



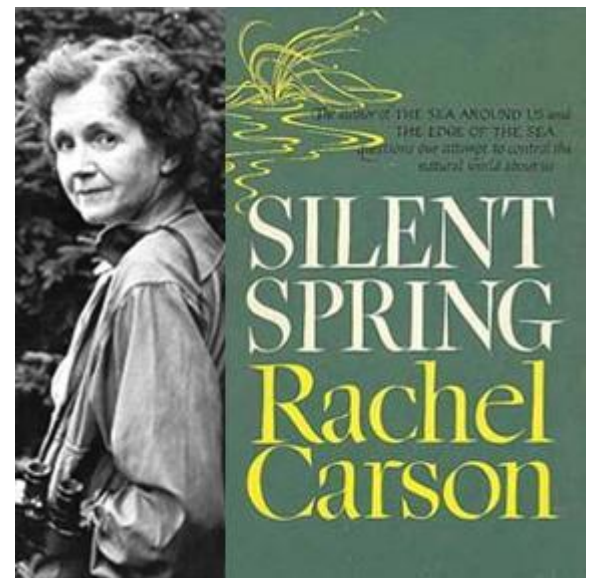
# OUR BIODIVERSITY CHALLENGE

Seeking solutions and call for community action

Dr Janet Jackson

University of Northampton

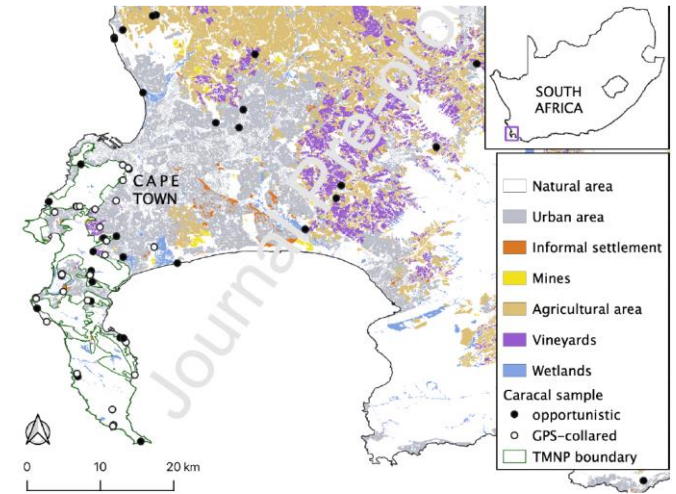
# Rachel Carson's silent spring (1962)



- Rachel Carson flagged the dangers of pesticides, such as organochlorines, and to consequences of exposure to these substances both to humans and to wildlife
- Most famously, dichloro-diphenyl-trichloroethane (DDT) was found to accumulate in the food chain with toxic effect. Top predators, particularly birds of prey were failing to reproduce because of damage to eggs they laid.

# Pesticide accumulation in food webs (South Africa), (Leighton *et al.* 2022)

- Exposure based on foraging behaviour
- Blood and tissue samples of top carnivores
- Found widespread exposure to pesticides
- 100% for PCBs, 83% for DDT
- Caracals move around human landscape – e.g. vineyards
- Elevated white cell and platelet count



Caracal (*Caracal caracal*)

# Pollinators are declining

- **23 bee and wasp species have gone extinct in the UK since 1850**
- other bee species have declined in half of areas surveyed since the 1980s
- 18 butterfly species extinct in England, many others have declined
- 70% of our commonest moths have declined since 1970s
- 25% of hoverfly species have reduced numbers since the 1980s

(Jeff Ollerton 2019)



# Food Security

Pollinated crops:

- Apples, plums, cherries and other orchard fruit
- Potatoes, Tomatoes
- Chilli, peppers
- Peas and beans,
- Pumpkin, melons, squash
- Courgette, cucumber
- Nuts
- Carrots, Celery
- Tea, coffee, chocolate
- oil seed rape, beet
- Brassicas



[https://www.apicultural.co.uk/the-foods-that-bees-](https://www.apicultural.co.uk/the-foods-that-bees-pollinate#:~:text=Brassicas%20include%20Cabbages%2C%20Mustard%2C%20Oil,Bumble%20Bees%20and%20Osmia%20Bees.)

[pollinate#:~:text=Brassicas%20include%20Cabbages%2C%20Mustard%2C%20Oil,Bumble%20Bees%20and%20Osmia%20Bees.](https://www.apicultural.co.uk/the-foods-that-bees-pollinate#:~:text=Brassicas%20include%20Cabbages%2C%20Mustard%2C%20Oil,Bumble%20Bees%20and%20Osmia%20Bees.)

**Climate Change: 2022 was a difficult growing year  
2023 food inflation! Food poverty**

**the threat of desynchronisation with pollinators, predators of pests and diseases, and prey for young birds.**



# Other compounding reasons

- loss unimproved grassland
- Intensive farming practices (monoculture)
- removal of hedgerows and native woodland
- drainage of wetlands, ponds
- urban development
- lack of protection and inappropriate management (neglect/degradation)

# — LOSS OF FRONT GARDENS

Front gardens converted to driveways is on the increase, 22.47% over a 20 year period (Warhurst *et al.* 2016).

Planning control is not need if a porous block paving surface is installed aim to reduce rainwater run off

– regulations do not consider habitat loss

Front gardens provide connectivity in urban landscapes:

Bees and other pollinators

Birds

Bats



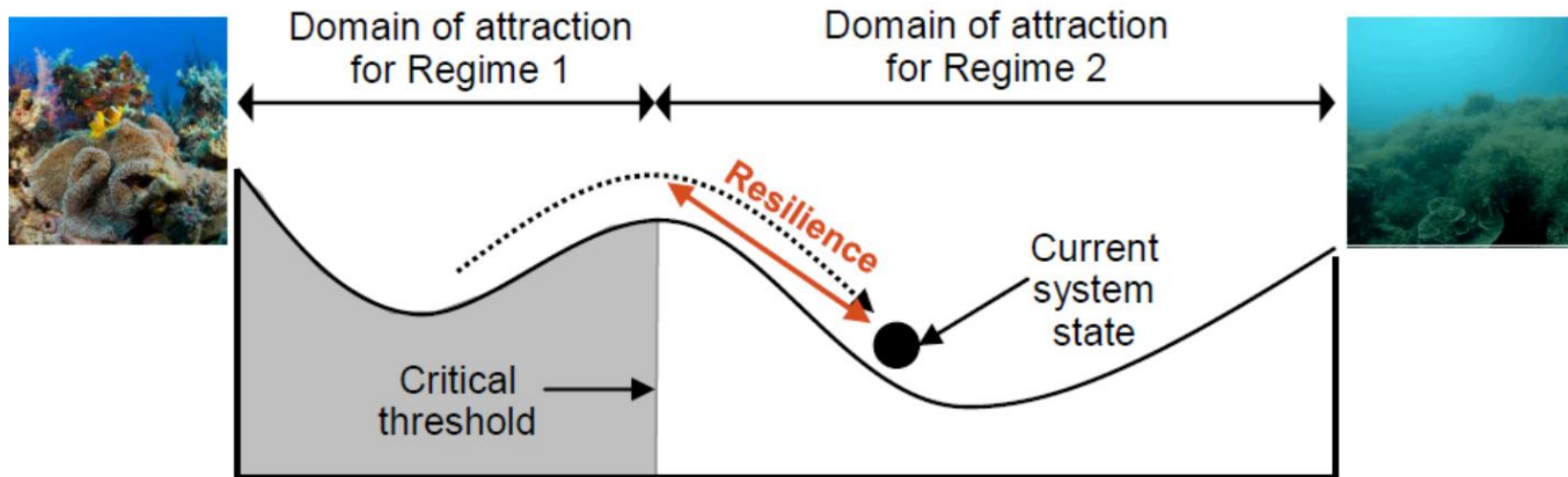


# Simplification of back gardens



# BIG MESSAGE FOR TODAY

– we can not stand by and watch populations decline and species go extinct anymore

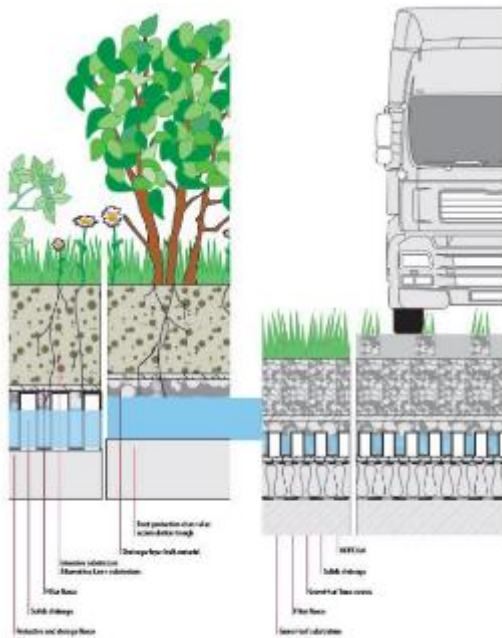


**Resilience** (in this context): **Magnitude of change that a system can absorb without undergoing a regime shift**

# Working with nature for Natural Resilience

Resilience is dependent the **function** and **maintenance** of biodiversity, the diversity biotic and abiotic interactions, nutrient cycling and production (Royal Society 2009)

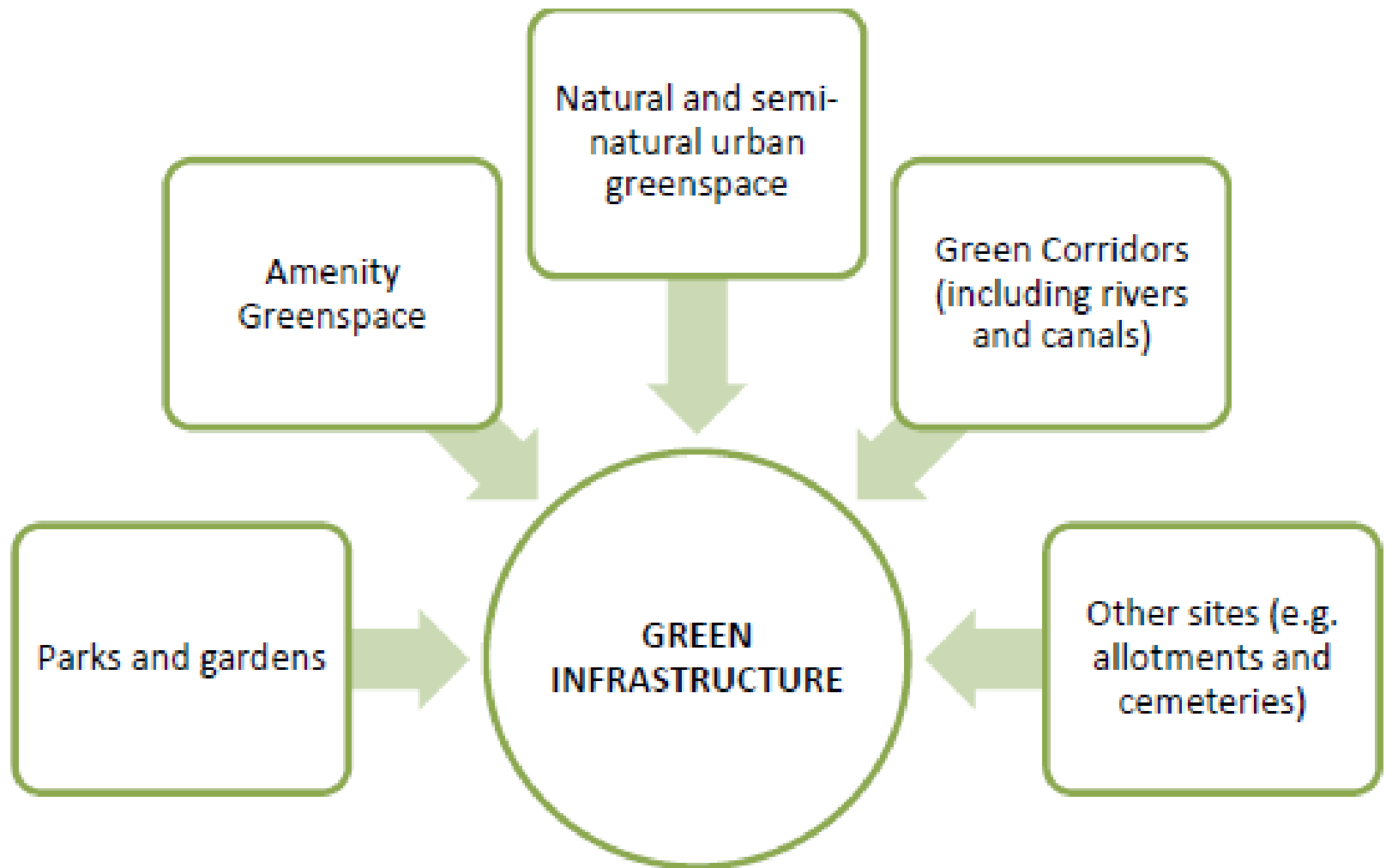
We need to urgently integrate our resilience to future climate change with development and **biodiversity gain**.



Berlin Senate for Urban Development (2010)



Sustainable Urban Drainage Systems: [SUDS] at Upton, Northampton



Natural England (2009) Green Infrastructure Guidance.



# HOW DO WE VALUE OUR GREEN SPACES AND BIODIVERSITY WHERE WE LIVE?







Through planning and design?

# Innovative landscape design



- Green roofs
- Willow whips and Pollards
- Species rich meadow turf
- Wildflower seeding
- RHS flowers for pollinators
- Native species trees and shrubs
- Rough areas for longer grasses
- Wetland depressions
- New hedgerow planting
- Fruit trees



# UON Project Awesome: Staff and Student Project



- Otter
- Hedgehogs
- Bats
- 29 species of bird
- 23 species of native bees
- 150 species of plants
- New records for rare species

- Small-Flowered Catchfly,  
thought extinct in the County  
170 years ago (Brien Laney  
2018)

- It is OK to be untidy!



# Education: multiple values of nature

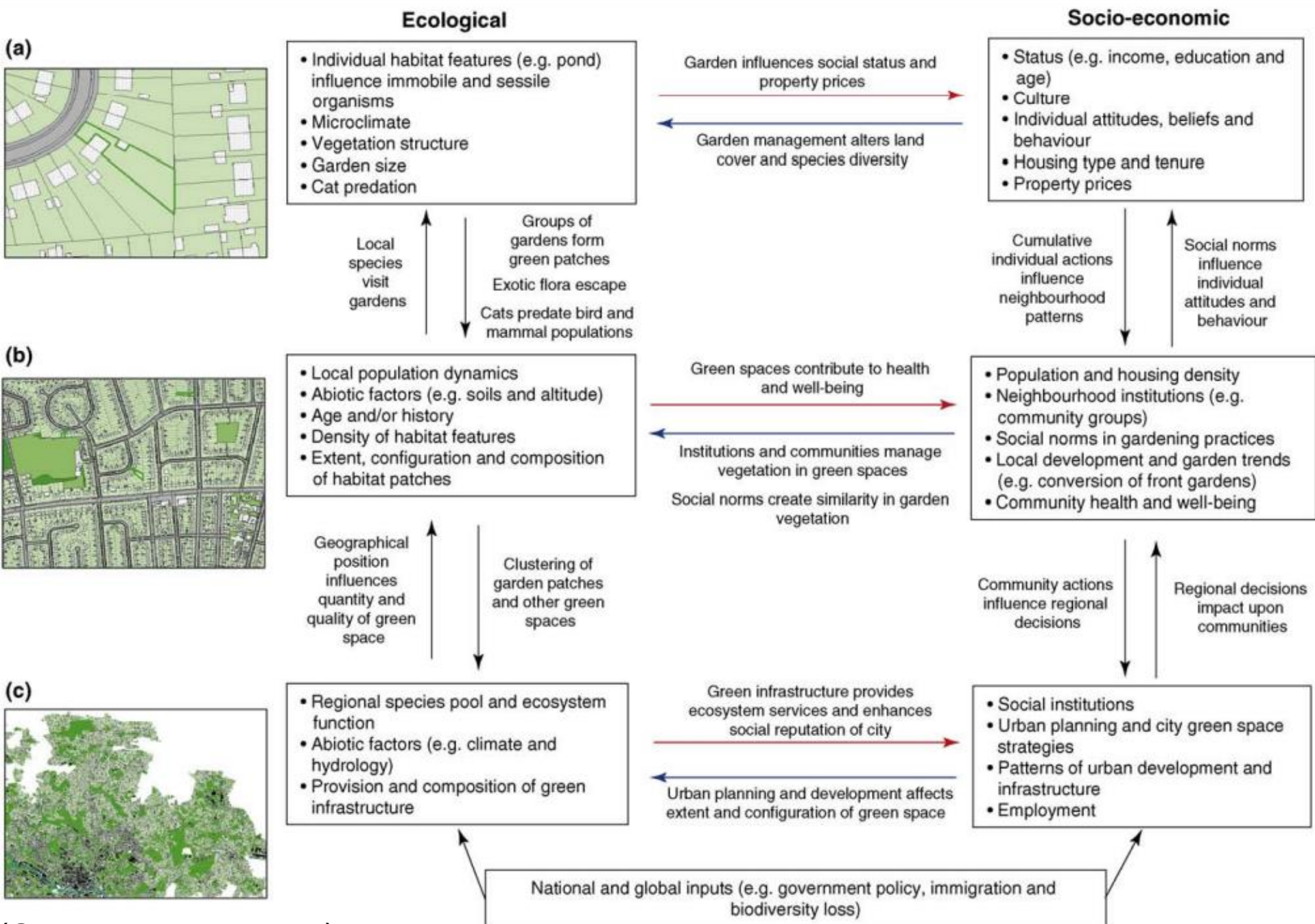






Engaging young people and neighbours





(Godwood *et al.* 2010)

# Who decides?

---

Some **ACTIONS** in creating and maintaining green spaces and improving natural areas are required; by duty of care, duty to collaborate and legal requirements (e.g. Protected species).

But other actions can be disconnected or missed opportunities

- .GOV & LA land holdings
- Land ownership – Pension pots, Commercial investments?
- Statutory duties – Flood Risk Management?
- Community engagement – common land?
- Contracted Private Companies?
- Community Trusts?
- Parish Councils?
- Us – driveways, Astro-turf, block paving



## **Community action and Neighbourhood norms for wildlife gardening (Godwood et al. 2013)**

*Mechanisms for increasing the uptake of wildlife gardening would benefit from harnessing existing social norms whereby ecological practices are spread by a process of neighbourhood diffusion. Such a process can be stimulated by sympathetic management of local green spaces, garden habitat certification, prizes.*