

Creating planted margins to enhance riparian habitat for pollinators

Pollinator projects in Lincs & Northants area

Project objectives: To improve the variety and seasonal availability of nectar and pollen for riparian habitats within 3 years by creating planted soft berm enclosures.

Background: Sections of many rivers have lost their “natural” course through a variety of processes mainly related to land drainage including dredging and straightening. Often these “modified” channels lack morphological diversity, suffer from a mixture of siltation and localised bank erosion resulting in little emergent marginal and aquatic vegetation being present. Creation of planted margins reintroduces native emergent flowers such as Water Mint, Purple Loosestrife and Gypsywort which are an important late summer pollen and nectar source for pollinators (especially hoverflies). Creation of planted margins also has an important secondary function of reducing siltation and providing a cleaner gravel bed (by increasing the speed of flow) which can benefit fish, aquatic invertebrates as well as key species such as native white-clawed crayfish.

Case study 1: Hudds Mill (Stamford)

A 2km length of the River Welland (east of Stamford) between Hudds Mill and Uffington (OS grid reference TF04110733 - TF05410724) where soft berm enclosures fronted with faggots (tightly bound bundles of sticks) were created at regular intervals in 2016. These created enclosures were filled with fine sediment from the river bed and appropriate native emergent plant species (already present at the site) were incorporated. In addition, these enclosures were enhanced by a mixture of plug planting and topping with planted coir rolls.



Established soft berm enclosures (both sides of channel) with low growing emergent vegetation dominated by plug planted Water-mint and naturally established new stands of Water-cress, Fool's Water-cress and Water Forget-me-not. The increased flow of the central channel has created a clean gravel bed allowing establishment of River Water-crowfoot (2017).



Established soft berm enclosures on both sides of channel with taller emergent vegetation dominated by Yellow Iris, Sweet Flag (introduced as plug plants and with planted coir rolls) and naturally established stands of Bulrush (2017).

Brash filled enclosures (specification):

Once created, enclosures were planted with the following native species:

(supplied in in 110 cc root trainers):

Water Mint *Mentha aquatica*

Water-plantain *Alisa Plantago-aquaticum*

Yellow Iris *Iris Pseudacorus*

Purple Loosestrife *Lythrum salicaria*

(supplied in in 1-2 litre root trainers):

Flowering Rush *Butomus umbellatus*

Sweet Flag *Acorus calamus*

Branched Bur-reed *Sparganium erectum*

Planted coir rolls (specification):

Supplied planted with following native species:

Lesser Pond-sedge *Carex acutiformis*

Yellow Iris *Iris Pseudacorus*

Soft Rush *Juncus effusus*

Reed Canary-grass *Phalaris arundinacea*

Purple Loosestrife *Lythrum salicaria*

Project outcome: Many of the emergent species introduced either by plugs or planted coir rolls (including Water Mint, Yellow Iris, Sweet Flag, Flowering Rush and Purple Loosestrife) have survived and many additional species such as Water-cress, Fool's Water-cress, Water Forget-me-not and Bulrush have established naturally within the soft berm enclosures. This increased diversity of flowering plants will directly benefit pollinators and the associated improvements to the river channel (increased flow and cleaner gravel bed) have seen establishment of beds of River Water-crowfoot within one year.

Case study 2: Wyndham Park (Grantham)

A 100m length of Upper Witham (OS grid reference SK9160336462) where soft berm enclosures fronted with faggots (tightly bound bundles of sticks) were filled with fine sediment from the river bed and then topped with planted coir rolls in July 2017. A special berm was also created for public access and tree management and river bed restoration with gravel were carried out.

Work specification:

Coir rolls (2x1m) were supplied planted with a mix of 80/20 of the following species:

80% resilient species comprising:

25% Yellow Iris *Iris Pseudacorus*
15% Lesser Pond-sedge *Carex acutiformis*
15% Glaucous-sedge *Carex flacca*
10% Reed Canary-grass *Phalaris arundinacea*
5% Water-plantain *Alisa Plantago-aquaticum*
15% Purple Loosestrife *Lythrum salicaria*
15% Marsh Marigold *Caltha palustris*

20% delicate species comprising:

20% Water Forget-me-not *Myosotis scorpioides*
20% Soft Rush *Juncus effusus*
20% Lesser Spearwort *Ranunculus flammula*
20% Reed Sweet-grass *Glyceria maxima*
20% Gypsywort *Lycopus europaea*



Newly created planted soft berm enclosure (left, 2017)



Close up of planted soft berm enclosure showing edging of faggots and top of pre-planted coir rolls.

Project outcome: Many of the emergent species introduced by coir rolls have survived and this increased diversity of flowering plants will directly benefit pollinators. This project has associated improvements to the river channel (increased flow and cleaner gravel bed) with chub observed on the fresh gravel bed soon after completion and brown trout redds (spawning scrapes) located in the following winter (2017/18). In August 2017 the flood resilience of the project was immediately demonstrated when heavy overnight rain caused the river to rise and temporarily flood the berms.

Case study 3: Fish refuge (Chapel Hill)

A fish refuge was created at Chapel Hill (OS grid reference TF2092053960) on the lower River Witham in March 2005. Planted coir rolls were used to increase the number of marginal plants while the banks and adjoining areas of grassland were enhanced by sowing a wetland wildflower seed mix as well as plug planting of wetland species.

Work specification:

Coir rolls (2x1m) were supplied planted with a mix of the following species:

Reed Sweet-grass *Glyceria maxima*

Reed Canary-grass *Phalaris arundinacea*

Soft Rush *Juncus effusus*

Lesser Pond-sedge *Carex acutiformis*

Purple Loosestrife *Lythrum salicaria*

Marsh Marigold *Caltha palustris*

Yellow Iris *Pseudacorus*



Chapel Hill fish refuge (2017) with well-established emergent vegetation and flower-rich wet grassland (left bank).

Project outcome: Many of the emergent species introduced by coir rolls have survived and this increased diversity of flowering plants will directly benefit pollinators.

A detailed report for each of these 3 case studies is available from the Environment Agency.