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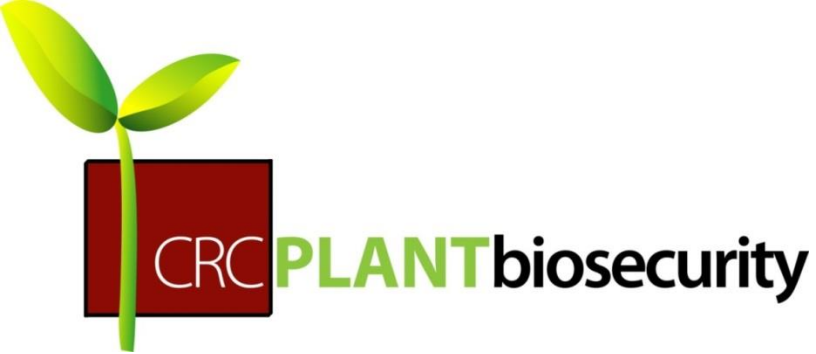
PBCRC 1108

**A risk return prioritisation tool for global trade
inspections**

Dean Paini, Paul Mwebaze, Daniel Heersink (CSIRO), and John Nielsen (Dept
Agriculture)

Contributed presentation at the 60th AARES Annual Conference,
Canberra, ACT, 2-5 February 2016

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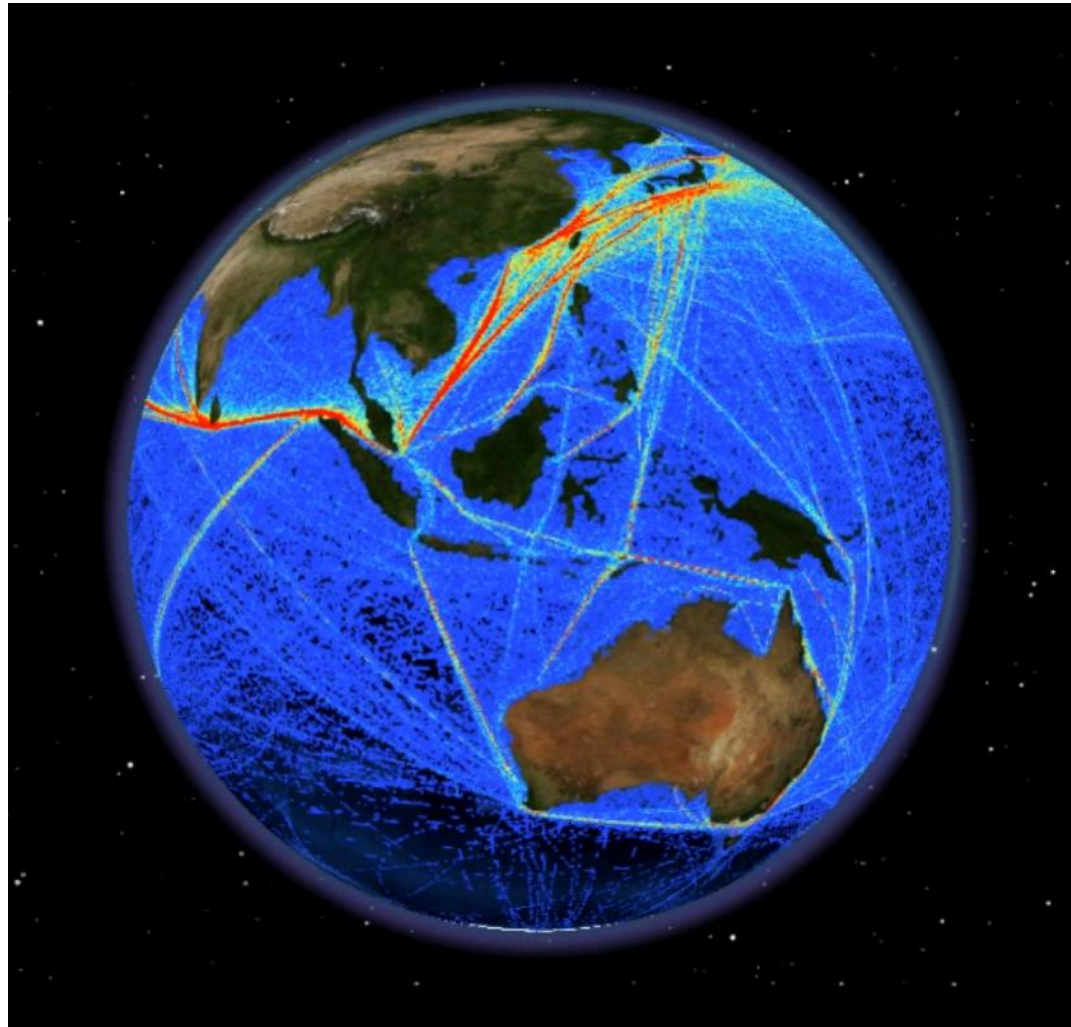
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A risk return prioritisation tool for global trade inspections

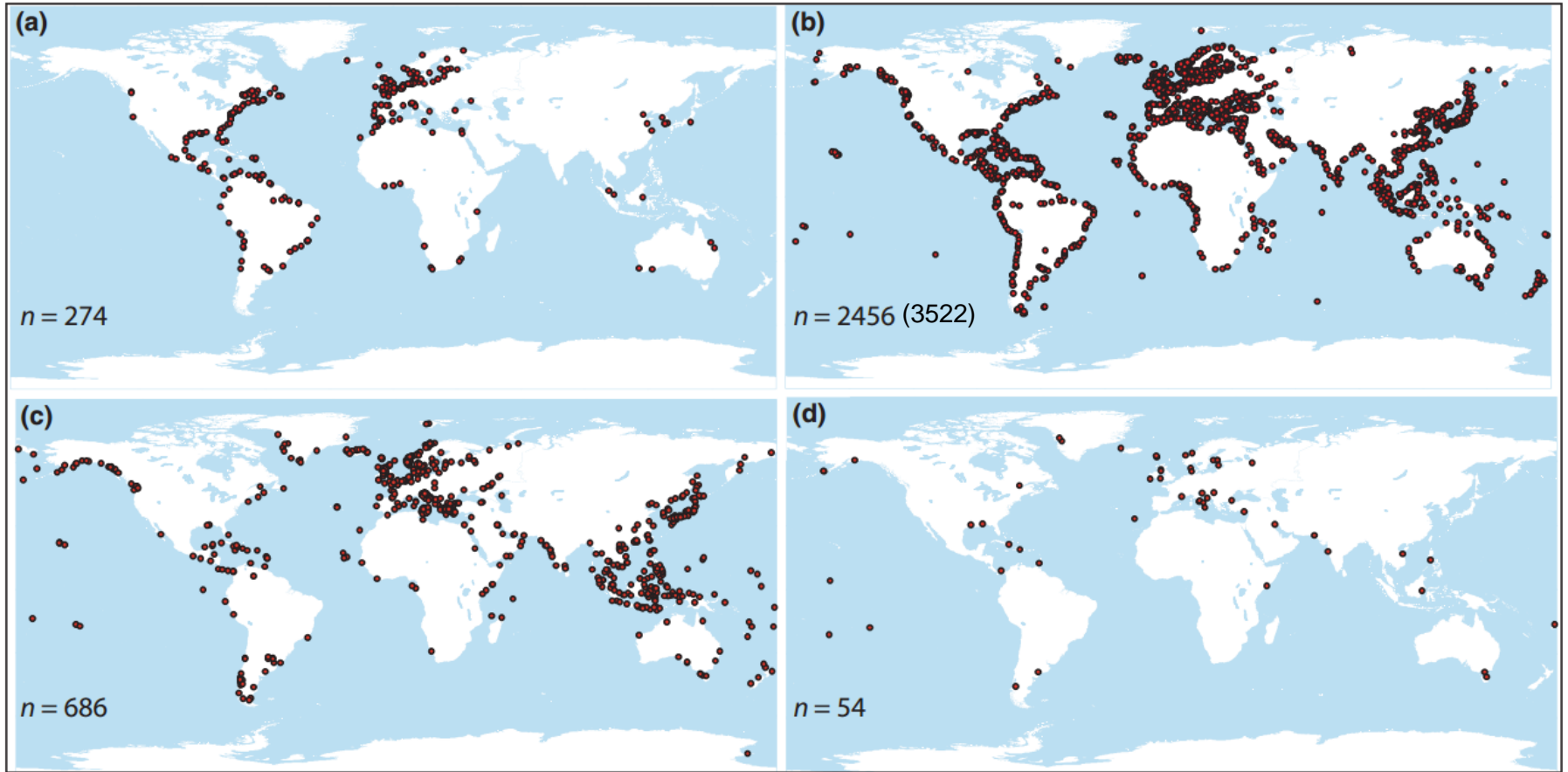
Dean Paini, Paul Mwebaze, Daniel Heersink (CSIRO)
and John Nielsen (Dept Agriculture)

Problem being addressed

- Globalisation



Problem being addressed



All ports = 5 steps

Keller et al 2011 Div & Dist

Problem being addressed

Asian Gypsy Moth (AGM) – *Lymantria dispar*



Problem being addressed

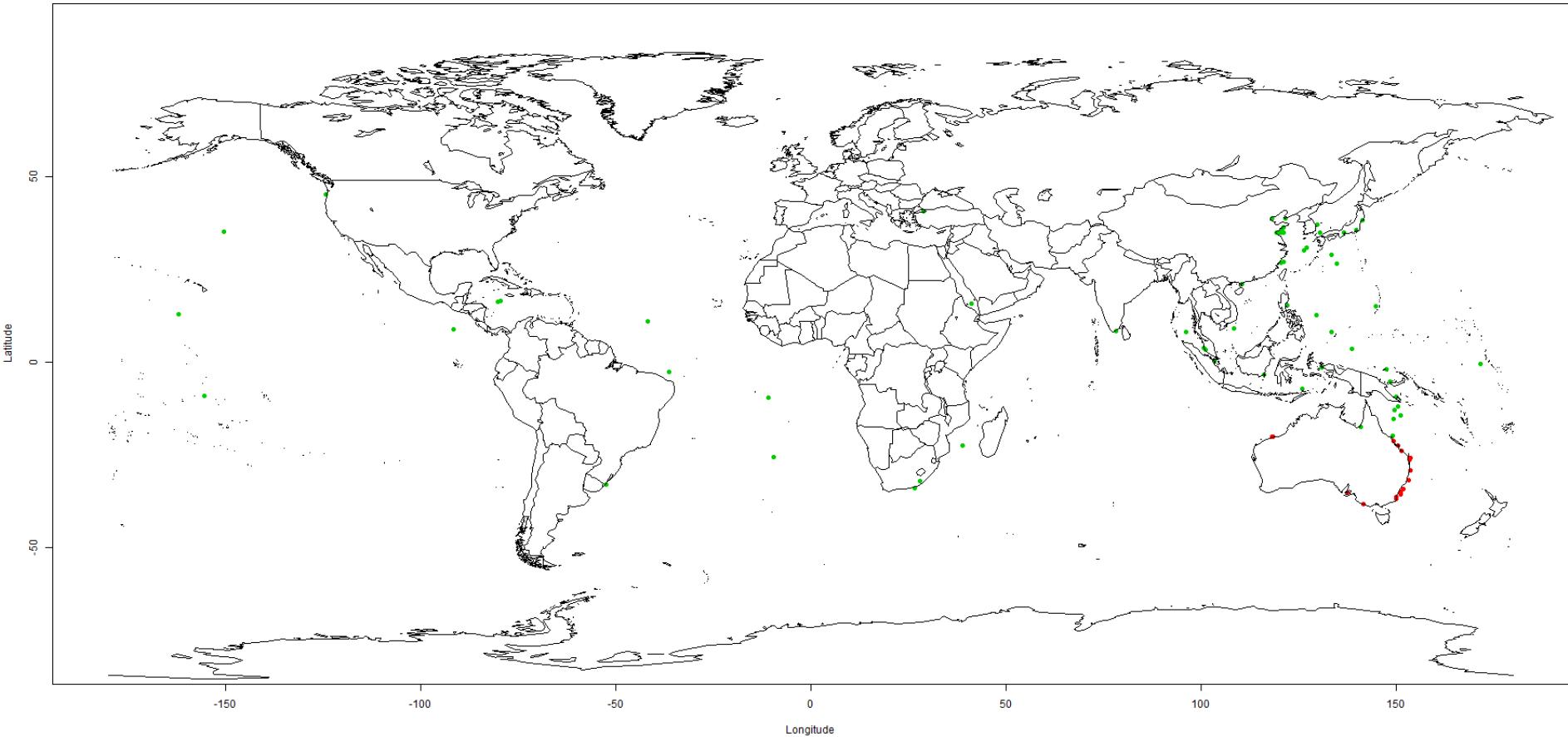
- Females lay eggs 1st June to 30th September
 - Egg diapause (cooling period)
 - Source ports = Japan, China, Korea, Russia
- Can egg masses survive trip to Australia and be viable?
- When would they arrive?
- Real time tool

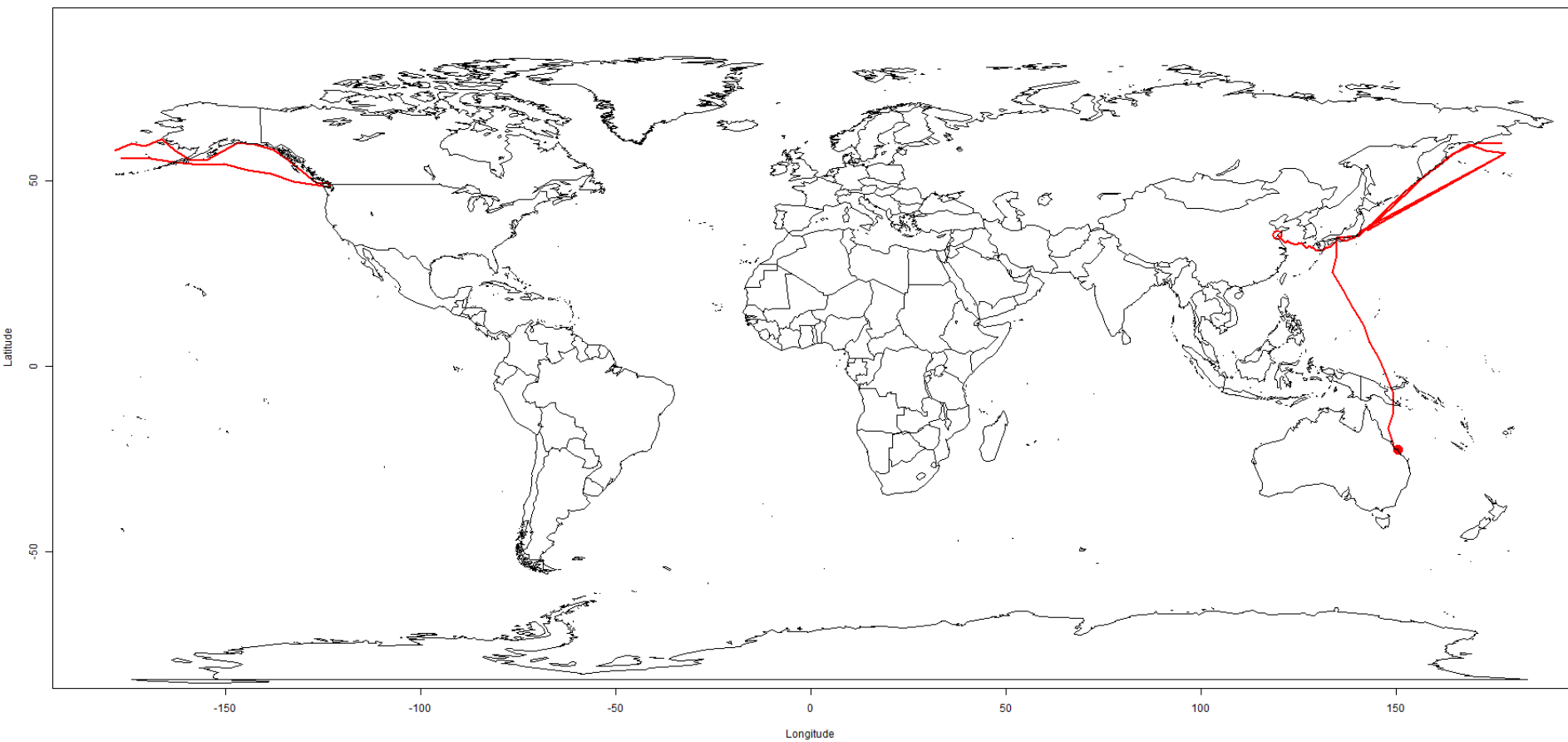
Results so far

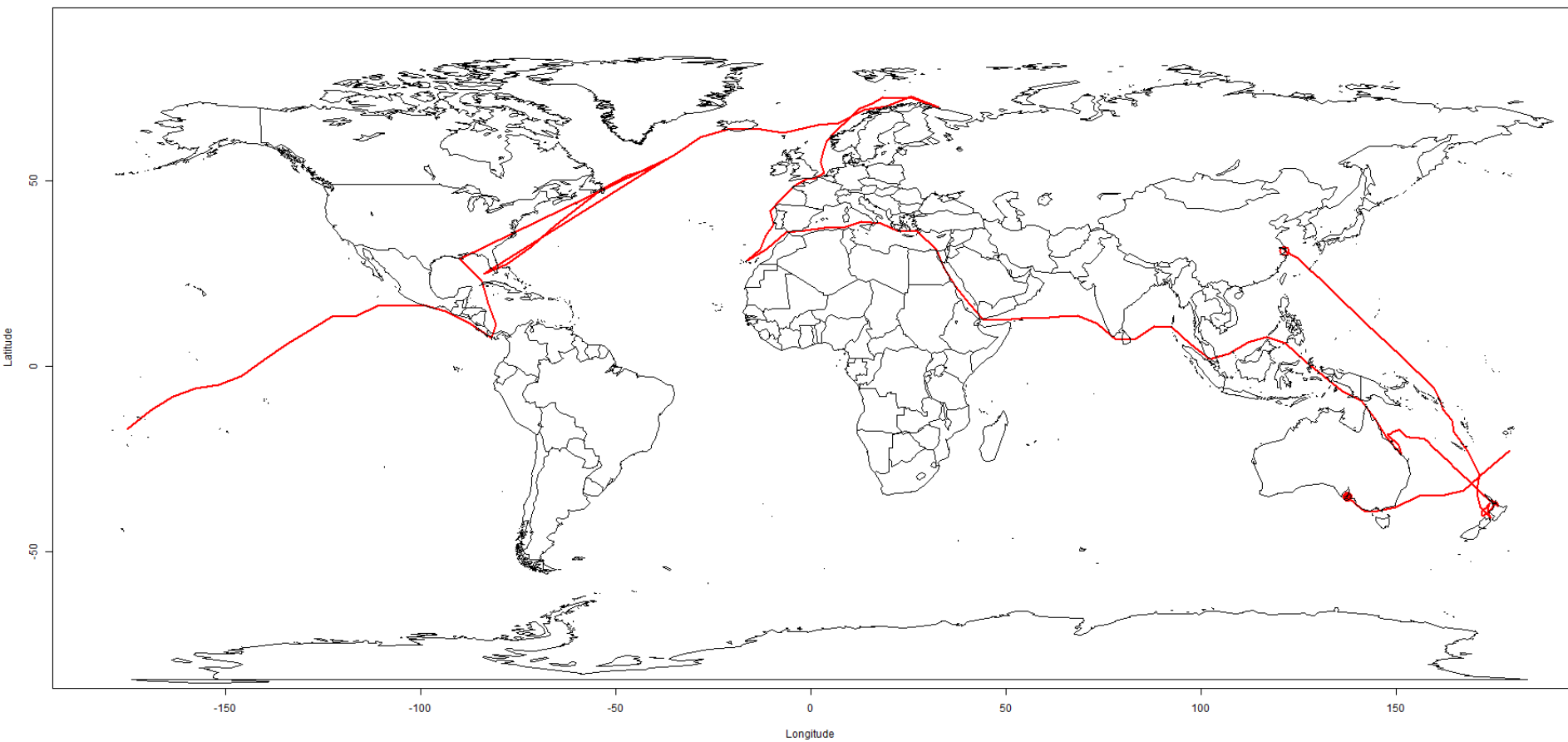
- Egg survival and viability =
 - Analysed 2010 Lloyds data
 - Gray's egg diapause model
 - Age and temperature dependent
 - Temperature response is nonlinear

Gray's diapause model

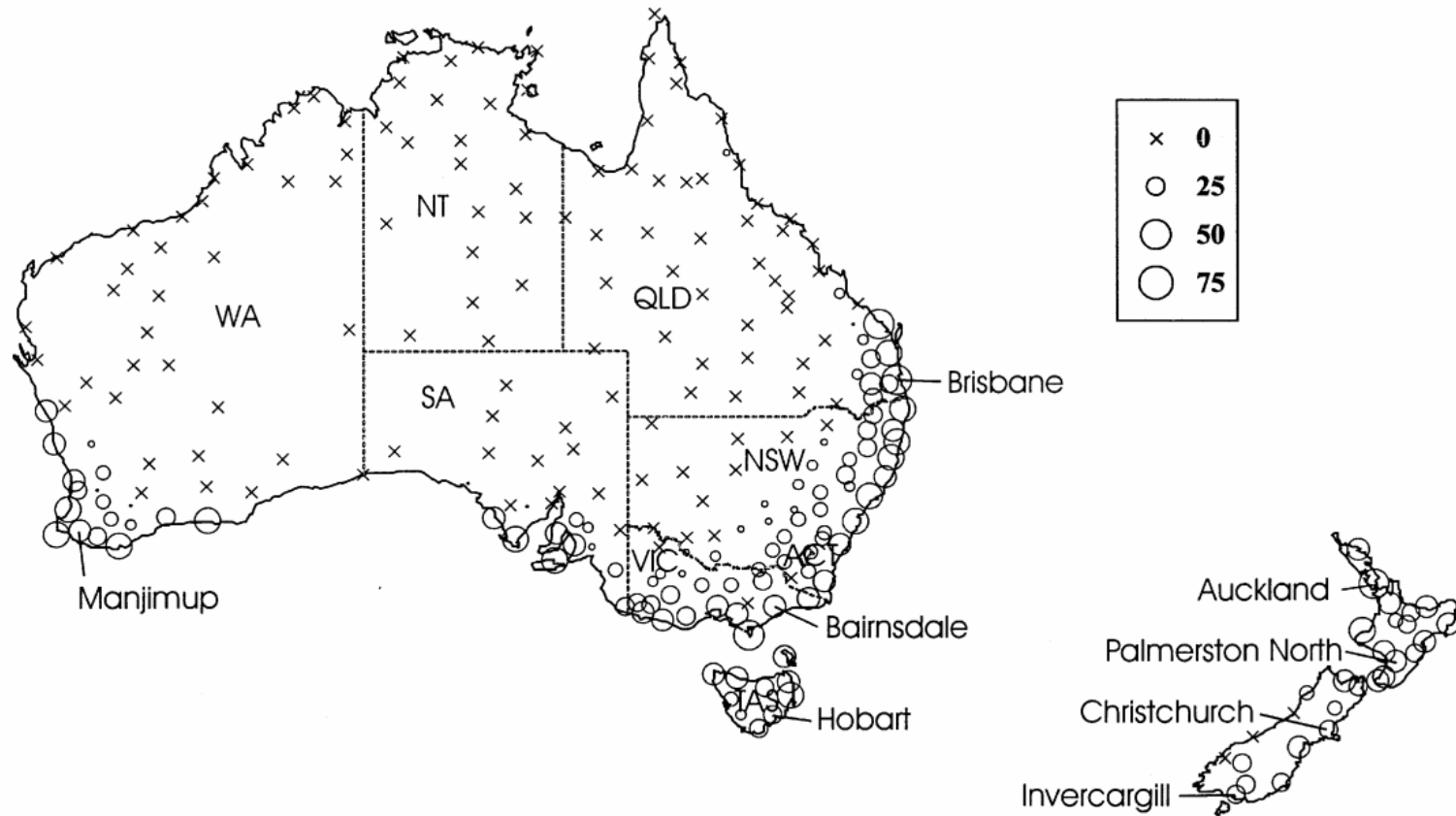
GLS Model



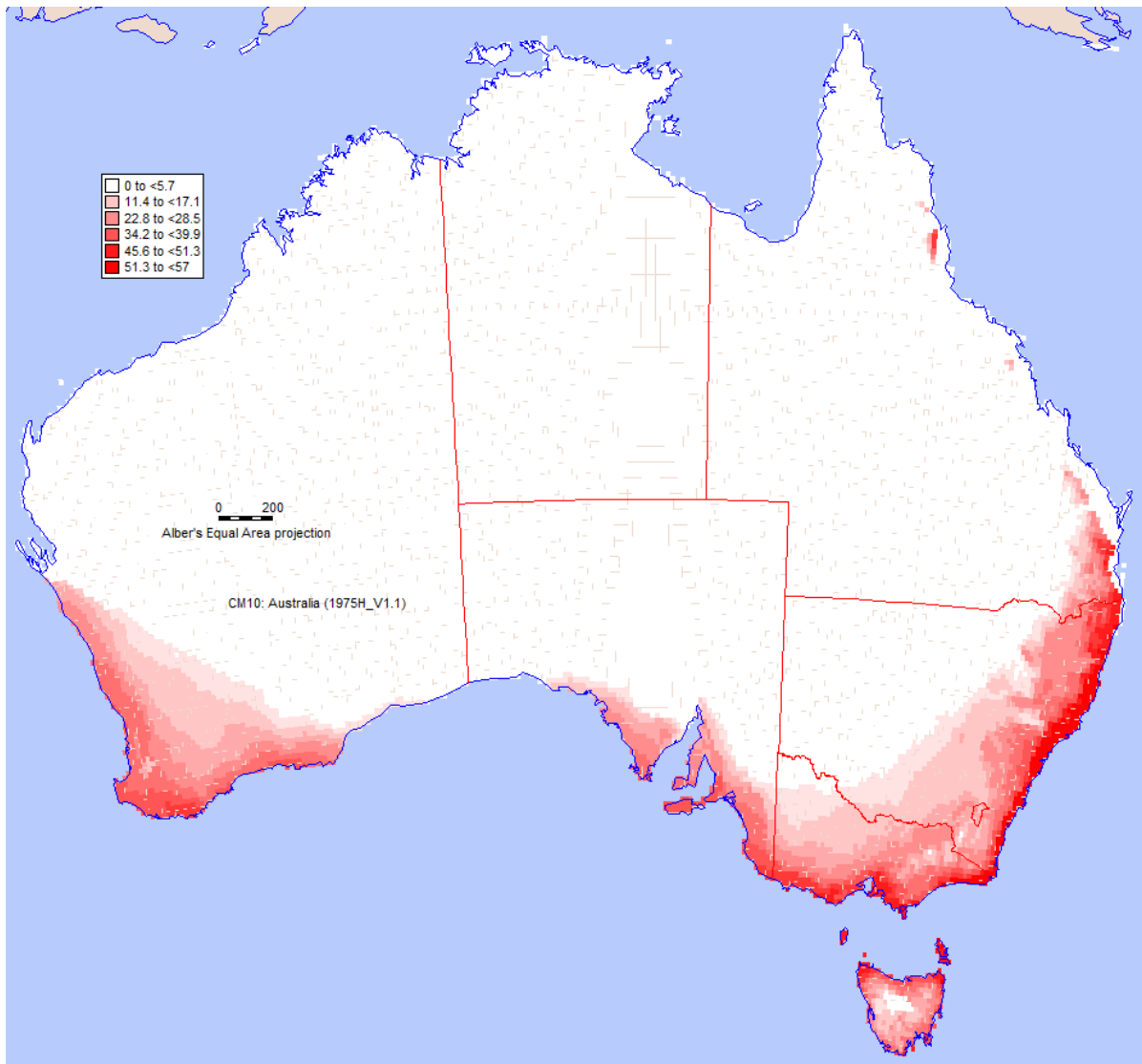




Results so far



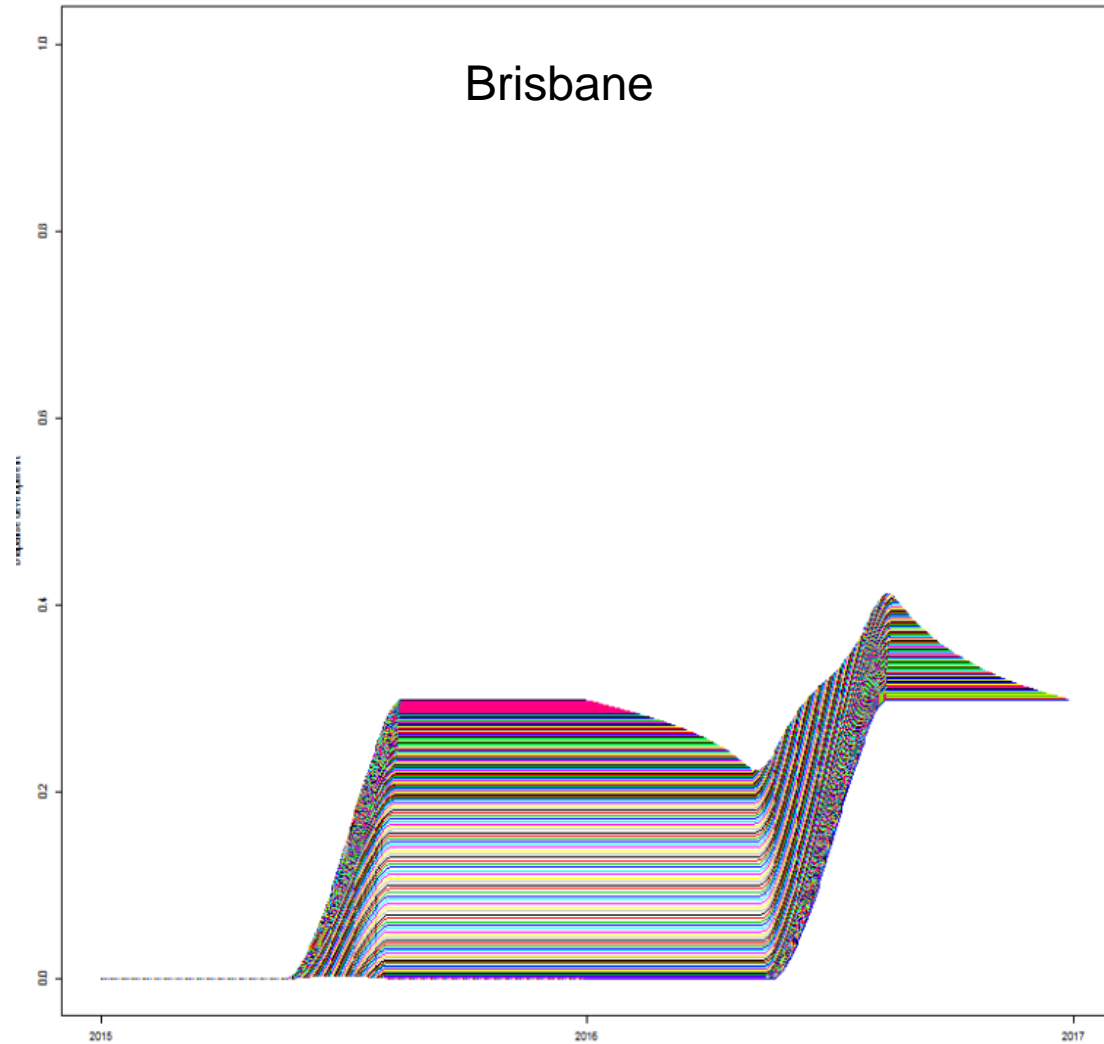
Matsuki et al 2001 Agric. & Forest Ent.



Diapause

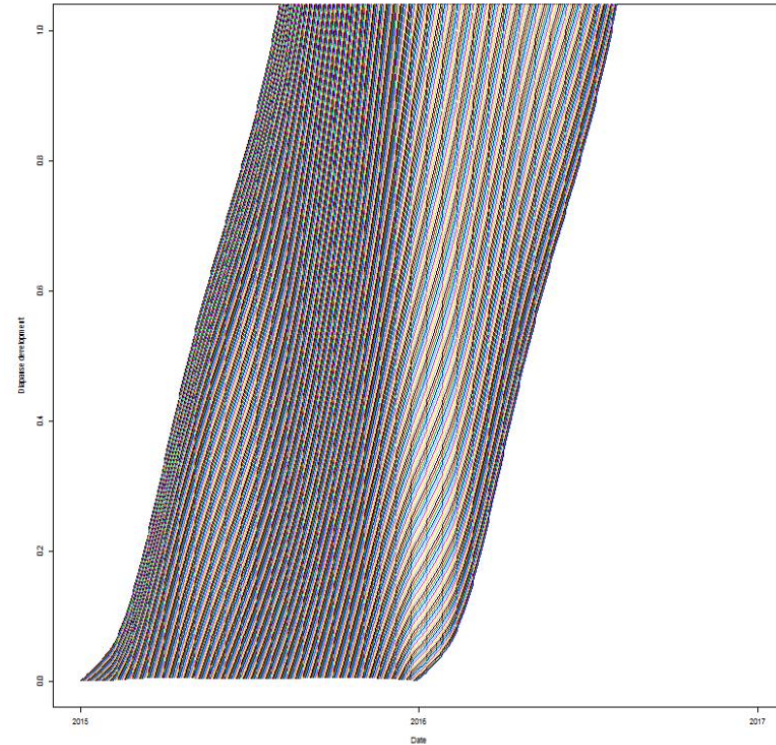
Brisbane

Brisbane

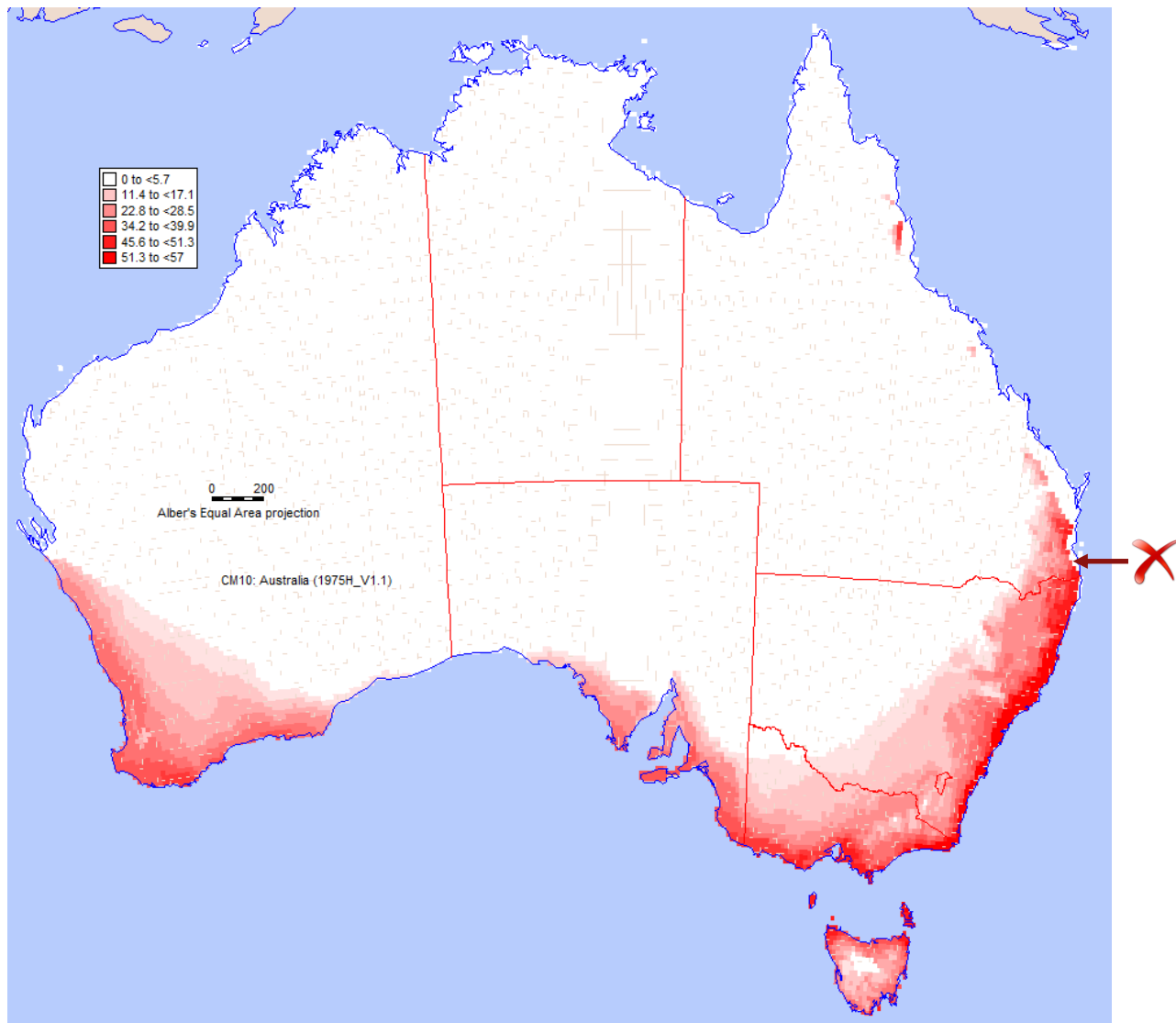


Hobart

Hobart



Results so far

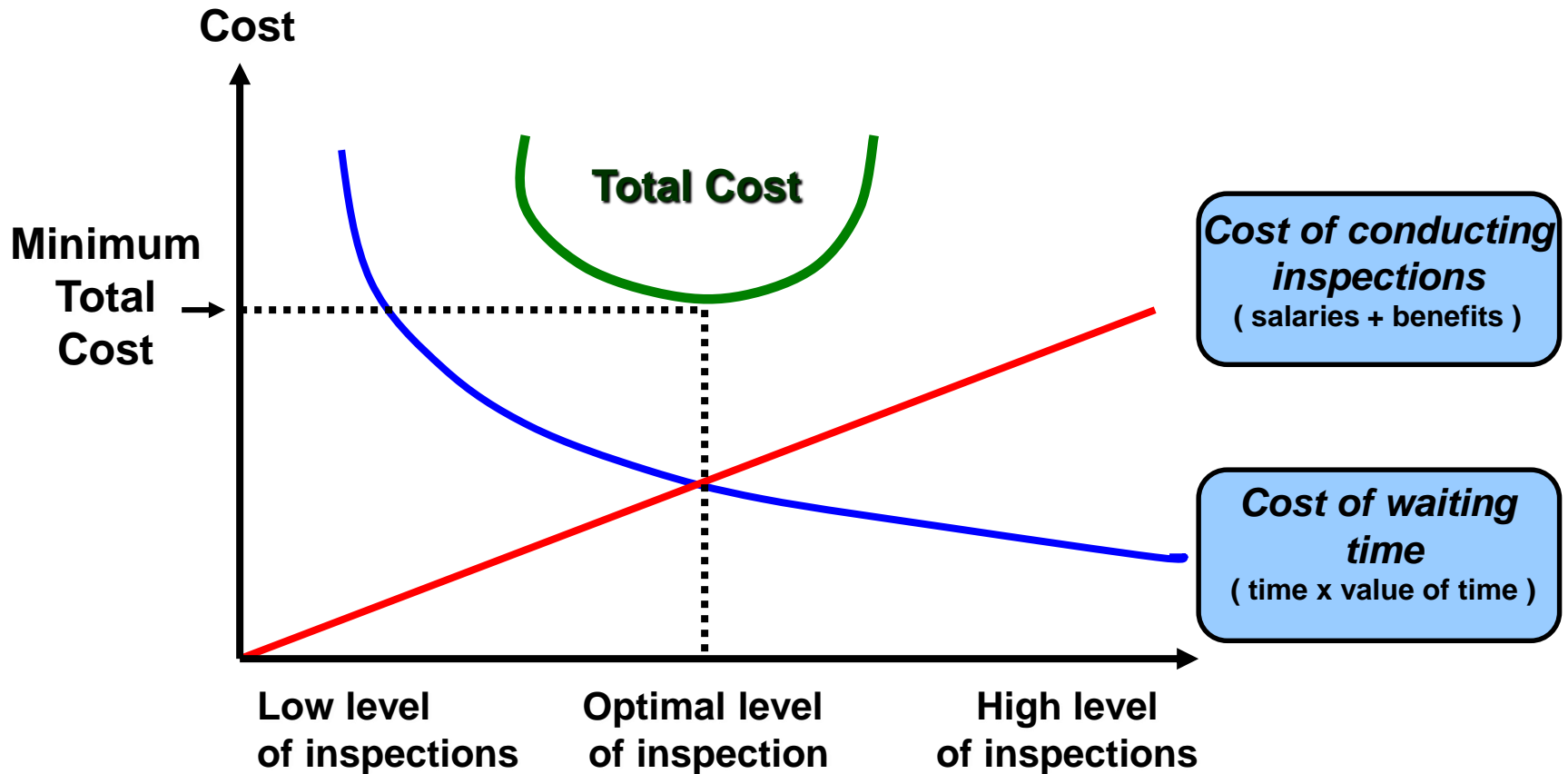


Challenges and issues arising from the research

- Gray model
 - Model uncertainty
 - Real time assessment

Economic analysis

- How much inspections to do?



Prospective cost-benefit analysis

Potential benefits

- Reduced number of vessels requiring inspections for AGM risk
- Reduced costs for the Dept. of Agriculture
- Minimising disruption to vessel itineraries and associated delay costs for the shipping industry

Costs

- Project and ongoing costs
- Implementation costs
- Other R&D costs

Thank you

- For more information, please email Dean.Paini@csiro.au



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