Building a Wildlife Research Community: From Field to Pathogen Discovery

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Socio-Economic Impacts
Diseases with Wildlife in their Ecology

- **TUBERCULOSIS**
  - NZ$30 – 60 MILLION/yr
- **WEST NILE**
  - $69 MILLION
  - 2002
- **Chikungunya**
  - $65 MILLION
- **Nipah**
  - $400 MILLION
- **FOOT & MOUTH**
  - $30 BILLION
- **SARS**
  - $50 BILLION
  - AUS$930 Million
- **JAPANESE ENCEPHALITIS**
  - $125 MILLION
- **Avian Influenza**
  - $1.25 Trillion
- **TUBERCULOSIS**
  - NZ$30 – 60 MILLION/yr
  - AUS$1.3 BILLION 1992
Current Events – Dz with Wildlife In Their Ecology
Wildlife Disease Emergence in Australia

A Decade in Review

1990
Green Sea Turtle Systemic coccidiosis

1995
Hendravirus
Menangle virus
Lyssavirus
Tammar Sudden Death Virus

TFM Organo-chlorine toxicity

A. cantonensis spreads south

1996
Pilchard Herpesvirus
Devil Facial Tumour

2000
WB Bandicoot Papilloma virus
Koala Retrovirus
Inclusion Body Disease of Snakes

Chytrid
Kangaroo viral blindness
Leishmania
The Wildlife Health Community

Cross Sector, Multi-disciplinary, National and International

- Environment, Agriculture, Human Health Departments – state and commonwealth
- Universities – veterinary, ecology, climate, bio-informatics
- Research Centres – CSIRO’s Australian Animal Health Lab
- Zoos
- Non-profit organisations
- Museums
- Invasive Animal and Emerging Biodiversity Cooperative Research Centres
- Wildlife Disease Association, Australian Society for Veterinary Pathology
- Reference Group
Challenges Faced by the Community

• Geographically Disparate
• Remote work
• Expense of field work and sample collection
• Animal welfare considerations – replace, reduce, refine resources
• Lack of readily accessible expertise pool
• Diagnostic delays
• Need for multi-disciplinary teams
• Resource constraints
• Trust and Data Sharing
Secure Access – to resources and information

One system to facilitate:

- Disease investigation and case management
- Emerging and exotic disease surveillance
- Education – primary training and continuing education
- Research / Project Management
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<tr>
<th>CATEGORY</th>
<th>REQUIREMENTS</th>
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<td><strong>OBSERVATION</strong></td>
<td>• Remote data capture&lt;br&gt;• Field based microscopy&lt;br&gt;• Specimen management automation - bar codes&lt;br&gt;• Media/publication trawl engines</td>
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<td><strong>NOTIFICATION</strong></td>
<td>• Education&lt;br&gt;• Data Management Systems&lt;br&gt;• Data Trawl engines and automated notification&lt;br&gt;• Syndromic surveillance</td>
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<td><strong>DIAGNOSIS</strong></td>
<td>• Linking data, tasks and expertise online&lt;br&gt;• ABIN Virtual Microscopy&lt;br&gt;• Whole Slide Scanning and Sharing</td>
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<td><strong>ANALYSIS</strong></td>
<td>• ALA host and vector distribution data&lt;br&gt;• ALA and ABIN generic data sets and mapping capabilities&lt;br&gt;• Wildlife Health specific data sets&lt;br&gt;• Advanced mapping and modelling capabilities&lt;br&gt;• Automated workflow timestamp, benchmarking and alerts</td>
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<td><strong>COMMUNICATION</strong></td>
<td>• ABIN web conferencing,&lt;br&gt;• Online visual representation of analysed data sets&lt;br&gt;• Specific risk and mitigation analysis tools</td>
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**WILDLIFE HEALTH eRESEARCH NEEDS**

Chytrid Fungus – 19 years

FUTURE - weeks
Welcome
Welcome to the Australian Biosecurity Intelligence Network's (ABIN) web portal, your gateway to Australian biosecurity online.

Establishment
ABIN was established with Commonwealth National Collaborative Research Infrastructure Strategy (NCRIS) funding, following the identification of a National Biosecurity Framework as a top priority for government funding in 2008.
Disease Investigation - Salmonella

Disease Investigation - Myxozoa


Disease Investigation - Tammars

Overcoming the Challenges

- Demonstrated capability
- Trusted champion with long track record
- Valued data and services provided through the infrastructure
- Submitters define level of confidentiality to their data
- Nearly bug free for UAT and rapid fixes
- Patience – it takes time to change organisational culture and business practices
- Find and break down barriers for each organisation
- Relationships
- Tools for field data and specimen collection
- Whole slide scanning capacity
- Bar coding of specimens
- System automation
- Additional data sets/map layers
- Incorporate existing disease and climate models to analyse and communicate pathogen spread and impacts of disease mitigation options
Thank You

ARCITECTA

ABIN
Australian Biosecurity Intelligence Network

WDA Wildlife Disease Association Australasia

TARONGA
Conservation Society Australia™
Australian Registry of Wildlife Health