

Creating ponds for Yellow Centaury *Cicendia filiformis*



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

1. Why is Yellow Centaury such a rare plant?

Yellow Centaury *Cicendia filiformis* is a very delicate (12cm) annual plant (Figure 1). It has a basal rosette of leaves which lie flat against the soil and a slender stalk, topped with tiny lemon-yellow flowers. These have just four petals. It grows on closely-grazed turf in winter-wet depressions on heathlands and acid grasslands.

Unfortunately the loss of heathland habitats, the loss of seasonal pools, and a decline in heathland grazing means that Yellow Centaury is now considered vulnerable to extinction. It is largely confined to the Lizard (Cornwall), the New Forest (Hampshire) and the Pembrokeshire heaths in south-west Wales (Figure 2). It is undergoing major declines at sites in Cornwall and Dorset, and appears to have become extinct from north Wales, Devon, East Anglia and the Thames Basin Heaths. Pond creation and reinstatement of appropriate grazing management are key to its survival.



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Figure 1. The diminutive Yellow Centaury growing in typically sparse vegetation. It is a very poor competitor and needs seasonal flooding and heavy grazing to create open conditions.

2. Habitat requirements

Yellow centaury is found in places with a long history of traditional grazing management such as the commons of the New Forest where stock are free to roam over extensive tracts of heathland.

It is dependent on a combination of three factors (i) winter-wet habitats, such as temporary ponds and seasonally flooded depressions in trackways, (ii) very short turf created by grazing animals, and (iii) mildly acid substrates on sandy or clayey soils.

Key messages

- **Locate ponds adjacent to existing or historical sites for Yellow Centaury to strengthen and expand the population.**
- **Create shallow ponds with very shallow margins on sandy soils, where compaction will hold surface water in the winter months.**
- **Maintain open habitats by grazing, especially during the autumn/winter months. Reduce grazing during spring/summer to allow plants to flower. Ponds should be heavily grazed but only lightly trampled.**
- **Locate ponds away from intensive land use areas - Yellow Centaury needs high water quality.**
- **Remove invasive non-native species as soon as they occur. Once established they are very difficult to remove effectively.**



Figure 2. Current distribution for Yellow Centaury

Data provided by the BSBI

3. Pond designs for Yellow Centaury

Yellow Centaury is most frequently found during the dry summer months in seasonally-flooded hollows and temporary ponds in heathy grasslands and trackways across heaths. These habitats are often overlooked or 'tidied up' and are rarely included within design plans during heathland re-creation schemes. A few simple steps can create very successful new habitat for Yellow Centaury which will help to support existing populations and perhaps recover lost ones.

Locating ponds

Create a complex of small shallow ponds on sand or clay. This can be a very variable substrate – sands are usually free draining, whilst pockets of clay will often retain surface water during the winter months. It can therefore be difficult to work out in advance which ponds will hold water. Use existing ponds as a guide and if you're not sure, go for small pools which are simple and cheap to make (see *Supplementary Habitat Factsheet: Heathland ponds* for more information on how to create heathland ponds which will hold water). Even if some ponds never hold water, areas of bare soil will provide important habitats for many plants, invertebrates, amphibians and reptiles, and will increase the micro-topography of the site.

Find areas within the site which are heavily grazed but not heavily poached. Yellow Centaury grows where the turf is less than 5cm, with patches of bare ground in the drawdown zone - a habitat which is found around the margins of temporary ponds or in nearby seasonally flooded hollows. Hoof prints can also be used by Yellow Centaury. Ponds in 'pinch-points' (such as gateways) will often receive a very heavy level of trampling and are important habitats for many rare plants in heathlands. However, the level of disturbance will usually be too great for Yellow Centaury which prefers the well-grazed but less poached ground on adjacent trackways (Figure 3).

Ponds for Yellow Centaury need to be fed by clean surface water or direct rainfall. It is important to locate ponds away from intensive land-use areas. This species can withstand some enrichment from the dung of grazing animals but uncontrolled nutrient input will lead to eutrophication, increased growth of competitive plants and a general decline in habitat quality.

Avoid areas with existing high biodiversity value. Sites suitable for Yellow Centaury close to existing populations are likely to have high biodiversity value as many rare plants and invertebrates are found in grazed heaths and acid grasslands. Pond creation should enhance, not replace, good quality habitats. Opportunities for pond creation exist during heathland restoration or where there is reinstatement of heathland trackways.



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Figure 3. Tracks across the grazed heathlands of the Lizard (left) and New Forest (right), where numerous wet pools support Yellow Centaury and other rare plants and invertebrates. The pinch-point (left) is too poached for Yellow Centaury due to the high level of animal and vehicle traffic. However, small pools on the adjacent trackway are ideal, being heavily grazed but less trampled. In the summer (right), the shallow ponds dry out to reveal a short turf with patches of bare ground on which Yellow Centaury will germinate and grow.



Pond shape, depth and size

Ponds for Yellow Centaury can be anywhere between 1 to 10m in width and generally less than 40cm deep, with a broad, shallow drawdown zone (Figure 4). Alternatively plants may occur in micro-pools which can be little more than a complex of ruts in a trackway (Figure 5), or hoof prints on a mown fire-break. Inundation should be sufficiently prolonged to prevent terrestrial grasses from becoming established (more than 4 months) but with little or no standing water remaining once the pond has dried out.

Figure 4. Broad and shallow ponds

The drawdown zone is the most important part of the pond for Yellow Centaury. It should be covered with water in winter then slowly exposed over the summer.

Don't be too neat. The micro-topography (bumps and lumps) within the pond will create ideal habitat for Yellow Centaury.

Shallow (10-30cm) winter water depth over wide area becomes summer drawdown zone.

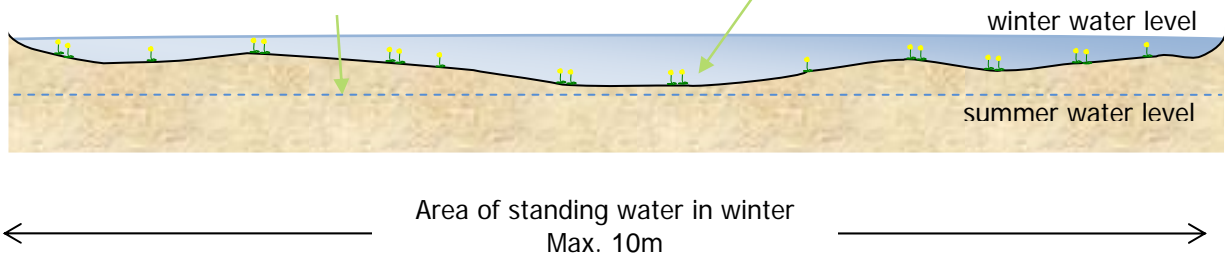
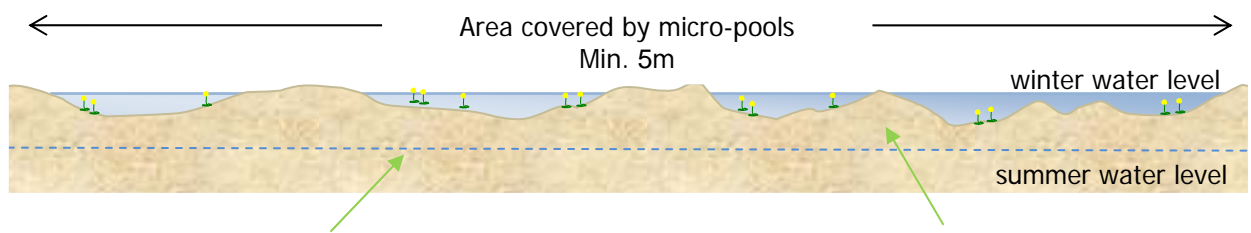


Figure 5. Micro-pools

Create lots of small pools where space is limited and in areas where the water holding capacity of the site is uncertain.

As above, try not to be too tidy - the more irregular the profile the better.



Five or six small pools created in areas where animal grazing produces a very short sward.

Create a variety of pond depths between 10-40cm.

Optimum pond designs will include a mixture of both of the above in a complex of ponds. This will maximize the availability of suitable habitat for Yellow Centaury and allow it to move around the site as conditions become suitable.

4. Management for Yellow Centaury

Yellow Centaury occurs on the edge of large temporary ponds, shallow ephemeral pools and poached damp hollows in heathy grassland. Heavy grazing pressure over extensive tracts of land creates a mosaic of heathland habitats, including areas with a very short-grazed turf which are of prime importance in the maintenance of temporary pond communities. The pastoral economy of traditionally grazed common-lands needs more recognition and support as it is essential to the continued survival of Yellow Centaury and other rare plants and invertebrates.

Livestock maintain an open habitat, control scrub and lightly poach the surface of winter flooded habitats for Yellow Centaury. Grazing animals also transport seed in their hooves from pond to pond. Winter grazing – ideally by ponies - is especially important to maintain open conditions. Summer pony or cattle grazing is a feature of many sites too, but in late summer, grazing levels may need to be reduced to allow plants to flower and set seed. In extensively grazed systems like the New Forest, stock movements during the year provide periods of different grazing intensities. However, bear in mind that each site will have its own grazing challenges and needs.

In less well-grazed sites, there may be potential for flail-mowing of wet areas or pond edges with cut-and-collect machinery which can close-mow or 'scalp' the ground in places, creating patches of bare ground. Where grazing management is not feasible, vehicle movement can be used during the autumn and winter to create areas of bare ground. Heavy vehicle traffic will be needed every 5-10 years, as well as additional scrub management to mimic livestock browsing.

All temporary pond species which occupy bare ground in the drawdown zone are vulnerable to invasion by non-native plant species. Monitor sites for species such as New Zealand Pigmyweed *Crassula helmsii* and remove as soon as they are identified. Once established they are difficult and costly to remove.

5. Further reading

Gimingham, CH. (1992) *The Lowland Heath Management Handbook*. English Nature, Peterborough.

Williams, P., Biggs, J. Fox, G., Nicolet, P. and Whitfield, M. (2001) *History, origins and importance of temporary ponds*. *Freshwater Forum*, 17, pp. 7-15.

Stewart A., Pearman DA. and Preston CD. (1994) *Scarce plants in Britain*. JNCC, Peterborough.

For further information about the Million Ponds Project and to consult other factsheets in the Pond Creation Toolkit, please visit

www.freshwaterhabitats.org.uk/projects/million-ponds

or email enquiries to info@freshwaterhabitats.org.uk



This factsheet was reviewed in 2015 with the advice of Matt Sutton, Wyndrush Wild: <http://wyndrushwild.co.uk/>

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