

Manage invasive species

Project Summary

Title: Pevensey Floating Pennywort Control Trials

Location: Pevensey, East Sussex, England

Technique: Herbicide spraying of invasive species

Cost of technique: ££

Overall cost of scheme: ££

Benefits: ££

Dates: 2010-2011

Mitigation Measure(s)

Manage invasive species

Sensitive techniques for managing vegetation (beds and banks)

How it was delivered

Delivered by: Environment Agency

Partners: Sussex Wildlife Trust; Natural England, Royal HaskoningDHV



Floating pennywort in Hurt Haven, 2010

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Background and issues

Pevensey Levels consist of a large area of low-lying grazing meadows intersected by a complex system of ditches. The Levels are a designated a Site of Special Scientific interest (SSSI) and a Ramsar wetland of international importance due to the invertebrate and plant assemblages found on the site, which include one nationally rare and several nationally scarce aquatic plants, and many nationally rare invertebrates.

Floating pennywort is classified as a non-native invasive species in the UK and is listed under Part II of Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England, Wales and Scotland. Surveys in 2008 confirmed the presence of the perennial and stoloniferous (i.e. spreads via horizontal stems) floating pennywort extending to approximately 10% of the watercourses on the Levels.

The plant grows very rapidly and forms large rafts of vegetation that can block water control structures, thus increasing flood risk and also reducing the amenity value of infested areas. By choking the watercourse the plant may also cause damage to species of interest in the Levels.

In order to develop a practicable method for the control of floating pennywort, Natural England and the Environment Agency established experimental trials at the Pevensey Levels to address the above issues, as a pilot study on options for the management of this invasive aquatic plant within a Site of Special Scientific Interest.



Floating pennywort in drainage ditch 2010

Step-by-step guidance

Pre-study works

A number of studies were undertaken to inform the development of the trials, including a desk-based hydroecological study, floating pennywort growth monitoring, protected species survey and aquatic invertebrate and macrophyte surveys.

Ditches of different sizes for selected as experimental sites to represent the influence of ditch size on control effectiveness. Control ditches (to which no clearance would be attempted) were also used.

Works to the SSSI

- Mobilisation of equipment and start of experimental methods (August 2010);
- Initial mechanical clearance of floating pennywort (August 2010). A tracked excavator with a long 45' boom was used for the mechanical clearance of pennywort biomass, both floating and rooted into bottom sediment or bank sides;
- Herbicide main treatment (September 2010). Two chemical control treatments, the herbicides glyphosate and 2,4D amine, were applied to experiment ditches based on Environment Agency operations staff recommendations. Herbicides were applied using a portable backpack sprayer with a variable telescopic boom and a pressure / volume control nozzle.

Post-works assessment

- Post-treatment aquatic invertebrate survey (October 2010) to assess treatment impacts
- Post-treatment aquatic macrophyte survey (November 2010) to assess treatment impacts



(1) 2,4-D amine after 11 days; (2) 2,4-D amine after 36 days



(1) Glyphosate after 11 days; (2) Glyphosate after 36 days

Benefits

- Depitox (2,4-D amine) herbicide displayed significant reduction in the distribution and abundance of floating pennywort, with some reaches nearly devoid of significant infestation. The glyphosate, whilst successful, was less effective.

Lessons Learnt

- Declines in macrophyte species in treated ditches were similar to declines in macrophyte species in untreated ditches, suggesting that mechanical / chemical treatments do not impact on macrophytes.
- There was a significant decline of macroinvertebrates in treated watercourse, which is anticipated to be due to physical destruction of habitats. Such impacts have not been acknowledged through herbicide manufacturers own ecotoxicological trials.
- Depitox (2,4-D amine) appeared to have a faster action than glyphosate, resulting in a significant reduction in the distribution and abundance of floating pennywort after 30 days.

Project contact: Fisheries & Biodiversity team, Kent & East Sussex Area, Environment Agency