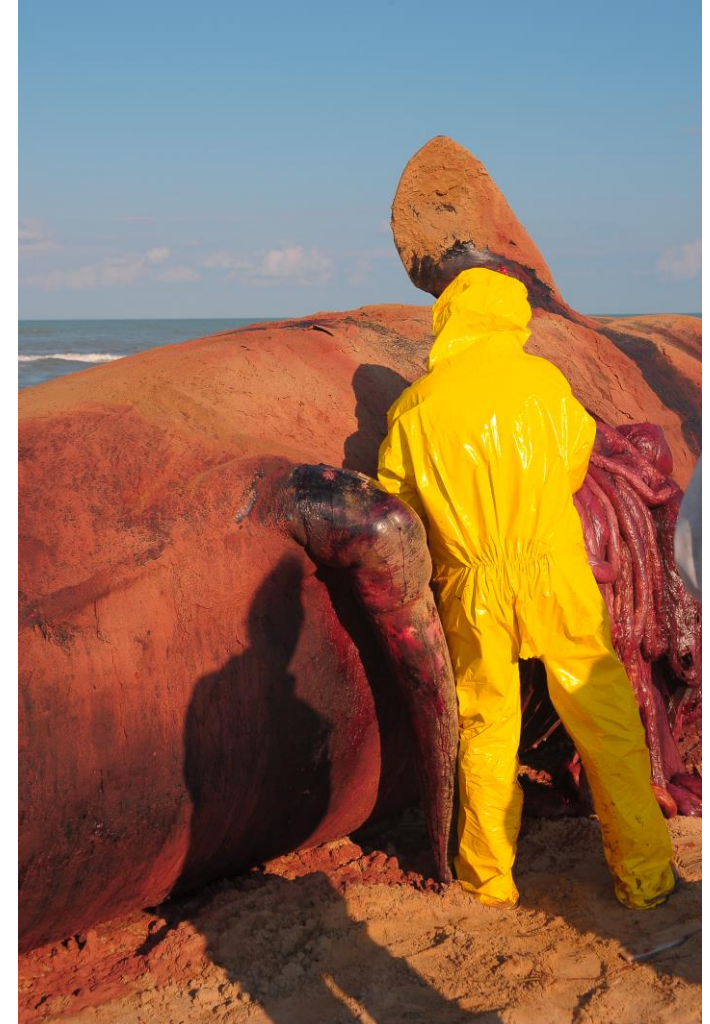
## TIER 1 - external examination and stranding data collection

- Who: Wide range of personnel who have basic training. .
- To be assessed: External examination only, aiming to collect
  - . basic morphometric data,
  - . assessment of decomposition condition,
  - . sex and age class determination,
  - . photographs of external features
- **DO NOT** permit any reliable assessment of health status nor allow conclusions to be drawn as to the cause of death.



## TIER 2 - dissection for sampling

- Assessment level: trained responders with skills and experience.
- To be assessed: thorough post-mortem investigation, involving the visualization and gross inspection of all organ systems and a detailed description of findings.
- Samples should be collected to allow assessment of health status but not the cause of death (i.e. diet, life history, contaminant)
- Findings should be considered informative, but not conclusive on the cause of death.
- **Marine litter presence/ingestion and interaction with fisheries could be assessed at this level**



## TIER 3 - necropsy (dissection with diagnostic aim)

Assessment level: **by professional** (e.g. an experienced veterinary or biologists), and always including a veterinary pathologists.

To be assessed: **cause of death.**

This involves additional or detailed analysis of the data and samples collected during post-mortem investigation (tier two), aiming to understand also wider parameters of ecological health.

This tier often requires specialized laboratories and can be carried out in collaboration with other stranding investigation groups.





# CONCLUSIONS and RECOMMENDATIONS

- Tool for building a functional stranding network depending on resources, skills and expertise
- Post-mortem investigation vs Necropsy
- No short-cuts but guidance
- Forensic medicine
- Veterinarian vs biologists
- Cooperation with all Institutions
- Capacity building and remote assistance





## ACCOBAMS NECROPSY TRAINING IN 2021

Sandro MAZZARIOL (Padoue) + Thierry JAUNIAUX (Liège)

- Online training end of June with 40 participants/ evaluation
  - A first face to face training session in Liege, end of September with 20 participants
  - A second face to face training session in Padoue, in October with 20 other participants
  - Certification at the end of the training
- to train experts from the different ACCOBAMS countries to collect further data and tissues + to gain information on possible threats;
  - to encourage harmonisation to allow regional analysis and interpretation