

# What do we know about marine invaders?

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*Protecting our natural heritage*



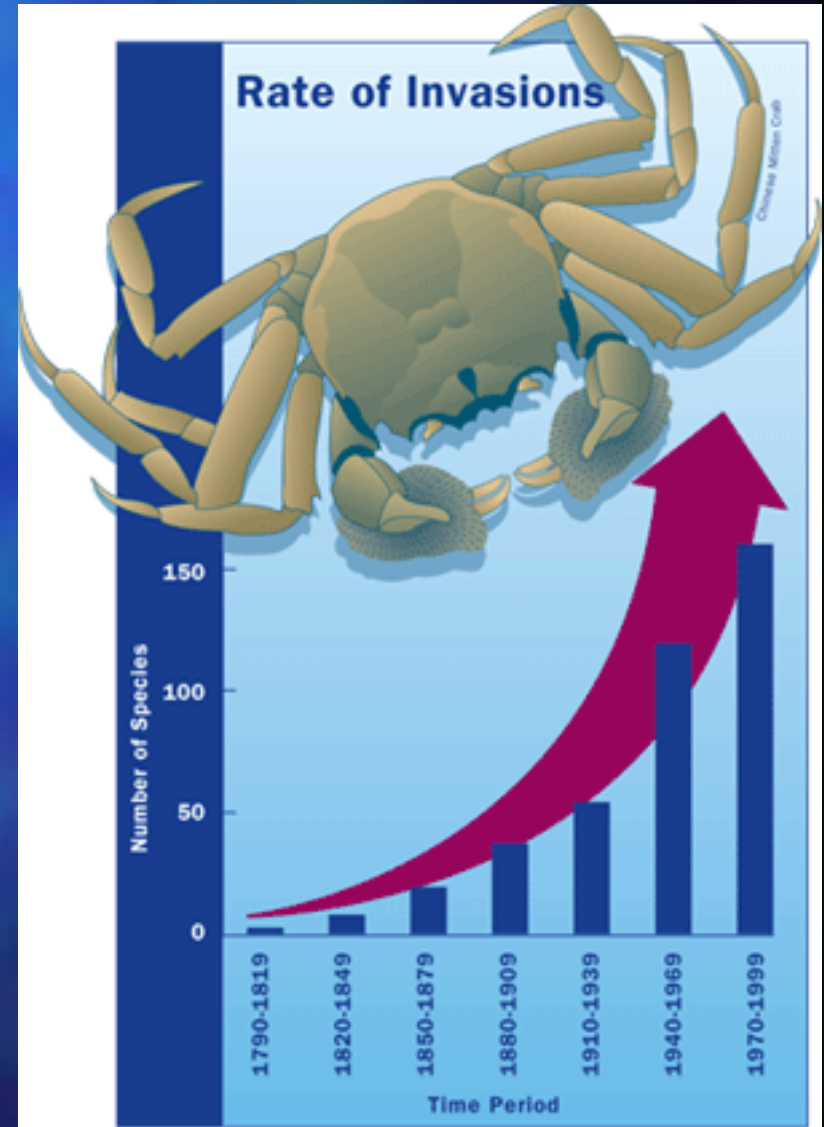
# Recent invaders



# An increasing problem?

- n Increasing global trade & travel
- n World shipping fleet of >45,000 vessels
- n 3-10 billion tonnes of ballast water shipped each year
- n >7000 marine species transported each day
- n Faster transit

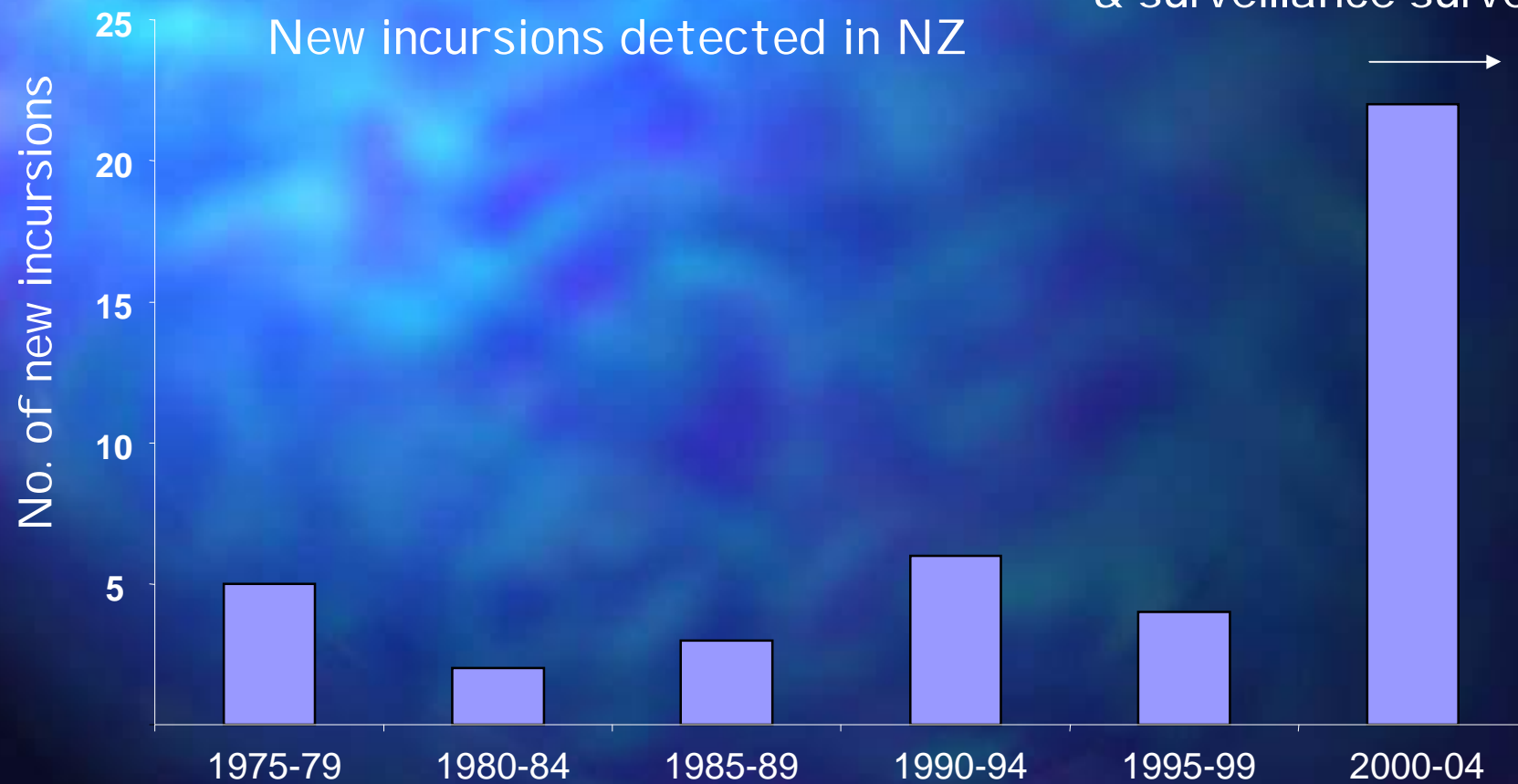
(Source: Ruiz et al. 2000)





# Or greater vigilance?

National port baseline  
& surveillance surveys



# Not so-recent invaders



# What is here?

- n ~130 "adventive" species  
(Cranfield et al. 1998 report)
- n 12 discoveries since 1998



## Port baseline surveys & surveillance

- n 19 new introduced species
- n 19 new cryptogenic species
- n =180+ introduced species??



# What is native?

- n historical introductions?
- n incomplete biogeography
- n incomplete taxonomy & systematics

## National port baseline surveys

- n 54 cryptogenic species
- n 106 species new to science!



# How do they here?





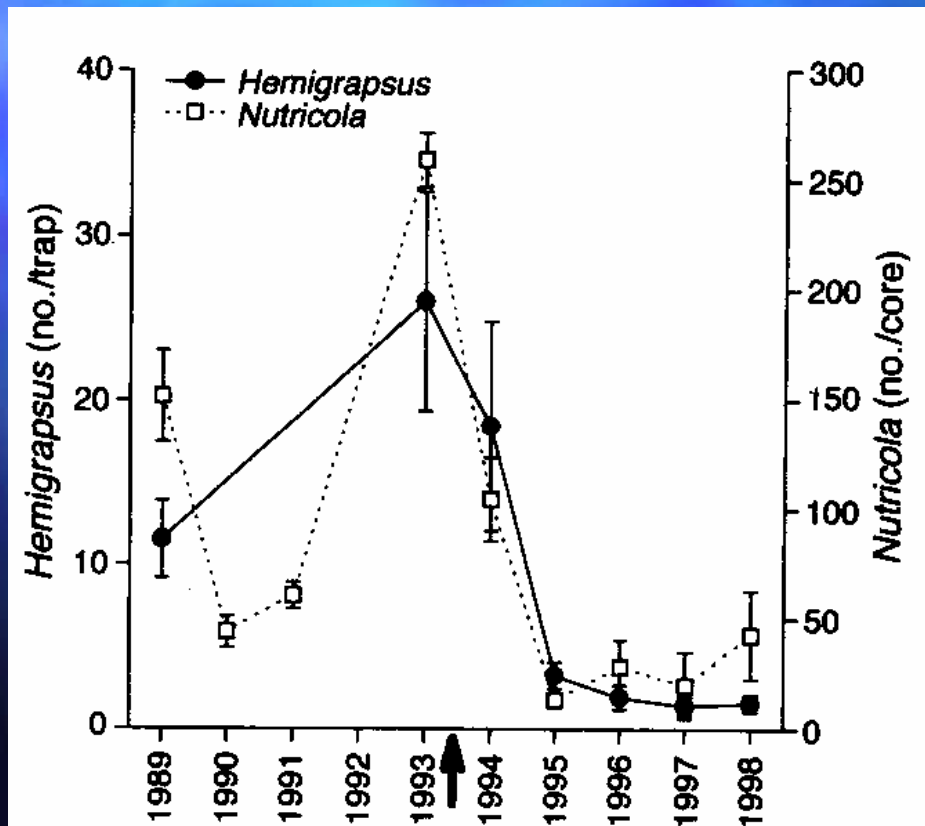
# What do we know about NZ invaders?

- n 34 studies on marine/estuarine invaders
    - n 16 announce discovery
    - n 7 reviews (no new data)
    - n 3 natural spread
    - n 5 human transport
    - n 2 demography
    - n 1 impacts
  - n Answer = not much
- 3 species:

\*Based on a search of ASFA database using the keywords “introduced species”, “exotic species”, “alien species”, “invasive species” and “New Zealand”

# Should we be concerned?

San Francisco  
Grosholz et al. (2000)



*Carcinus maenas*  
European green crab





# Should we be concerned?



Northland – early 1900's

Manukau – 2003



# Should we be concerned?



PEI Fisheries, Aquaculture & Environment

**YES!**