

Trading Blows:

Can we control invasive species through trade agreements?

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

Mark Lonsdale
CSIRO Australia

February 2009

Summary

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

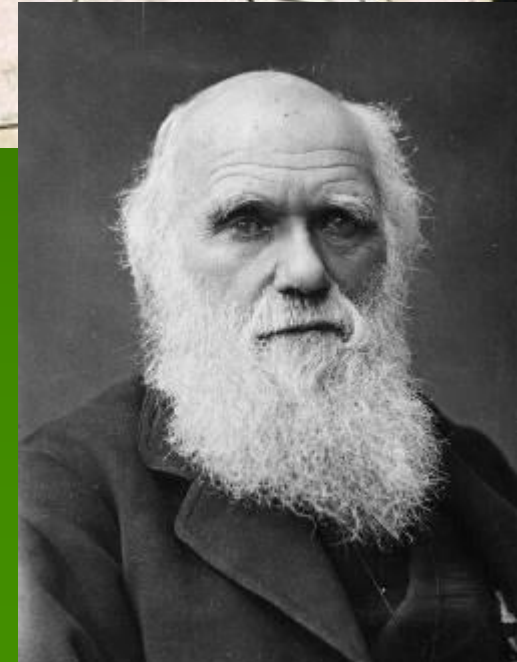
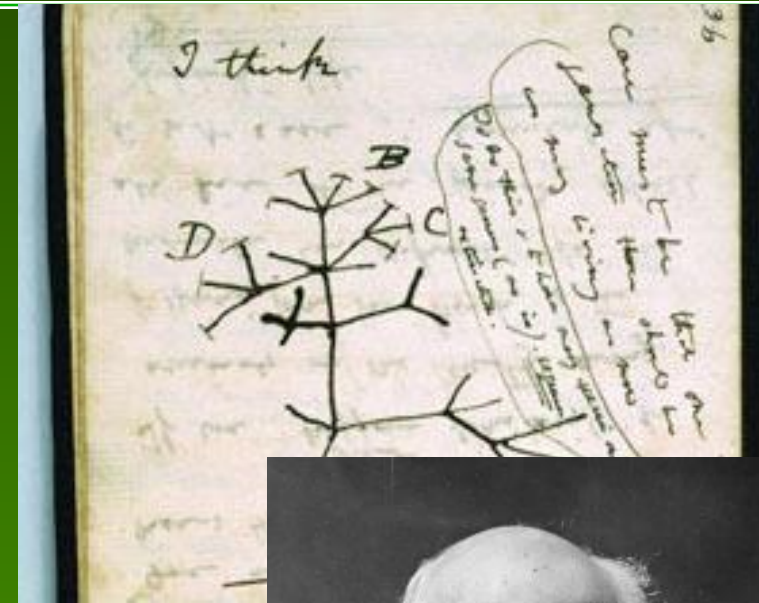
Definitions: Invasive alien species (IAS)

- 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



Nelumbo



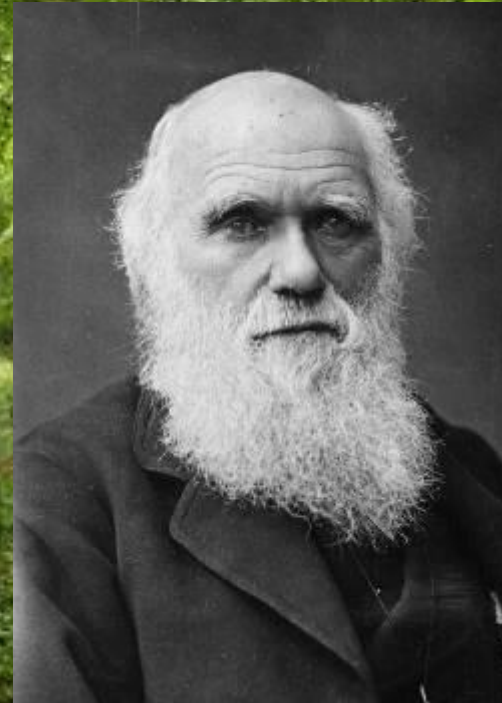
Heron



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.....

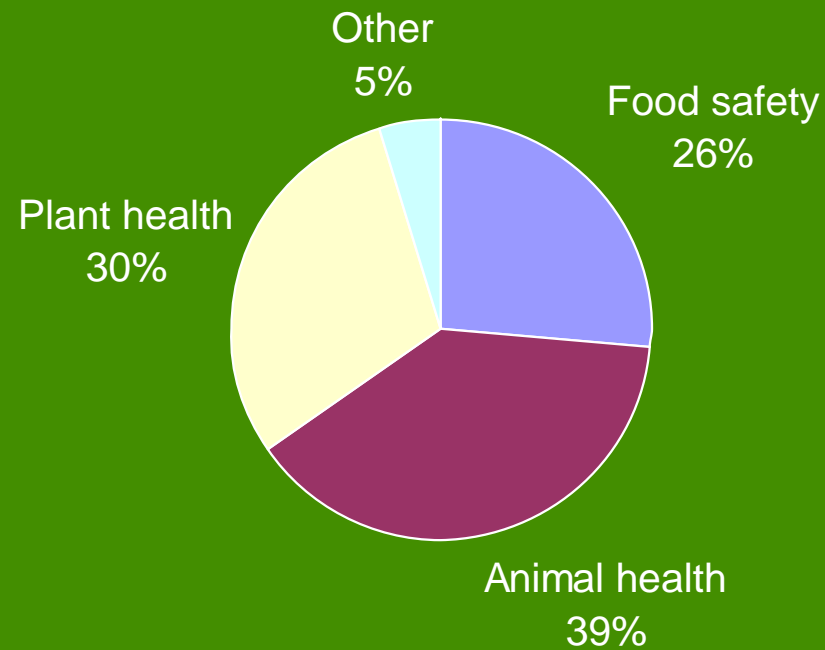
- SPS Agreement allows countries to take strong biosecurity measures
See Burgiel et al 2006
<http://cleantrade.typepad.com/clean_trade/files/iastraderpt0106.pdf>
- Many countries, e.g. Australia, have such measures in place
- What is lacking is international cooperation
- Approach is adversarial, yet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



Sources of guidance for SPS Agreement

- 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



http://www.wto.org/english/tratop_e/sps_e/sps_agreement_cbt_e/c4s5p1_e.htm

Risk is approached mechanistically in the SPS agreement

- 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

- 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



Camels

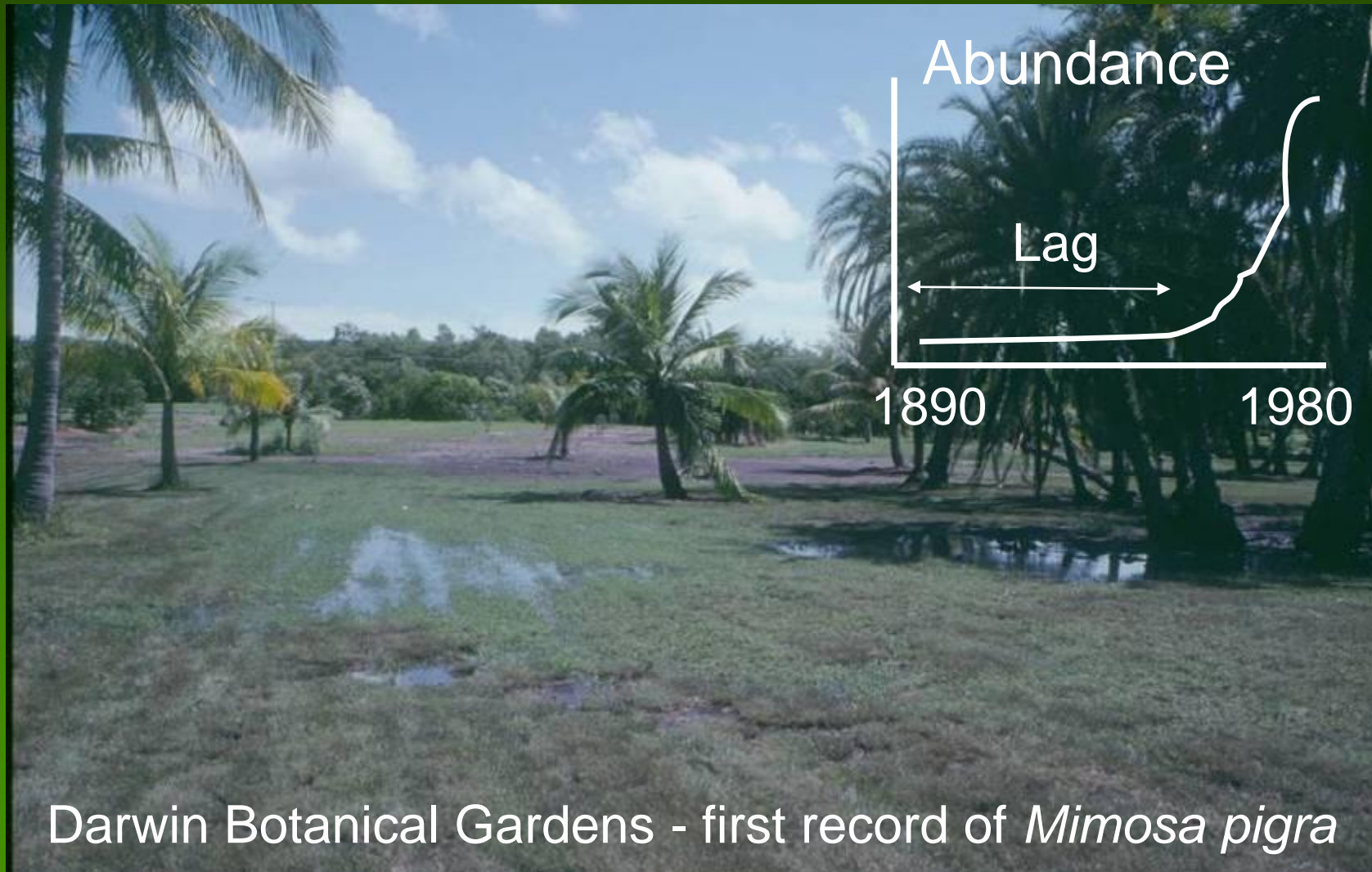


Rabbits



Cane toads

Invasion quirkiness 3: Lag phases



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

- 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

- 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

- 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.

Summary

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

Acknowledgements to *Diversitas* for funding my attendance

Further reading

- 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
- Cooney, Rosie. and Andrew T. F. Lang. (2007). Taking Uncertainty Seriously: Adaptive Governance and International Trade. *The European Journal of International Law*. Vol. 18, no. 3 (523-551).
- Damian, Michel. and Jean-Christophe Graz. (2001). The World Trade Organization, the environment, and the ecological critique. *International Social Science Journal*. Vol. 53, no. 170 (597 – 610).
- Morse, Edward A., McGrath North Mullin and Kratz. (2007). Sound Science and Trade Barriers: Democracy, Autonomy, and the Limits of the SPS Agreement. <http://ssrn.com/abstract=982626>
- Stirling, Andrew. Synthesis report of studies by Ortwin Renn, Andreas Klinke, Arie Rip, Ahti Salo, Andrew Stirling. (May 1999). On Science and Precaution in the Management of Technological Risk. *European Science and Technology Observatory Project Report, a Synthesis Report of case studies*. Vol.1. <ftp://ftp.jrc.es/pub/EURdoc/eur19056en.pdf>