SPECIES DOSSIER

Creating ponds for Coral Necklace *Illecebrum verticillatum*

MILLION PONDS PROJECT
Pond Conservation

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

1. Coral Necklace a rare jewel

Coral Necklace is a rare flowering plant which is restricted to a few sites in southern and south-west England. It is a beautiful and unmistakable species with long trailing red stems (15-20cm) and clusters of white flowers resembling beads threaded along a necklace (Figure 1).

With the loss of heathland habitat in the last century and a decline in grazing management, Coral Necklace has undergone a major decline, particularly in Cornwall and Berkshire. However, the species is still locally abundant in the New Forest and on Bodmin Moor, and has recently colonised the Dorset, Wealden and Thames Basin heaths (Figure 2). This suggests that habitat creation and the instigation of appropriate management could significantly benefit Coral Necklace and extend its range further.

Figure 1. Coral Necklace growing on heavily disturbed ground which is covered with standing water in the winter.

Key messages

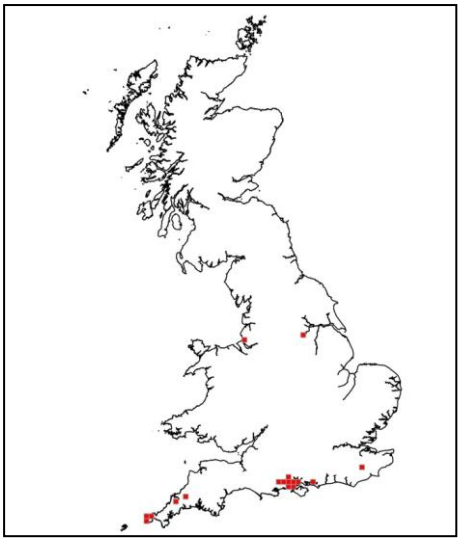
- **Locate ponds adjacent to existing or historical Coral Necklace sites. It will readily spread within a site wherever there are suitable conditions and where viable seeds remain in the soil.**
- **Create very shallow ponds with very shallow margins, as little as 10cm depth for at least 1m width.**
- **Needs fluctuating water levels which will reduce the cover of other terrestrial and aquatic plants.**
- **Maintain open habitats by grazing with cattle or ponies year-round. Compaction will help to retain standing water in winter.**
- **Remove invasive species as soon as they occur. Once established they are very difficult to remove effectively.**

2. Habitat requirements

Coral Necklace can be found in a range of different heathland habitats, though three factors seem to be key to its survival:

1. Winter wet habitats, such as temporary ponds and seasonally flooded depressions in trackways,
2. Very short and/or open vegetation created by grazing animals,
3. Mildly acid substrate on sandy soils – often where a thin layer of mud has collected to locally impede the drainage.

Coral Necklace is most frequently found in seasonally-flooded hollows and pools in heathland and heath grasslands; and in seasonally-flooded trackways across heaths and in conifer plantations. Ideally sites should receive a heavy level of extensive grazing, though the species can survive in trackways with mechanical disturbance through vehicle usage.



Data provided by the BSBI

Figure 2. Current distribution of Coral Necklace in the UK

3. Pond designs for Coral Necklace

The temporary pond habitats of Coral Necklace are often overlooked or 'tidied up' and are rarely included within site design plans. A few simple steps can create very successful new habitat for Coral Necklace which will help to support existing populations and may restore habitats where Coral Necklace has been lost.

Locating ponds

Coral Necklace is found in acid grasslands on sandy soils usually within a heathland mosaic. Many conservation plans seek to restore this habitat type particularly following forestry and aggregate operations. Consider pond creation for Coral Necklace as part of the restoration scheme, particularly in sites with historical records for this species.

Ponds for Coral Necklace will be surface water fed. It can be difficult to determine which ponds will hold water on these free draining soils. If you're not sure, go for small pools which are simple and cheap to make. If they don't hold water these hollows will add to the micro-topography of the site. Be prepared to be flexible and change design plans as needed.

Trampling, particularly in trackways, creates compaction which will retain surface water during the winter months. Identify areas where this pressure is likely to be greatest, e.g. at pinch points in gateways, where the surrounding vegetation funnels stock into one area or where a number of paths meet (Figure 3).

Manage ponds with moderate/heavy grazing. Coral Necklace needs a very short (<5cm), poached sward (more than 50% bare ground). This is best achieved with extensive grazing throughout the year, using cattle or horses/ponies. Pond creation for Coral Necklace will only be successful where this level of management is sustained.

Figure 3. Coral Necklace habitat in summer (left) when flowering plants are present and winter (right) showing seasonal inundation and heavy poaching.

Pond shape, depth and size

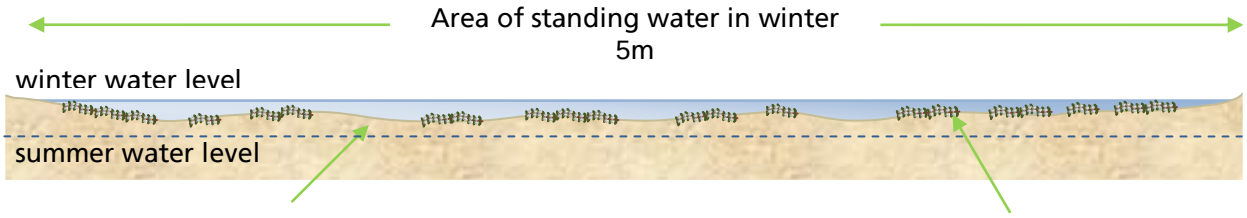
Coral Necklace is an annual plant which is found growing on the bare ground of shallow ponds and drawdown zones during the summer months. Inundation should be sufficiently long (4 months) to prevent terrestrial grasses from becoming established but with no standing water remaining once the pond has dried out. Creating small shallow temporary pools is as easy as digging a $1m^2$ shallow scrape (Figure 4). If the pond never holds water nothing has been lost as small depressions will add to the micro-topography of the site.

Figure 4. Pond profiles for Coral Necklace

Option 1: Pond design is broad and shallow

Create shallow untidy scrapes where animal poaching or vehicle traffic is likely to be high.

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



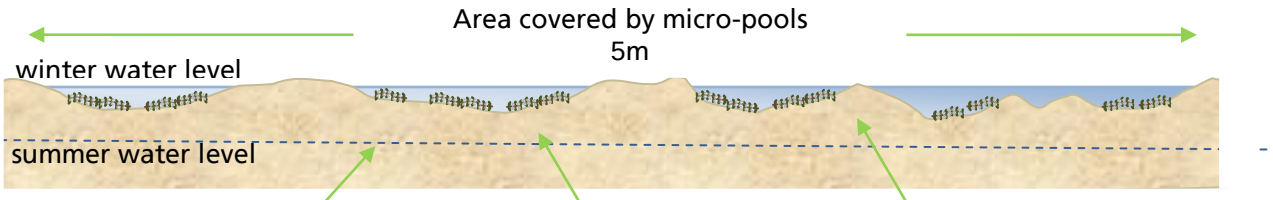
Dry in summer, wet in winter. Coral Necklace grows on bare mud revealed after water levels recede.

Maximum water depth 10-20cm.

Option 2: 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. Poaching by animals will add to the profile.



Five or six small pools created in areas where animal traffic is concentrated.

Dry in summer, wet in winter. Coral Necklace grows on bare mud revealed after water levels recede.

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 Coral Necklace and allow it to move around the site as conditions become suitable.

4. Management for Coral Necklace

Grazing

Ponds for Coral Necklace should require no additional management. A high level of stock grazing, throughout the year is essentially the only form of sustainable management. Most sites occur where there has been a long continuity of grazing, such as the commonlands of the New Forest, though the species can persist for some time in ungrazed or under-grazed grass heath where mechanical disturbance (e.g. off-road vehicle movement) creates open conditions locally.

Grazing densities should be high enough to exposure bare soils though poaching. It is difficult to be prescriptive about the exact number of stock as this will depend on the surface area of the ponds and the movement of animals within the site (see *Supplementary Habitat Design Factsheet: Creating ponds in grasslands* for more information).

Invasive species

The invasive non-native plant New Zealand Pigmyweed *Crassula helmsii*, can thrive in the same conditions as Coral Necklace but is much more aggressive. It takes over the available bare ground and leaves little room for Coral Necklace to move around the site. Ponds for Coral Necklace should be monitored and if New Zealand Pigmyweed is found, it should be removed before it becomes established.

Planning for change

Creating very shallow pools to support species such as Coral Necklace does not mean that ponds will be short lived. Heavily grazed ponds with winter flooding can persist for a very long time in the landscape. However, conditions change and micro-pools should be expected to come and go across a site. Observe changes and create new pools to take advantage of new areas of intensive grazing. Natural ruts in trackways and elsewhere should be retained and paths should be allowed to become braided and uneven.

5. Further reading

Murphy, RJ. (1994) *Illecebrum verticillatum*, in Stewart, A., Pearmand, DA. and Preston, CD. (eds). Scarce plants in Britain. Peterborough. Joint Nature Conservation Committee.

Pearman, D. (2010) The decline of *Illecebrum verticillatum* (Coral Necklace) in Cornwall, in Bennallick, IJ. and Pearman, DA. (eds.) Botanical Cornwall No. 14. Botanical Cornwall Group and the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS).

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*

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