



Pumpkinseed

(*Lepomis gibbosus*)

Proposed protocol for pumpkinseed management in the Trait marshes

The Boucles de la Seine Normande regional nature park

■ The park was created in 1974 in the Seine-Maritime and Eure departments as the Brotonne regional nature park. The name was changed to the Boucles de la Seine Normande regional nature park in April 2001.

■ The main missions are to conserve natural environments, biodiversity and the landscape by:

- setting up programmes to preserve biodiversity;
- achieving good ecological status of water bodies in compliance with the Water framework directive (WFD) and the 2006 Law on water and aquatic environments;
- generating knowledge through scientific research and monitoring;
- managing and restoring environments (and notably wetlands) through direct project management or by accompanying project promoters. A management plan for the period 2011 to 2014 was set up for the marshes in the town of Trait for the Rouen-Elbeuf-Austreberthe urban area (CREA).

■ In the framework of a policy to control the invasive alien species on the site, a management protocol for pumpkinseed (*Lepomis gibbosus*) was proposed.

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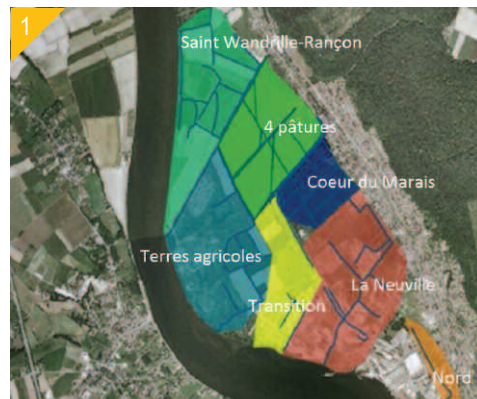
Intervention site

■ The protocol was proposed for the management of the pumpkinseed populations in the marshes in the town of Trait (Seine-Maritime department). Trait lies on the right bank of the Seine, approximately 25 kilometres downstream of Rouen and over 70 kilometres upstream of Le Havre.

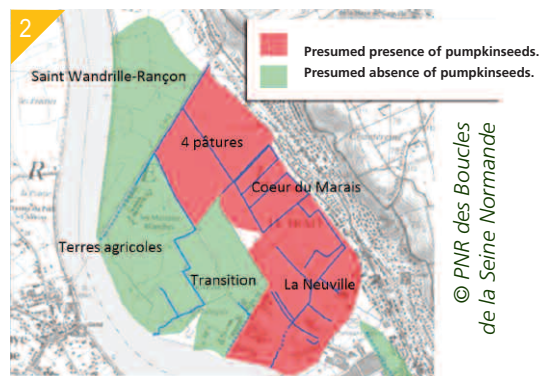
■ The Trait marshes are located in the Trait-Yainville loop of the Seine, within the floodplain of the river. The Trait marshes are a Natura 2000 site that is part of the Boucles de la Seine Aval Natura 2000 zone (FR2300123).

■ The marshes cover a surface area of 114 hectares. The fish in the marshes travel via a dense network of interconnected ditches (representing a total distance of 14 325 metres).

■ The hydraulic network is divided into eight sectors: “Saint Wandrille-Rançon”, “Terres agricoles”, “zone de transition”, “La Neuville”, “Nord”, “Cœur du marais”,



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1. Sectors of the hydraulic network in the Trait marshes.
 2. Sectors of the marshes with pumpkinseed populations.

“Les quatre pâtures” and “Yainville” (the latter lies to the south and is not shown on the map).

■ The protocol will be implemented in the sectors “Cœur du marais”, “La Neuville” and “Les quatre pâtures”.

Disturbances and issues involved

■ In 2008, the park conducted an assessment on the status of the marshes in view of the future management plan. The surveys on the fish populations revealed a large pumpkinseed population.

■ The species is seen as a “species likely to provoke biological imbalances” (articles L432.10 and R432-5 in the Environmental code).

■ Given its reproductive capabilities, it is considered invasive and its presence can produce a number of impacts, including:

- competition with native fish species with as a result a possible reduction in cyprinid communities;
- possible impacts on different insect larvae, crustaceans, worms and small molluscs, but also the eggs and alevins of amphibians.

Interventions

■ Surveys of fish populations

■ A survey was conducted in 2008 to determine the status of the Trait marshes prior to setting up the management plan. It was an occasion to draw up an inventory of the ditches and other hydraulic networks in the Trait-Yainville loop.

Survey protocol:

- a trapping campaign was conducted from 9 to 12 June;
- fyke nets were set in all the ditches (three sectors) still containing water during the campaign. Seven were set in the “Cœur du marais” sector (green dots in Figure 4), five in a ditch in the “La Neuville” sector (yellow dots) and one in a ditch near the “Maisons blanches” site, between the “Terres agricoles” and “Saint Wandrille Rançon” sectors (red dot);
- the traps were checked once daily.

■ A survey was conducted in 2010 in the framework of a study specifically on eels (*Anguilla anguilla*) in certain river loops in the park, including the Trait marshes. One objective of the study was to compare the methods (fyke nets and electrofishing) employed for fish surveys. To that end, electrofishing was carried out in two sectors surveyed using fyke nets in 2008.

Survey protocol:

- electrofishing was used for point abundance sampling (PAS) on 29 June 2010;
- the sectors surveyed were “Cœur du marais” and “Nord”.

■ A survey was conducted in 2011 in the framework of an inventory of fish populations in the hydraulic networks of all the Seine loops.

Survey protocol:

- the survey on the Trait loop was carried out from 4 to 7 July 2011;
- eight fyke nets were set up for three days at three points in the “Coeur du marais” sector;
- the traps were checked once daily.



3. Pumpkinseed (*Lepomis gibbosus*).

4. Positions of the fish traps in the Trait marshes.

Results and assessment

■ Main results of the 2008 survey

Sector	“Cœur du marais”	“La Neuville”	“Terres agricoles”
Average number of fish caught per day and per trap (CPUE)	11	6	7
Percentage of pumpkinseed caught	77 %	3 %	0 %

■ Main results of the 2010 survey

- “Cœur du marais” sector: 22.4% of the fish caught were pumpkinseeds.
- “Nord” sector: no pumpkinseeds were caught.

■ Assessment

■ The data produced by the fish surveys indicate:

- the proven presence of pumpkinseed populations in the “Coeur du marais” and “La Neuville” sectors;
- the absence of pumpkinseed populations in the “Nord” and “Saint Wandrille-Rançon” sectors.

■ The connections between the ditches in the various sectors mean that the “Les quatre pâtures” sector must be presumed to be colonised by pumpkinseeds.

■ As a result, the total length of the ditches presumed to be colonised by pumpkinseeds is thought to be 8 046 metres out of a total of 14 325 metres. It should be noted that not all of the colonised ditches are filled with water year round

■ Proposal for a pumpkinseed management protocol

■ In view of controlling the pumpkinseed population in the Trait marshes, the Boucles de la Seine Normande regional nature park devised a management protocol in 2011 for CREA. The protocol presents methods to experiment different types of traps with estimates on the human and financial resources required.

■ The experimentation phase was intended to select the best possible trap, providing sufficient catch per unit effort, based on a number of parameters:

- the type of trap (hoop net or fyke net);
- the netting mesh, between 10 and 20 mm to capture fish of all sizes;
- the size of the trap, large enough to catch several fish, but small enough that the entry is completely submerged in the water of the ditch;
- the material used for the traps, taking into account the probability of damage by mammals (coypus, muskrats) present at the site and the perception (attraction/repulsion) of the trap by fish;
- the effectiveness of the trap (bait).

■ The protocol was proposed for use on the 8 046 metres of ditches colonised by pumpkinseed:

- the ideal period for trapping is in April and May, i.e. when the marshes are not flooded and before the reproductive period in order to catch adult fish before they reproduce. If it is decided not to intervene during the spring period (e.g. low temperatures limit the activity of the fish), then the summer period (July to October) should be selected to ensure effective catches;
- the traps are laid for 24-hour periods to limit the risks of mortality and cannibalism in the traps;
- the protocol foresees approximately 20 traps laid every 4 metres (a compromise between the “inventoried” surface area and the “attractiveness” of the trap), thus covering 80 metres of ditch;
- three replicates.

■ In that the protocol is experimental, the parameters will be adjusted to meet the conditions encountered in the field and in step with the effectiveness of the traps.

■ Cost estimate:

- estimates are difficult as long as the protocol has not been finalised;
- one indication is that a trap costs between 60 and 200 euros (before VAT) depending on the size and the mesh of the netting..

Assumptions on the time required to manage pumpkinseed populations in the Trait marshes as a function of different conditions.

Length of ditch (metres)	Number of replicates	Hours required to lay and check the traps
80	1	2
80	3	6
8 046	1	201
8 046	3	603

● Outlook

- CREA will purchase four double-entry hoop nets with 10 mm netting.
- Experiments on the equipment and the method will be run to test their effectiveness as soon as the authorisation for the management work has been received. The request has been made to the State services.

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For more information

■ Internet site of the Boucles de la Seine Normande regional nature park:

<http://www.pnr-seine-normande.com/>

■ Rozanska, F. (PNR des Boucles de la Seine-Normande). 2011.

Proposition d'un protocole pour la régulation de la Perche soleil (*Lepomis gibbosus*), Marais du Trait.

