Hector’s and Maui dolphin toxoplasmosis

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Maui Dolphin Threat Management Plan meeting
Auckland, 2 November 2015

Hector’s dolphin mortalities

• 2007 to 2011
• 28 dolphins
  • 7/28 (25%) died of toxoplasmosis
  • 17/28 (63%) dolphins positive on PCR
    • PCR – detection of toxoplasma DNA
    • latent infections
**Histology – H&E stain**

From Roe et al., 2013, Veterinary Parasitology 192, 67-74

**Immunohistochemistry (IHC)**

From Roe et al., 2013, Veterinary Parasitology 192, 67-74

IHC. Brown staining is toxoplasma tissue cysts and tachyzoites.
all fatal cases found in October or November
7/8 isolates were atypical type II genotype

From Roe et al., 2013, Veterinary Parasitology 192, 67-74
FINZ study

- testing of dolphins from
  - 2001 – 2007 (‘early’) 36 (3 Maui)
  - 2012 – 2014 (‘late’) 24 (1 Maui)

Histology
- none died of toxoplasmosis

Immunohistochemistry
- 2 had inactive tissue cysts (both early)

PCR
- 13 positive (4 early and 9 late)
Overall:

- total of 88 examined
  - 7 (8%) died of toxoplasmosis
    - diagnosis on histology and IHC
    - deaths only in 2007 – 2011 period
  - 23/81 (28%) others were PCR positive
- similar proportions of Hector’s and Maui dolphins
- all ages but more often in older or male
- slightly lower on WCSI cf ECSI and WCNI

Over time:

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<tbody>
<tr>
<td>Toxoplasma Deaths</td>
<td>0/36</td>
<td>7/28 (25%)</td>
<td>0/24</td>
<td>1/8 (13%)</td>
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<tr>
<td>Latent infections</td>
<td>6 (17%)</td>
<td>10 (36%)</td>
<td>9 (38%)</td>
<td>Not tested</td>
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<tr>
<td>Maui submitted</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
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  - 0 toxo deaths
  - No latent

- latent infections - PCR positive or IHC positive with no inflammation
- likely to be an underestimate – testing small pieces of tissue
Conclusions:

- Hector’s and Maui dolphins are exposed to toxoplasma
- some become chronically/latently infected
- others get severe fatal infections
  - could be genotype of toxoplasma
  - or dose
  - or other factors – stress, concurrent disease....
- deaths are still occurring
  - September 2015, Timaru