Site-based practical conservation combining science and practical experience: Ouse Bridge Farm, Denver

Based around a field visit 5th September 2023

This document summarises the topics discussed during a visit to Ouse Bridge Farm, hosted by farmer Joe Martin. The management actions at Ouse Bridge Farm are described, with inputs and suggestions from other attendees highlighted with an asterisk (*). Supporting evidence is provided in green boxes.

This is not a detailed synthesis or comprehensive review, but rather an attempt to combine knowledge from experienced, local land managers with evidence from the Conservation Evidence database (www.conservationevidence.com) and other sources.

Attendees:			
Joe Martin	*Farmer*	Nicola Crockford	*RSPB*
Jo Thomas	*WWT*	Normal Sills	*Retired RSPB*
Chris Hainsworth	*Natural England*	Guiliana Sinclair	
Mike Taylor	*Natural England*	Rachel Georgiou	*CLR*
Matt Jones	*Norfolk Wildlife Trust*	Bill Sutherland	*CLR*
Catherine Weightman	*Natural England*	Nigel Taylor	*CLR*
Ivan de Klee	*Nattergal*	Vanessa Cutts	*CLR*

Introduction

Joe's main farm is Ouse Bridge Farm. At present, 10 % of the farm is managed for conservation. However, due to the fact that it is its own distinct catchment and its close proximity to the Ouse Washes, it would be possible and beneficial to convert the entire farm to wet grassland for breeding waders and wintering wildfowl by raising the water table. A Landscape ELMs (Environmental Land Management scheme) was applied for to determine the feasibility, not least, the effect on Capital Value. The application was recently accepted.

Joe also tenants three other land parcels, which have been converted to wet grassland through agri-environment schemes: Silt Fen (10 years); Bank Farm (5 years) and Tallymore (9 months).

Two of the wetland conservation sites managed by Joe. Left of the river is Tallymore, right of the river is Bank Farm

Bank Farm

Bank farm is a 55 ha site that has been under an agri-environment scheme for five years. It is a self-contained site that fills up with rainwater during the winter months, reaching up to 9 inches deep. The site empties of water during the spring and summer months through drainage and evapotranspiration, usually remaining damp until July. By September, it is almost completely dry (water is only held in the deeper ditches). This mimics the natural wet and dry cycle of wetlands, i.e. moist soil management, and it produces lots of seeds that are important food for water birds.

In addition, foot drains and scrapes have been dug out. These keep water on the site for longer and increase the amount of muddy edge for waders to feed. Birds such as lapwing, redshank and little ringer plover can be seen visiting the foot drains. Islands of slightly higher ground have been created, which are used by breeding waders. The foot drains are usually renewed every year, because the cattle push the peat in. However, this year they were not renewed.

* Allowing the site to fill with rainfall is great. This is a natural source of water, rather than the alternative, which is to pump in water that may be polluted from agricultural practices.

* Too much flooding can release methane

* What about filling the site half way?

    * This is probably not a good idea as the site will become too dry in summer months

* Do the foot drains need to be renewed every year or can they be left longer?

    * Partly dependant on land use e.g. where cattle push earth into drains, regular maintenance is necessary.

* Constant flooding will be suitable for some inverts. However, a greater variety of invertebrates will be maintained with greater habitat variety (e.g. varying water levels/flooding durations). This requires a variety of habitats.

* Bill: there are three main types of food for waders: 1) worms in the grassland (soil needs to be damp so waders can probe, but not flooded for too long as this drowns worms), 2) invertebrates like *Gammarus* (freshwater shrimp) in permanent water bodies and 3) invertebrates like chironomids in ephemeral water bodies. Need to think about which one or combination of these we are aiming for.

* It was suggested that having wider foot drains is better for chironomids: this increases the surface area of open water they need to lay their eggs in autumn.

* Could Ivermectin in cattle dung affect invertebrates and subsequently birds?

Evidence about invertebrates

Winter flooding can reduce invertebrate biomass of the soil, mostly due to earthworms vacating their burrows [1]. A meta-analysis of wetland sites showed that species richness and abundance of worms, woodlice and millipedes tended to be lower in flooded sites [2]. However, this can concentrate them into non-flooded areas, making them easier prey. In water-logged soils, invertebrates are found in the upper soil layers making them easier to catch for probing birds.

A study in the USA found that invertebrate biomass was higher when wetlands under moist soil management were flooded for longer durations (4 months rather than 2 months) [3]. A study in The Broads showed that invertebrate abundance was significantly higher in foot drains and pools compared to a grazing marsh and what's more, lapwing *Vanellus vanellus* chick body condition was significantly higher in fields with high foot drain densities [4]. However, recent evidence suggests that invertebrate abundance may be more strongly related to increasing vegetation growth (productivity) than soil moisture in wader habitats [5].

A mosaic of habitats, including flooded, unflooded sites, pools and open water will suit both birds and invertebrates. Flooded sites should experience slow, moderate flooding in winter and waterlogging in spring [1,2]. When the water drains, small wet patches (e.g. foot drains) should be left for the aquatic invertebrates as refuges.

Chironomids

The Chironomidae, also known as "non-biting midges", are a family of freshwater insects estimated to encompass ~15,000 species [6]. Their larvae are mostly aquatic and are abundant in freshwater

ecosystems worldwide [6]. Chironomid larvae and adults are a food source for many animals, including other insects, birds, and bats. A study in Spain found there were more feeding birds at ponds with a higher abundance of chironomid larvae [7].

Ivermectin

Studies show that Ivermectin residues in cattle dung can attract dung beetles up to 98 days after treatment [8] but are in fact toxic [9]. This reduces the colonization and removal of dung by both dung beetles and flies [10]. A landscape-scale study in the Swiss Alps found that the use of Ivermectin led to reduced diversity of the dung insect community [11].

Vertebrates such as birds may be affected by reduced quantity and/or quality of invertebrate prey, especially if this occurs at critical times of year, e.g. during the breeding season or just after chick fledging.

Sources:

[1] Ausden, M., Sutherland, W.J. & James, R. (2001) The effects of flooding lowland wet grassland on soil macroinvertebrate prey of breeding wading birds. *Journal of Applied Ecology*, 38, 320-338.

[2] Plum, N. (2005) Terrestrial invertebrates in flooded grassland: A literature review. *Wetlands*, 25, 721-737.

[3] Anderson, J.T. & Smith, L.M. (2000) Invertebrate response to moist-soil management of playa wetlands. *Ecological Applications*, 10, 550-558.

[4] Eglington, S.M., Bolton, M., Smart, M.A., Sutherland, W.J., Watkinson, A.R. & Gill, J.A. (2010) Managing water levels on wet grasslands to improve foraging conditions for breeding northern lapwing *Vanellus vanellus*. *Journal of Applied Ecology*, 47, 451-458.

[5] Silva-Monteiro, M,.Scheper, J.,Pehlak, H. (2022) Invertebrate abundance increases with vegetation productivity across natural and agricultural wader breeding habitats in Europe, *Biological Conservation*, 273, e109670.

[6] Armitage, P.D., Pinder, L.C. & Cranston, P.S. (2012) *The Chironomidae: Biology and ecology of non-biting midges*, Springer Science & Business Media.

[7] Sánchez, M.I., Green, A.J. & Castellanos, E.M. (2006) Spatial and temporal fluctuations in presence and use of chironomid prey by shorebirds in the Odiel saltpans, south-west Spain. *Hydrobiologia*, 567, 329-340.

[8] Errouissi, F. & Lumaret, J-P. (2010). Field effects of faecal residues from ivermectin slow-release boluses on the attractiveness of cattle dung to dung beetles. *Medical and Veterinary Entomology*, 24, 433-440.

[9] Hempel, H., Scheffczyk, A., Schallanass, H-J., Lumaret, J-P., Alvinerie, M. & Römbke, J. (2006). Toxicity of four veterinary parasiticides on larvae of the dung beetle *Aphodius constans* in the laboratory. *Environmental Toxicology and Chemistry*, 25, 3155-63.

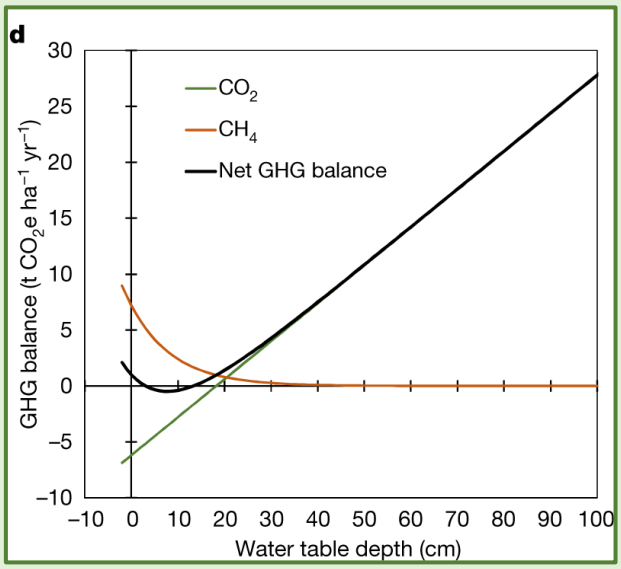
[10] Kavanaugh, B. & Manning, P. (2020), Ivermectin residues in cattle dung impair insect-mediated dung removal but not organic matter decomposition. *Ecological Entomology*, 45: 671-678.

[11] Jochmann, R. & Blanckenhorn, W. U. (2016) Non-target effects of ivermectin on trophic groups of the cow dung insect community replicated across an agricultural landscape. *Basic and Applied Ecology*, 17, 291-299.

[12] McCracken DI (1993) The potential for avermectins to affect wildlife. Veterinary Parasitology, 48, 273–280.

Evidence about flooding effects on methane release

Flooded peat soils release more methane than drained peatland soils. But flooded peat soils also release less carbon dioxide. There may be a 'sweet spot', with the water table about 10 cm below the soil surface that minimizes greenhouse gas emissions [1].



Best-fit regressions showing the net climate impact of carbon dioxide (CO_2) and methane (CH_4) versus the water table depth. Source: [1].

Sources:

[1] Evans, C.D., Peacock, M., Baird, A.J. et al. (2021) Overriding water table control on managed peatland greenhouse gas emissions. *Nature*, 593, 548–552.

Crassula helmsii

Crassula helmsii, (New Zealand pygmy weed) is an issue at the farm. It is treated annually with Roundup ®, a glysophate-based herbicide.

Are there any other alternatives for getting rid of it?

* What about putting spoil on it to bury it?

* Or hot water? This technique has been tried at Martin Mere WWT.

A small patch of *Crassula helmsii*. Roundup was applied to the patch one week prior to this photos being taken.

Evidence for controlling *Crassula helmsii*

Seawater, lightproof barriers, and Glyphosate application show some success at controlling *C. helmsii* [1]. See the Lady Fen report for a bit more information.

Biodegradable hot foam has been proposed as a way to control vegetation but the evidence of its effectiveness is limited. One study found no effect on *C. helmsii* cover, while another reported a 50% reduction in *C. helmsii* [1].

Hot water has been suggested as a method of controlling *C. helmsii*. An experimental study found submerging fragments of the plant in hot water (45°C water bath for 15 minutes) led to 90% mortality [2]. However, a field study found high pressure hot water spraying to be ineffective at killing *C. helmsii*, even at up to 90 seconds of exposure to 90°C water sprayed from 10 cm away (but it led to complete mortality of floating pennywort *Hydrocotyle ranunculoides*) [3].

The gall-forming mite *Aculus crassulae* is being trialled as a biological control agent for *C. helmsii*, with support from Natural England and DEFRA [4]. A lab experiment showed that the mite caused a significant reduction in *C. helmsii* growth and nearly always chose to feed on *C.helmsii* rather than native plants [5]. In 2022, the mites were released at 12 sites in England and Wales, with more releases in 2023 [4].

Sources:

[1] Aldridge, D., Ockendon, N., Rocha, R., Smith, R.K. & Sutherland, W.J. (2020) Some Aspects of Control of Freshwater Invasive Species. Pages 555-87 in: W.J. Sutherland, L.V. Dicks, S.O. Petrovan & R.K. Smith (eds) *What Works in Conservation 2020*. Open Book Publishers, Cambridge, UK.

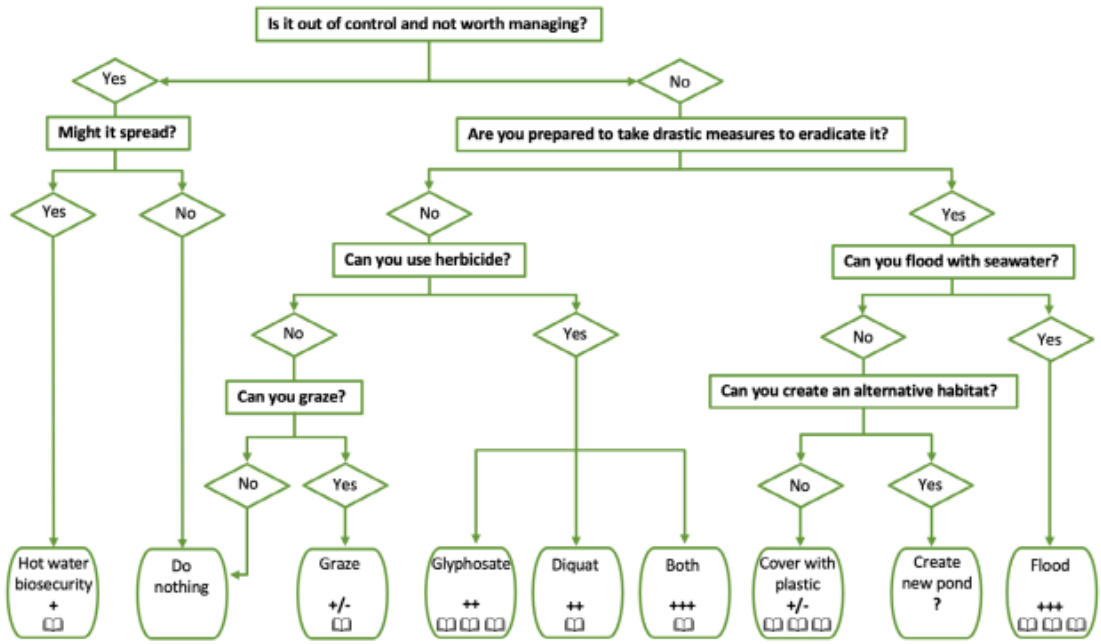
→ *Crassula helmsii:* Use salt water to kill plants: www.conservationevidence.com/actions/1288
→ *Crassula helmsii:* Lightproof barriers to kill plants: www.conservationevidence.com/actions/1294
→ *Crassula helmsii:* Chemical control using herbicides: www.conservationevidence.com/actions/1279
→ *Crassula helmsii:* Use hot foam: www.conservationevidence.com/actions/1286

[2] Anderson L., Dunn A., Rosewarne P. & Stebbing P. (2015) Invaders in hot water: a simple decontamination method to prevent the accidental spread of aquatic invasive non-native species. *Biological Invasions*, 17, 2287-2297.

[3] Bradbeer, S.J , Renals, T., Quinn, C. *et al.* (2021) The effectiveness of hot water pressurized spray in field conditions to slow the spread of invasive alien species. *Management of Biological Invasions*, 12, 125-147.

[4] CABI (2023) Progress report: UK weed biological control projects – March 2023. Centre for Agriculture and Bioscience International.

[5] Varia, S., Wood, S.V., Allen, R.M.S. & Murphy, S.T. (2022) Assessment of the host-range and impact of the mite, *Aculus crassulae*, a potential biological control agent for Australian swamp stonecrop, *Crassula helmsii*. *Biological Control*, 167, e104854



A decision tree for options for controlling Crassula helmsii. +++ = considerable benefit; ++ = moderate benefit; + = little benefit; +/- = mixed effect. Number of books indicates the strength of evidence: three books = moderate evidence; two books = weak evidence; one book = negligible evidence. Source: Sutherland et al. (2023) Transforming Conservation: A practical guide to evidence based decision making.

The predator fences

There is a five-foot-high fence surrounding the Bank Farm site. The top three wires are electrified. The holes in the netting are 95mm x 74 mm, yet Joe witnessed a fox squeeze through! It is suspected that otters are getting through the fence – three to four otters are caught on trial cameras each week. There are badger setts on the farm but badgers have not been a problem.

* Word of warning: do not try to set up a fence across an established badger run because the badgers will force their way through!

The fence at the Tallymore site is modelled on fences from fisheries. It has holes of 100mm x 50 mm, is buried by 300mm, and reaches 1500mm above ground. It has electric wires, one each side at 900 mm from ground level and a third one on top.

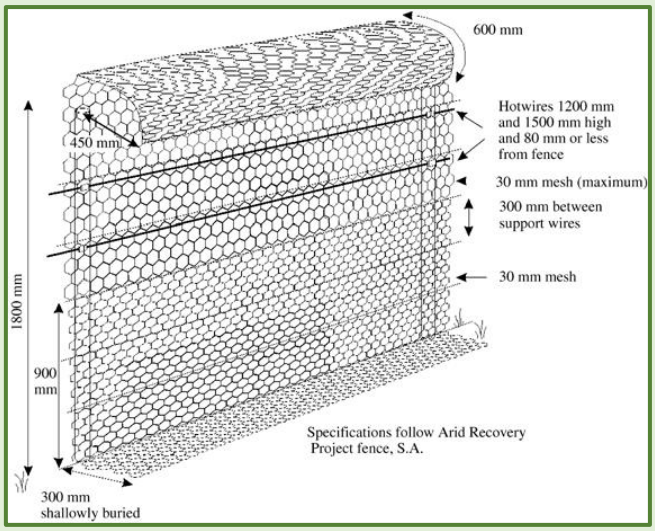
The predator fence at Bank Farm

Evidence about predator fences

Fences to exclude predators have generally shown to have positive effects on nesting and hatching success in birds [1], including lapwings, curlews and redshank [2]. However, this assumes the fences successfully exclude predators. The question here is: What fences work best?

Evidence suggests fences should have an overhang preferably curved, with 30-mm-diameter holes to exclude medium- and large-sized mammals [6, 7]. Sealing the netting along the ground outward from the fence for about 300 mm prevents burrowing [6, 7, 8]. At Lady Fen, Welney, a single piece of barbed wire along the ground has deterred foxes from burrowing.

The design described above has shown to be effective for red foxes *Vulpes vulpes*, feral cats, hedgehogs *Erinaceus europaeus* and rabbits *Oryctolagus cuniculus*. Foxes have been witnessed to chew through 0.9 mm gauge wire [7], therefore netting should be thick enough to prevent this, e.g. 1.2 mm [7].



Example of a fence design that successfully prevented foxes from passing. The electrified wires provided no additional deterrent to foxes. Source: [6]

Otters: are they a problem predator?

The Eurasian otter *Lutra lutra* eats mostly fish – a recent UK study found that fish made up 81% of the otter diet, while birds only 6% [3]. However, otters vary their diet depending on prey abundance [4] and there are instances where they rely more heavily on birds. For example, at Shapwick Heath in Somerset, birds make up 20–60% of their diet depending on the month [5]. Other evidence shows they eat more birds near ponds or tarns [3, 4]. Birds that are typically preyed upon include moorhens, coots, little grebes and mallards [3, 4]. Declines in preferred prey items, such as eel, may contribute to the shifting otter diet [4] and have knock-on effects for other species vulnerable to otter predation.

The UK Wild Otter Trust suggest a fence design similar to the one described above, with height of 1200–1800 mm, an overhang, and a ground skirt of 900 mm [9]. Otters have been seen squeezing through gaps of 50 mm. They will also exploit weaknesses in the fence, therefore it is important to check the fence regularly [9].

Sources:

[1] Williams, D.R. *et al.* (2020) Bird Conservation. Pages 137-281 in: W.J. Sutherland, L.V. Dicks, S.O. Petrovan & R.K. Smith (eds) *What Works in Conservation 2020*. Open Book Publishers, Cambridge, UK.

→ Physically protect nests from predators using non-electric fencing: www.conservationevidence.com/actions/183

[2] Jellesmark, S. *et al.* (2023) The effect of conservation interventions on the abundance of breeding waders within nature reserves in the United Kingdom. *Ibis*, 165, 69-81.

[3] Harper L., Watson H., Donnelly R., Hampshire R., Sayer C., Breithaupt T., Hänfling B. (2020) Using DNA metabarcoding to investigate diet and niche partitioning in the native European otter (*Lutra lutra*) and invasive American mink (*Neovison vison*). *Metabarcoding and Metagenomics*, 4: e56087.

[4] Almeida, D., Copp, G.H., Masson, L., Miranda, R., Murai, M. and Sayer, C.D. (2012), Changes in the diet of a recovering Eurasian otter population between the 1970s and 2010. Aquatic Conservation: Marine and Freshwater Ecosystems, 22: 26-35.

[5] de la Hey, D.C. (2008) The importance of birds in the diet of otter *Lutra lutra* on Shapwick Heath, *Bioscience Horizons: The International Journal of Student Research*, 1, 143-147.

[6] Robley, A., Purdey, D., Johnston, M., Lindeman, M., Busana, F. & Long, K. (2007) Experimental trials to determine effective fence designs for feral Cat and Fox exclusion. *Ecological Management & Restoration*, 8, 193-198.

[7] Moseby, K.E. & Read, J.L (2006) The efficacy of feral cat, fox and rabbit exclusion fence designs for threatened species protection. *Biological Conservation*, 127, 429-437.

[8] Jackson, D.B (2001) Experimental removal of introduced hedgehogs improves wader nest success in the Western Isles, Scotland. *Journal of Applied Ecology*, 38, 802-812.

[9] UKWOT (2023) Otter-Proof Fencing Advice. UK Wild Otter Trust.

Left: Admiring the foot drains. Right: Travelling between sites.

Tallymore

Tallymore is new site of 50 ha for which Joe has received a 12 year tenancy from the Environment Agency. The site was entered the countryside stewardship scheme in January 2023. Foot drains were dug on 1st July 2023. There is very little peat on the site, it is mainly silt. It is on the edge of the fen: in one direction is silt (where the tide came in and out, historically) and in the opposite direction, towards Ely, is black fen (freshwater the whole time).

The site is effectively bordered by waterways, being situated between tidal river and relief channel, thus making it hydrologically isolated. By the end of winter, 50% of the site is flooded by rainfall, supplemented a tiny bit with water from the river, reaching sea level. By summer, the river is 0.4 m below sea level and the site is maintained at the same level. Water flow is controlled with a dropboard sluice and a Penstock sluice (stainless steel guillotine door). The goal is to maintain a range of water depths, currently it ranges from dry to one foot of water.

Should the site be dried out completely or some areas left wet?

* Leaving some small areas wet all year round will create refuges for aquatic species. This could allow both desirable species (e.g. chironomids) and undesirable species (e.g. predatory fish) to persist on site, so site-specific decisions will need to be made about whether to retain such refuges. If wet refuges are retained, targeted management of undesirable species could be used (e.g. fishing).

* Left over spoil from digging foot drains (or perhaps digging the centre of the site slightly deeper) can be dumped on ground that is already high, or be used to create islands. Islands should be created with different slopes and an undulating top (not a flat top!). This creates diversity and variety in the land. Nature is messy!

> "Nature doesn't do straight, except for the horizon of the sea, and even that's bent" - Norman Sills

Some reeds in ditches were mown in 2022 and 2023, while others were left alone. Although this was a practical choice rather than a conservation choice, it has resulted in a diversity of habitat types. Areas of the site that are not underwater during flooding were seeded on 1st August 2023 with a wildflower mix (Table 2).

* Sometimes seeding does not work. Other options include planting young plants (plugs) that have been grown in a nursery, or spreading a green hay crop.

The foot drains and scrapes at Tallymore

Evidence for seeding: Grasslands

Evidence from 50 studies in Conservation Evidence suggests that **sowing a mixture of grass and forb seeds** will typically improves the plant community composition (making it more like intact grasslands) and can be an effective tool to increase the richness/diversity of specific grassland-characteristic plant species (but not necessarily their cover) [1]

One study in the USA [2] found that **planting seedlings**, in addition to seeding, can boost plant species richness on restored former arable land.

Evidence from 13 studies in Conservation Evidence suggests that **sowing grass seeds** to restore grasslands can sometimes improve the plant community composition (making it more like intact grasslands) and increase grass and vegetation cover (at least in the short term, relative to unsown areas). However, sowing grass seeds can also reduce overall plant species richness and forb abundance.

Five of six studies in Conservation Evidence that **introduced seeds of parasitic species** (e.g. yellow rattle *Rhinanthus alectorolophus*) to degraded grasslands or grasslands undergoing restoration found that this increased overall plant richness/diversity [1].

Evidence for seeding: Wetlands

Evidence from 23 studies in Conservation Evidence suggests that sowing seeds typically can increase vegetation cover, species richness or abundance [3]. However, four out of the 23 studies found sowing seeds was not effective or only weakly effective, in that few species germinated, or there was no change in vegetation cover.

Three of the studies found that spreading hay increased the abundance of the target vegetation. Two of those studies found removing a layer of topsoil before adding the hay to be particularly effective.

One study found that a higher proportions sedge *Carex* spp. seeds germinated in recently rewetted meadows than in natural meadows. Furthermore, for the seeds sown in natural meadows in the spring, more germinated when they had been chilled over the previous winter than when kept at room temperature [4].

Sources:

[1] Martin, P.A., Ockendon, N., Berthinussen, A, Smith, R.K. and Sutherland W.J. (2021) Grassland Conservation: Global evidence for the effects of selected interventions. Conservation Evidence Series Synopses. University of Cambridge, Cambridge, UK.

→ Sow native grass and forbs: https://www.conservationevidence.com/actions/3432
→ Sow grass seeds: https://www.conservationevidence.com/actions/3397
→ Sow seeds of parasitic species (e.g. yellow rattle): https://www.conservationevidence.com/actions/3404

[2] Middleton, E.L., Bever, J.D. & Schultz, P.A. (2010) The effect of restoration methods on the quality of the restoration and resistance to invasion by exotics. Restoration Ecology, 18, 181–187.

[3] Taylor, N.G., Grillas, P. & Sutherland, W.J. (2020) Peatland Conservation. Pages 367-430 in: W.J. Sutherland, L.V. Dicks, S.O. Petrovan & R.K. Smith (eds) What Works in Conservation 2020. Open Book Publishers, Cambridge, UK.

→ Introduce seeds of peatland herbs: www.conservationevidence.com/actions/1823
→ Introduce seeds of non-woody plants: freshwater wetlands: www.conservationevidence.com/actions/3264

[4] Kettenring, K.M. & Galatowitsch, S.M. (2011) Carex seedling emergence in restored and natural prairie wetlands. *Wetlands*, 31, 273-281.

Table 1. Seed mix for Bank Farm. 5kg/ha of seed mix on 32.15 ha. All of native provenance. Seed cost £212.50 /ha + 10 kg Yellow rattle broadcast Autumn 2020 at cost of £46.15 / ha

Species		**%**	**Kg/ha**
Sheep's fescue	*Festuca ovina*	1.6	32
Red fescue	*Festuca rubra*	0.4	8
Crested dog's-tail	*Cynosurus cristatus*	1.6	32
Common Bent	*Agrostis stolonifera*	0.4	8
Selfheal	*Prunella vulgaris*	0.1	2
Bird's-foot trefoil	*Lotus corniculatus*	0.1	2
Meadow Buttercup	*Ranunculus acris*	0.1	2
Wild Red Clover	*Trifolium pratense*	0.1	2
Yarrow	*Achillea millefolium*	0.1	2
Small/Field scabious	*Scabiosa columbaria*	0.1	2
Knapweed	*Centaurea nigra*	0.025	0.5
Perforate St John's-wort	*Hypericum perforatum*	0.025	0.5
Meadow Vetch	*Lathyrus pratensis*	0.05	1
Common Sorrel (Sheep's Sorrel)	*Rumex acetosa*	0.07	1.4
Oxeye daisy	*Leucanthemum vulgare*	0.015	0.3
Cowslip	*Primula veris*	0.015	0.3
Betony	*Stachys officinalis*	0.1	2
Ribwort Plantain	*Plantago lanceolata*	0.05	1
Rough Hawkbit	*Leontodon hispidus*	0.05	1
		5 kg/ha	100%

Table 2. Seed mix for Tallymore. 150kg AB8 seed mix with no meadow fescue. Total cost = £1725.00 (10kg/ha = £155/ha)

Species		**%**	**kg/ ha**
Crested dogs tail	*Cynosurus cristatus*	3%	0.3 kg/ha
Smooth stalked meadow grass	*Poa pratensis*	2%	0.2
Sheep's fescue	*Festuca ovina*	20%	2.0
Red fescue	*Festuca rubra*	30%	3.0
Red clover	*Trifolium pratense*	2%	0.2
Chewing's fescue	*Festuca rubra subsp. commutata*	25%	2.5
Sainfoin	*Onobrychis viciifolia*	4%	0.4
Musk mallow	*Malva moschata*	0.10%	0.01
Selfheal	*Prunella vulgaris*	0.25%	0.025
Birds-foot trefoil	*Lotus corniculatus*	1.25%	0.125
Ribwort	*Plantago lanceolata*	1.25%	0.125
Black Knapweed	*Centaurea nigra*	0.25%	0.025
Oxeye Daisy	*Leucanthemum vulgare*	0.80%	0.08
Yarrow	*Achillea millefolium*	1.00%	0.10
Wild Carrot	*Daucus carota*	0.50%	0.05
Meadow buttercup	*Ranunculus acris*	0.80%	0.08
Viper Bugloss	*Echium vulgare*	0.80%	0.08
Common Vetch	*Vicia sativa*	2.00%	0.20
Agrimony	*Agrimonia*	0.50%	0.05
Meadow Clary	*Salvia pratensis*	0.50%	0.05
			9.6kg/ha

Ouse Bridge Farm

Ouse Bridge farm is a new site to be used for conservation (hopefully). It is Grade 1 farmland, good for growing wheat, potatoes, sugar beet and onions. Although this is taking good farmland out of production, there several reasons why this would make a good wetland creation site: it is lower than the neighbouring land, the riverbank surrounds the site, it is situated next to a Ramsar site, it has its own IDB and there is very little peat left! The site can be filled with water via a 9-inch pipe, which fills the ditches 2 feet in 24 hours.

The owner of the land is interested, but needs to know how the creation of a Nature Reserve from Grade 1 farmland will affect the capital value.

Ouse Bridge farm drainage pump. The field earmarked for rewetting are behind the pump and disappearing into the distance on the right.

Water storage

The farm works, like the rest of the Fens, by pumping excess water in winter up into the river and in the summer months letting water flow by gravity, from the river back into the farm. There are no storage reservoirs on the farm.

Considering the proposal to “wet up” the farm (and therefore require more summer water) and the continuing pressures on summer water availability (because of climate change and increased housing developments in the catchment), should a storage reservoir be constructed? And who is going to pay for it?