
Presentation
An unusual mortality event involving Bottlenose Dolphins (*Tursiops aduncus*) within the Swan Canning Riverpark June-October 2009

Nahiid Stephens¹, Carly Holyoake¹, Padraig Duignan², Hugh Finn³, Chandra Salgado⁴, Lars Bejder³.

¹ School of Veterinary and Biomedical Sciences, Murdoch University, Murdoch Drive, Murdoch, WA, 6150. N.Stephens@murdoch.edu.au
² Faculty of Veterinary Science, University of Melbourne, Werribee, VIC 3030.
³ Murdoch University Cetacean Research Unit, School of Biological Sciences & Biotechnology, Murdoch University, Murdoch, WA 6150.
⁴ Centre for Marine Science & Technology, Curtin University of Technology, Bentley, WA 6102.
Adult female ‘Leeuwin,’ Waylen Bay, 25th October 2009
(image courtesy of Simon Allen, Murdoch University)
• 6 bottlenose dolphin deaths in 2 clusters – 3 in June 2009 and 3 in Sept-Oct 2009
• 4 had significant gross/histopathological findings
• Represent a marked ↑ in dolphin mortalities based on previous stranding data
• Likely to be biologically significant to the resident population due to:
  • Small size of resident dolphin community (20-25 individuals)
  • Site fidelity and natal philopatry
Factors that adversely impact on dolphin health

- Shark predation
- Human-induced injury
- Anthropogenic stressors (noise, vessel traffic)
- Physiological stress from environmental conditions
- Algal biotoxins
- Infectious disease
- Low genetic diversity?
- Contaminants?

*Estuaries are inherently stressful & challenging environments*
Dolphin (1)

Male juvenile (09/637)

• At least 3 years old
• Good BCS
• June
Dolphin (2)

Female adult (09/664)

- At least 16 years old
- Good BCS
- June
Dolphins (3 & 4)
(Both Sept-Oct)

Female adult (AS-09-2912-F-V1)
• Dental aging not done
• Reasonable BCS

Female adult (09/1108)
• Dental aging not yet completed
• Poor BCS
Atypical TSD – the role of contaminants/others

- Osmotic epidermal damage
- ↑ poxvirus virulence
- Unidentified intercurrent immunosuppressive viruses (eg: morbillivirus)
- Organic contaminants:
  - Dieldrin - extremely high
  - DDE & PCBs - comparable to other populated coastal areas
- Heavy metals: Zn ↑
Conclusions

Stressors

- Contaminants
- Environmental factors (salinity, pH, O₂, temperature)
- Boat traffic & disturbance
- Noise
- Food availability

1 pathogen (morbillivirus, pox, others)

Human-induced injury

↓ Immune function

Opportunistic infection

Death

Possible causes of immunosuppression

Multifactorial aetiology likely

Low genetic diversity
Future directions & acknowledgments

• Ongoing necropsies
• Compare to control ‘pristine’ population
• Repeat EM
• Morbillivirus IHC (Dr Tony Patterson)
• Viral microarray (Dr Joe DeRisi)
• Isolate/sequence poxvirus

The authors would like to acknowledge the contribution of Perth Zoo, Dept of Agriculture and Food WA, Swan River Trust & Dept of Environment and Conservation WA; as well as support from the WA Depts of Water & Health. Thanks also to Kate Charlton-Rob, Drs Mandy O’Hara & Phil Nicholls; also to Michael Slaven & Gerard Spoelstra
References


