
LEAD POISONING OF FREE-LIVING BIRDS AT ESPERANCE

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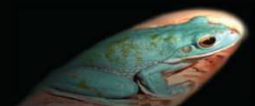
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INTRODUCTION

- ❖ Australia has one of the **best biosecurity systems** in the world.
- ❖ The **animal health status** of Australia's native and feral **wildlife is of significance** for reasons of conservation, biodiversity, human health and environmental management.
- ❖ **Identifying priorities** for surveillance and coordination across jurisdictions can, however, be **challenging** especially in a federated system.
- ❖ This is **especially so in the wildlife** sector, where activities not only require coordination across jurisdictions, but also across multiple agencies, organizations and industries.

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TODAY

- ❖ **Case report - lead intoxication**, associated with atmospheric lead carbonate, cause of a mass mortality of primarily insectivorous and insectivorous birds at Esperance in Western Australia in early December 2006.
- ❖ The incident raised the **importance of wildlife acting as indicators for human health** and the **need for cooperation** between the various National and State/Territory agencies involved in responding.
- ❖ It is concluded that although encouraging and enterprising research and policy initiatives are occurring in wildlife health in Australia, such activities could benefit from **improved co-ordination, better commitment to collaboration** and to **integration of wildlife surveillance** into the **existing arrangements**.



ESPERANCE



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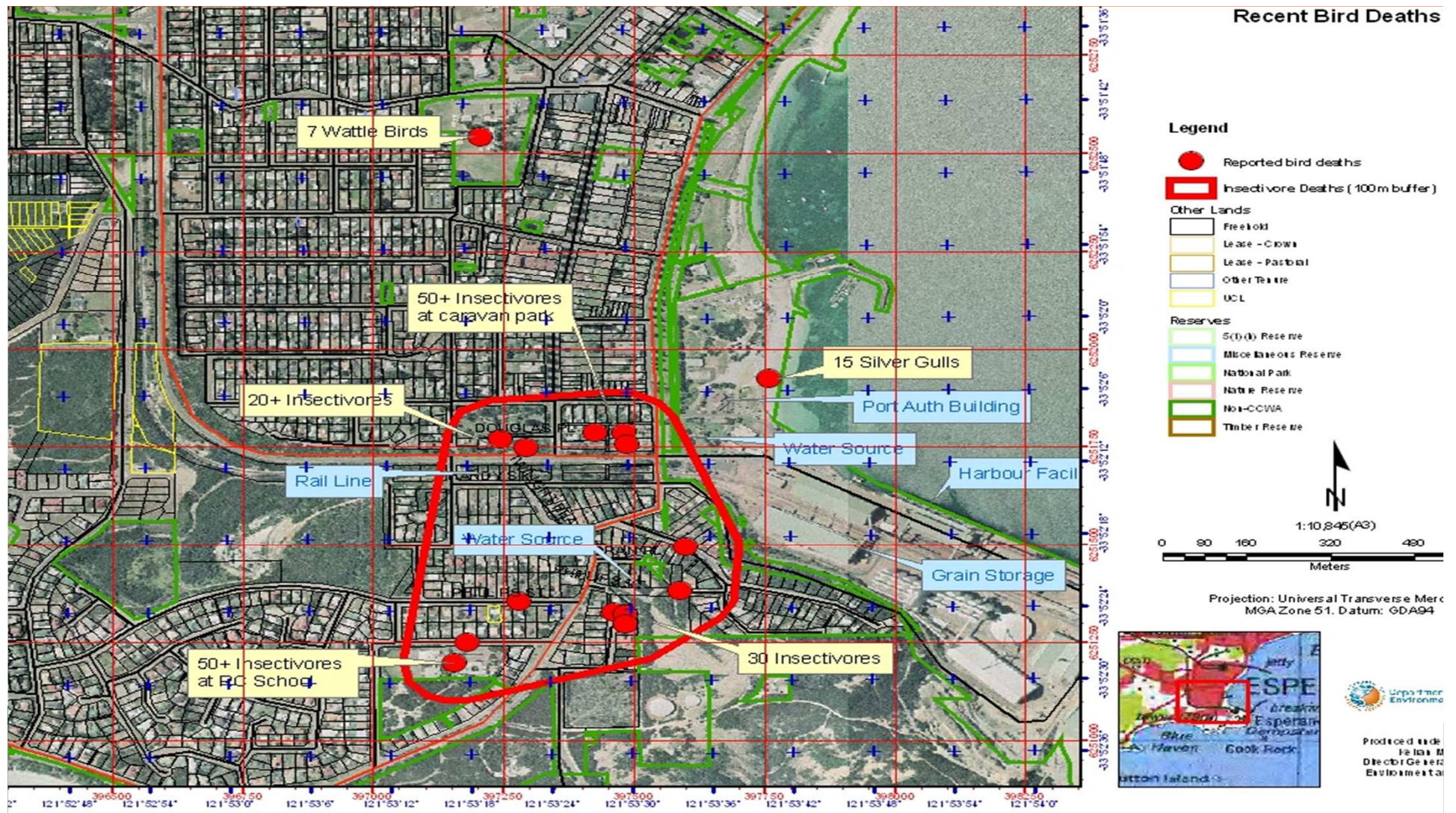


CASE REPORT

- ❖ **Dead and dying birds were first noticed in early December 2006.**
- ❖ **Honeyeaters, wattlebirds, yellow throated miners and silvereyes.**
- ❖ **A number of dying birds were seen convulsing prior to death.**
- ❖ **The number of deaths during December (2006) - January (2007) was confirmed at 400 - 500. However, the total number of deaths was subsequently extrapolated to 4000 - 5000.**



Recent Bird Deaths



Legend

- Reported bird deaths
- ▭ Insectivore Deaths (100m buffer)

Other Lands

- Freehold
- Lease - Crown
- Lease - Pastoral
- Other Tenure
- UCL

Reserves

- S(D) Reserve
- Miscellaneous Reserve
- National Park
- Nature Reserve
- Non-CCWA
- Timber Reserve

Scale: 1:10,845 (A3)

0 80 160 320 480 Meters

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

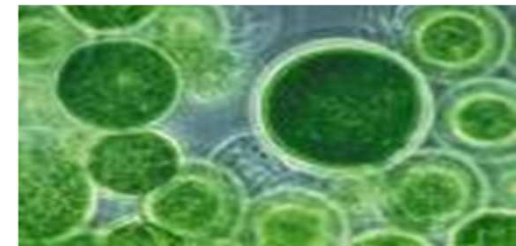


Uppertown
Environment

Produced with
Field &
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Environmental

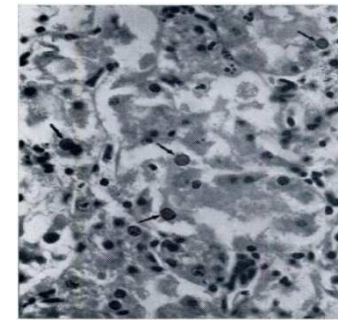
CASE REPORT (CONT.)

- ❖ **Initial necropsies** were **unhelpful** with no gross abnormalities detected.
- ❖ **Differential diagnoses** included infectious processes and intoxication. Avian influenza, virulent Newcastle disease and West Nile virus were excluded.
- ❖ **Tests** for toxic blue green algae in local ponds were negative and no organo-chlorines, organo-phosphates or pyrethroid pesticides were detected in tissue samples.



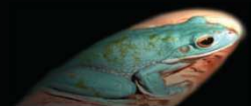
CASE REPORT (CONT.)

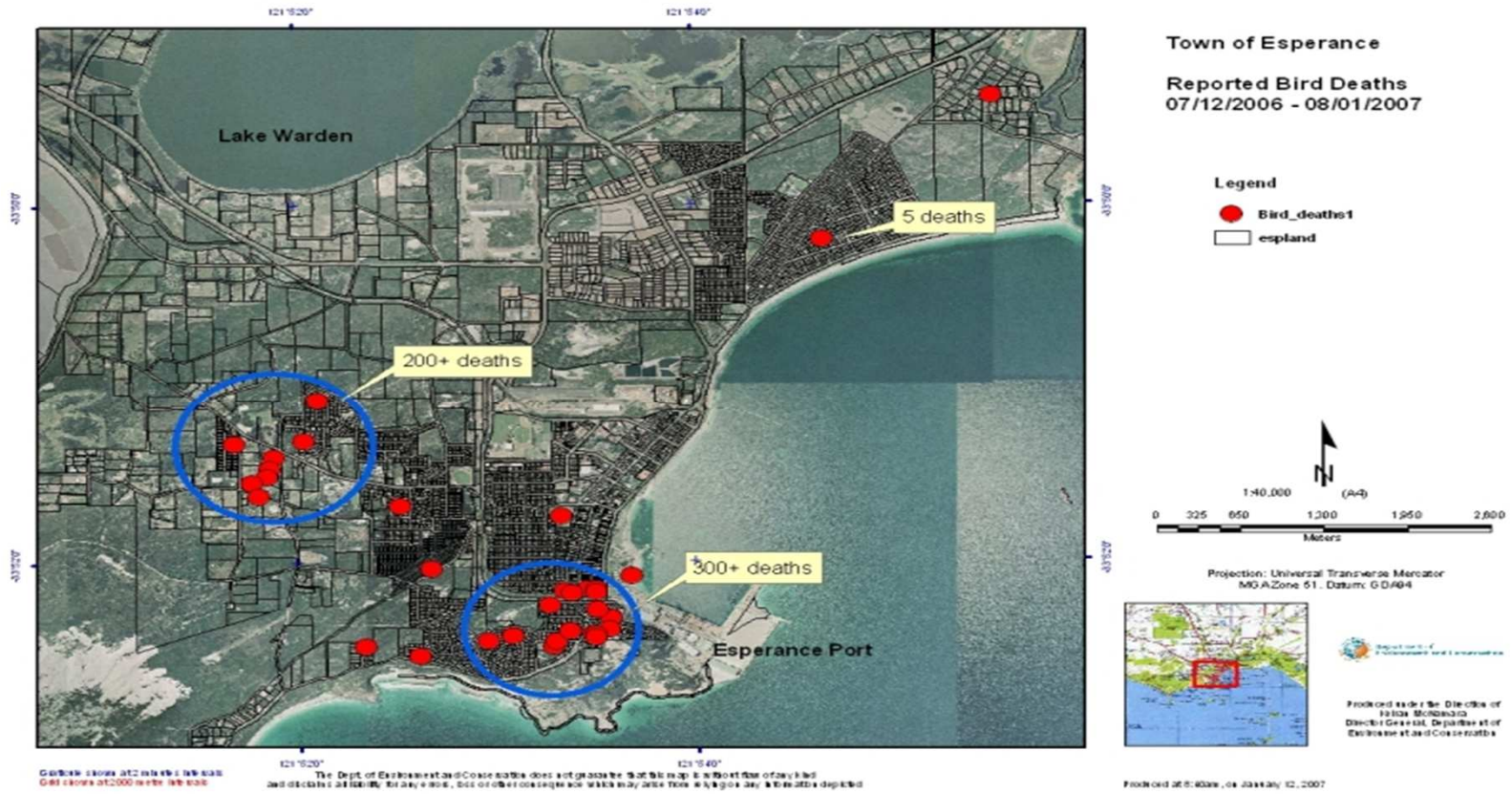
- ❖ Testing of **tissue samples** and the presence of characteristic lead **inclusion bodies in the kidneys** of dead birds indicated that at least a proportion of the estimated 4000 - 5000 wild birds **died from lead poisoning**.
- ❖ A **second episode** occurred in early March (2007) when 150 birds mostly purple-crowned lorikeets died. Tests on tissue samples from ten of these birds were also found to have **significant lead levels** (11 - 98 mg/kg wet weight).



CASE REPORT (CONT.)

- ❖ Results of **leaf, flower stamen and bird feather tests** also showed **high lead and nickel levels**.
- ❖ Large tonnages of **lead carbonate** mined at Wiluna were being **exported** via the port at Esperance.
- ❖ **Isotope fingerprinting** on samples taken in Esperance **matched** the lead in the samples of material transported into and out of the town.



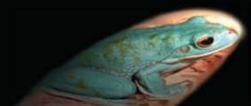


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CASE REPORT (CONT.)

- ❖ **Marine sedimentary samples**, collected from the seabed directly under the Esperance Port Authority's discharge pipe, also returned **very high lead** and nickel levels.
- ❖ Australian guidelines for sediment lead levels are 50 - 220 mg/kg and the Esperance marine samples showed lead levels between 3,600 - 29,000 mg/kg.
- ❖ Similarly, guidelines for sediment nickel levels are 21 - 52 mg/kg and the marine sediments had levels of 660 - 5,900 mg/kg.



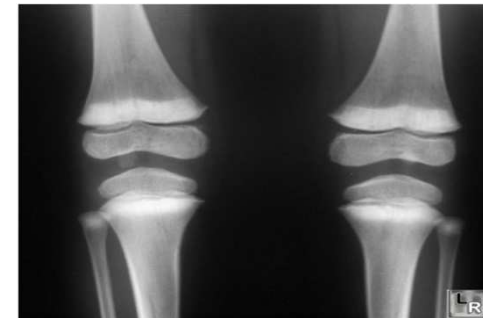
CASE REPORT (CONT.)

- ❖ A full investigation by the Environmental Enforcement Unit (EEU) and a comprehensive health and ecological risk assessment occurred as a result of the findings of lead intoxication.
- ❖ The investigation included blood testing of Esperance community members and environmental sampling (water, rainwater tanks, soil).
- ❖ The Western Australian Department of Health advised people not to drink water from rainwater tanks until the tanks had been tested for lead, emptied and cleaned.



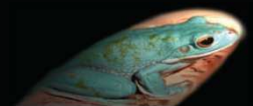
CASE REPORT (CONT.)

- ❖ It was also recommended that **consumption** of shellfish and crustaceans taken from the area should be avoided. Lead carbonate **export** from the port was **suspended**.
- ❖ Variety of other measures.



WHAT DID WE LEARN?

- ❖ **Timing.**
- ❖ **Communication, prior preparation and identification of roles and responsibilities** are crucial in any response.
- ❖ To better manage wildlife mortality events, an **integrated response plan**, where roles and responsibilities are clearly outlined, **is required in each of Australia's States and Territories (including Departments of Agriculture, Health and Conservation).**
- ❖ It is important to **identify funding resources** in line with jurisdictional responsibilities.



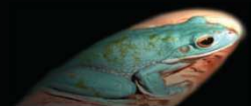
WHAT DID WE LEARN (CONT.)

- ❖ However, there needs to be **recognition** of the need to **manage** incidents **beyond jurisdictional boundaries** and the **identification** of strategies, responsibilities and sources of **resources** to deliver.
- ❖ **Laboratory issues** particularly associated with funding and prioritization need to be addressed to allow the confirmation of a diagnosis.
- ❖ There is also a need to **better integrate** wildlife samples **with mainstream** agricultural sample management.



WHAT DID WE LEARN (CONT.)

- ❖ To improve the capability of recognizing emerging and emergency wildlife diseases we need to continue to improve **national surveillance systems**, as well as better **integrate** and **share information**.
- ❖ Australia needs to **recognise** more and more the **need** for **meaningful collaboration** between organisations and government departments.
- ❖ There is a need for close consultation, **collaboration** and commitment to develop **among environment, human health and biosecurity organisations**.



CONCLUSIONS

- ❖ The event raises the **importance of wildlife acting as indicators for human health** and the **critical need for cooperation between the various National and State/Territory agencies in responding to incidents such as this.**
- ❖ It is concluded that although encouraging and enterprising research and policy initiatives are occurring in wildlife health in Australia, such activities, taking into account Australia's unique wildlife and organisational structure, could **benefit from continuing to improve co-ordination, better commitment to collaboration and to integration of wildlife surveillance into the existing arrangements.**
- ❖ How well this happens is **simply a question of resourcing.**



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- ❖ What could have been **observed** earlier and by whom?
 - ❖ What should have been the **trigger points**?
 - ❖ Who should have been **notified** and **how**?
 - ❖ Where does the **responsibility** lie?

