Information and advice note

Version 1 –
June 2003

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Creating wader scrapes and flashes on farmland.

Summary

Several species of wading bird of conservation concern use farmland on which to breed. They may nest in spring crops and tillage on arable land, in wet grassland or in-bye pasture. However, drainage and improvement of grassland to provide better grazing and forage has greatly reduced suitable areas for feeding and nesting . An opportunity to offset some of the declines in breeding waders on farmland is possible through the creation of scrapes and wet flashes with sparse marginal vegetation. These can provide important feeding areas for adult and young birds alike, and can help a range of other important species of bird throughout the year. Table 1 lists the birds likely to benefit by the creation of scrapes and flashes.

Table 1: Birds of conservation concern likely to benefit from the creation of a scrape.

Species	BoCC status	Requirements for nesting	Requirements for feeding
Curlew	Amber	Tussocky damp grassland or heathland.	Pastures, damp fields, particularly with wet flushes
Lapwing	Amber	Short grass (0- 12cm) with some tussocks, spring tillage or bare ground	Short vegetation and wet mud in damp grassland and water margins,
Redshank	Amber	Short (5-15 cm) damp grassland with tussocks, close to standing water.	Damp grassland, marginal vegetation, mud and shallow water.
Snipe	Amber	Wet pastures and boggy heaths with a tussocky sward of 10-30 cm.	Soft damp ground, or shallow muddy bottomed pools. Close to cover.
Oystercatcher	Amber	Short grassland, bare ground or shingle banks, all with open views.	Short grassland, and marginal vegetation with soft damp ground to probe for food.
Ringed Plover	Amber	Bare stony ground including spring tillage	Soft damp mud or dry muddy areas.
Teal	Amber	Tussocky marsh vegetation near shallow water.	Aquatic invertebrates and weed seeds.
Shoveler	Amber	Tussocky marsh vegetation near shallow water.	Aquatic invertebrates and weed seeds
Water Rail	Amber	Tall dense clumps of marsh vegetation in shallow standing water.	Invertebrates
Turtle Dove	Red	Dense scrub and thick tall hedges often in climbers.	Weed seeds especially around short sparse vegetation.
Yellow Wagtail	Amber	Damp meadows or cereal fields	Insects from grazed pasture and short, sparse marginal vegetation around pools.
Song Thrush	Red	Trees, hedges or scrub.	Invertebrates, especially earthworms and snails, and, in autumn, fruit.
Starling	Red	Trees, buildings or nest boxes	Insects and seeds from grazed pasture and short, sparse marginal vegetation around pools.
House Sparrow	Red	Buildings or nest boxes, hedges or scrub	Insects and weed seeds.
Tree Sparrow	Red	Trees, buildings or nest boxes	Insects and weed seeds.
Linnet	Red	Thick thorny hedges. Also, scrub and brambles on grassland and waste ground.	Insects and weed seeds.
Yellowhammer	Red	Thickets and tall thick grass.	Insects and weed seeds.
Reed Bunting	Red	Ditch edges, crops and set-aside. Occasionally in hedges.	Insects and weed seeds.
Corn Bunting	Red	Crops, set-aside and field margins.	Insects and weed seeds.

BoCC= Birds of Conservation Concern: 2002-2007 (RSPB) Red = high concern, Amber = medium concern

The Countryside Stewardship Scheme, operated in England by DEFRA, provides payments to farmers to improve and extend wildlife habitats, including scrapes. This Information and advice note provides guidance on how to create and manage shallow scrapes and wet flashes for wetland birds on farmland. The landscape feature likely to be most appropriate to scrapes within the Countryside Stewardship Scheme is waterside land. Where there are no conflicts with other priorities, scrapes could also be considered for arable land, low lying coastal land, degraded old meadows and pasture, and for upland.

Assessing the habitat

Scrape creation should only be attempted in suitable areas. These are often in low-lying poorly drained areas of fields, where as a result, crop yield and productivity is low. It is important to consider all the issues before proceeding, and where necessary, specialist advice should be sought. Table 2 identifies the key issues needed to be assessed.

Table 2 Key issues to be considered in scrape creation

Issue	Rationale	Points to consider
Geographic location	Breeding waders have been lost from large areas of the country. Newly created habitat may be only slowly colonised by target species.	• Target species should ideally be present in the locality to enable colonisation.
Site suitability	Waders generally require unenclosed habitats with an open and tussocky vegetation structure.	• The site should be unenclosed, being relatively free of hedgerows, trees and other screening. • Is the site accessible for grazing or cutting management required to maintain the habitat structure.
Hydrology and soils	Adult waders and their chicks feed in damp soil and shallow water with muddy margins	• Can shallow water be maintained throughout the spring and early summer? (water control structures will be needed to manage water levels in some cases). • Are the soils suitable? Free draining soils are generally unsuitable unless the water table is close to the surface. • Have the water flows entering or leaving the area been identified and quantified. • Consult with appropriate authorities to ensure there is no conflict when altering drainage.
Potential conflict with other features:	A scrape should NOT be created in areas where there is a conflict of interest, for instance where there is: • Environmental • Historic and archaeological, or • Cultural landscape interest.	• Does the land have existing conservation value; eg a wet marsh or species rich flower meadow? • Is the land a Scheduled Ancient Monument, other archaeological site, or ridge and furrow field system? • Are there existing public rights of way?

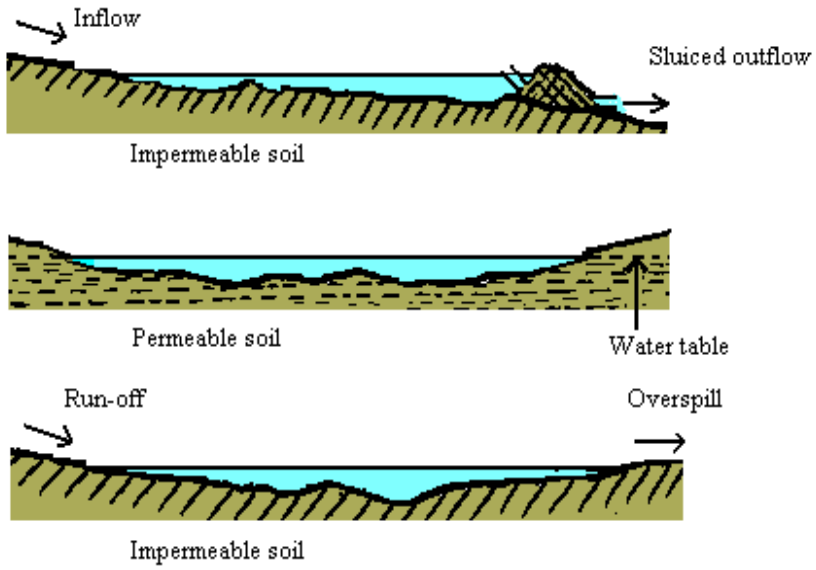
Creating the scrape

Scrapes may be located in a range of soil and hydrological conditions (see Figure 1) but most frequently will be on relatively level open land, preferably seeking a known damp area where water lies naturally on impermeable soils. Creating a scrape is often simply a case of reversing or reducing the function of drainage in a particular area, in others water may be directed to a chosen location. Assess the soils and drainage patterns for the site and if necessary, block any drains that take water away from the scrape area or redirect others to drain into it. Consider any likely impacts created up-stream by blocking or diverting drainage and consult with the necessary statutory agency (eg The Environment Agency in England and Wales) for further advice. In potentially difficult situations, it may be necessary to assess rainfall against evapo-transpiration and volumes of water flow throughout the critical spring period, using local climate data from the Meteorological Office. Expert assistance may be required at this stage.

- There is no minimum size of scrape but 1 hectare will provide an adequate amount of feeding habitat.
- Several small flashes could be created instead of one larger one, and will provide more marginal habitat, but may also require more maintenance.
- Sculpting a convoluted, or sinuous, edge to the scrape will increase available feeding area and is likely to provide shelter in windy weather.
- Water depths in the scrape in early spring should typically be between 0–25 cm over half of the area and the remainder 25-50 cm.
- Ideally locate in a natural depression; otherwise, earthmoving, undertaken during a dry period, may be required to achieve the correct depth.
- A very gentle slope with an uneven finish will allow shallow wet pools to remain longer within the scrape and allow a gradual exposure of the feeding surface.

Any spoil material that is the by-product of excavating the scrape should ideally be removed away from the area. Alternatively, the spoil could be used to construct a bund around the downstream edge of the scrape. Note that this may limit the openness of the scrape and reduce its attractiveness to birds. Bunds need to be carefully engineered so that they are stable and impervious. It is very important to consult with the appropriate authorities to ensure that designs are appropriate and storage capacities are not exceeded, as there are serious safety considerations[1].

Figure 1 Types of scrape



Type A: Dry area with impermeable soil. Water is retained by bunds and a control structure

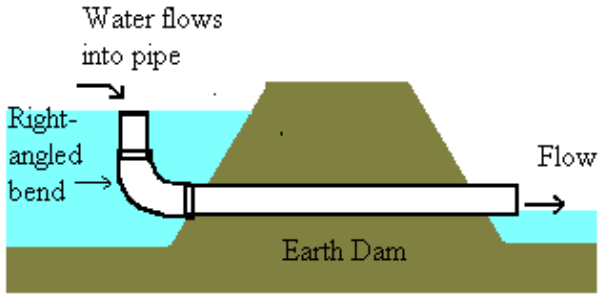
Type B: Permeable soil with high groundwater. Surface flooding occurs in a depression as a result of a high water table.

Type C: Wet area with impermeable soil. Water retained in low-lying wet areas.

Managing water levels

The provision of shallow water and muddy margins are important to feeding waders, and ideally, the water levels in a scrape should be controllable. Without the ability to control the inflow or outflow of water, the scrape may dry out too soon in early dry weather, while a wet spring may result in levels remaining too high. A simple water control device, or sluice, can be installed to help manage levels.

Figure 2: Diagram of a pipe sluice.



The most cost effective sluice is likely to be constructed with a length of plastic piping, either rigid pipe with a swivel end or flexipipe, laid through an earth dam in the outflow ditch or bund (Figure 2). Each end extends beyond the dam, and the upstream end is held at the desired level. Flexipipe will normally need weighting to keep the lip submerged and require a length of rope to hold the upstream end at the desired level. Adjusting the upstream end (by swivelling the pipe or raising or lowering the rope) will set the desired water levels.

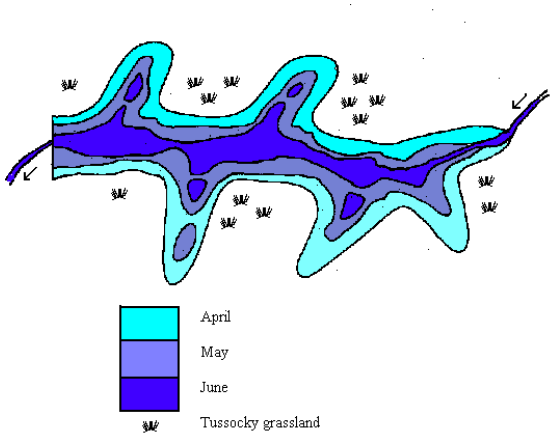
Other options are available, for example: drop-board sluices. These are more costly in time and resource to install. Details of these can be found in Reedbed Management for commercial and wildlife interests (see further reading).

[1] Note: Impounding volumes of water in excess of 25,000m^3 above ground falls under 1975 Reservoir Safety Provisions Act. Design and construction under control of DEFRA Panel Engineer and inspected annually. (A bunded scrape with an average depth of 25cm would need to be bigger than 10 ha to exceed this)

The scrape should naturally reduce in depth slowly during the spring through evaporation. Alternatively, depending on weather, let water out of the scrape slowly (1cm depth at a time) to create a muddy fringe. If the sluice is not connected to an existing watercourse, a soak away will need to be created behind the dam to take the water drawn off through the sluice.

In Figure 3 the outer line represents the extent of the open water in early April, ideally surrounded by short grassland with up to 20% tussocky grassland. The middle line represents the shrinking area of water by the end of May and the inner by the end of June. Annual weeds will have grown on the mud and set seed. By August the scrape should be all but dry and ready for management.

Figure 3: Hypothetical scrape, showing receding area of water throughout spring and early summer.



Feeding requirements

Waders and their chicks require a constant supply of high protein invertebrate food throughout the breeding season. A rich supply of insects will also help other birds such as Reed Bunting and Yellow Wagtail, which rely heavily on insect food for their chicks. The conditions created by the periodic flooding and drying of ephemeral water bodies attract a limited but specialised range of invertebrates. These often occur in very high numbers because of reduced competition and few predators. The water body is often nutrient rich because of the levels of organic matter, which encourages high rates of invertebrate reproduction, particularly of midge larvae, which are a valuable food source for waders and their chicks.

As the water levels in the scrape are lowered, or dry naturally, annual plants will germinate on the margins; these provide additional food and cover for chicks. The seeds they produce will accumulate around the edges of the pool and will provide winter food for waterfowl as well as a variety of finches and buntings that come to the shallow margins to drink and bathe.

Maintenance

It will be necessary to manage colonising plants, such as rushes or grasses, to prevent them from choking the whole area. Patchy cover of marginal plants will provide cover for young chicks, but if this exceeds more than 25% of the scrape, then management should be considered. Grazing with livestock at a moderate intensity is ideal as it a) creates a mosaic of tussocks and short turf used for nesting by a range of wader species, b) augments the invertebrate population of the margin through dunging. If grazing is not possible, cutting or cultivation could be used. Cutting should be timed for suitably dry periods after the end of the breeding season, usually between August and October. It is not necessary to remove the cuttings, as they will initially provide a source of seed food and later, as it decomposes, a source of insect food for birds.

Following summer/autumn management, re-flooding in winter will kill colonising perennial vegetation such as grass. Annual weeds, which germinate each year on the muddy margins as the water retreats, are important as they provide a large supply of seeds for dabbling duck as well as number of passerines such as Yellowhammer, Reed Bunting and Linnet.

Further reading[2]

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[2] A complimentary set of Information and Advice Notes on the Ecology and Conservation for tree sparrow, yellowhammer, corn bunting, turtle dove, linnet, lapwing and yellow wagtail, all listed in Table 1, can be obtained from RSPB Conservation Management Advice. There are also available, leaflets for lowland and upland farmland habitats and species. Contact: richard.winspear@rspb.org.uk or telephone: 01767 680551

Case study sites

Old Hall Marshes, RSPB reserve

Old Hall Marshes nature reserve was acquired by the RSPB in 1984 and is run as a working farm as well as a nature reserve composed of several habitat types, including 70ha of improved grassland. The primary management of the reserve is as a traditional grazing marsh, providing sheep and cattle grazing to a number of local graziers.

The current 'improved' grassland is primarily managed for wintering Brent Geese by tightly grazing with sheep and cattle. A low-lying 'creek' feature, a remnant of the old saltmarsh grassland, retained water throughout the winter months but quickly dried out in the spring, minimising any benefit for breeding waders. By controlling water levels, this feature has been enhanced and maintained as a shallow scrape throughout the spring to provide feeding opportunities for breeding waders.

A windpump was installed in 2000 to lift water 2.0 m from the adjacent ditch and circulate through the scrape. Installation costs amounted to £9,000, while ongoing maintenance costs are negligible. Water can be let out of the scrape through a simple sluice mechanism of a 300 mm plastic pipe with a 90 degree 'turner' joint on the upward end. This enable precise water level control on the scrape by turning the joint to the required angle.

Breeding waders have increased from one or two pairs to 15 pairs of Lapwing and eight pairs of Redshank in 2002.

The wader scrape at high winter level, showing shallow pools and long shorelines

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Newsham Hall Farm, North Yorkshire

This 330 ha farm supports a diverse range of lowland farmland habitats, including a newly created 31ha wetland complex of open water, fen and grassland.

After discussions with relevant agencies, the landowner was able to reinstate the wetland with a Countryside Stewardship grant to support the capital and revenue costs (£280 per ha for arable reversion to grassland and an annual re-wetting payment of £60 per ha for raised water levels)

Restoration was relatively simple, with the existing drainage infrastructure (an Archimedes Screw sub-soil system) switched off. This allowed ground water to rise, creating an area of shallow water (0.2 – 0.5m deep), surrounded by newly established wet grassland and hay meadows.

This attracts several hundred wintering waders (eg lapwing and golden plover), wildfowl and passage birds. Once the water management and new grasslands are established, breeding wader densities are expected to be high. Breeding reed buntings, sedge warblers and snipe have quickly colonised the wetland fringes.

Water level control – in the first year, water levels remained very high all year, with no lowering of levels during the breeding season to create good wader habitat. A newly installed flexi pipe system on the main ditch should now give the appropriate level of water level control

Grazing management – During the first year, there was no grazing in the wetland compartments. Agreements are now in place to deliver low-intensity cattle grazing year round, possibly using native hardy cattle breeds.

Condition monitoring –regular site visits from DEFRA and bird monitoring from a local volunteer should ensure site management continues to evolve to maximise the site's biodiversity delivery.

Another CSS agreement is now in place, to convert an adjacent 40ha of arable land, into fenland and wet grassland. A bird hide overlooking the existing wet grassland area is proposed and the farm may be used as a demonstration farm in the future.

Contact: nick.mason@rspb.org.uk

Great Bridgeford Hall Farm, Staffordshire.

Under the Countryside Stewardship Scheme, 10ha of floodplain grassland along the River Sow is being managed as extensively grazed damp pasture. Through the RSPB Waders of Wet Meadows project, CSS has been actively promoted and targeted at floodplain sites in Staffordshire, Shropshire and Cheshire. Great Bridgeford Hall Farm came under CS management because of this project.

To introduce in-field wet features and raised water levels, sub surface drains on the site have been exposed, creating shallow, well-profiled, linear scrapes/ditches.

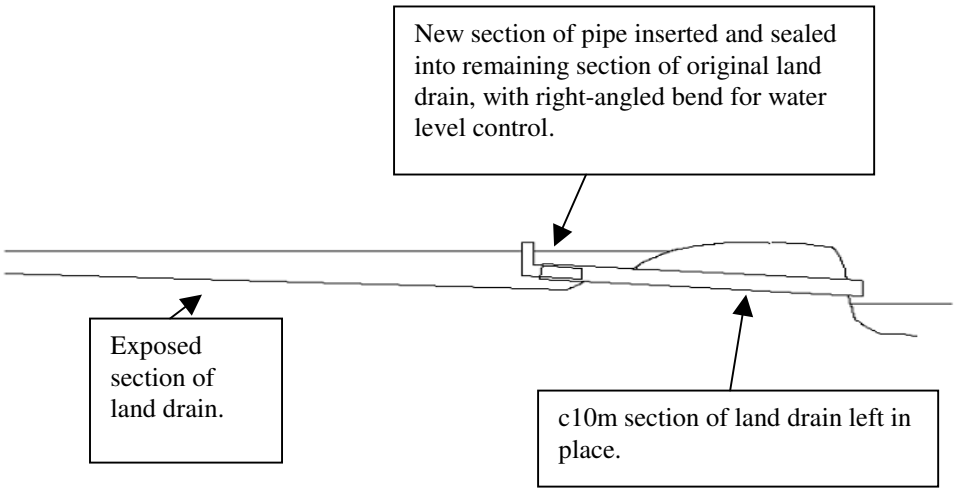
The final 10m of the drain, before they enter the River Sow, have been left intact. Where the remaining length of drain enters the exposed section, a right-angled-bend section of pipe has been inserted and sealed with the remaining land drain, to provide a system of control on water levels held in the exposed sections.

All exposed sections have been kept as shallow as possible, with gentle profiles. The result has been a network of linear, shallow scrapes/ditches across the site, providing plenty of shallow, muddy, margins. The right-angled bend arrangement provides water level control.

As well as creating the in-field wet features, the system has also resulted in raised water levels and some splash flooding across the field surface, away from the scrapes/ditches themselves.

Elsewhere on the site, land drains have been left in place, but blocked using commercially available pipe test plugs.

Longitudinal cross section of new ditch/scrape arrangement.



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