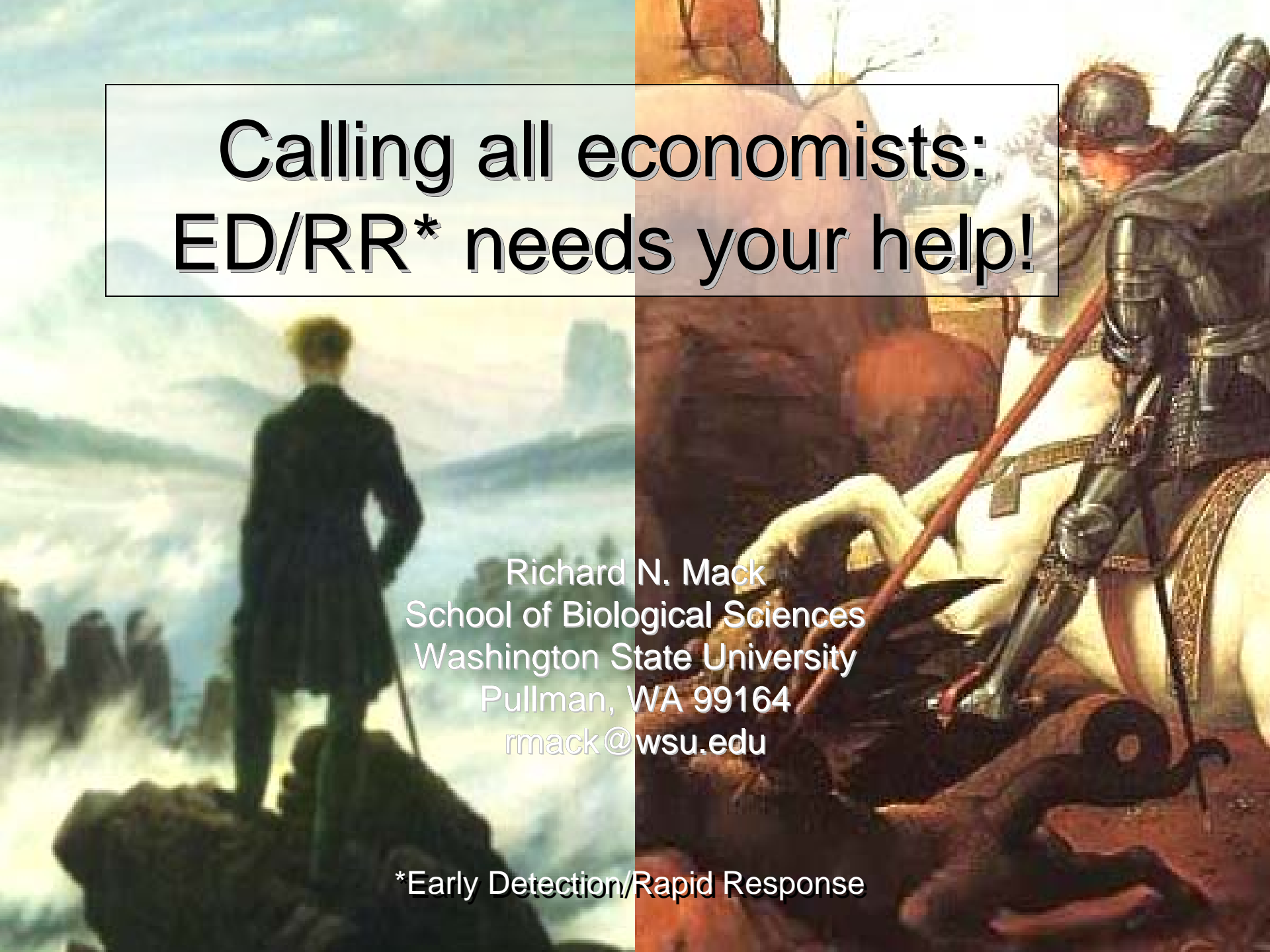


Calling all economists: ED/RR* needs your help!



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*Early Detection/Rapid Response



Early Detection - Part 1

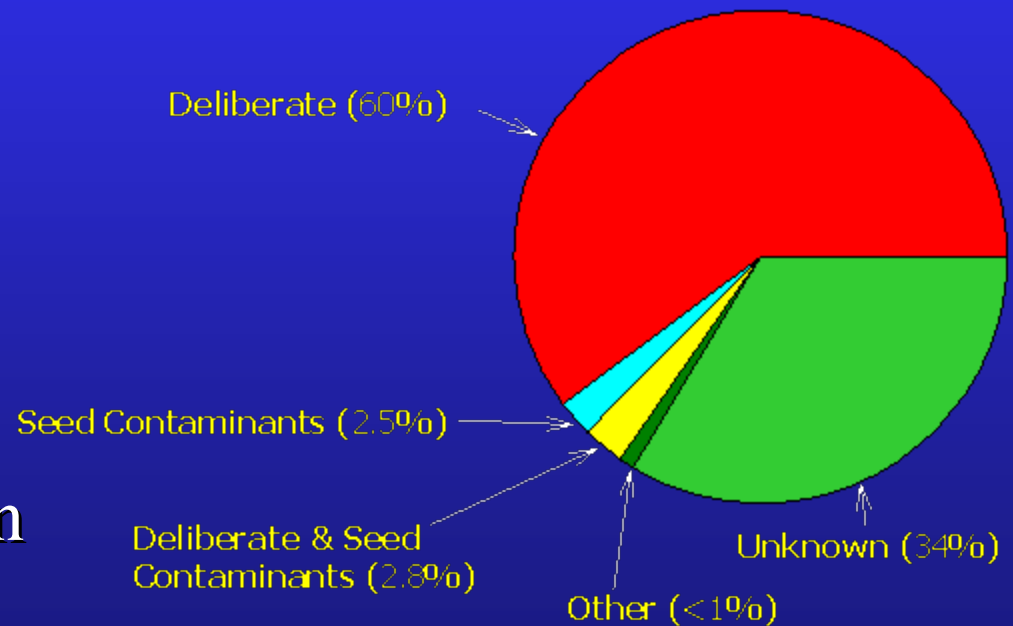
Early Detection – Part 2

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

Major U.S. Ports of Entry



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



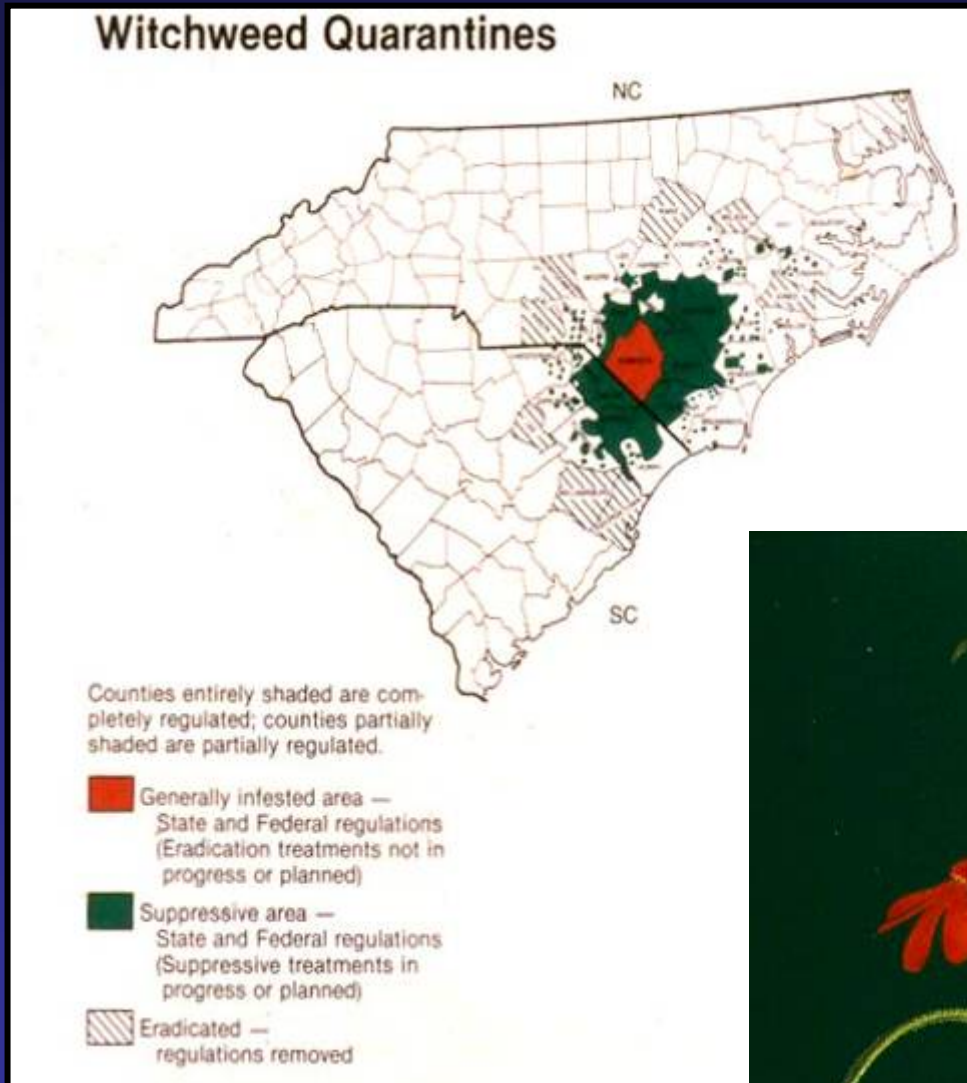
U.S. Centennial Exhibition Philadelphia, 1876



U.S. Centennial
Exhibition
Philadelphia, 1876



Any delay in ED/RR can be costly



Striga asiatica



Centaurea trichocephala



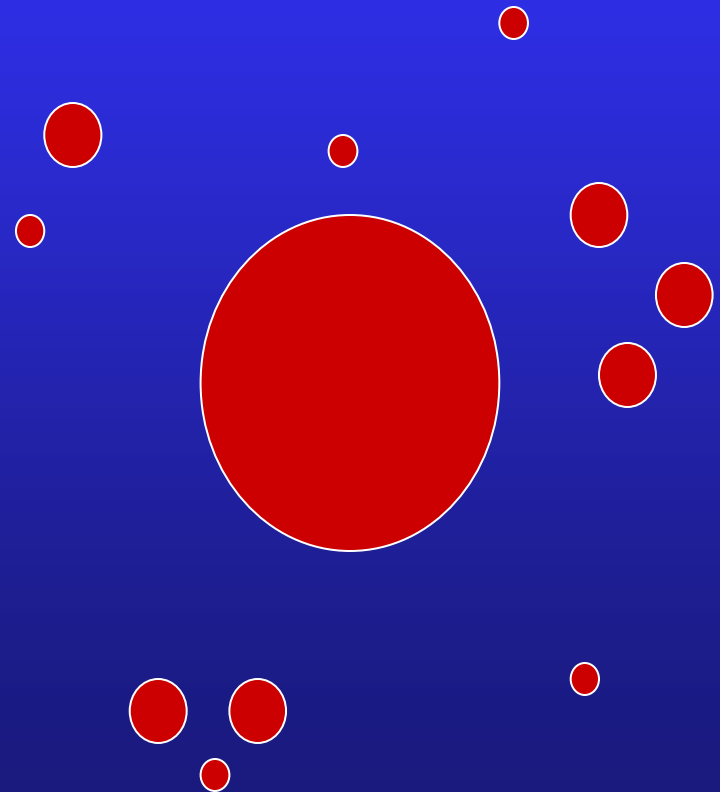
Lessons learned in ED/RR: basic tenets must be scrupulously followed

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

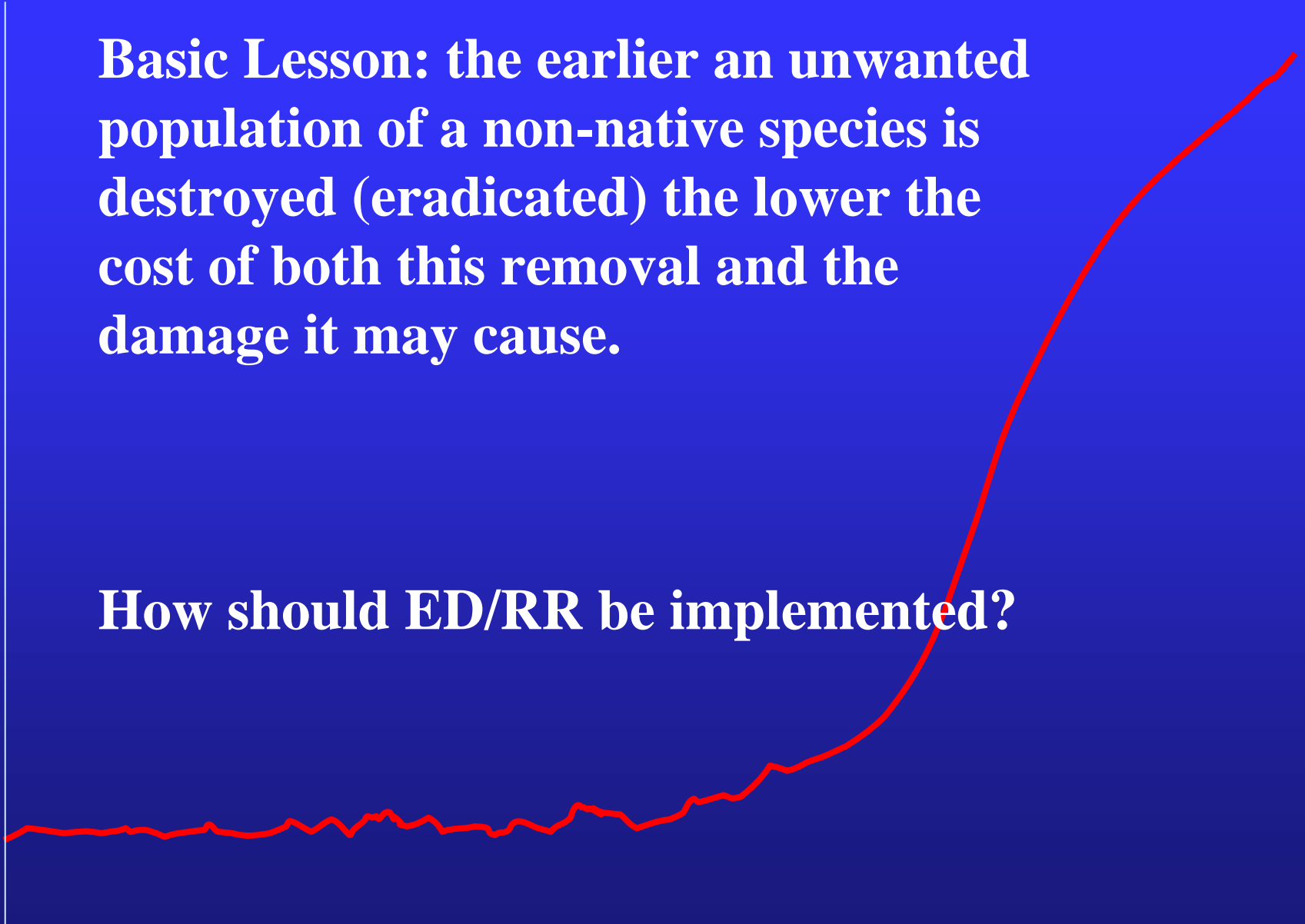


Basic Lesson: the earlier an unwanted population of a non-native species is destroyed (eradicated) the lower the cost of both this removal and the damage it may cause.

How should ED/RR be implemented?

Number of Individuals ⇒⇒⇒⇒

Time ⇒⇒⇒⇒



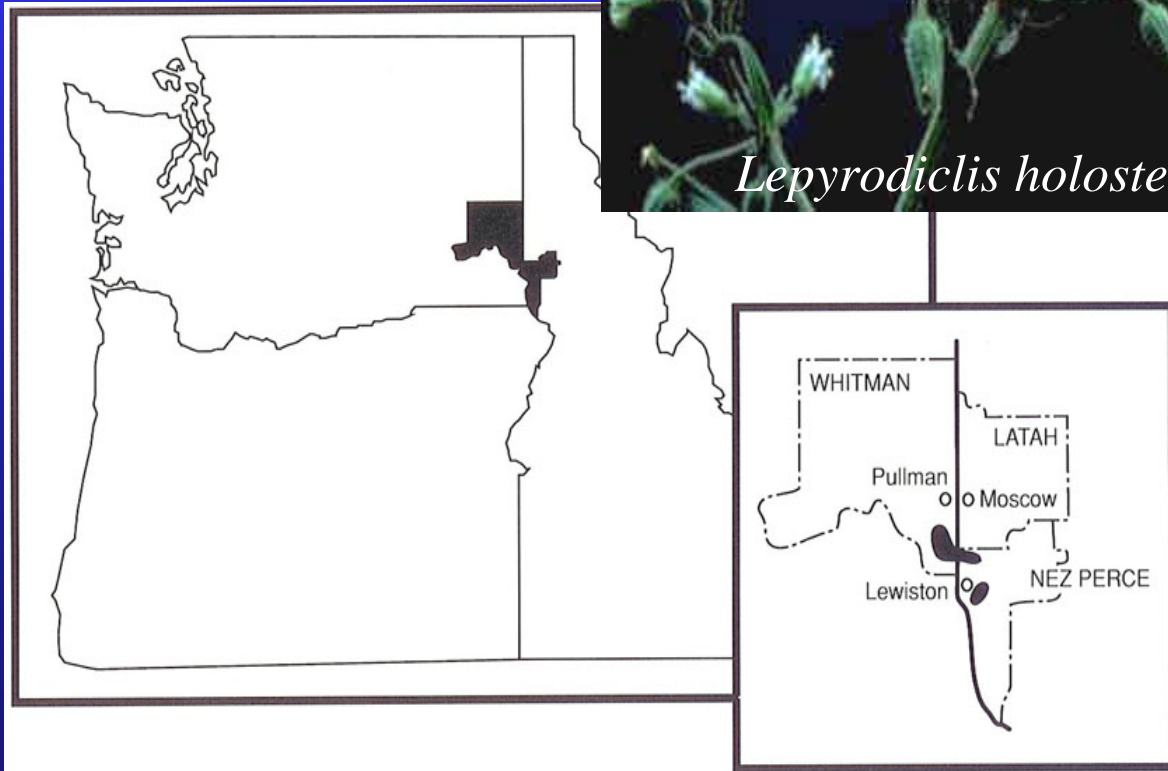
Early Detection: the record in Idaho (1984-1991)



3 records for
North
American

21 new regional
records

40 new state
records



NPS Strike teams



NPS Strike teams

National Park Service
U.S. Department of the Interior

Natural Resource Program Center



Exotic Plant Management Teams

Safeguarding native plants and animals

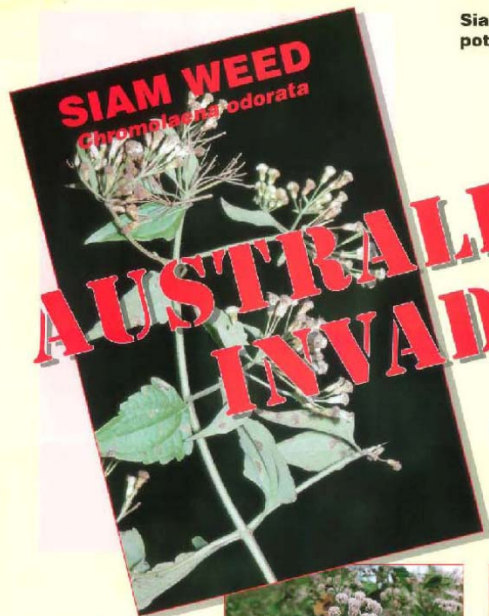




Australian Government

Australian Quarantine and Inspection Service





Siam Weed was regarded as Northern Australia's greatest potential weed threat

NOW IT'S HERE!

Siam Weed outcompetes pasture, sugarcane, bananas, forest plantings and other plantation crops.

Siam Weed is toxic to stock.

Siam Weed (*Chromolaena odorata*) has the growth habit of bananae, but with soft green triangular leaves. Soft round stems, woody when old but with **NO PRICKLES** at all. Masses of lilac or white flowers produced in winter. Small brown seeds (5mm) with a parachute of white hairs blown by the wind. Seeds stick to people, machinery and animals eg. *Pental Pigs*.

Individual plants can produce over 1 million seeds.

Siam Weed is perennial, grows 2 to 3 metres in the open and can scramble 20 metres up trees.

It will smother native vegetation.

It is vital to locate all Siam Weed growing in Australia.

If you suspect you have seen Siam Weed, or would like more information, contact:

QUEENSLAND DEPARTMENT OF LANDS
nearest Regional Office

or Ph: (07) 896 2865
Fax: (07) 895 2875

or the Department of Agriculture in your state.

If you transport a specimen, keep it sealed in a plastic bag. Clean boots, clothing, machinery and vehicles before leaving area.

Please report all suspected infestations.



Predicted distribution of
Siam Weed in Australia
(based on current weather patterns)



Early flowering



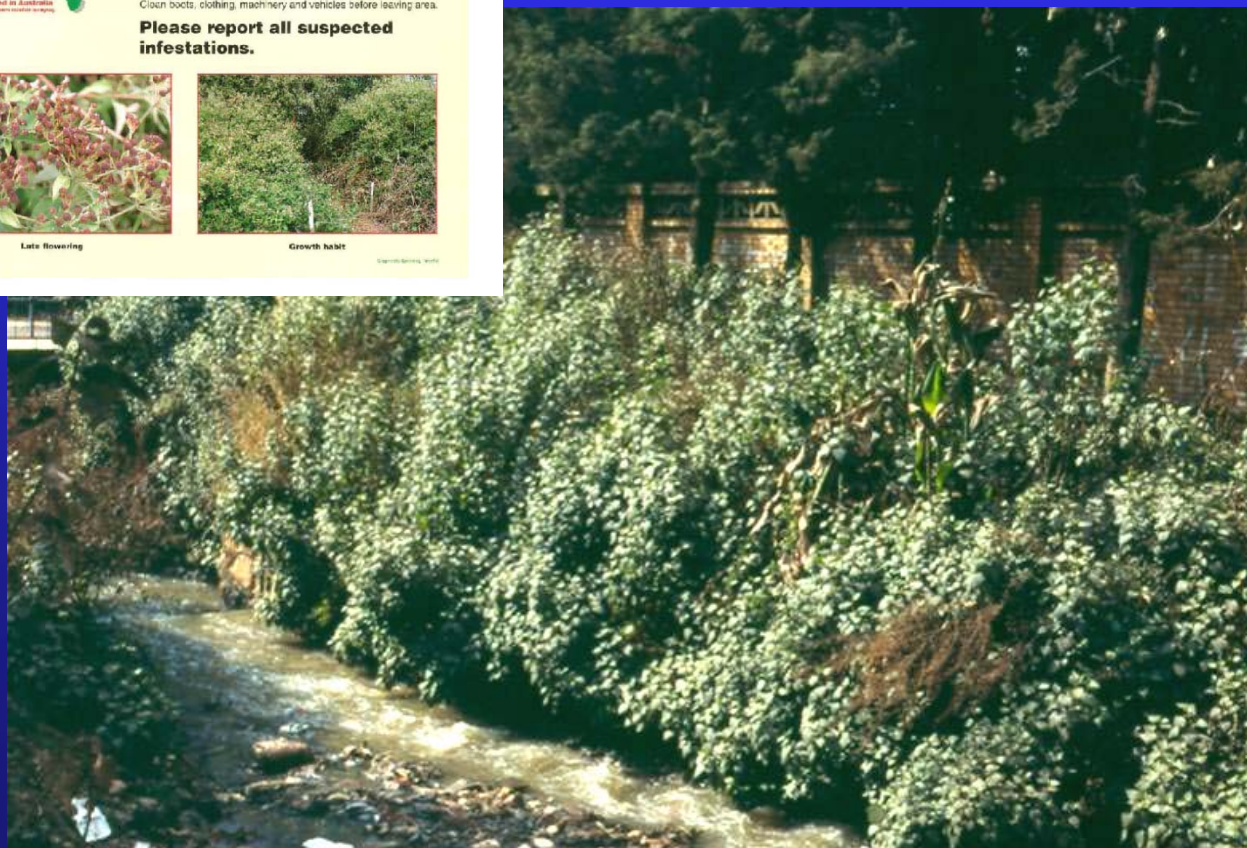
Late flowering



Growth habit

Copyright: Queensland, 1995

Chromolaena odorata





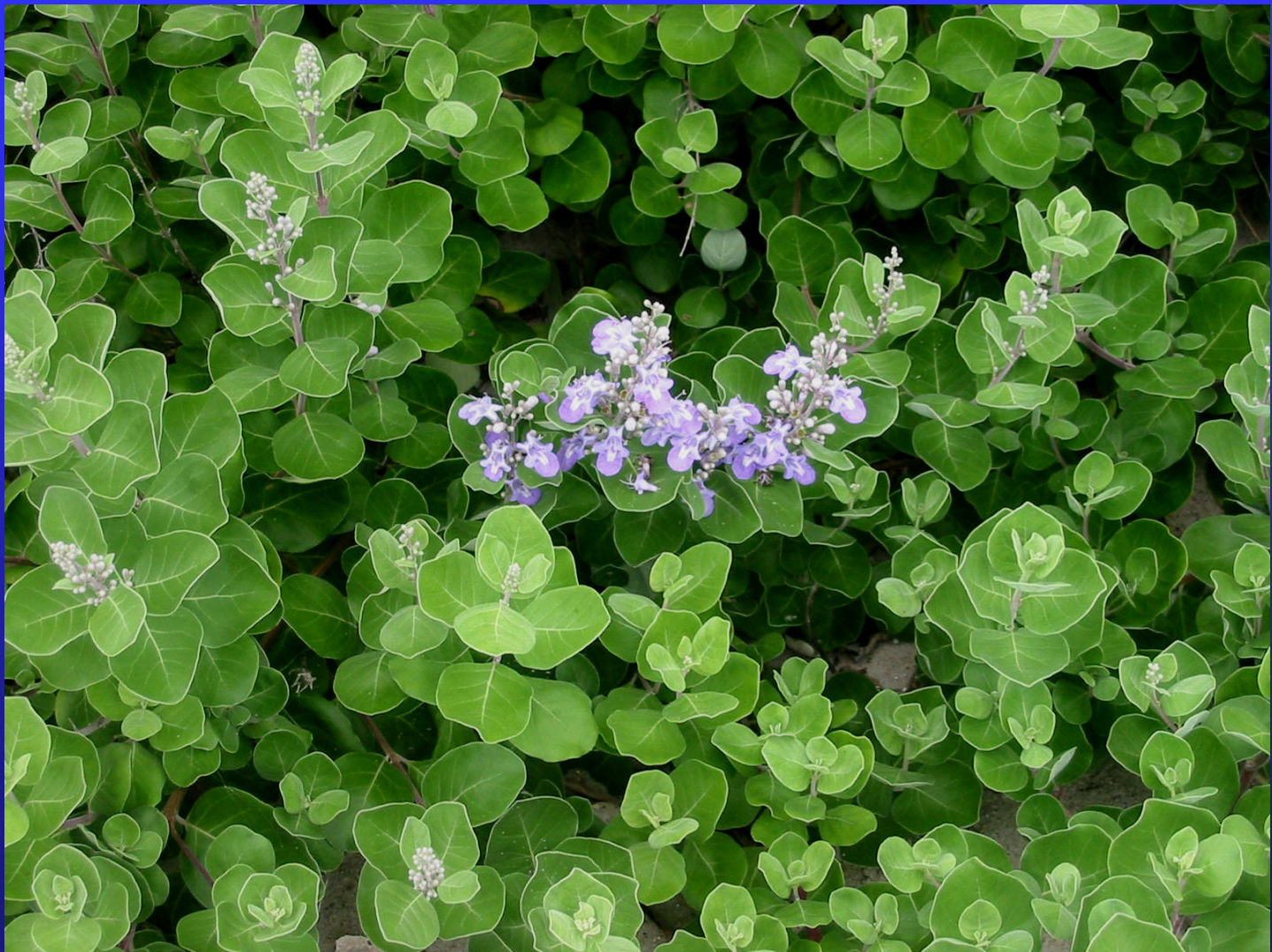
CSIRO ENTOMOLOGY

Red Imported fire ant

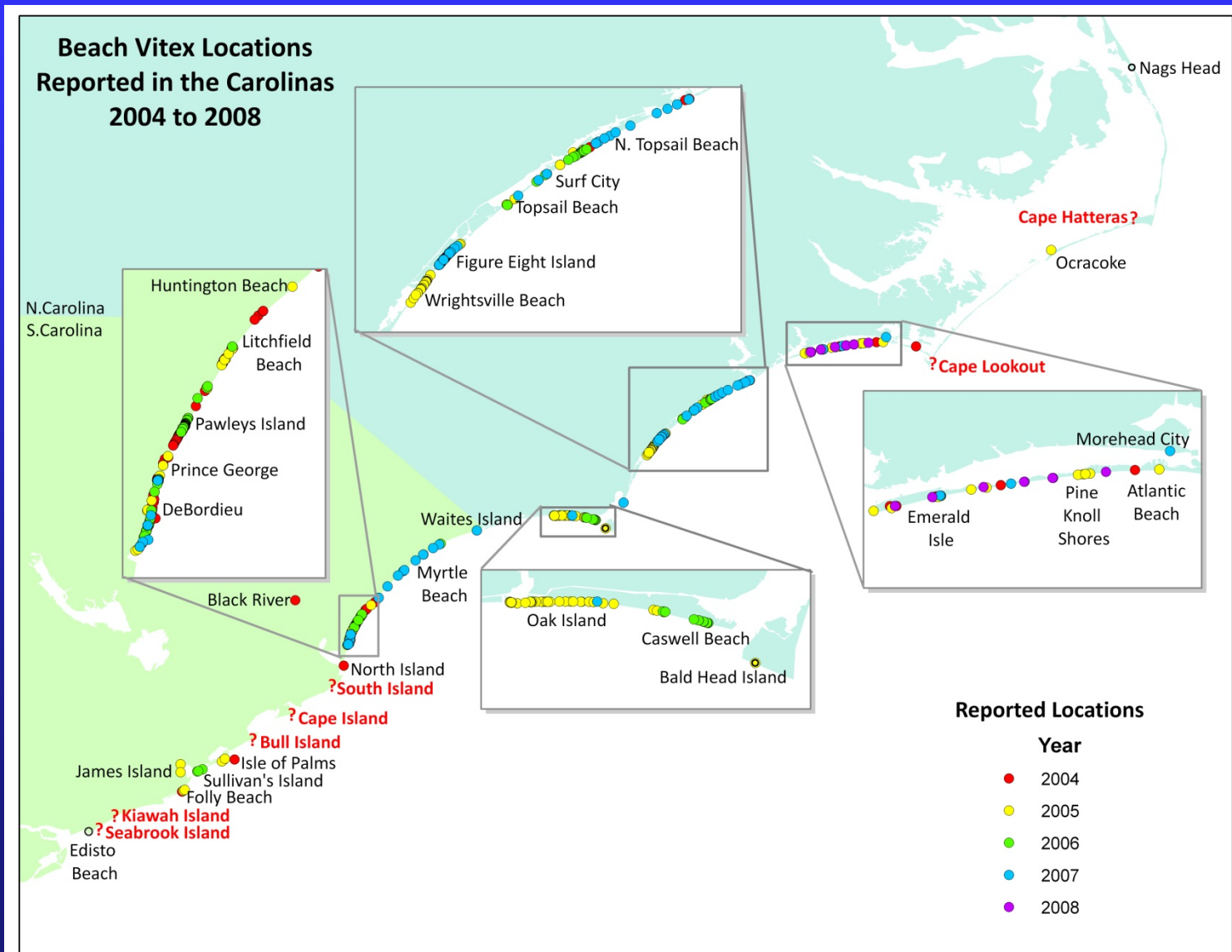


Eradication has a string of success stories: particularly in Australia & New Zealand and U.S.

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