



New Zealand pigmyweed (*Crassula helmsii*)

Managing New Zealand pigmyweed in an old side channel of the Vire River (Manche department)

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. It also manages two regional programmes concerning ponds and invasive alien species.

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Vire and Saint-Lois river board

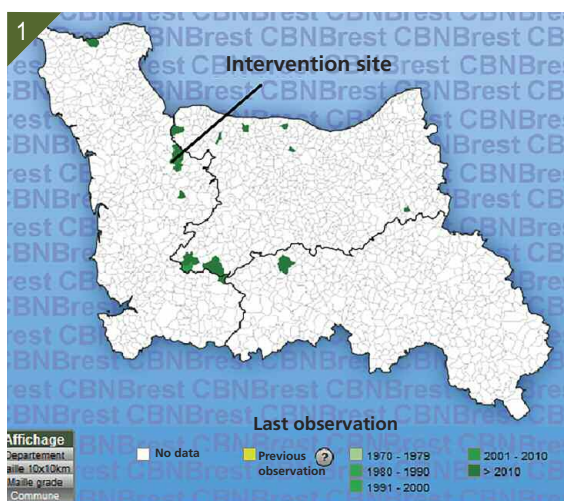
■ Composite board resulting from the merger of the Saint-Lois development board, the Val de Vire board and the Pays Saint-Lois promotional association.

■ The main objective is to monitor and update the local development plan (SCOT) and to encourage the balanced and sustainable economic, social, cultural development of the area.

■ Within that framework, a further mission is to maintain the public river domain of the Vire River and the Vire-Taute canal, e.g. manage the vegetation, ensure the correct flow of water and eliminate obstacles to the flow, etc.

■ The board also acts as the technical and administrative secretariat of the SBMP (sub-basin management plan).

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1. Map showing the distribution of New Zealand pigmyweed in the Basse-Normandie region and the intervention site.
2. Map showing the area colonised by New Zealand pigmyweed in an old side channel of the Vire River.

The Marais du Cotentin et du Bessin regional nature park

■ Members of the park include 150 towns in the Manche and Calvados departments and the two departmental councils.

■ The park covers a total of 146 650 hectares and includes a wetland of 30 000 hectares.

■ Its missions include, among other aspects, efforts to reconcile the preservation of landscapes and the natural heritage with the development of economic activities. It is in charge of implementing management policies on sites in the Natura 2000 network.

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Source: E. Calluna, CBN Brest, April 2016.

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Intervention site

- New Zealand pigmyweed (NZP) was discovered in July 2013 in an old side channel of the Vire River, in the town of Cavigny (Manche department). It is thought to have arrived three years earlier.
- The entire side channel was colonised by NZP, representing a surface area of approximately 1 700 square metres. In the middle of the side channel, the plants formed a dense mat that thinned out toward the edges due to the shadows formed by the nearby bushes. The plants were nonetheless present under the willows, but in lesser densities.
- The side channel is no longer connected to the Vire River which flows at a distance of approximately ten metres, however during highwater periods, water does overflow from the river into the channel.
- At the former meeting point with the river, a mound of sediment formed on which willows and new patches of NZP developed.
- There was a risk of the plants colonising further areas downstream along the river, which could threaten the Taute marshes, an EU-listed habitat.
- The site is part of the *Marais du Cotentin et du Bessin* regional nature park. It is located in the *Baie des Veys* and *Basses Vallées du Cotentin* Natura 2000 sites and in Type 1 and 2 ZNIEFF (high-value ecological zones) sites (*Basse Vallée de la Vire* and *Marais du Cotentin et du Bessin*).
- It is also located in the *Carrières et fours à chaux de Cavigny* sensitive natural area.
- Finally, it is listed as an internationally-recognised wetland by the Ramsar convention.

Disturbances and issues involved

■ Impacts on biodiversity

- The plants form dense mats that limit the development of other aquatic plants and eventually result in monospecific stands that reduce biodiversity.
- The beds of plants modify the oxygen cycle and the pH level that negatively impact animal populations (fish, amphibians and invertebrates).
- They also affect amphibian reproduction by delaying the hatching of eggs.

■ Impacts on site use and on the economy

- Proliferation of NZP can block the flow of water in canals and ditches, thus creating flood risks.
- The mats of vegetation reduce the recreational value of ponds and lakes, and can cause small children and animals to slip and fall.

■ Issues in the Basse-Normandie region

- New Zealand pigmyweed has been observed in the three departments comprising the region, namely the Manche, Calvados and Orne departments. It was first sighted in the Gast pond (Manche department) in 1996.
- Since then, dozens of colonised sites have been discovered, primarily along the Vire River, but also in a number of isolated ponds in the region. It is still sold in garden shops.
- The plant has now been listed as a proven invasive species in the Basse-Normandie region and designated as a priority in the strategy against invasive species that threaten biodiversity.



3. The side channel colonised by New Zealand pigmyweed.

4. The Gast pond (Manche department) colonised by New Zealand pigmyweed.

5. A pond located near the coast, in Tourlaville (Manche department), and colonised by New Zealand pigmyweed.

Interventions

■ Discussions with other stakeholders and partners

■ Following the discovery of NZP on the site in 2013 (after taking a sample and confirming the species identity), the local stakeholders met on site in August 2013 to assess the degree of colonisation and to discuss the necessary management work given the situation.

■ The Manche departmental council, the Cotentin centre for environmental initiatives (CPIE), the *Marais du Cotentin et du Bessin* regional nature park, the Vire and Saint-Lois river board and the Basse-Normandie nature conservatory decided collectively on the management plan for NZP.

■ Preliminary investigations

■ After observing the degree of colonisation on the specific site and noting the issues involved, an initial investigation on the presence of the species was carried out.

■ A team of four people spent two days in a boat, at the end of the summer of 2013, inspecting 25 kilometres of banks along the Vire River from the side channel in Cavigny down to the town of Veys.

■ Seven stands of NZP were discovered with surface areas ranging from 0.2 to 1.5 square metres.

■ Objective of the interventions

■ In the fall of 2013, the main stakeholders decided to launch the management work in order to minimise the risks of NZP dispersal downstream, via the Vire River.

■ Given that the site was no longer used for fishing, the idea of completely filling in the side channel was raised. After studying the available literature on the topic, this management technique was judged to be the most effective, given the context.

■ The management work

■ Technical specifications were drawn up, defining the technical conditions for the work.

■ In advance of the work, the *Marais Cotentin et du Bessin* regional nature park went through the formalities in compliance with the Water law.

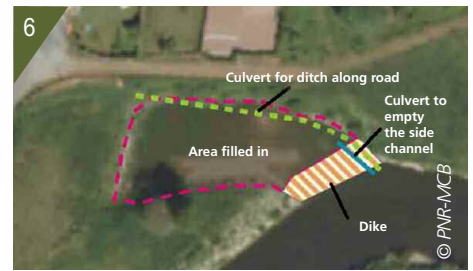
■ The work was managed on site on a daily basis by the Vire and Saint-Lois river board.

■ The first step was to create a dike on the existing mound to cut the side channel off from the Vire.

■ A culvert was installed at the foot of the dike to regulate the water level. The culvert was equipped with an anti-return flap on the Vire side and with a filter (3 millimetre grid) on the channel side to avoid any dispersal of NZP fragments.

■ The entire surface area (1 700 square metres) of the side channel was filled in with on-site deposits and material excavated during work on the sewer system in the town of Meauffe.

■ Prior to the filling work, the water level of the Vire was lowered to facilitate the reinforcement of the dike.



6. Diagram showing the work on the site.

7. a) Creating the dike and b) installing the culvert.

8. The work to fill in the side channel.

■ The work began on 21 July 2014 and lasted four days.

Day 1:

- creation of the dike with the culvert;
- start of the filling process, beginning from the downstream end of the side channel.

Day 2:

- filling both the upstream and downstream ends of the side channel with material stored on a neighbouring lot (belonging to the Manche departmental council).

Day 3:

- transport of the material from the Meauffe lime kilns to the site;
- spreading of the material using shovels and a tractor.

Day 4:

- end of the earthwork with some additional material;
- grading to obtain a constant, gentle slope toward the river.

■ Regular monitoring of the side channel

■ The site has since been monitored for the equivalent of one man-day per year. The purpose is to check the stability of the landfill over the mid to long term and to look for any new NZP stands around the site.

Results and costs

■ Results

■ The consolidation of the dike and the filling of the side channel required 4 000 cubic metres of material. The entire area formerly colonised by NZP was covered with 1.2 metres of soil.

■ The excellent weather during the project made for fast and easy work in moving and arranging the soil, and limited the dispersal of NZP fragments.

■ No NZP regrowth has been observed since the work. Ruderal species are now growing on the site.

■ However, a few, remaining stands of NZP persist along the Vire, further downstream. These stands have been manually removed (scraping of the surface) each year since 2013 by people using spades and travelling by boat. The plants are stored in dry areas.

■ In 2015, large stands of NZP were discovered 30 kilometres upstream of the side channel that was filled in.

■ Financial aspects

■ The total cost of the project for the side channel was 26 832 euros including VAT for the four days of work.

■ The cost was covered by the Seine-Normandie water agency (40%), the regional council (40%) and by the Vire and Saint-Lois river board (20%).

■ The total amount of time spent in 2014 on project management, monitoring, inspections along the river and writing reports represented approximately 16 man-days.



9. The side channel at the end of the work.

10. Manual scraping of colonised areas.

Outlook

- The side channel is monitored annually and the banks of the Vire River are inspected increasingly closely each year.
- The discovery in 2015 of new stands of New Zealand pigmyweed over 30 kilometres upstream of the side channel means that the management programme must be revised because it would now appear that a large part of the Vire basin is colonised.

Information on the project

- A number of technical reports on the management work were drafted by the Basse-Normandie nature conservatory.
- Public meetings were held to inform local stakeholders (fishers, local residents, local governments and managers of natural areas) on the project.
- Articles were published in the local press and in the bulletin of the Vire SBMP.
- Thanks to this particular case, elected officials and local residents were informed on the problems with invasive species.

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For more information

- Basse-Normandie nature conservatory: www.cen-bn.fr
- France Mercier, coordinator of the Basse-Normandie regional action programme against invasive species: f.mercier@cen-bn.fr - 02.31.53.01.05.
- Mercier F. 2013. Diagnostic et préconisations de la gestion de la Crassule de Helms le long de la Vire. Conservatoires d'espaces naturels de Basse-Normandie. 16 pp.
- Mercier F. 2014. Bilan des actions menées le long de la Vire sur la Crassule de Helms en 2014. Conservatoires d'espaces naturels de Basse-Normandie. 10 pp.
- Mercier F. 2015. Bilan du projet « Brigade espèces invasives 2015 ». Chantier et prospection Crassule de Helms – Vallée de la Vire. Conservatoires d'espaces naturels de Basse-Normandie. 5 pp.



This management report was drafted in September 2016 by the work group for biological invasions in aquatic environments, set up by Onema and IUCN France, in addition to those already presented in the second volume of the book titled "Invasive alien species in aquatic environments, Practical knowledge and management insights", in the Knowledge for action series published by Onema.

<http://www.onema.fr/sites/default/files/EN/ENV/cat7a-thematic-issues.html>

