



Parrot-feather watermilfoil

(*Myriophyllum aquaticum*)

Managing parrot-feather watermilfoil in the Chicheboville-Bellengreville fens

Basse-Normandie nature conservatory

- The conservatory is a certified environmental-protection non-profit and a member of the Federation of conservatories for natural areas. Its headquarters is in the town of Hérouville-Saint-Clair (Calvados department).
- The conservatory implements 4 major principles (learn, protect, manage, enhance) in its work to preserve the natural heritage of the Normandie region. For 20 years, the conservatory has provided its knowledge and experience in the management of natural environments to public and private owners in order to protect the fauna and flora of the outstanding natural habitats in the region. As part of the federation, it collaborates with all the local associations in the region.
- Its work covers the entire region and focusses on 4 main types of environment, i.e. limestone hills, wet meadows and marshes, former quarries and bat caves. The conservatory manages a total of 985 hectares spread over 108 sites.
- Contact: France Mercier - f.mercier@cen-bn.fr.

Intervention site

- The Chicheboville-Bellengreville fens (alkaline wetlands) cover 150 hectares approximately 10 kilometres to the south-east of the city of Caen. The fens are biologically very rich with remarkable terrestrial and aquatic habitats, as well as a large number of rare and protected species.
- The site is protected by a number of statutes, including a type-1 ZNIEFF (natural zone with high ecological value), the Chicheboville-Bellengreville Natura 2000 site n° FR2500094, the Calvados sensitive natural area and conservatory sites (19 hectares are managed by the conservatory, including land owned by the conservatory, private property and all the property owned by the town of Chicheboville).
- The conservatory has been involved in managing the fens since 2000 (land owner since 2000 and Natura 2000 manager since 2004).
- Parrot-feather watermilfoil (PFW) was discovered in the Chicheboville-Bellengreville fens in 2011 by the National botanical conservatory in Brest, on a number of private lots that became town property in 2012. Since then,



Key

- PFW beds in 2011 (4 000 square metres)
- PFW beds in 2012 (6 600 square metres)
- PFW beds in 2013 (7 000 square metres)
- Small islands
- Isolated plants in 2011
- Isolated plants in 2012
- Isolated plants in 2013

1. Map showing the spread of PFW from 2011 to 2013 in the Chicheboville-Bellengreville fens.

the conservatory has mapped the area and launched management work on the basis of agreements with the various land owners.

Disturbances and issues involved

■ Impacts on biodiversity

■ Menace à court et moyen terme l'habitat d'intérêt communautaire « plans d'eau eutrophes avec végétations enracinées avec ou sans feuilles flottantes », déjà jugé en mauvais état de conservation. Compromet également le maintien de la vie aquatique (herbiers de characées, faune aquatique, etc.) associée à l'étang.

■ Risk of dispersal via the hydrographic network

■ The colonised pond, located in the heart of the fens, is connected to the network of ditches running throughout the fens. Via this network, the plants could easily spread to other pools and ponds, in effect colonising the entire fens.

Interventions

■ 2011

- The species was discovered in the privately owned section.
- Mapping revealed that 4 000 square metres (40% of the pond) were colonised by PFW.
- Filters were installed on all water inlets and outlets to prevent dispersal of the plant.
- Manual uprooting over 2 days was organised with the conservatory team, owners and volunteers.
- 370 square metres of beds were uprooted, stored on site on tarps and then incinerated.

■ 2012

- The town purchased the private land with financial assistance from the Seine-Normandie water agency and the Calvados departmental council
- Mapping revealed that 6 600 square metres (almost 70% of the pond) was colonised by PFW.
- No management work on the plants was undertaken due to the change in ownership.

■ 2013

- Mapping revealed that PFW beds covered 7 000 square metres of the pond.
- Mechanical uprooting was launched.
- Funding was provided by the Water agency, the Calvados departmental council and the regional environmental directorate.
- The work consisted of:
 - clearing the banks to facilitate access by the machines;
 - installing filters on the water inlets and outlets and regularly cleaning them;
 - mechanical uprooting from the banks with a 24-ton excavator;
 - mechanical uprooting from a barge;
 - manual uprooting and finishing work by a team of 4 people with boats and dip nets to collect any floating stalk fragments and isolated plants;
 - digging a ditch on the bank, lined with a geotextile fabric, for storage and drying of the plants;
 - transport off site in a closed container to dry farm land for spreading.

Results and costs

■ Results

- Manual uprooting in 2011:
 - a voluntary manual-uprooting project was conducted to determine the time required for PFW management in the pond. During a total of 96 man-hours (8 people over two days), 370 square metres of beds were uprooted, representing barely 10% of the surface area covered by PFW in the pond;
 - inspections in 2012 revealed that the entire surface area uprooted in 2011 was again covered with PFW. Given the size of the site and the need to deal with the entire site in order to produce effective results, mechanical means were deemed indispensable.



2. The pond colonised by parrot-feather watermilfoil in the spring of 2013.

3. Manual uprooting.

4. Bucket used for mechanical uprooting.

5. Barge with an excavator on board.

6. Various steps during the work on PFW in 2013.



■ Mechanical uprooting in 2013:

- mechanical uprooting produced effective results with very little subsequent regrowth. A special bucket was created for aquatic plant beds by attaching large “claws” to a standard bucket;
- manual finishing work was indispensable to reduce the amount of regrowth the following year. It was also necessary in areas that the excavator could not access (the island in the middle of the pond and the reeds along one edge of the pond).

■ The dry farm land where the PFW was spread was monitored regularly. To date, no regrowth has been observed.

■ In the fall, the conservatory team spent 2 days manually uprooting PFW to limit the regrowth and reduce the quantities to be uprooted in 2014. Only 400 litres of plants were collected.

■ **Human and financial aspects**

■ The work done produced very encouraging results.

■ Mechanical uprooting made it possible to conduct an unusually large management project for Basse-Normandie and to eliminate the largest PFW colony in the region. The conservatory noted with satisfaction the professional work and the care taken to avoid dispersal of the plants. In addition, in spite of the mechanical means employed, beds of native aquatic species could be preserved in the pond. These natural beds have since expanded and can now compete with the PFW on the condition that the management work be continued.

■ It was difficult to obtain the funding for the mechanised work (70 000 euros incl. VAT), which did not include the site monitoring work done by the conservatory.

■ Important aspects include precise technical specifications, daily monitoring of the work site, careful cleaning of the equipment (with a boot bath for smaller objects) and regular monitoring of the fields where the plants were spread.

Outlook

■ Manual uprooting will be conducted regularly to attempt to completely eliminate PFW from the site.

■ Further work is planned for 2014 if the funding can be obtained. Manual uprooting by a social reintegration association is planned for 2 days per month for 6 months. The plants will be stored on a geotextile fabric, then transported to the same dry farm land as in 2013.

Information on the project

■ During the project, an information panel was set up on the land to explain the work and raise awareness concerning invasive species. People using the road and neighbours (hunters) were informed, as was the farmer who received the plants on his land. The funding entities and local elected officials visited the work site.

■ A poster explaining the management work for PFW on the site was prepared and presented at the meeting of conservatories in Bourgogne in November 2013. It was also made available to local officials, the funding entities and project partners.

■ Following the work, articles were published in the local press.



9 Lutter contre le Myriophylle du Brésil sur un site à fort enjeu écologique

1 ha de plan d'eau – 80% envahis par le myriophylle du Brésil en 2013
 Dans les marais de Chicheboville-Bellengreville, au sud-est de Caen, en Basse-Normandie
 Propriétaire : commune de Chicheboville (14)
 Gestionnaire : Conservatoire d'espaces naturels de Basse-Normandie
 Statuts en faveur du patrimoine naturel : ZNIEFF de type I, site Natura 2000 et ENS

2011 - Découverte du myriophylle du Brésil sur la parcelle
 Chantier-bénévoles d'arrachage manuel

2012 - Accompagnement de la commune pour l'acquisition de la parcelle

2013 Chantier d'arrachage mécanique

Département du chantier :
 - Déagencement des larges du plan d'eau pour faciliter l'accès aux berges
 - Pose de filtres aux entrées et sorties d'eau
 - Arrachage mécanique des herbiers avec une pelle de 2,47 mètres de long
 - Arrachage mécanique du reste des herbiers avec la pelle depuis une barge flottante
 - Finition en arrachage manuel (écouverts, flottantes et pieds isolés)
 - Couverture d'une fosse aux bords pour stockage et nettoyage des herbiers
 - Exposition hors site avec bannière imprimée dans les parcelles agricoles voisines

Durée du chantier : 3 semaines
 Coût : 70 000€
 Maître d'ouvrage : Conservatoire d'espaces naturels de Basse-Normandie
 Maître d'œuvre : Environnement & Forêts de REVEL

Enseignements :
 - Financement innovateur à mobiliser
 - Suivi fin du chantier nécessaire
 - Matériau du matériel minéral
 - Création d'un sentier pour le nettoyage des plants récoltés
 - Lutte des herbiers en forêt de Basse-Normandie

Partenaires techniques et financiers

- 7. The plants were stored in a ditch prior to being transported.
- 8. Aerial view of the pond in the fall of 2013, after the work to remove the parrot-feather watermilfoil.
- 9. Poster explaining the management work.

For more information

- Basse-Normandie nature conservatory: www.cen-bn.fr
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