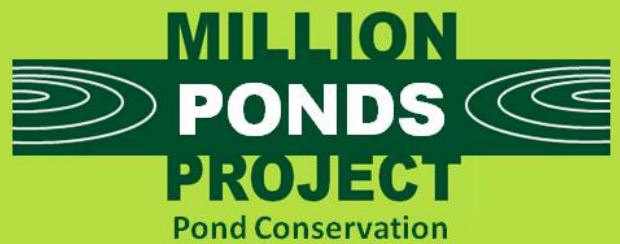


Llandeilo Common



A 50-YEAR PROJECT TO CREATE A NETWORK OF CLEAN WATER PONDS FOR FRESHWATER WILDLIFE

Background

- This factsheet reviews the problems encountered in this pond creation project on Llandeilo Common. The aim of the project was to create small, shallow ponds for the aquatic fern pillwort (*Pilularia globulifera*), the invertebrate fairy shrimp (*Chirocephalus diaphanus*), and to provide additional watering for livestock. A total of 9 ponds were created but seven were subsequently filled in because they did not hold water.
- The project illustrates how good knowledge of local geology and hydrology, and good communication between stakeholders are both key in delivering a successful pond creation project.
- The area is privately-owned common land which is grazed by sheep and ponies. The site is designated as a Site of Special Scientific Interest (SSSI).

Key Points

This factsheet shows how pond creation must:

- Be carefully planned – including investigation of the local geology and hydrology.
- Be carefully supervised during the on-site pond excavations.
- Get 'buy-in' from all those involved at a site.



Pillwort – a species of seasonal, fluctuating pools grazed by livestock.

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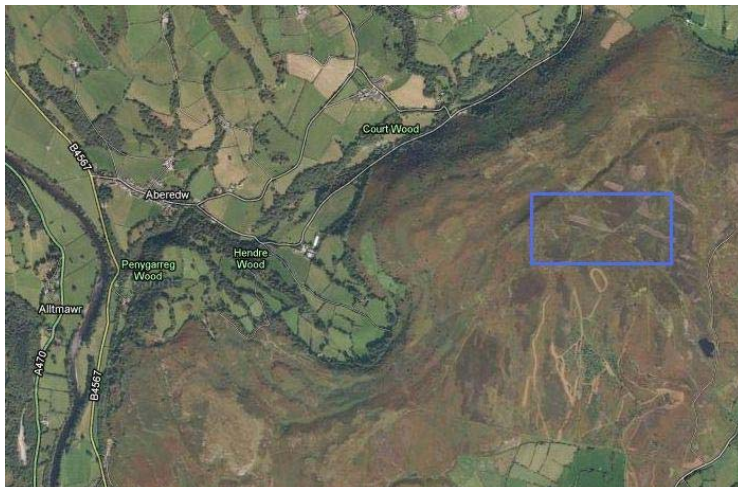


Figure 1. Satellite image of Llandeilo Common, an area of upland heathland in Powys, mid-Wales.

Meeting the Million Ponds Project criteria

The concept of the project was sound in that the new ponds would meet all of the Million Ponds Project criteria:

- **Clean water** – the ponds were located in high quality upland heath habitat, free from pollution.
- **Nothing added** – the ponds would be left to colonise naturally.
- **Free from disturbance** – the site is grazed at low intensity and most areas outside of footpaths receive relatively little pressure from walkers or dog walkers.

- **Design principles** – Pillwort requires extensive drawdown zones created by fluctuating water levels, and fairy shrimp is a temporary ponds specialist, so both species benefit from ponds that dry out annually. The area is grazed and it was hoped that pillwort spores and fairy shrimp resting eggs would be brought to the new ponds by livestock roaming the common.

Sketch map showing the ponds created on Llandello Common

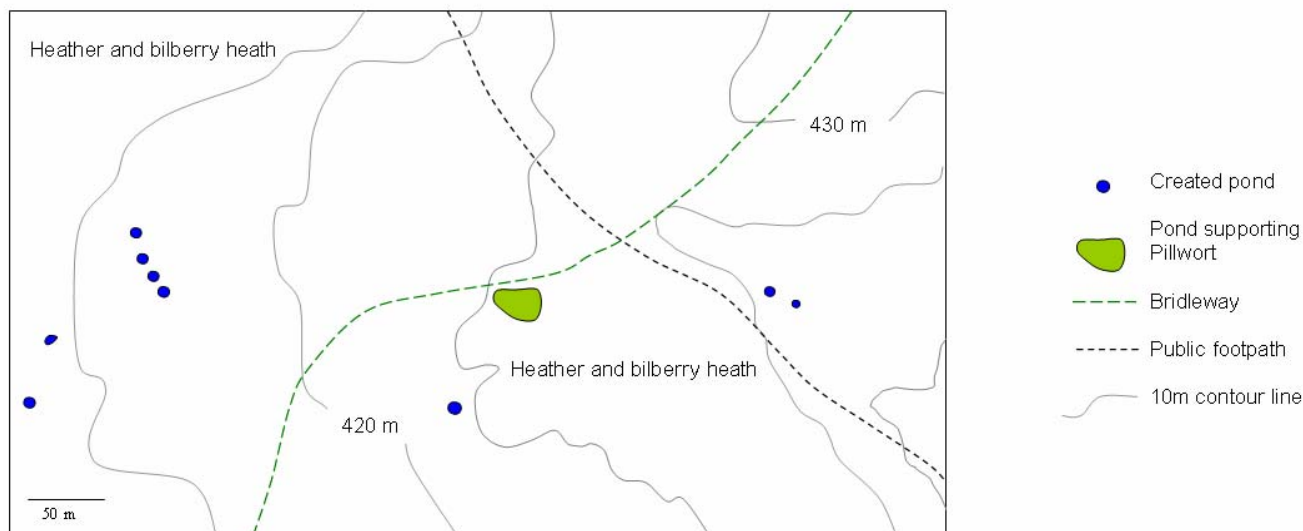


Figure 2. Sketch map of area

Planning and preparation

- Many surface water pools exist in the immediate vicinity of the location of new ponds. Since the local climate is rather wet, and the potential catchment areas for the ponds quite extensive, it was assumed that no further investigation of the local geology and hydrology was needed, and that the ponds would hold water for sufficient time to provide a habitat for pillwort and fairy shrimp.
- Permission for the project was obtained from the landowner and, since the common is an SSSI, consent was also obtained from the local officer from the Countryside Council for Wales. Ideally, the graziers should also have been consulted but because the landowner agreed to the project, this somehow was not done.
- Locations for the ponds were identified during site visits in areas of lower quality heather or patches where heather had been burned for management purposes, so that spoil spreading following the excavation of the ponds would have little impact on the surrounding area.

Construction

- A 2-ton tracked mini digger driven by a local contractor was used to excavate 9 ponds over a two-week period in autumn 2009. A small digger was selected because of difficult access to this upland site, and to help prevent damage to sensitive heathland vegetation.
- The contractor was left unsupervised and as a result even when it should have been clear that the substrate was likely not to hold water properly – mainly coarse shale and sand, with no or very little clay – more ponds continued to be excavated. With adequate supervision, the pond location would have been changed, or the whole scheme put on hold until trial holes had been dug and monitored.

- The lack of supervision also means that the new ponds were poorly designed – more bomb crater than natural ponds:
 - The pond banks and sides were too steep – reducing the area of drawdown and so suitability for the target species.
 - Instead of the spoil being spread around the edges of the ponds it was landscaped into a ‘lip’ around the ponds which prevented surface run off entering the pond (see below).

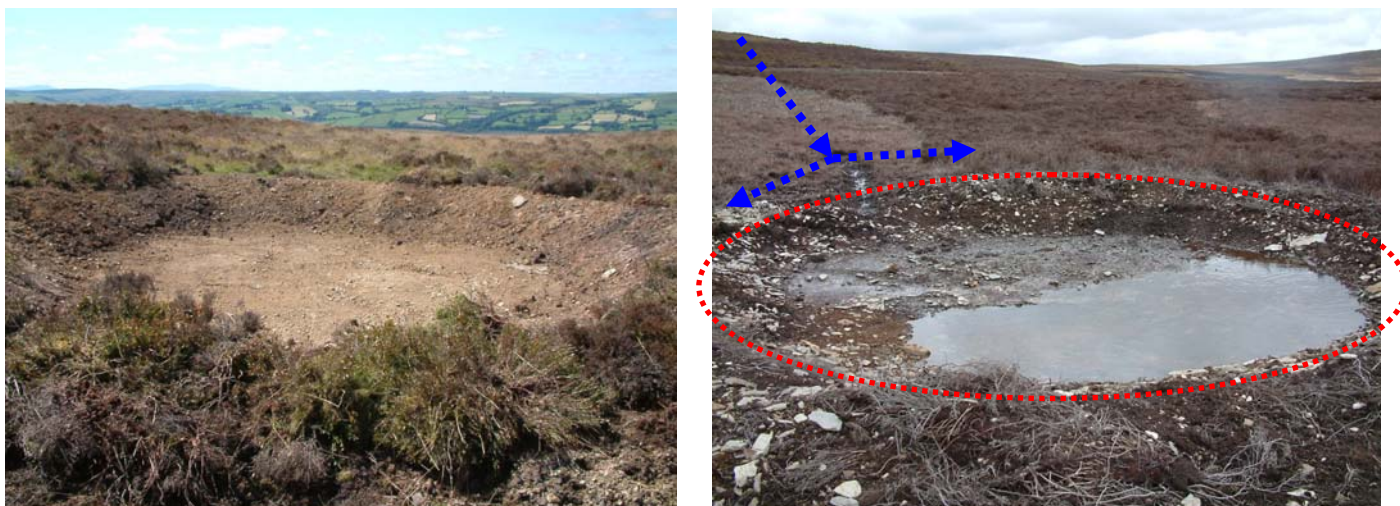


Figure 3. Left: New pond showing the steepness of the pond banks. Right: Spoil was deposited around the edge of the newly created ponds forming a lip which prevented surface run-off from entering the pond. Path of surface run-off from *potential pond catchment area* is shown by the dotted blue line - and so considerably reducing the pond catchment area – *actual pond catchment area* shown here by the dotted red line. (Photographs: Pond Conservation)

Outcome

- Due to the nature of the substrate and the poor design which restricted the size of the pond catchment area, the ponds only held water for a short time after heavy rainfall – not long enough for wetland vegetation to become established.
- Since the ponds have failed to create wildlife habitat or additional watering points for livestock, and their design was so poor, all but two were filled in 2012.
- The two remaining ponds will be re-landscaped so that they can receive the run-off from the surrounding land and their banks will be made shallower so that a wider drawdown zone is created, and the pond design emulate existing ponds at the site. Over time they may self-seal as livestock compact the sediment and silt washes into them.
- The graziers are now working with the CCW officer to identify where new ponds may be located.



Figure 4. The new ponds created in 2009 would fill with water but then appear to be empty a short while later. These photos were taken 2 weeks apart. (Photographs: Pond Conservation).

Cost and funding

- The total cost of excavating the ponds was £1725.00 for 9 ponds, which was covered by a grant from Biffaward through the Million Ponds Project's Pond Digging Fund.
- The estimated cost of filling eight of the ponds is about £300.
- Landscaping to improve the design of the remaining two ponds will be carried out by volunteers with the local Wildlife Trust.

Lessons learned:

- In most cases you need to dig and monitor trial holes to assess the water retaining capacity of the substrate. Test holes can be as small or as large as you need them to be, depending on the design of the ponds in the proposed scheme. They can be hand dug, or excavated using a digger, again depending on the scale of the scheme, the design specifications (do you want a permanent or temporary pond?), and the funding available.
- Make sure that all relevant parties are contacted and agree to the scheme before work takes place.
- Ensure that the contractor is properly briefed and supervised. Ideally plans should be drawn up – these can be rough or detailed, depending on the complexity of the scheme and the local conditions should ideally include surface area, maximum depth and bank angles.

For further advice creating ponds, please consult the Pond Creation Toolkit.

For further information about the Million Ponds Project and to consult other factsheets in the Pond Creation Toolkit, please visit www.pondconservation.org.uk/millionponds or email enquiries to info@pondconservation.org.uk