

# Trading Blows: Can we control invasive species through trade agreements?

*Twenty-first Century Ecosystems: Systemic Risk and  
the Public Good*

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# Summary

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- Darwin and invasive species
- Trade and invasions
- World Trade Organization
- Problems with the WTO approach to invasives
- The way forward

# Definitions: Invasive alien species (IAS)

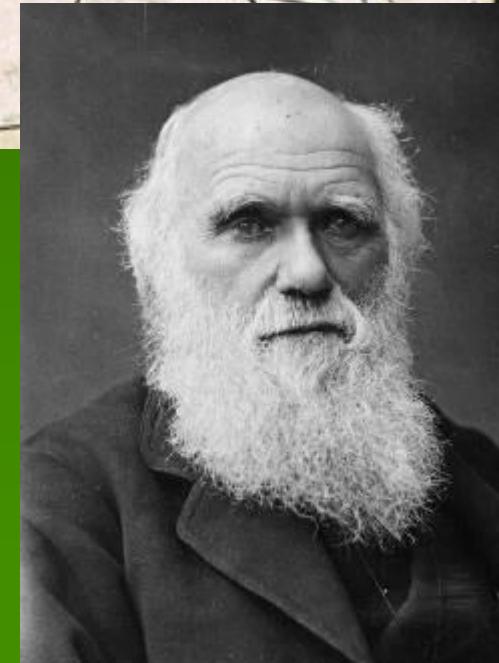
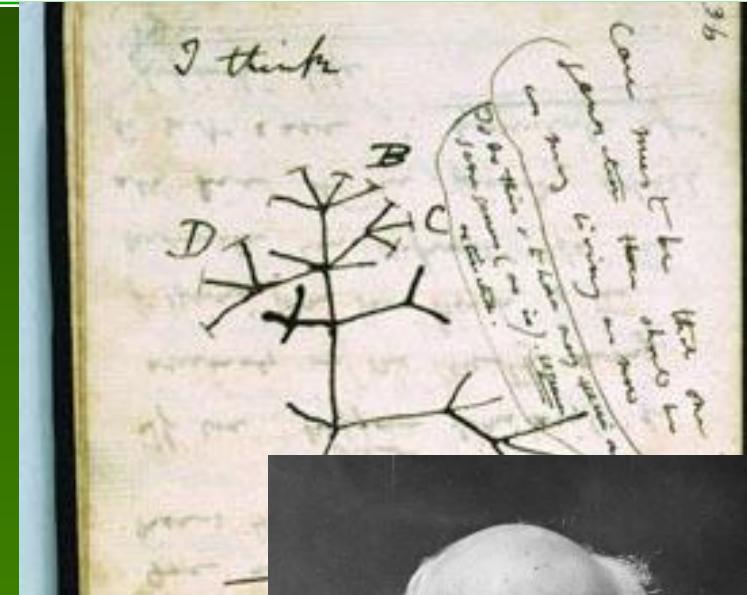
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- Invasive
  - » proliferate and spread
  - » harmful to environment, economy or society
- Alien
  - » Have moved from one geographic area to another in which they did not previously occur
- A major global threat to biodiversity, food security, and human health

# Darwin and invasive species

- Many statements on IAS in *Origin of Species*
- Darwin focussed on invasions to explain discrepancies in fossil record



See Ludsin and Wolfe 2001 **BioScience**  
51(9) 780-789

# Darwin and species translocation

- Movement around the globe - Darwin's emphasis was natural dispersal e.g.
  - » Bird guts
  - » Oceanic currents



Hazelnut



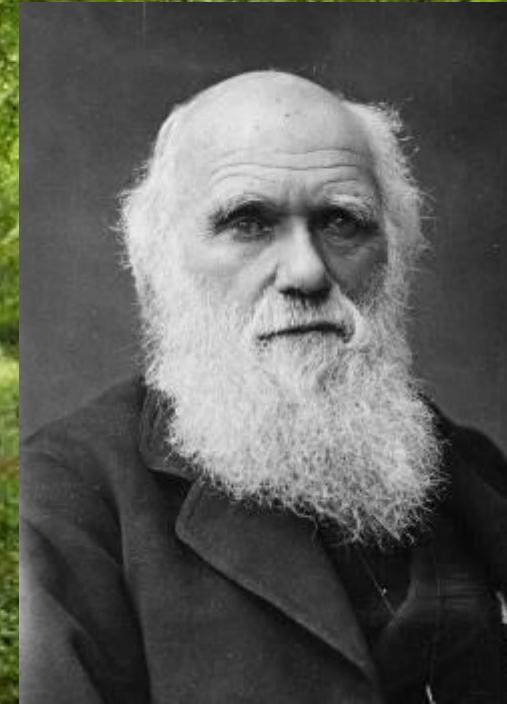
Heron



Asparagus

# Pathways of invasion – Darwin's focus

- Accidental
  - » Wind
  - » Water
  - » As passengers
    - On/in animals
    - in trade
- Intentional
  - » Ornamentals
  - » Pastures
  - » Pets
  - » Forestry species



Darwin's walk

# Pathways of invasion – the present danger

- Accidental
  - » Wind
  - » Water
  - » **As passengers**
    - On/in animals
    - in trade
- Intentional
  - » **Ornamentals**
  - » **Pastures**
  - » **Pets**
  - » **Forestry species**



# For example, ballast water

- Between 3 – 10 billion tonnes discharged per year
  - » > 7,000 spp. in transit at any one time
- From 1975-2005
  - » Sea cargo tripled
  - » Air cargo increased 6 fold
  - » See Hulme 2009: *Journal of Applied Ecology* 46: 10-18



(Acknowledgments: Lynn Jackson)

# World Trade Organization

- Ecological implications e.g.
  - » Exports of GMOs
  - » Undercutting environmental protection legislation
  - » Undercutting sustainable harvesting
  - » **Movement of species, threat of IAS**



# World Trade Organization – SPS agreement

- Administers various agreements relevant to invasives, especially the Sanitary and Phytosanitary (SPS) Agreement



WTO HQ Geneva © Jonars/ Picasa

# Despite the bad press.....

- SPS Agreement allows countries to take strong biosecurity measures  
See Burgiel et al 2006  
[<http://cleantrade.typepad.com/clean\\_trade/files/iastraderpt0106.pdf>](http://cleantrade.typepad.com/clean_trade/files/iastraderpt0106.pdf)
- Many countries, e.g. Australia, have such measures in place
- What is lacking is international cooperation
- Approach is adversarial, yet the problem increasingly demands an adaptive, cooperative approach



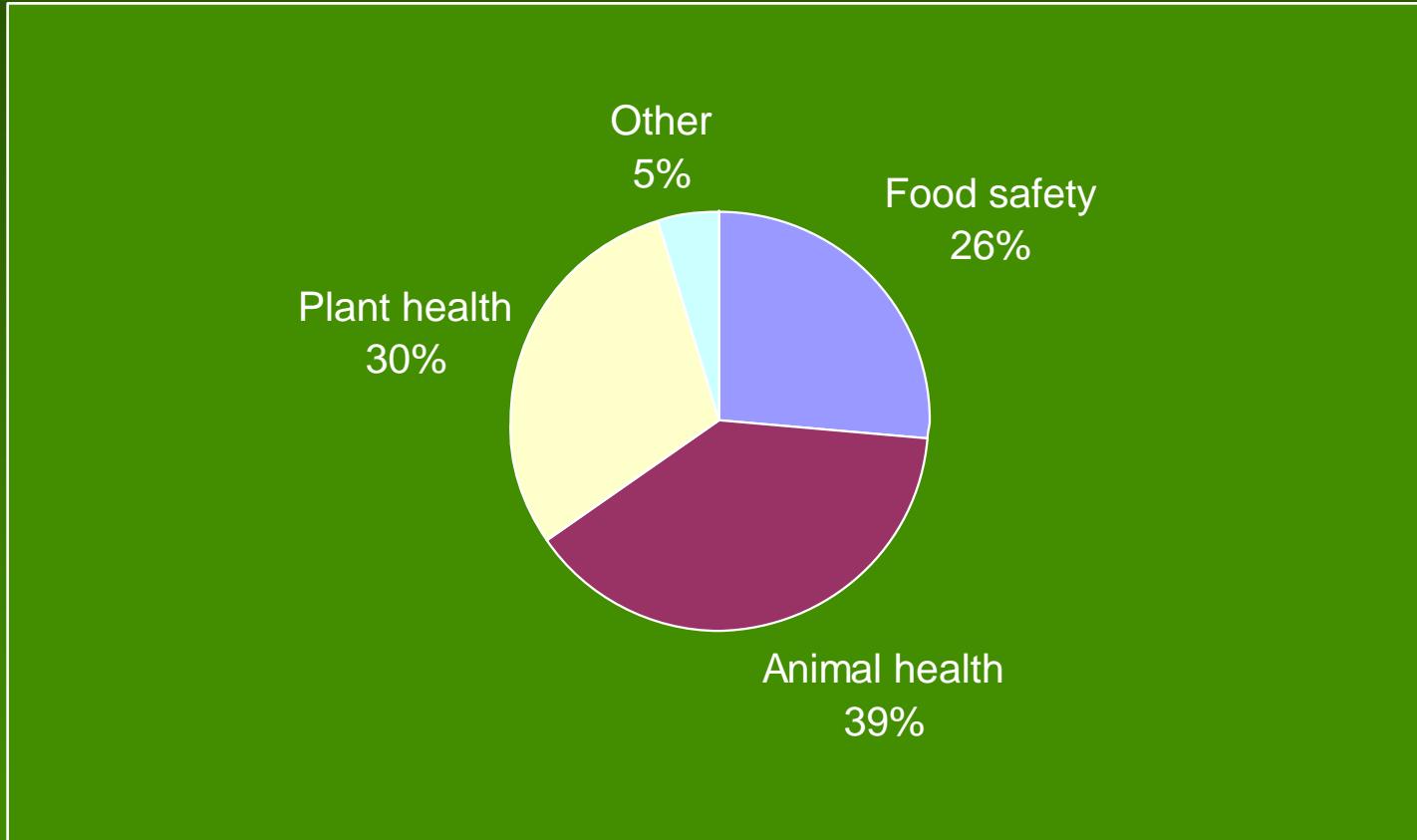
# Sources of guidance for SPS Agreement

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- International Plant Protection Convention ( IPPC ) - standards for plant health
- Office International des Epizooties ( OIE ) - standards for animal health and animal diseases that impact human health
- Codex Alimentarius Commission – food safety standards
- What is missing? Some examples of guidance not currently explicitly drawn on:
  - » CBD “Guiding Principles” on IAS 2002
  - » IMO’s convention on ballast water and sediments

# SPS Committee focus



# Risk is approached mechanistically in the SPS agreement

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- Tends to assume the risks can be quantified;
- Requires Members to ensure that exclusion measures are ‘ based on scientific principles ’ and are ‘not maintained without scientific evidence ’
- Yet invasions are difficult to predict - low prevalence and high uncertainty (e.g. Smith et al. 1999 *Biological Invasions* 1: 89-96)

# Invasion quirkiness 1 – similar species behave very differently

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- Rubbervine a major weed in N. Australia
- Two closely related species introduced at the same time into home gardens
- Only *Cryptostegia grandiflora* became invasive
- *Cryptostegia madagascariensis* remained behind



# Invasion quirkiness 2: previously harmless species become invasive

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Camels

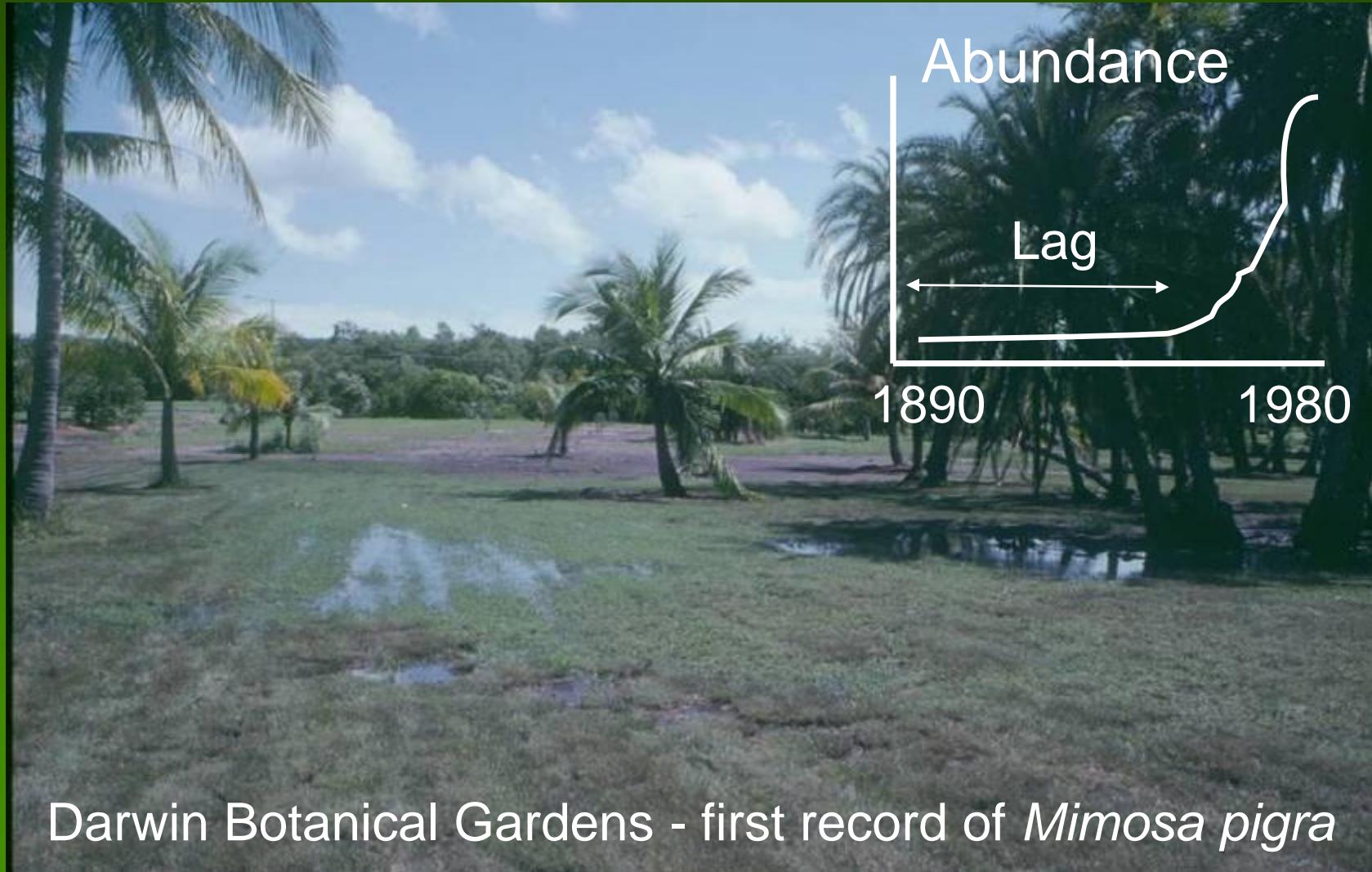


Rabbits



Cane toads

# Invasion quirkiness 3: Lag phases



# Accurately predicting risk is beyond the limits of science here...

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- We can retrospectively explain, but hardly predict, the outcome of most species' introductions
- Ensuring that exclusion measures are 'not maintained without scientific evidence' is near impossible for invaders in natural ecosystems
- Need for precautionary approach – acknowledge uncertainty

# Summary of issues with WTO/SPS agreement

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- Adversarial where adaptive/information sharing approach is needed
- Lacking in biodiversity/invasives context
- Mechanistic approach to risk rather than precautionary

Time to change our ways

# The way forward: improving the working of the SPS agreement

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- Expand SPS committee membership to include biodiversity expertise and ecological knowledge - e.g. CBD to join
- Shift to precautionary approach - acknowledge uncertainty rather than mechanistic risk models in agreement
- Adaptive management - allow evolution of regulatory actions in response to new information – defer to national decisions/local knowledge
- Build capacity for information exchange and learning on biological risks within SPS committee.

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Acknowledgements to *Diversitas* for funding my attendance

# Further reading

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- Burgiel, Stas., Greg Foote, Marcos Orellana and Anne Perrault. (2006). Invasive Alien Species and Trade: Integrating Prevention Measures and International Trade Rules. [http://cleantrade.typepad.com/clean\\_trade/files/iastraderpt0106.pdf](http://cleantrade.typepad.com/clean_trade/files/iastraderpt0106.pdf)
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