Ponds against climate change

Froglife – James Stead - April 2022

Introduction

- **Froglife:**
- Offices in Peterborough, Falkirk, Glasgow and London
- Practical habitat works
- Education and engagement
- Research

Introduction

- **Come Forth for Wildlife:**
- 4 year project funded by the National Lottery Heritage Fund and a range of co-funders.
- Working throughout the Forth Valley to develop connections to conserve and enhance the unique heritage the area offers.

Wildlife Gardening Workshops	**Pond Doctor Events**
Mapestry	**Virtual Reality Exhibitions**
Training Courses	**Volunteer Sessions**
Habitat Works	**Neighbourhood Wildlife Corridors**

Made possible with Heritage Fund

Climate change background and rising temperatures – affecting people and wildlife?

- Climate change as a threat to people, wildlife and plants globally
- Warming temperatures
- Disrupting balance

Climate change background and rising temperatures – affecting people and wildlife?

- Threats include:
- Heat-related illness
- Severe storms
- Flooding
- Landslides
- Wildfires
- Droughts…..

How do ponds fit in?

- Estimated 304 million natural lakes and ponds
- Covering approximately 4.2 million km2

How do ponds fit in?

Benefits of ponds

- Ponds – benefits are numerous
- Managing greenhouse gases
- Carbon sinks

Benefits of ponds

- Carbon sinks – storing and absorbing
- Ponds more active than lakes
- Higher efficiency
- *Downing, 2010*

Benefits of ponds

Benefits of ponds

- Permanent ponds best
- Naturally vegetated
- Aquatic grasses / thick moss swards
- *Gilbert et al. 2014*

Benefits of ponds

- Small pond can sequester 79-247g of organic carbon per square meter annually
- Rate of carbon sequestration 20-30 times higher than woodlands / grasslands
- 500m2 of ponds can sequester up to 1000kg of carbon a year

Benefits of ponds

- Studies suggest that ponds combined worldwide can store as much carbon as the world's oceans
- Long term carbon locking in ideal cases

Benefits of ponds

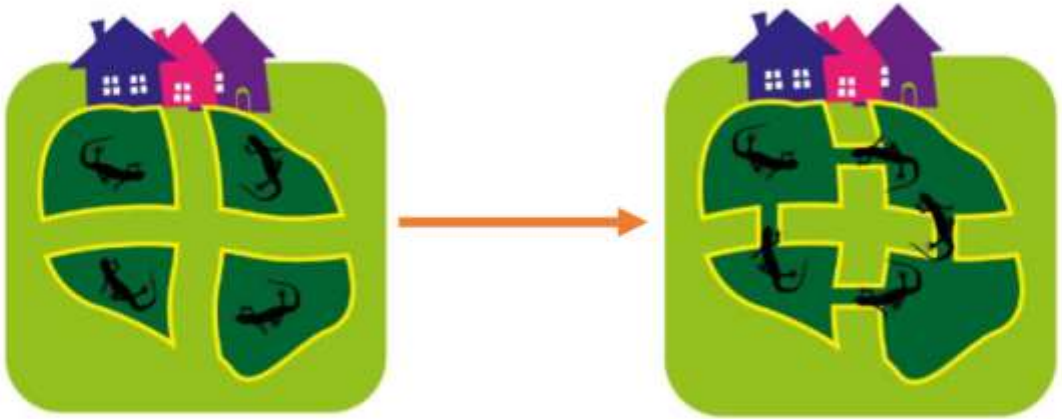
- Photosynthesis – carbon dioxide → oxygen/biomass
- Algae utilising carbon dioxide

Benefits of ponds

Benefits of ponds

- 2/3 of farm ponds – nitrous oxide sinks

Benefits of ponds



Benefits of ponds

- Flood alleviation

What's the bad news?

- Small temporary ponds least efficient
- Disturbed ponds
- Different ponds with differing purpose

What's the bad news?

- Ponds as carbon sources?
- Permafrost thaw ponds – source of carbon release
- Smaller ponds becoming carbon emission hotspots
- These ponds aren't creating these gases however

What's the bad news?

Actions to take forward

- Wetland decline by 1/3 since 1975 globally
- Human activity is largely to blame

Actions to take forward

Actions to take forward

Actions to take forward

- Ponds for;
  - Education
  - Wildlife / biodiversity
  - Carbon storage?

Actions to take forward

- Pond creation where possible
- Leaving existing ponds undisturbed

Actions to take forward

- Greater legal protection for ponds

To conclude

- Ponds sequester carbon at a higher rate than grasslands / woodlands
- Ponds equate to 0.0006% of land area in the UK
- Grasslands equate to 36% of land area in the UK

To conclude

Further studies?

- Where do lined ponds fit in?
- Are all lined ponds the same anyway?

Further studies?

- How will climate change in turn affect ponds?

Froglife at COP26 – our messages

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- Climate change poses a huge threat to amphibians and reptiles. The UK Government must set binding targets to keep global temperature rises to below 1.5°C.
- Animals like frogs, newts, toads, lizards and snakes face a number of threats, including habitat loss, pollution, disease, exploitation and climate change.

Froglife at COP26 – our messages

- Many ponds are even better at storing carbon than woodland and are biodiversity hotspots. Throughout the last decade, Froglife has created more than 500 ponds in our mission to protect and conserve amphibian and reptile wildlife.

References

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Come Forth for Wildlife

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