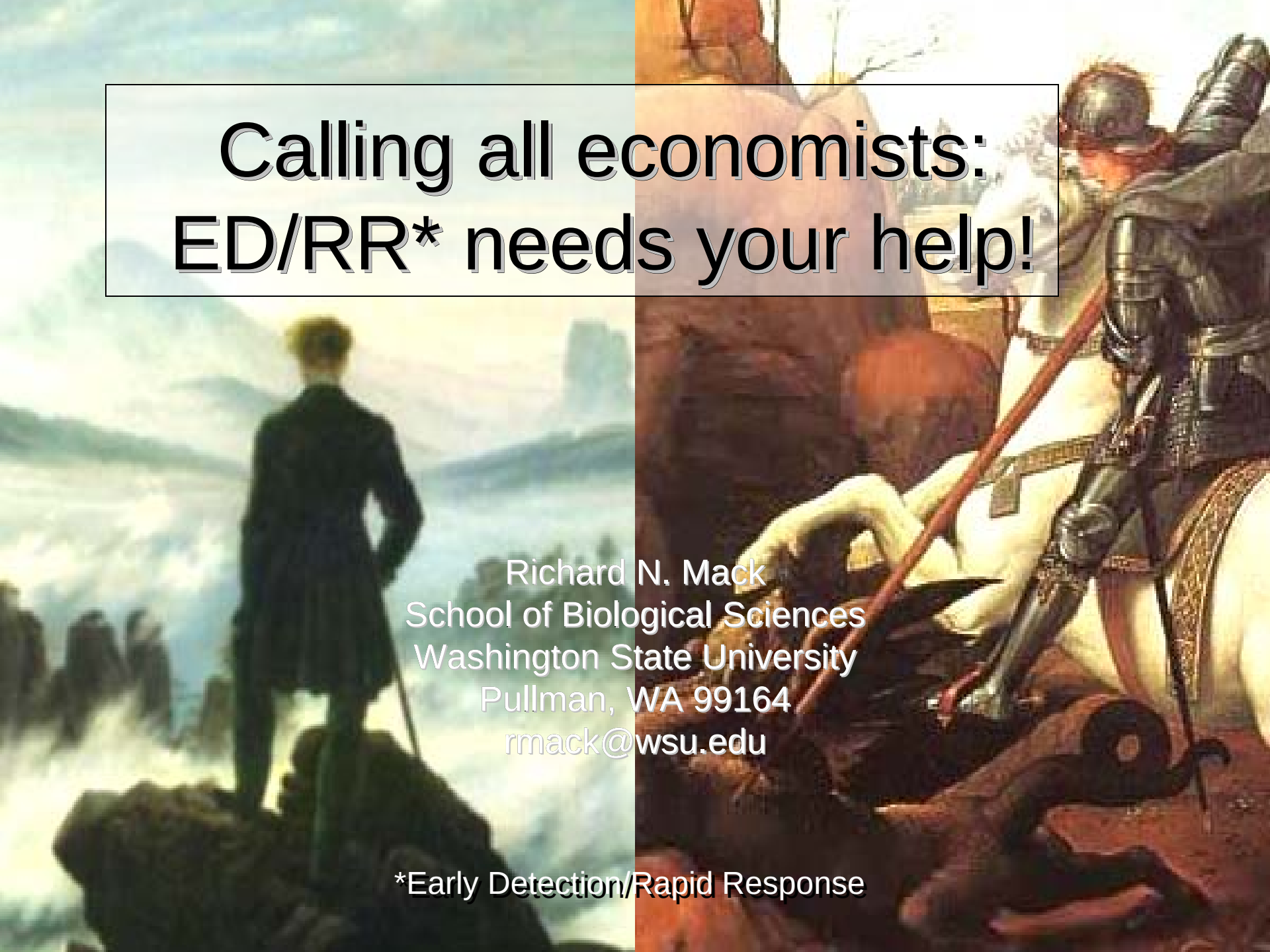
Calling all economists: ED/RR* needs your help!



Richard N. Mack
School of Biological Sciences
Washington State University
Pullman, WA 99164
rmack@wsu.edu

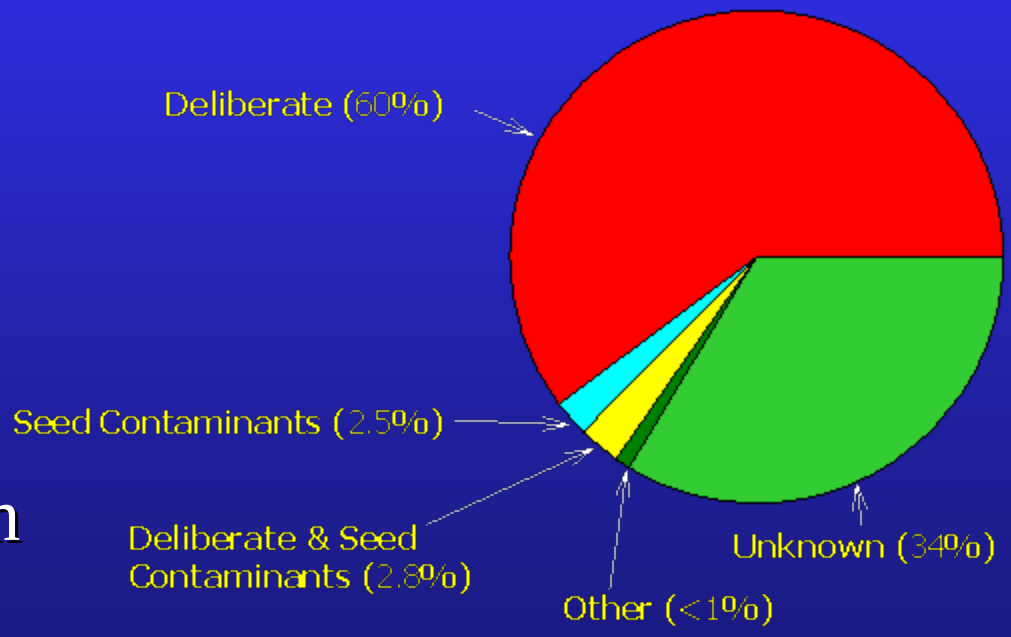
*Early Detection/Rapid Response

Early Detection - Part 1

Early Detection – Part 2

- No quarantine/detection system at ports of entry is fail safe
- Furthermore, no nation knows all the species that pose a threat
- Most naturalized plants in the US were deliberately introduced

Most Naturalized Species were Deliberately Introduced

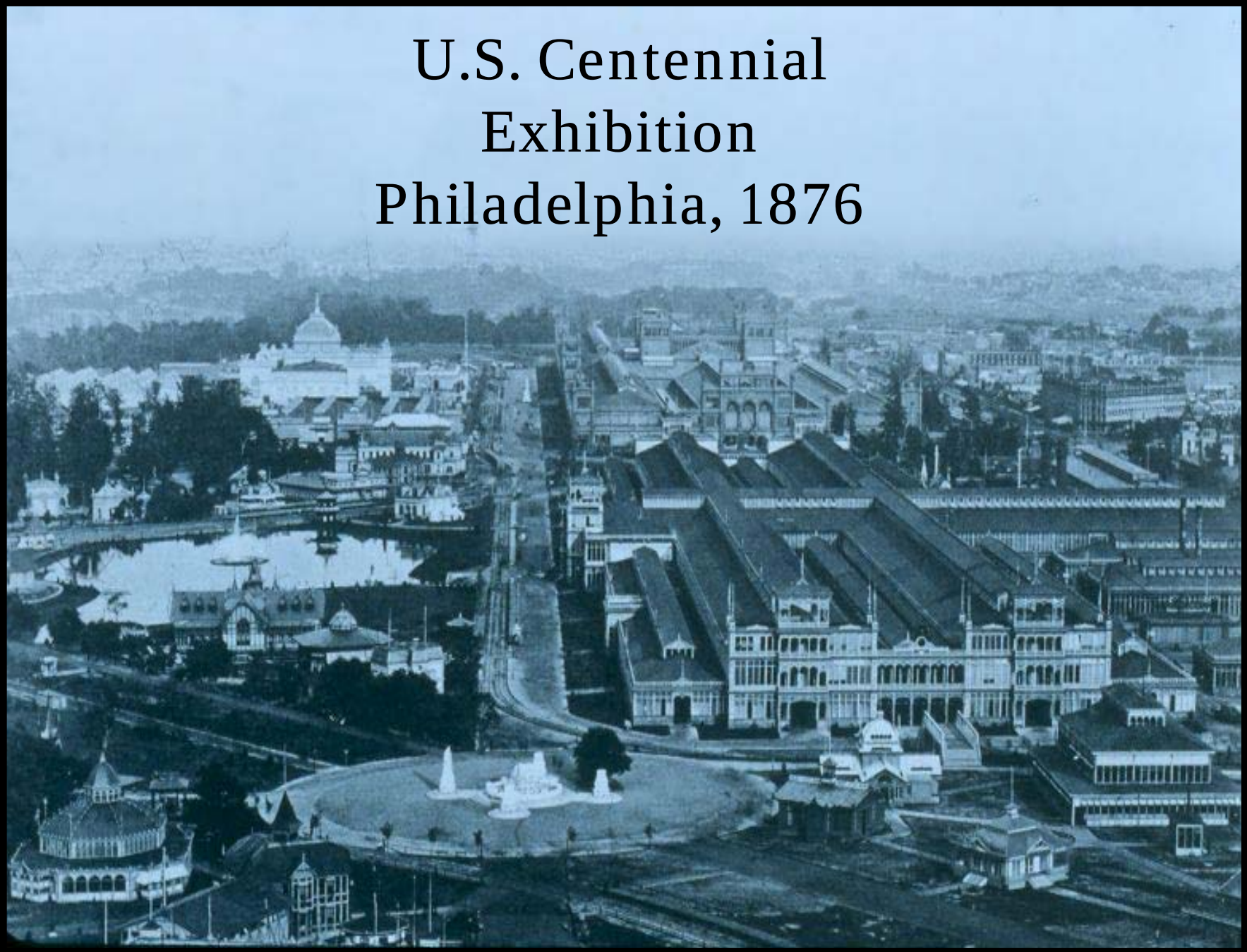


Mack and Erneberg 2002

Most first detections of non-native plants are in the US interior, not at ports

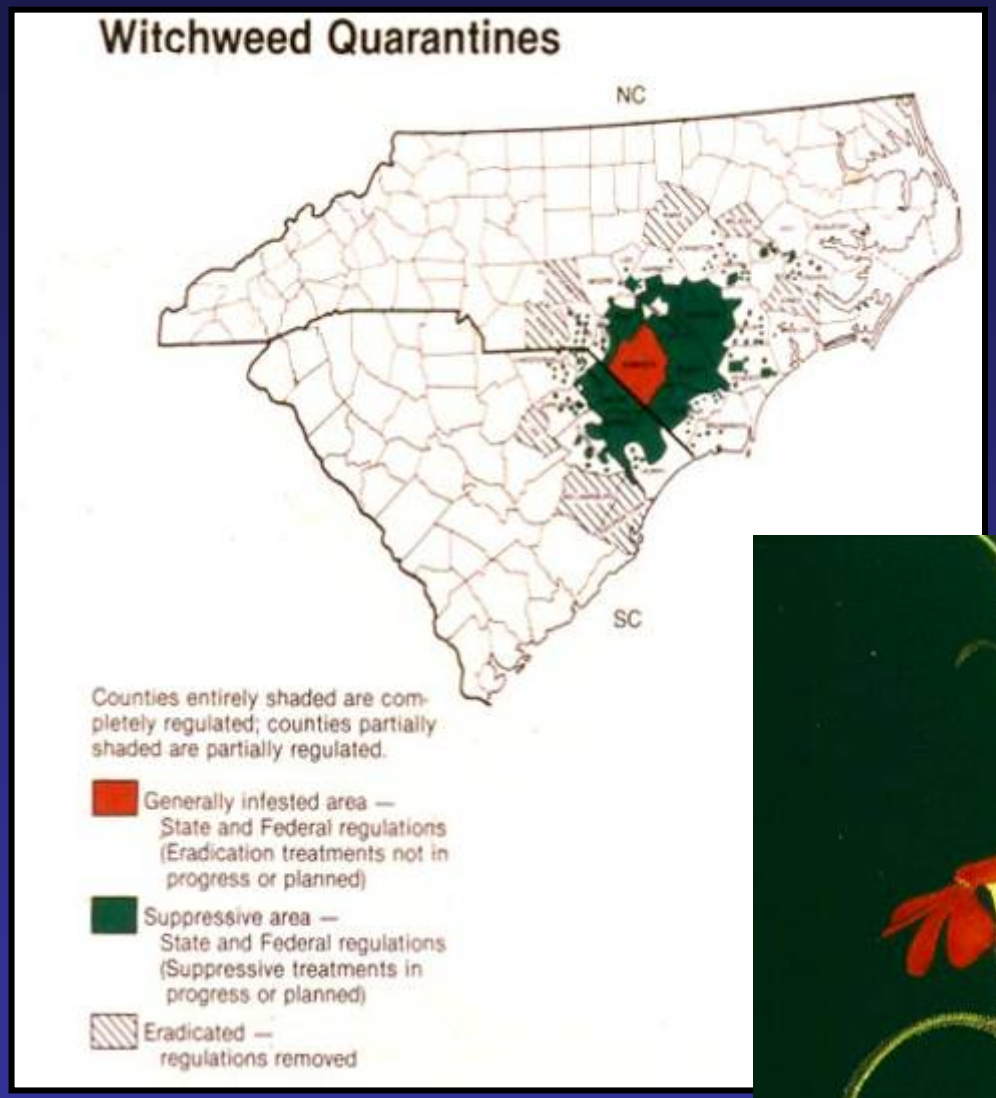
ED/RR has a surprisingly long history in the US but sporadic application

U.S. Centennial Exhibition Philadelphia, 1876




U.S. Centennial
Exhibition
Philadelphia, 1876

Any delay in ED/RR can be costly

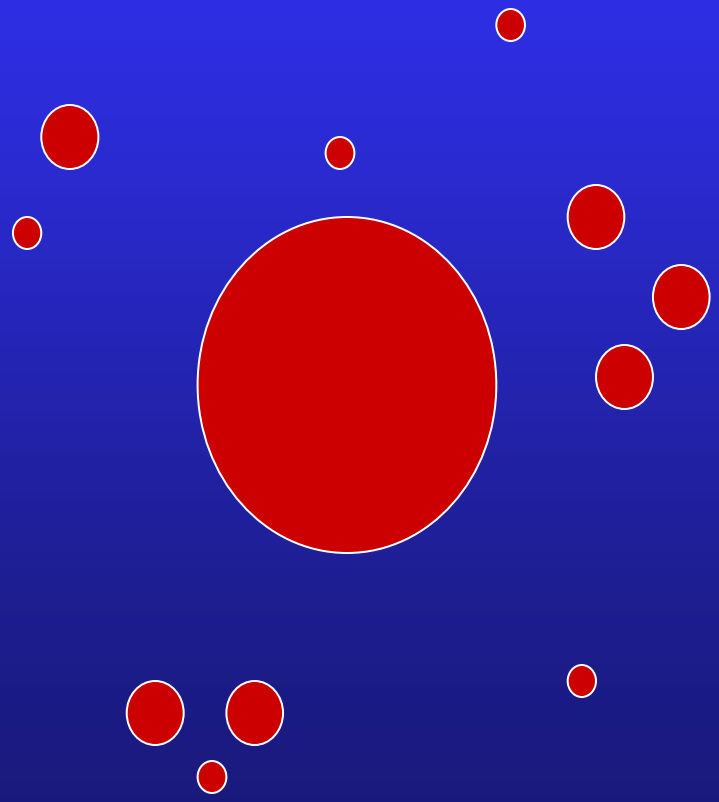


Striga asiatica

Centaurea trichocephala

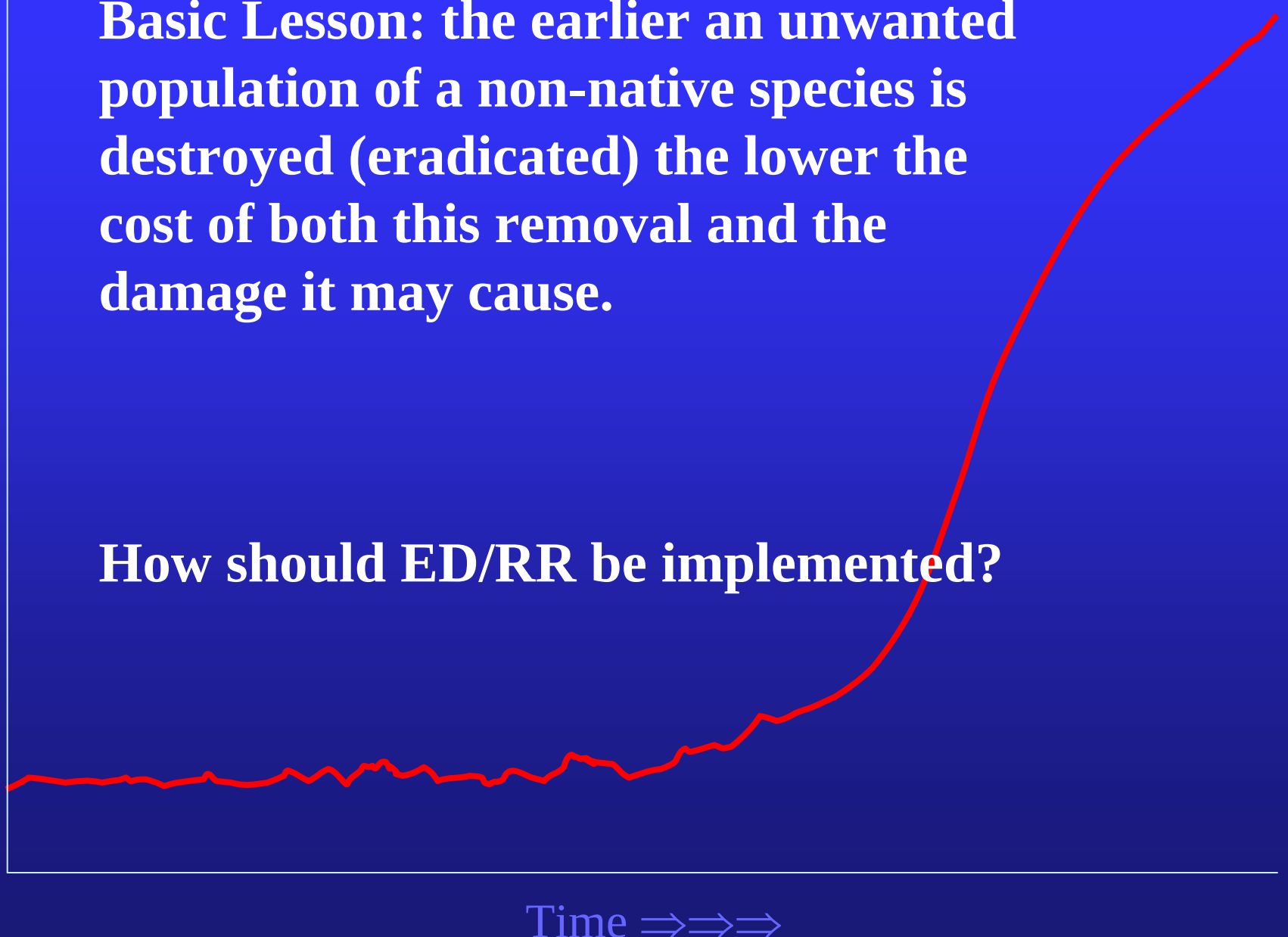
Lessons learned in ED/RR: basic tenets must be scrupulously followed

- Early detection
- Rapid risk assessment: weeks or months, not years
- Rapidly destroy all plants upon their detection, beginning with nascent foci
- Conduct long-term, repeated searches for remaining or newly emergent plants



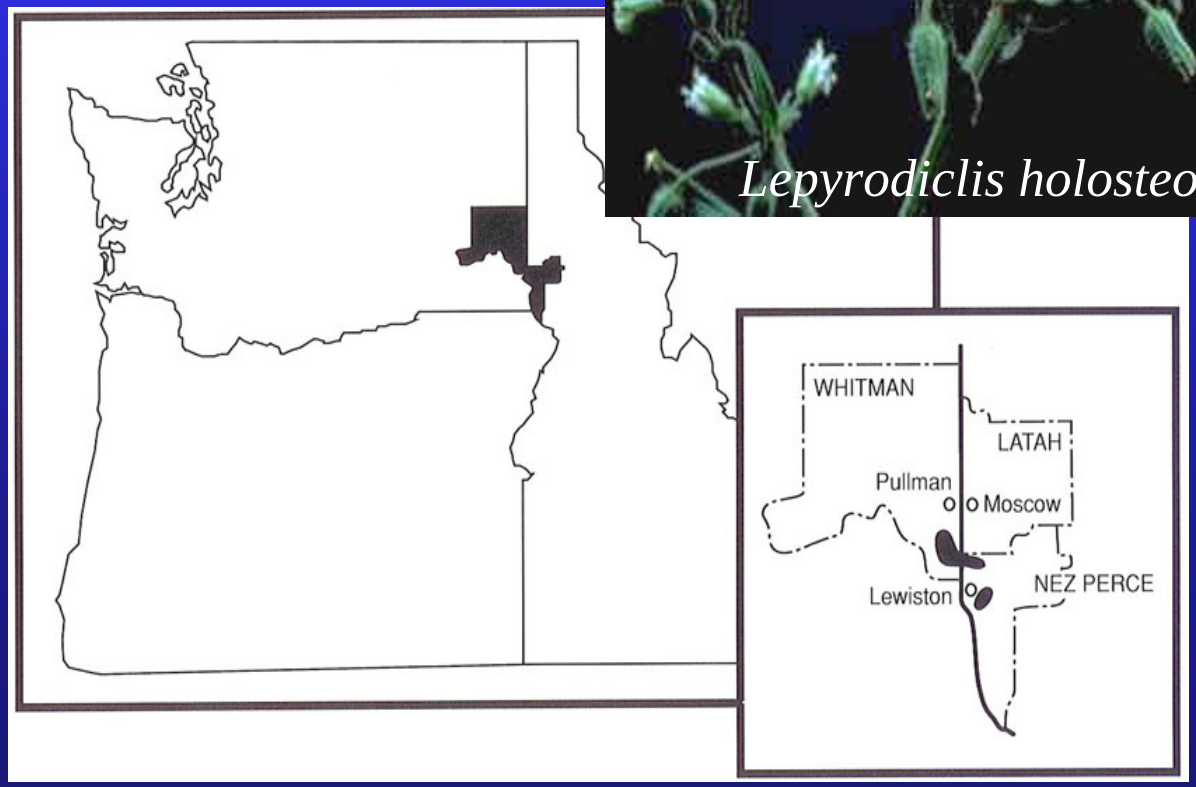
Basic Lesson: the earlier an unwanted population of a non-native species is destroyed (eradicated) the lower the cost of both this removal and the damage it may cause.

How should ED/RR be implemented?



Early Detection: the record in Idaho (1984-1991)

Lepyrodiclis holosteoides



- 3 records for North American
- 21 new regional records
- 40 new state records

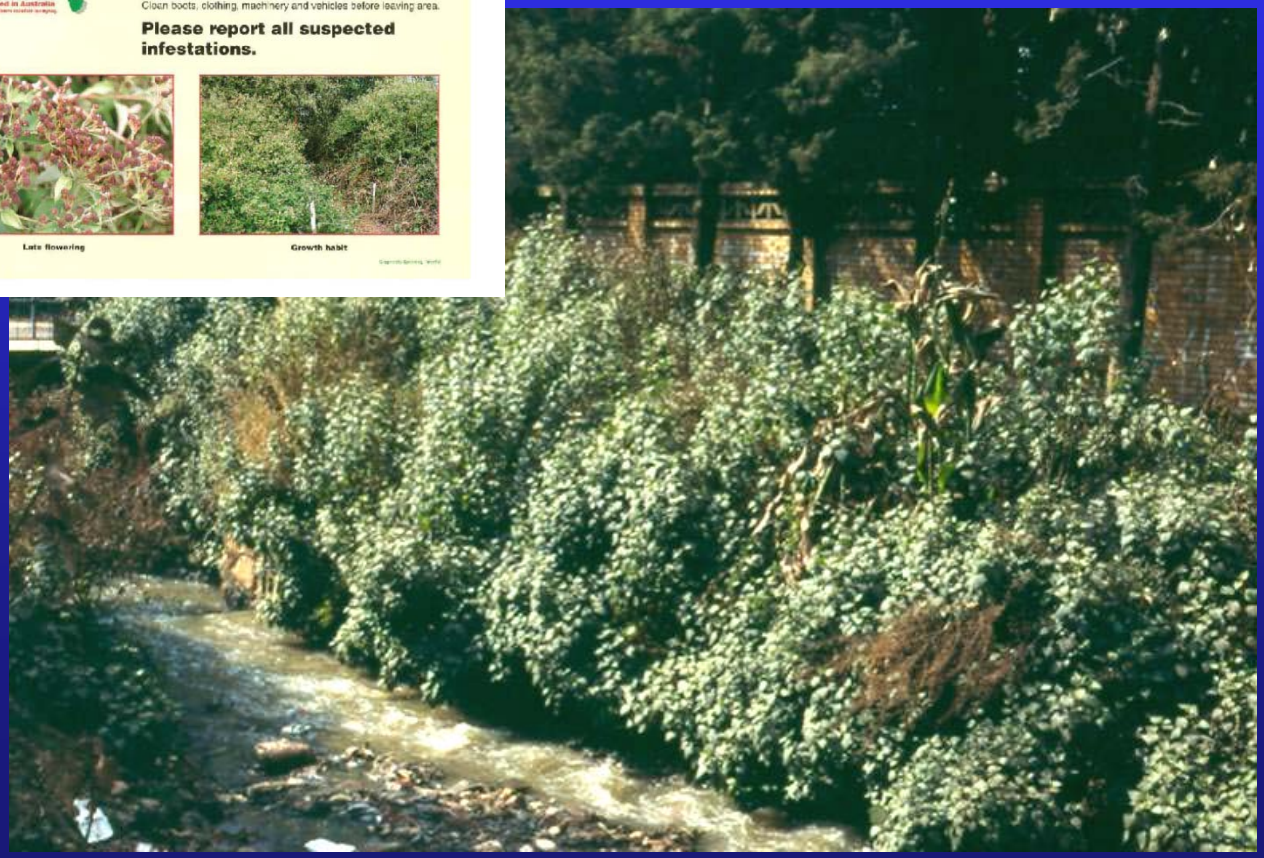
NPS Strike teams

NPS Strike teams

Australian Government

Australian Quarantine and Inspection Service

Chromolaena odorata



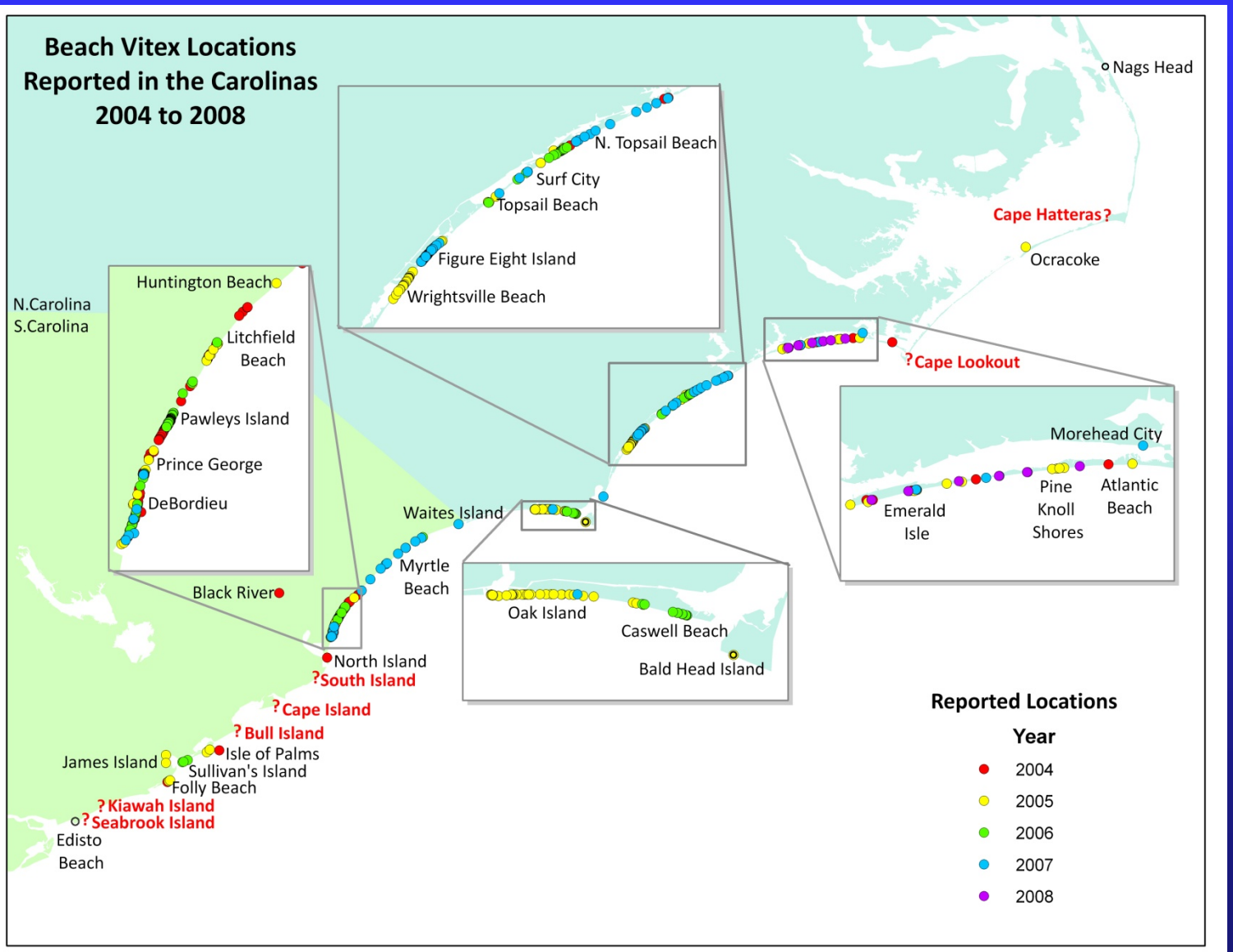
CSIRO ENTOMOLOGY

Red Imported fire ant

Eradication has a string of success stories: particularly in Australia &New Zealand and U.S.

A case ripe for economic analysis: *Vitex rotundifolia* (Beach vitex)

Beach vitex:
an invasion that has been largely contained



Several metrics of cost:

Potential loss of biodiversity

Loss in real estate value

Vitex rotundifolia

ED/RR offers an important opportunity for economic analysis

What temporal and spatial scale is cost effective for early detection?

Are trained field specialists or volunteers most effective in ED? A mix? What ratio?

Is reliance on volunteers at all effective in RR? A mixture?

When is the RR of ED/RR too late and a control strategy needs to be employed?

What would a national ED/RR system cost? (What would it save vs. cost of control?)

Conclusions

- ED/RR seems an effective tool in combating plant invaders (before they become invasive) – a contention supported by case histories
- Yet the resources devoted to ED/RR at any governmental level remain meager
- Economists could draw on abundant documentation of the epidemiology of numerous invasions (and invasions blunted) for analysis
- Economic analyses of the cost/benefits of ED/RR could provide some of its strongest evidence for policy makers and the public