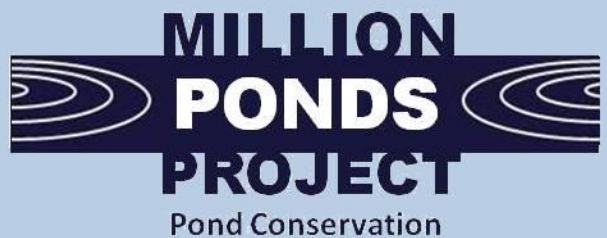


# Creating ponds for Yellow Centaury *Cicendia filiformis*



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) flowering annual (Figure 1). It has a basal rosette of leaves which lay flat against the soil and a slender stalk topped with tiny lemon yellow flowers, comprised of just four petals. This species is found growing on seasonally dry, closely grazed turf in winter wet depressions on heathlands and acid grasslands.

Unfortunately, the loss of heathland habitat, loss of seasonal pools, and cessation of 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 a species of heathland and acid grasslands with a history of traditional grazing management such as the commonlands of the New Forest where stock are free to roam over extensive tracks 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 substrate on sandy/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 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 in the UK

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 restoration. A few simple steps can create very successful new habitat for Yellow Centaury which will help to support existing populations and can restore habitats where Yellow Centaury has been lost.

#### Locating ponds

**Create a complex of small shallow ponds on sandy clayey soils.** 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 in advance to work out 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 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 (~25% of the drawdown zone) - a habitat which is found around the margins of temporary ponds or in nearby seasonally flooded hollows. Ponds in 'pinch points' such as gateways will receive a very heavy level of trampling and are important habitats for many rare plants in heathlands, but the level of disturbance will be too great for Yellow Centaury which prefers the less poached but still heavily grazed pools on the 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 competitively dominant plants and a 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 of the UK's rarest plants and invertebrates are restricted to grazed 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.



**Figure 3.** Trackways across the grazed heathlands of the Lizard Peninsula (left) and New Forest (right), where numerous seasonally-flooded pools support Yellow Centaury and other rare plants and invertebrates. The pinch point (left) is too heavily 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 not heavily trampled. In the summer (right) the shallow ponds dry completely to reveal a short turf interspersed with patches of bare ground on which Yellow Centaury will germinate and grow.



### Pond shape, depth and size

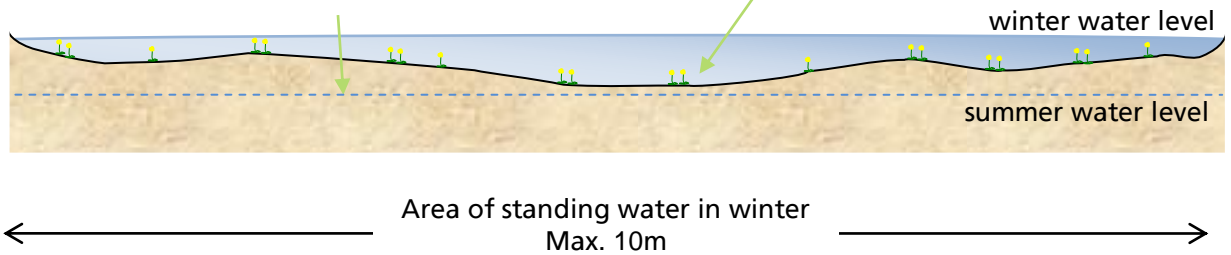
Ponds for Yellow Centaury can be anywhere between 1 to 10m in width and generally less than 40cm deep, with a broad shallow drawdown zone (Figure 4). Alternatively plants may occur in micro-pools which can be little more than a complex of ruts in a trackway (Figure 5). Inundation should be sufficiently long to prevent terrestrial grasses from becoming established (more than 4 months) but with 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.

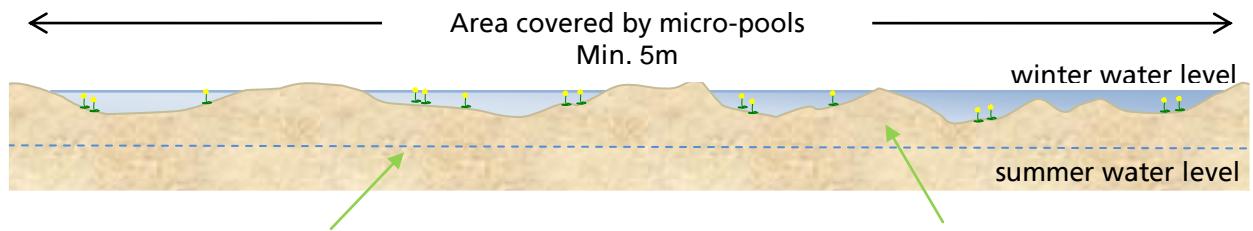
Shallow (10-30cm) winter water depth over wide area becomes summer drawdown zone.



#### 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 to 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 traditional grazed commonlands needs 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 widely from pond to pond. Winter grazing is especially important to maintain open conditions. In the summer, grazing levels should 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.

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 grazing conditions.

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**  
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