The York Contribution to Environmental Research

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. . . or what has York ever done for us?

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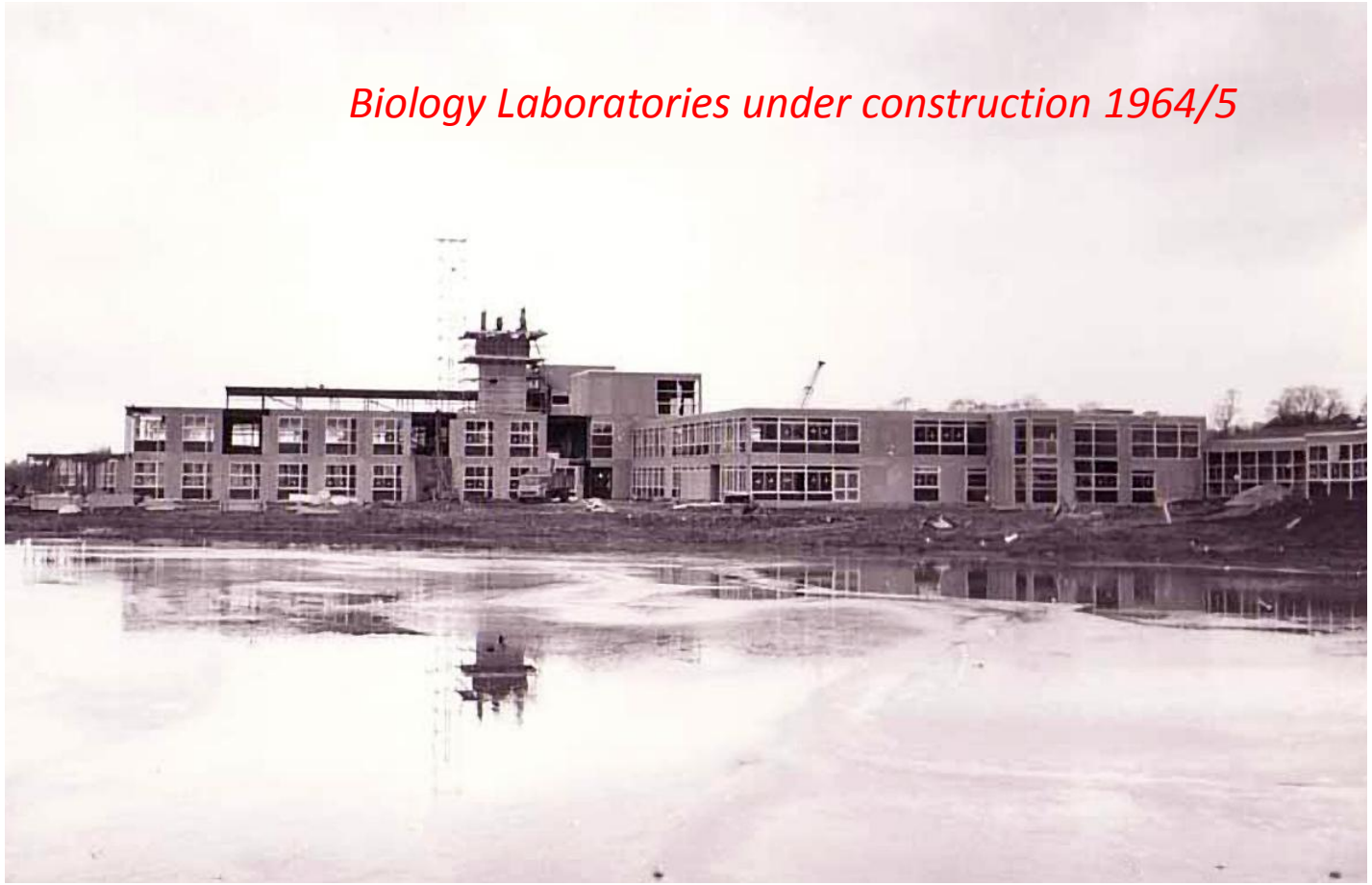
1963 – In the beginning, there was a building site



Biology Laboratories under construction 1964/5

1963-1988: the first 25 years

- Mainly in Biology – ecology one of 4 main foci
  - Focus on mathematical ecology, principally population ecology: Williamson (63-now), Usher (67-90), Lawton (71-88), Beddington (71-83)
  - Applied ecology: Chadwick (66-90)
  - Ecological genetics: Turner (65-72), Oxford & Crawford (72 on)
  - Physiological ecology: Lewis (69-72), Fitter (72 on)

1973 – a slight hiatus

One thing . . .

. . . led to another

Biological Journal of the Linnean Society **(1984),** 23: **269-286.**
With 1 figure

Enemy free space and the structure of ecological communities

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'Enemy free space' is defined as ways of living that reduce or eliminate a species' vulnerability to one or more species of natural enemies. Mike Jeffries (a PhD student) and I realised that whilst many aspects of species' niches are moulded by interactions with enemies, in 1984 most ecologists continued to see resource-based competition as their primary determinant. Reviewing an extensive literature we argued that this view was wrong, and showed how the idea of enemy free space had been independently 'discovered' by at least 15 authors.

MUTUAL INTERFERENCE BETWEEN PARASITES OR PREDATORS AND ITS EFFECT ON SEARCHING EFFICIENCY

BY J. R. BEDDINGTON

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Journal of Animal Ecology, Vol. 44, No. 1 (Feb., 1975), pp. 331-340

The searching efficiency of predators and parasites was known to decline with their own density according to a simple power law. This model allowed for time to be lost both on encounter with the prey or host – the traditional functional response – and on encounter with competing predators or parasites. The model successfully mimicked the data and had implications for biological control

Ecology, 77(6), 1996, pp. 1661-1666

THE VARYING SUCCESS OF INVADERS[1]

MARK WILLIAMSON AND ALASTAIR FITTER
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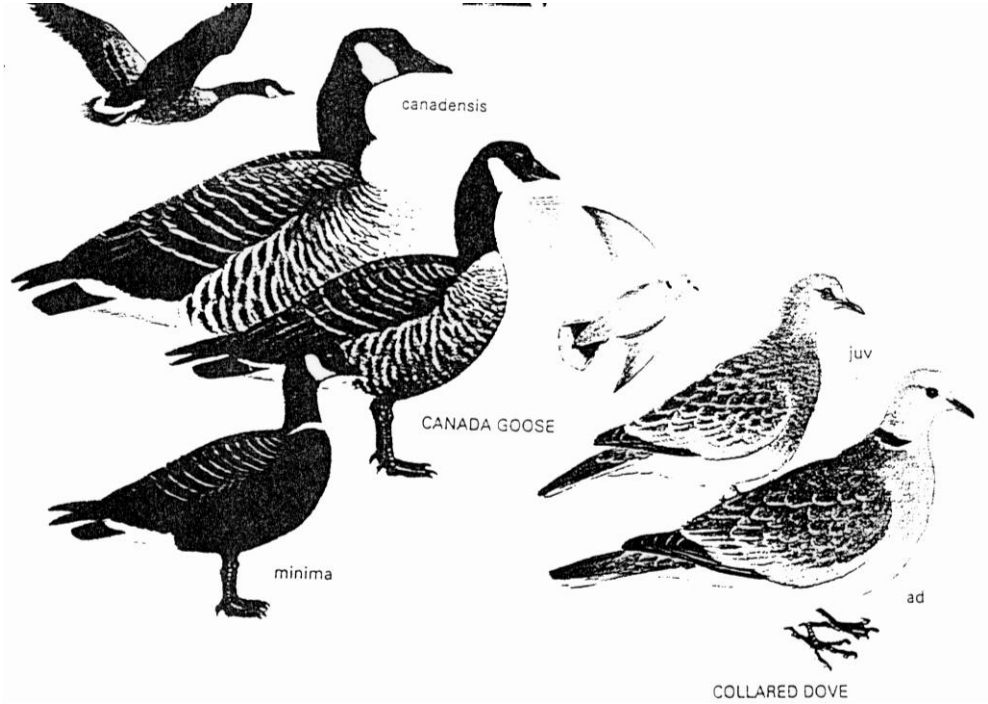
Is there a statistical regularity to biological invasions? We test Williamson's tens rule: the probability of progression up our defined stages (imported, casual, established, pest) is about 10%. It can be a useful rule and the exceptions are instructive. It remains one of the few robust generalisations about invasions.



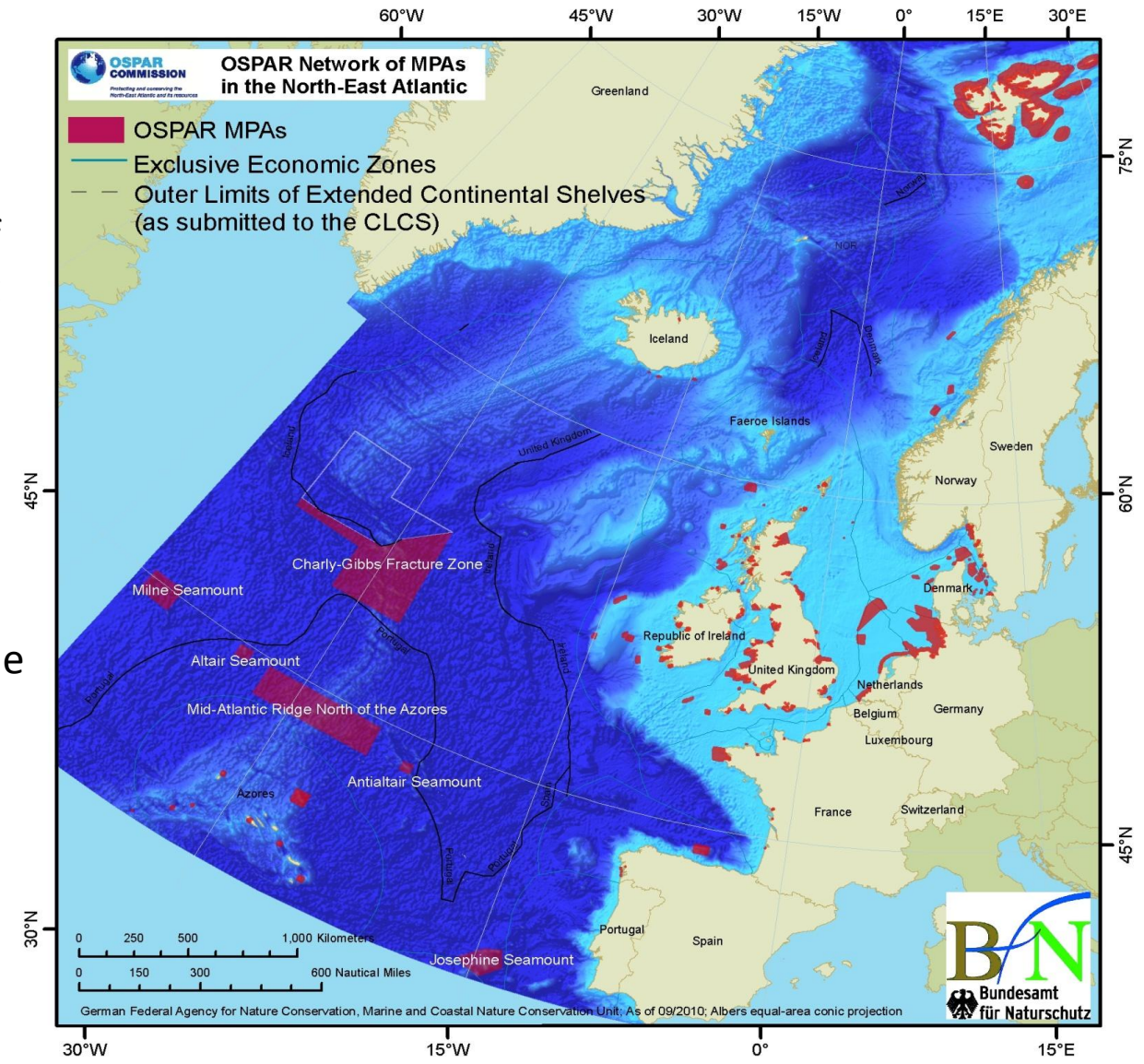
1988-2013: next 25 years

- New departments and new foci
  - Environmental Economics and Environmental Management (now Environment)
  - Atmospheric Chemistry
  - Archaeology, Maths, Social Sciences, Law, Health and Medicine
  - Marine science
  - Climate change, ecosystems, symbiosis
- Joint programmes
  - MRes in Ecology and Environmental Management (Biol/Env)
  - MRes Mathematics in the Living Environment (Biol/Maths)

World's first high seas MPA network 2010: 285,000km^2

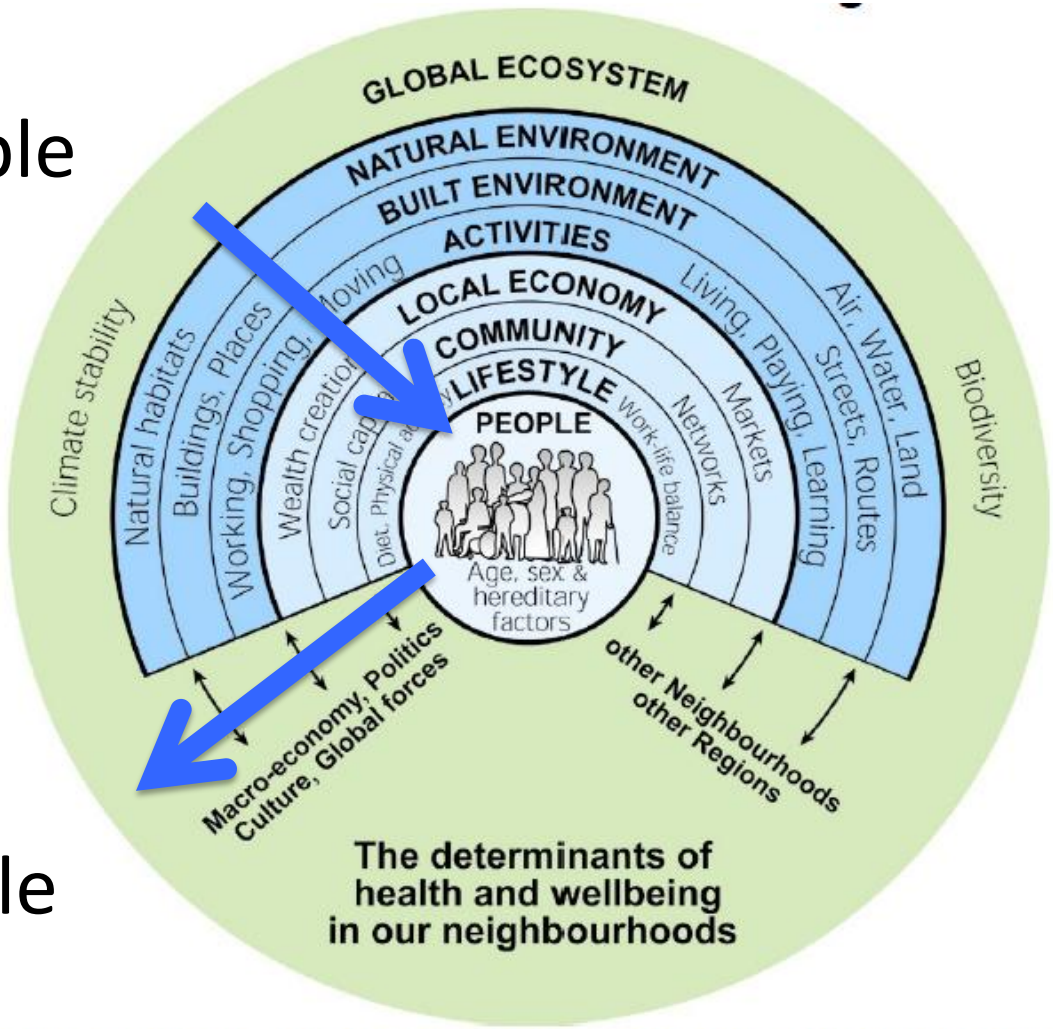
Roberts, CM, Bohnsack JA, Gell FR , Hawkins JP, Goodridge R 2001. Effects of marine reserves on adjacent fisheries. *Science* **294**: 1920-1923.

O'Leary BC *et al* 2012. The first network of marine protected areas (MPAs) in the high seas: the process, the challenges and where next. *Marine Policy* **36:** 598-605



Linking social and natural environment

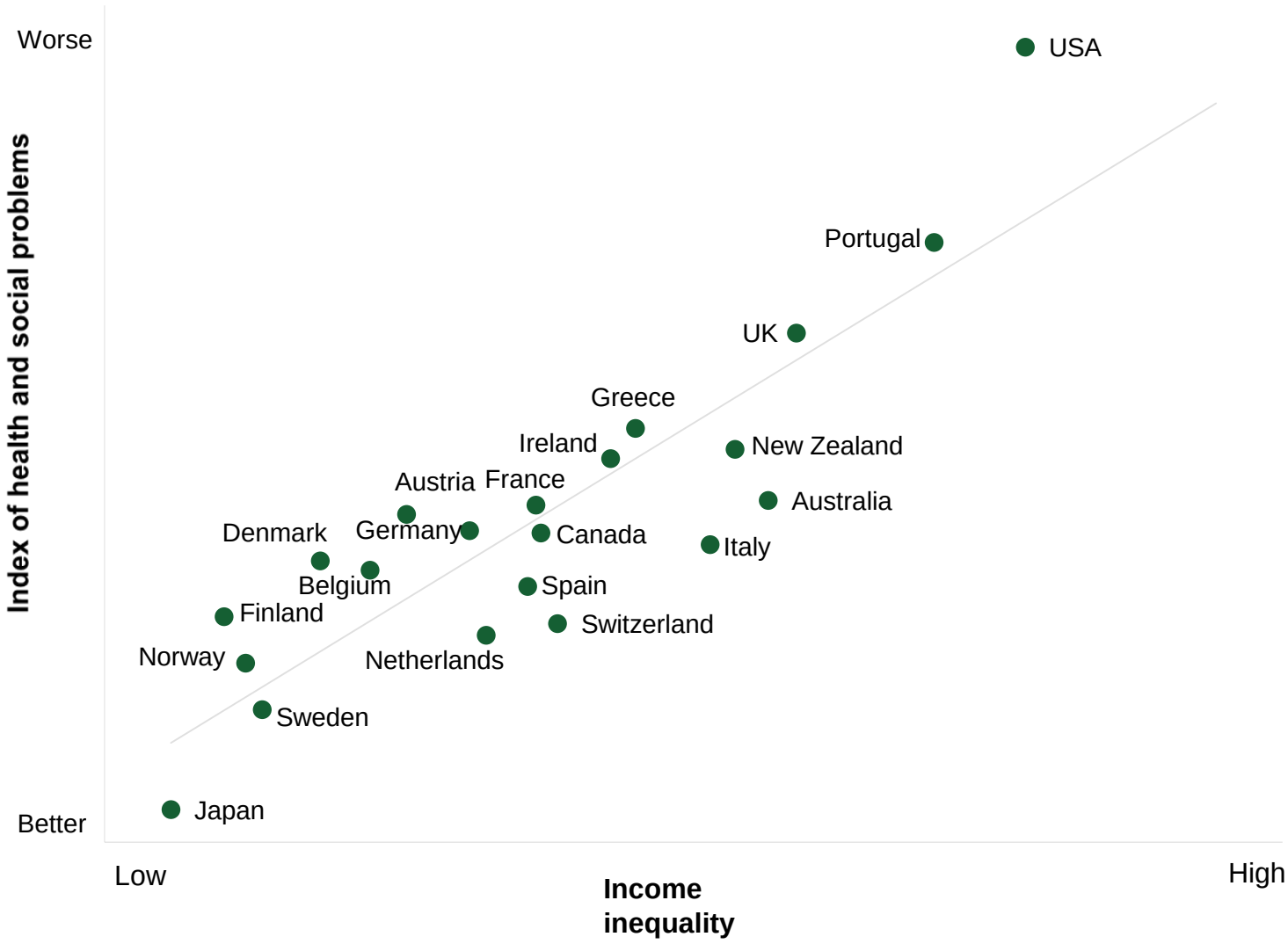
Impacts on people



Impacts of people

Source: Grant and Barton, University of the West of England

The Social Environment: health and social problems are worse in more unequal countries



Index includes:

- Life expectancy
- Maths & literacy
- Infant mortality
- Homicides
- Imprisonment
- Teenage births
- Trust
- Obesity
- Mental illness (inc. drug and alcohol addiction)
- Social mobility

Source: Wilkinson & Pickett, The Spirit Level (2009)

2013 - ?: YESI

- Explicit goal is to link natural and social sciences
  - Human impacts on natural world
  - Environmental impacts - social and natural (physical, biological) - on people
  - Feedbacks
- Big and topical problems
  - Sustainable environments
  - Global change
  - Future food and fuel

YESI
York Environmental Sustainability Institute