

Creating ponds for Brown Galingale *Cyperus fuscus*



Freshwater Habitats Trust

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

1. Brown Galingale – a species under threat

Brown Galingale is a small (up to 25cm) annual sedge, with tiny clustered chestnut-brown flowers, surrounded by three long leaf-like bracts (Figure 1). It occurs on the open, shallow margins of seasonal pools, on mildly acidic silty peats and gravels, and on areas of winter wet poached ground. Brown Galingale germinates as water levels recede; flowering from late July until September (and sometimes later).

Brown Galingale is associated with commonlands that have a long history of grazing by cattle and horses. Cessation of grazing, infilling and deepening of temporary pools and the loss of this habitat type have led to a significant decline in this species which has only ever been recorded from 12 sites (Figure 2). Brown Galingale is Globally Threatened and classified as Vulnerable in the UK. It is protected under Sch. 8 of the Wildlife and Countryside Act.



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Figure 1. Brown Galingale is a small annual sedge which needs bare ground to germinate.

2. Habitat requirements

Brown Galingale has three basic habitat requirements, (i) winter wet habitats that dry in summer, i.e. temporary ponds or permanent ponds with a very broad, shallow drawdown zone, (ii) very short vegetation and poached bare ground created by grazing animals, or wildfowl which removes other competing vegetation, and (iii) mildly acid silty peats and gravels in which to germinate and grow.

Individual populations can fluctuate dramatically from year to year. In good years at exceptional sites there may be tens of thousands of plants. These explosions occur following heavy disturbance of pond margins combined with a strong summer drawdown of water levels exposing large areas of marginal mud. Brown Galingale is at the northern limit of its distribution in the UK and is one species which may benefit from increasing temperatures if it has suitable habitat to move in to. The seeds of brown galingale may remain viable for 20 years or more, so the species may be revived at historic sites through pond creation and the restoration of favourable management.

Key messages

- Locate ponds adjacent to existing or within historical Brown Galingale sites.
- Create shallow ponds with very shallow margins. These will be covered with water in winter, but will be bare mud by late spring, early summer. Brown Galingale needs seasonal fluctuations in water levels to reduce the cover of terrestrial and aquatic plants.
- Create ponds in areas free from nutrient enrichment. Although this species can tolerate relatively high levels of eutrophication, it is readily outcompeted by other marginal vegetation.
- Maintain open habitats - using very heavy grazing with cattle or ponies.
- Make a complex of ponds. Brown Galingale will move between ponds within a site as conditions change.
- Remove any invasive species as soon as they are detected.

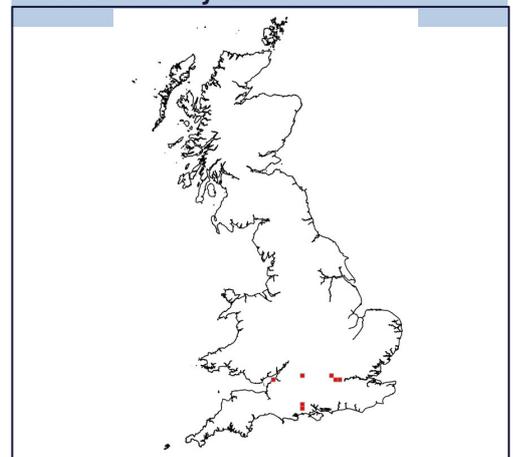


Figure 2. Current distribution of Brown Galingale in the UK.

3. Pond designs for Brown Galingale

The historical rarity of Brown Galingale suggests that it may have rather exacting habitat requirements. However, where the correct combination of wide draw-down zones and heavy trampling are combined, Brown Galingale can be locally very abundant (Figure 3).

Create ponds close to existing populations, at least within the same grazing unit as Brown Galingale is thought to spread to new ponds as seed on the feet of grazing animals. However, pond creation is not always possible where existing sites are small. Care is also needed not to inadvertently upset the hydrology of the existing pond. Creating new ponds and reinstating grazing within historical sites may help to reinstate the population.

Locating ponds

- **Brown Galingale is found in grassy heathlands and floodplain grassland** on mildly acidic silty peats and gravels. Ponds may be either surface or groundwater fed, but must have fluctuating water levels to reveal the bare mud on which Brown Galingale germinates.
- **Brown Galingale is tolerant of nutrient enrichment** and is not *directly* threatened by fertiliser run-off from farmland etc. However, enrichment leads to the rapid dominance of ranker vegetation leaving little suitable habitat for Brown Galingale.
- **Ponds for Brown Galingale should be temporary or with naturally fluctuating water levels.** The impermeable layer to hold this water may be due to clay deposits in otherwise freely draining soils or the poaching action of grazing animals causing compaction.
- **Create ponds to maximise the amount of poaching.** Brown Galingale is a poor competitor and needs a lot of bare ground to germinate and grow successfully. Grazing by cattle or ponies is the only successful management technique, but it is also important to consider grazing densities. Locating ponds strategically in pinch-points e.g. by gateways, may be valuable to increase the level of grazing pressure (Figure 4). Similarly poaching can be intensified using fencing, to control where stock access the pond margins to drink.
- **Brown Galingale needs heavy grazing.** The grazing pressure upon a pond depends on (i) the number/area of waterbodies and size of grazing unit, and (ii) the head of stock *in the grazing unit as a whole*. This means that given the same grazing density, a pond in a small field (with few cattle/ponies) will be less grazed and poached, than the same pond in a larger field with more livestock. As the number of ponds in a field increases, grazing pressure per pond will decrease.
- **Create a complex of small shallow ponds** as these will be grazed more effectively across the entire pond basin than larger ponds. Brown Galingale will move around a site to germinate where conditions are favourable. As long as there is still sufficient grazing pressure, increasing the number of ponds in future years will increase the stability of the population by increasing the availability of suitable habitat.



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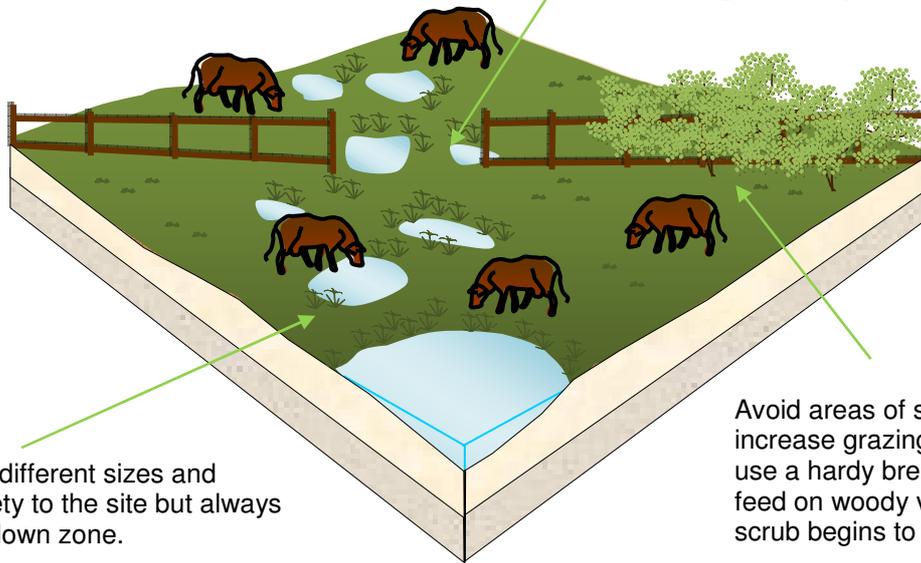
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Figure 3. Habitat for Brown Galingale - this sedge needs heavy grazing to reduce the cover of other plants and a broad drawdown zone. These winter flooded temporary ponds are heavily poached and have over 75% bare ground when the pond dries down at the end of spring.

Figure 4. Locating ponds for Brown Galingale to maximise grazing pressure

A complex of ponds will strengthen the population, allowing Brown Galingale to move between ponds as conditions become suitable.

Small water bodies are more easily poached particularly if they are positioned in areas with heavy use by stock – e.g. trackways and gates.



Create ponds with different sizes and depths to add variety to the site but always with a broad drawdown zone.

Avoid areas of scrub - increase grazing pressure or use a hardy breed which will feed on woody vegetation if scrub begins to encroach.

Pond shape, depth and size

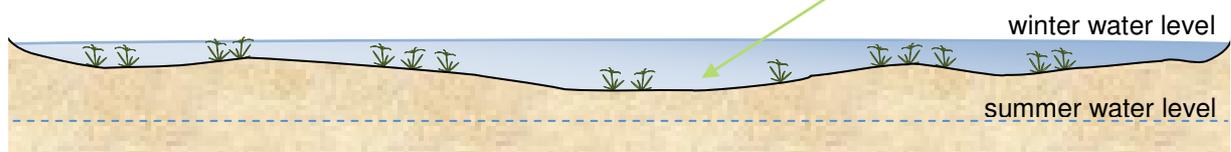
Creating ponds for Brown Galingale does not need complicated design plans. If the pond has a very gentle profile (Figure 5) and seasonally fluctuating water levels it is suitable, provided that it is not heavily shaded. Creating small shallow temporary pools is as easy as digging a 1m² shallow pit. If the pond never holds water nothing has been lost, the depression will add to the micro-topography of the site. If creating ponds in one area is particularly successful, focus on creating more pools there in the future.

Figure 5. A very shallow pond profile over a wide area is suitable habitat for Brown Galingale

The drawdown zone is the most important part of the pond for Brown Galingale. It should be covered with water in winter then slowly exposed over the summer. This zone needs to be heavily poached to maximise the area of bare ground.

Few other plants will grow in these conditions but those that do are often as rare as Brown Galingale and will benefit from new pond creation.

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



Size 5-10m.

← This could be the whole pond or the margin of a larger body of water. →

4. Management for Brown Galingale

The decline of Brown Galingale has resulted from changes in traditional farming practices. Any decline or cessation of grazing will lead to encroachment by vegetation, reducing the availability of open space and microsites that this species requires. Ideally, Brown Galingale needs periods of intense grazing to create open conditions (Figure 6), interspersed with periods of rest to allow the plants to develop. To promote this, heavy grazing should be avoided from June to October.



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Figure 6. Heavy grazing creates the bare poached ground needed by Brown Galingale. At this site the geese create additional disturbance on top of the rough trampling cause by the cattle.

Because this species requires fluctuating water levels, lowering, or regulating of groundwater levels will adversely affect this species. Management of surrounding land can therefore be as important as management of the site itself.

To reduce competition from other plants, occasional dredging of vigorous reeds and other vegetation may be necessary. Periodic pollarding of poolside trees such as willow may also help by increasing light levels. With any dredging or terraforming operation, careful thought should be given to the removal of substrate which may contain Brown Galingale seed. This may provide a source for new populations.

Monitoring of extant sites is important to determine trends in population size, the precise locations of seed banks and to indicate any habitat management required. Monitoring at sites where the species is no longer visibly present is desirable to encourage sympathetic habitat management and to record any recovery from dormant seed.

At several of the most important sites for Brown Galingale, invasive non-native species including New Zealand Pigmyweed *Crassula helmsii*, Parrot's Feather *Myriophyllum aquaticum* and Creeping Water Primrose *Ludwigia peploides* are posing a severe risk to Brown Galingale and other native species. Invasive species should be controlled as soon as they are identified. Once established they can be difficult and costly to remove.

5. Further reading

Chatters, C. (2009) Brown Galingale at Braemore Marsh. *British Wildlife* 20(6): 400-404.

Plantlife (2010) Briefing sheet on Brown Galingale *Cyperus fuscus*.
http://www.plantlife.org.uk/uploads/documents/Brief%20sheet%20-%20Brown%20Galingale%20Cyperus_briefing_sheet.pdf

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 or email enquiries to info@freshwaterhabitats.org.uk

