

The naiades  
of Picardie

# Managing the wetlands

## In order to preserve biodiversity



*nai-ad* (nd, -d, n-)

n. pl. *nai-a-des* (-dz) or *nai-ads*

1. Greek Mythology One of the nymphs who lived in and presided over brooks, springs, and fountains.

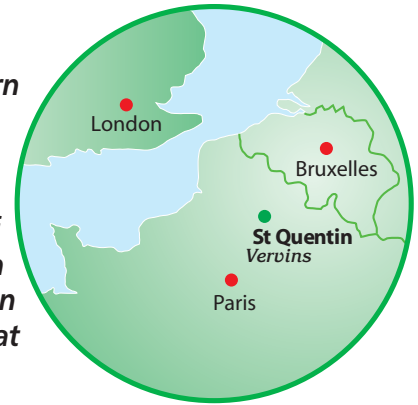
2.. The aquatic nymph of certain insects, such as the mayfly, damselfly, or dragonfly.

3. An aquatic plant of the genus *Naias*

Damselfly leaving its Naiad form

The Lycée Agricole de Vervins is located in Picardie, a region in northern France.

As pre-penultimate year baccalauréat students, we have used the natural reserve at the marshes of St Quentin as an area of investigation. We discovered how to evaluate biodiversity, and how to get rid of some "natural" trends in order to preserve the richness of such wetlands. The three authors of the dossier have then concentrated on the subject of "maintenance of the reed-beds", a transition zone that favours spawning and the reproduction of fish like the pike.



The Marais d'Isle marshlands occupy 100 hectares at the site of a former pond. They are between the town of St Quentin and the Somme river.

1- *Cicuta virosa*; 2- *potamogeton coloratus*.



### Discovering the marshes:

With the guidance of specialists from the Saint Quentin environment department, we have discovered this wet zone which is in perpetual evolution, we have taken samples and performed measurements, and these have enabled us to quantify the "natural" variations and ascertain the appropriate corrective measures required in order to preserve the character of an open aquatic environment for the marshland.

In exchange for this guidance, all of the class participated directly in the difficult operations of pulling out invasive plants, and in the cleaning out of ditches that were in the process of filling.



### Biological Index in various spots, trend 1991-2007



### Measuring "IBGN"

We learned the Standardised General Biological Index (IBGN) technique. From a sample of macro demersal invertebrates (small creatures found at the bottom of water courses), and on the basis of the taxons found, a score of 0 to 20 is accorded after the application of a reference table. All of these operations are subjected to a very precise protocol. Some species are very sensitive to the smallest pollution, while others are a lot more tolerant. The species found to be most sensitive to pollution are the larvae of plecoptera (stone flies). Their presence indicates an excellent quality of water. Other species that are indicators of a healthy environment are the larvae of ephemeroptera (mayflies) and trichoptera (caddis flies). After the collection of samples, the laboratory phase is particularly important.





The pike has very stringent parameters regarding its spawning grounds. It requires an aquatic vegetation that is slightly submerged in winter in order to allow the eggs to hatch and the fry to develop. The quality of the water has to be very high. The grassy areas must be connected to the water course in order to ensure the return of the individuals to the pelagic zones.

## Maintaining reed beds(\*)

When the reeds are allowed to develop unhindered, they contribute, through their death and decomposition, to the eutrophication of the site. This vegetation, which is so typical of the marshlands, allows the development of species for which this is the environment of predilection, like certain birds that use it to establish a nesting site or that use it as a staging site during their migration. In winter, the reed beds are also an aquatic repository of marsh-grass, which aids the reproduction of fish by providing them with suitable spawning grounds. Maintaining the reed beds means cutting them back regularly and removing the harvested material.

*\*This appellation covers all those natural habitats that are dominated by large herbaceous plants such as sedge, cat's tail, marisca and other reeds. These are the pioneering habitats of the banks of water planes. The reed-bed habitats accommodate groups of both original flora and fauna, with the very structure of the reed beds involving the presence of highly adapted species.*



A reed beds in the process of filling up

## A new sustainable way for harvesting reed-beds?

The authors will transpose this knowledge during their summer work experience course within a natural reed-bed reserve close to Laon. This study subject concerns maintaining the openness of the environment by a means other than cutting back, namely making use of herbivores such as sheep, so that the beds are maintained directly without the need for cutting and removal.

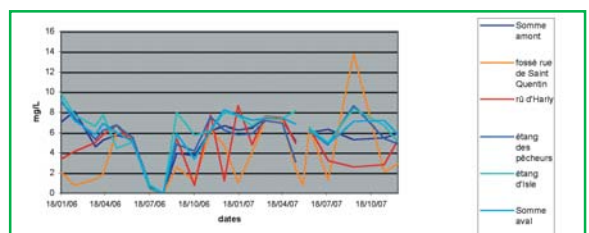
This report will constitute original work on a subject that has been explored very little.

## Sharing our knowledge

An exhibit is in the making for presentation in the town of Vervins during the regional environment weeks next October. Besides, this exhibit, with panels and models of the marshland, will be presented and explained to the students of primary and secondary schools and colleges, with a view to raising awareness of the environment and of sustainable development.

## Removing invasive vegetals

A species of exogenous dogwood has overwhelmed the forest floor. This is developing to the detriment of the local vegetation. It is therefore necessary to intervene in order to limit this population, so as to retrieve the individual Picardie character of the marshland. Not only the network of ditches, but even the marshlands themselves are tending to fill. The decomposing vegetation is leading to anoxia of the environment, which is then further accelerating the phenomenon.



Dissolved O<sub>2</sub> concentration in various spots of the marshlands

French selection for the Stockholm Junior Water Prize 2008: Vervins Agricultural High School

