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INTERREG CLANCY project Monitoring of the Chinese Mitten Crab (*Eriocheir sinensis*) in the rivers of the Hauts-de-France Region in 2024

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Clancy

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I. INTRODUCTION

Invasive alien species are recognised as one of the main causes of biodiversity loss globally (IPBES, 2019). Through their multiple impacts, they threaten native species, natural habitats, ecosystem services, and also economic activities and human health. France is no exception, with numerous examples of invasions, including water primrose, American crayfish, and the Asian hornet. It is therefore imperative to progress rapidly towards implementing monitoring programmes and measures to prevent future introductions, which remain the most effective (and cost-efficient) means of managing biological pressures.

Among these species, the Chinese mitten crab, Eriocheir sinensis (Figure 1), despite its apparently low (or poorly documented) impact in France, is listed as an invasive alien species of concern for the European Union, under Regulation No. 1143/2014. It is also listed among the 100 most harmful invasive species globally by the Invasive Species Specialist Group (ISSG) of the International Union for Conservation of Nature (IUCN). The species is further subject to national regulations.

The Chinese mitten crab was introduced to Europe in the early 20th century, likely in larval form within ship ballast water. In France, it was first reported near Boulogne in 1930, within the Artois-Picardie basin. An opportunistic omnivore, it consumes aquatic plants, algae, detritus, fish eggs, and a wide range of macroinvertebrates. When present in significant densities, it can impact local species, leading to declines in fish populations (e.g., migratory fish species already struggling in our rivers, as well as freshwater and brackish fish species) or competitors like crayfish. This species is also problematic as it can damage fishing nets and, at high densities, harm dykes and erode banks through burrowing.

Figure 1 : Female Chinese mitten crab (Eriocheir sinensis) captured in June 2022 off the Bay of Somme by Fabrice Montassine (fisherman from Le Hourdel)

On 13 April 2023, funding for the CLANCY project ("Improve habitat quality and climate-adaptivity of freshwater ecosystems through the management of alien invasive aquatic invertebrates") under the North Sea Interreg Programme was approved. Proposed by eight European partners from Belgium, Sweden, Germany, and France, the project aligns with the themes of "Climate Resilience, Biodiversity, and Pollution".

The project officially began on 2 May 2023 and will conclude in April 2028. The partners include:

- ✓ Belgium: Flemish Environment Agency (VMM – lead), University of Antwerp (UA), and East Flanders Province (POV)
- ✓ Germany: Alfred Wegener Institute (AWI) and University of Dresden (TUD)
- ✓ France: GEMEL (Estuarine and Coastal Environment Study Group) and CSLN (Normandy Coastal Monitoring Unit)
- ✓ Sweden: University of Skövde (HIS)

GEMEL benefits from the support of the Artois-Picardie and Seine-Normandie Water Agencies for this project. The European project aims to strengthen cross-border capacity, maintain biodiverse and climate-adaptive ecosystems through mitten crab management. Its objectives are to establish a comprehensive database on the spatial distribution of Chinese mitten crabs

(WP1), use traps to monitor and manage their populations, conduct genetic analyses (WP2), and facilitate the cross-border application of management strategies (WP3).

GEMEL is committed to monitoring the spatial and temporal distribution of Chinese mitten crabs between the Bresle and the Aa rivers over a four-year period, contributing to cross-border genetic analysis. Additionally, the project involves studying the use and implementation of traps for species management and leveraging studies on the commercial opportunities of captured specimens.

This report presents GEMEL's progress from January to December 2024, including monitoring campaigns, results, and future actions. Notably, the end of 2023 and the beginning of 2024 were marked by significant storm events and flooding in the Pas-de-Calais region, necessitating extensive bank maintenance works in Hauts-de-France, which impacted sampling campaigns.

II. *ERIOCHEIR SINENSIS* : LITERATURE REVIEW

A. BIOLOGY AND ECOLOGY OF THE CHINESE MITTEN CRAB

The Chinese mitten crab measures up to 9 x 8 cm. The carapace is slightly wider than long, almost square, with convex lateral edges. It has four pointed anterolateral spines, four frontal teeth, and weak transverse ridges. The palms of adult male claws are densely covered with wool-like hairs (hence its name). The walking legs are long and finely fringed with setae. Its colour ranges from olive-brown to green-grey (Figure 2). Initially herbivorous, the crab later becomes predatory (Noel & Breton, 2016).

Figure 2 : The Chinese mitten crab (Eriocheir sinensis) (H. Milne-Edwards, 1853), dorsal view of a male (©Chouquet, 2022)

Sexual maturity is reached between 1-3 years in China (Jin et al., 2001) and between 3-5 years in Europe (Schubert, 1938). Mature adults migrate downstream between August and October or September to December, depending on location, to reproduce in the sea. This catadromous species' females, once fertilised, migrate to estuaries to release larvae in spring. Larval development occurs in marine and estuarine environments, progressing through a prezoea stage, five zoea stages (2-8 weeks), and a megalopa stage (3-6 weeks; Dittel & Epifanio, 2009).

Juvenile crabs migrate upstream to rivers, ponds, or lakes, sometimes up to 1,200 km inland (Figure 3; Bentley, 2011; Peters, 1933).

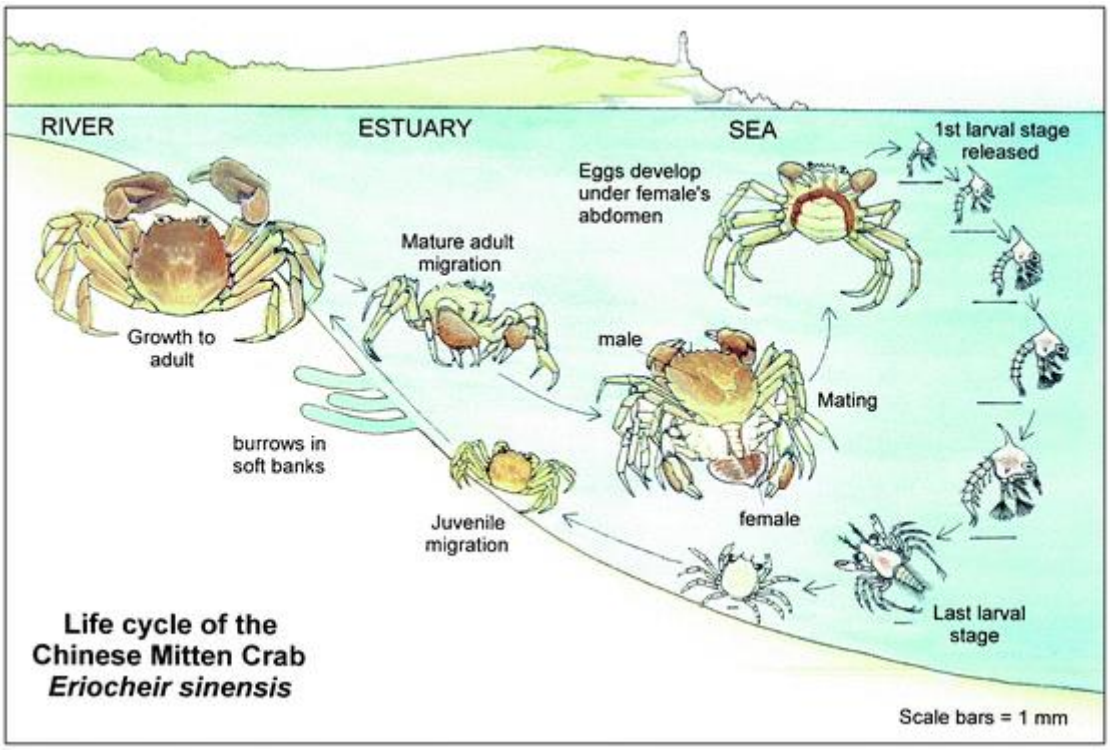

Figure 3 : Life cycle of Eriocheir sinensis (Bentley, 2011)

Growth occurs through moulting, with crabs growing rapidly: six to eight moults in the first year, four to five in the second, and two to three in the third year (Panning, 1938).

The Chinese mitten crab is a burrowing species, digging galleries along riverbanks. During its freshwater phase, it feeds predominantly on vegetation (two-thirds), including algae and aquatic plants, and on animals (one-third), such as crustaceans, insect larvae, and molluscs (Godin & Smigielski, 2013).

B. Geographical Distribution

Native to East Asia, where its range extends from Hong Kong to the North Korean border, the Chinese mitten crab (Eriocheir sinensis) has been present in Europe since 1912. Introduced via ballast waters in Germany (Panning, 1938), the species is listed among the 100 most invasive alien species globally (Lowe et al., 2007). Today, it spreads from Finland to southern France, including England (Herborg et al., 2003; Panov, 2006; Robbins et al., 2006).

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Several observations of the Chinese mitten crab have been reported in the Hauts-de-France and Normandy regions, documented in the literature. The first French observation occurred in 1930 on Ningles Beach near Le Portel in Boulogne-sur-Mer (Hoestlandt, 1940). Subsequent sightings occurred six years later, spreading to the Somme River in 1942 and the Seine River a year later. By the following decade, the species had reached the Garonne (1953) and Loire (1954). Its range expanded further (Figure 4): Mediterranean (1960), Bayonne region (1967), Brittany coastline (1991), and the Rhône basin (1993).

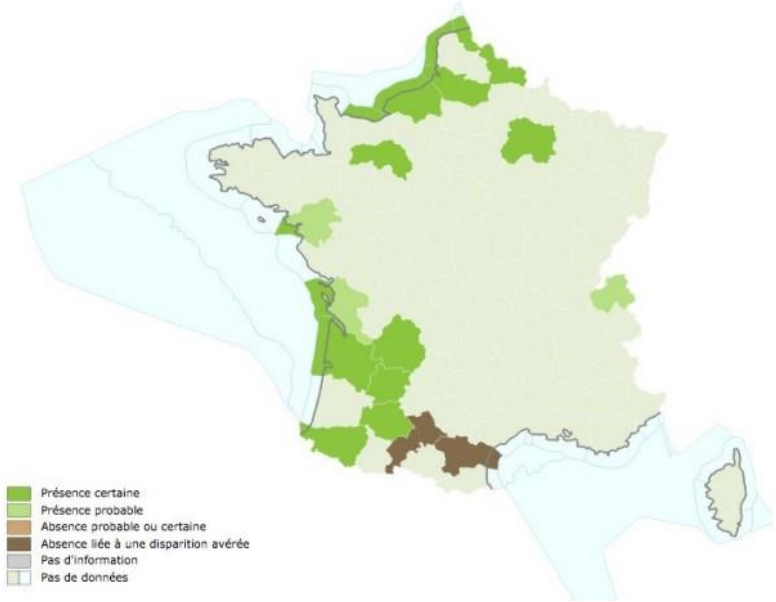

Figure 4 : Distribution of the Chinese mitten crab (Eriocheir sinensis) in metropolitan France (adapted from P. Noël INPN-MNHN 2016)

At the scale of the Pas-de-Calais department, which was the first French department to document the invasion of the Chinese mitten crab, its presence has been confirmed in the Audomarois region since the 1950s–1960s, with observations recorded in the Slack, Wimereux, Liane, and Canche rivers (Dewarumez et al., 2011; Amara, personal communication).

In the Nord department, the Chinese mitten crab first appeared in the Aa and Yser basins in 1937, followed by the Escaut basin in 1946. Unlike older records, recent observations are less well-documented. During the war years, German occupiers caused flooding in French Flanders with seawater, increasing brackish zones favourable to the reproduction of Chinese mitten crabs. After the war, variable precipitation and freshwater discharges into the sea gradually reduced these suitable areas, leading to a decrease in recorded observations.

In the Somme department, the first observation dates back to 1942 in Le Crotoy. A year later, the species was observed in Normandy. Although the Chinese mitten crab was very common there between 1950 and 1960, no individuals have been observed in the port of Le Havre since 1995 (Breton, 2014).

All locations and dates of observations found in the literature or from personal communications are listed in Table 1. This census will be integrated into the database created as part of the CLANCY project (WP1: capacity building).

Table 1 : Dates and Locations of Observations of the Chinese Mitten Crab (Eriocheir sinensis) (in Godin and Smigielski, 2013; Pezy et al., 2014; Breton, 2014; WFD ichthyofauna monitoring reports for the Artois-Picardie basin, 2021 and 2022; personal communications)

Locations	Departments	Locations of sightings	Years of sightings
BOULOGNE-SUR-MER	62	Plage de Ningles	1930
ARQUES	62	Ascenseur des Fontinettes	1937
BERGUES	59	Fossé des fortifications	1937
GRAVELINES	59	Ecluses entre l'Aa et les fossés des fortifications	1937
MARDYCK	59	Ancien canal : pont à roseaux	1937
SAINT OMER	62	Non précisé	1937
WYLDER	59	Yser	1937
BOURBOURG	59	Aa	1938
DUNKERQUE	59	Canal de l'Ile Jeanty	1938
GHYVELDE	59	Canal de Furnes	1938
HONDSCHOOTE	59	Canal de la "Basse Colme"	1938
HOULLE	62	Marais	1938
SAINT-FOLQUIN	62	"Grand Drack" relié à l'Aa	1938
STEENWOORDE	59	Ey Becque	1938
WATTEN	59	La "Bombe" (watergang relié à l'Aa)	1938
HERZEELE	59	Barrage sur l'Yser	1939
BAVINCHOVE	59	Peene Becque	1940
BOLLEZEELE	59	Yser	1941
BUYQQCHEURE	59	Yser	1941
ESQUELBECQ	59	Yser	1941
QUESTRECQUES	62	Liane	1941
CROTOY	80	Non précisé	1942
VILLERVILLE	14		1943
AMIENS	80	Non précisé	1945
ABBEVILLE	80	Non précisé	1945
BRIE	80	Non précisé	1945

Locations	Departments	Locations of sightings	Years of sightings
BOUCHAIN	59	Non précisé	1946
CONDE-SUR-L'ESCAUT	59	Etangs de Macou	1946
TRITH-SAINT-LEGER	59	Non précisé	1946
COUDEKERQUE-BRANCHE	59	Canal de Bergues	1946 à 1950
?		Entre la Touques et l'Orne	1950
MAYVILLE	76		1950
HARFLEUR	76		1950
HARFLEUR	76		1950
LE HAVRE	76	Brise-lames sud	1952
LE HAVRE	76	Brise-lames sud	1952
LE HAVRE	76	Brise-lames sud	1952
LE HAVRE	76	Entre les ponts VI et VII	1954
LE HAVRE	76	Pont aval VI	1954
SAINT VIGOR	27	Au sud du Canal de Tancarville	1954
CERLANGUE	76		1954
TANCARVILLE	76		1954
OUISTREHAM	14		1955
HOUDAN	78		1955
VILLEQUIER	76		1955
BERVILLE	76		1957
BERVILLE	76		1957
LE HAVRE	76	Plage "pouilleuse"	1957
OUISTREHAM	14		1965
ZUYDCOOTE	59	Canal de Furnes	1973
Non précisé		Baie de Seine	1977
Non précisé		Estuaire de la Seine	1987
LE HAVRE	76	Pont Rouge (Hydro Azote)	1989
LE HAVRE	76	Centrale EDF	1990

Locations	Departments	Locations of sightings	Years of sightings
Non précisé		Pont de Normandie	1995
Entre Honfleur et la Risle	14		1997
LE HAVRE	76	Banque Amfard	1998
ROUEN	76	Confluence avec le Cailly	2004
ROUEN	76	Bassin de St Gervais	2004
ROUEN	76	Bassin de St Gervais	2004
ARQUES	62	Aa	2006
AIZIER	27		2007
BLENDECQUES	62	Basse Meldyck d'Arques	2008
UXEM	59	Canal des Chats	2008
?	62	Canche	2009
LE PORTEL	62	Rade de Boulogne	2009
SAINT-OMER ou NIEURLET	62 or 59	Rivière de Nieurlet	2011
?	62	Canche	2011
WATTEN-EPERLECQUES	62	Rivière de la Vlotte	2011
ECLUSIER-VAUX	80	Amont du bassin versant	2011
CLERY SUR SOMME	80	Somme	2011
SAINT VALERY SUR SOMME	80	Somme	2013
VILLERS-SUR-MER	14		2013
THUN-SAINT-AMAND	59	A proximité de l'écluse	2014
MORTAGNE	59	Confluent de la Scarpe et de l'Escaut	2014
FLINES-LES-MORTAGNE	59	Ecluse de Rodignies	2014
VASOUY	14		2014

Communes	Départements	Lieux d'observation	Années d'observation
AMBLETEUSE	62	Slack	2019
BOULOGNE-SUR-MER	62	Liane	2019
ETAPLES	62	Canche	2019
CONCHIL LE TEMPLE	62	Authie	2019
EU	76	Bresle	2019
HERRE-LES-RUE	80	Course du Quesnel	2020
BAIE DE SOMME	80	Somme	2021
BAIE D'AUTHIE	80	Authie	2021
BAIE DE CANCHE	62	Canche	2021
SAINT-VALERY-SUR-SOMME	80	Somme	2022
BAIE DE SOMME	80	Somme	2022
BAIE D'AUTHIE	80	Authie	2022
SAINT-VALERY-SUR-SOMME	80	Somme	2023
BAIE DE SOMME	80	Somme	2024
SAINT-VALERY-SUR-SOMME	80	Amboise (affluent Somme)	2024

III. STUDY SITES

To study the spatial distribution and population dynamics of Chinese mitten crabs in the Hauts-de-France region, 11 watercourses were selected: the Aa in the north, the Slack, the Wimereux, the Liane, the Canche, the Authie, the Canal du Marquenterre, the Maye, the Canal à Poissons, the Somme, and the Bresle in the south.

To best prepare for the project's sampling campaigns, a prospecting phase was carried out using a cartographic analysis with aerial views (utilising QGIS and Géoportail). This analysis helped identify potential areas for trap placement along the selected watercourses. The planned locations, both upstream and downstream of each site, were then inspected on the ground by two GEMEL agents. Depending on site accessibility, they were either validated or relocated. It was therefore determined that, in the Nord department, the Aa would be monitored (Figure 5).

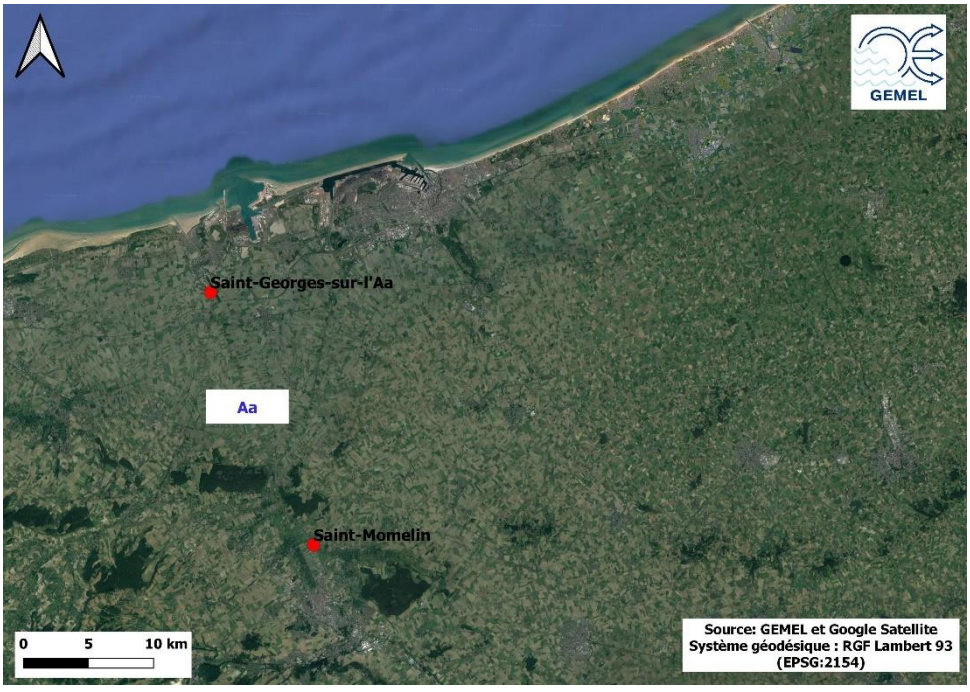

Figure 5 : Location of the two municipalities in the Nord department (59) for monitoring the Aa river

he traps will be set upstream of the river at Saint-Momelin (Figure 6 and Figure 7) and downstream at Saint-Georges-sur-l'Aa (Figure 8 and Figure 9).

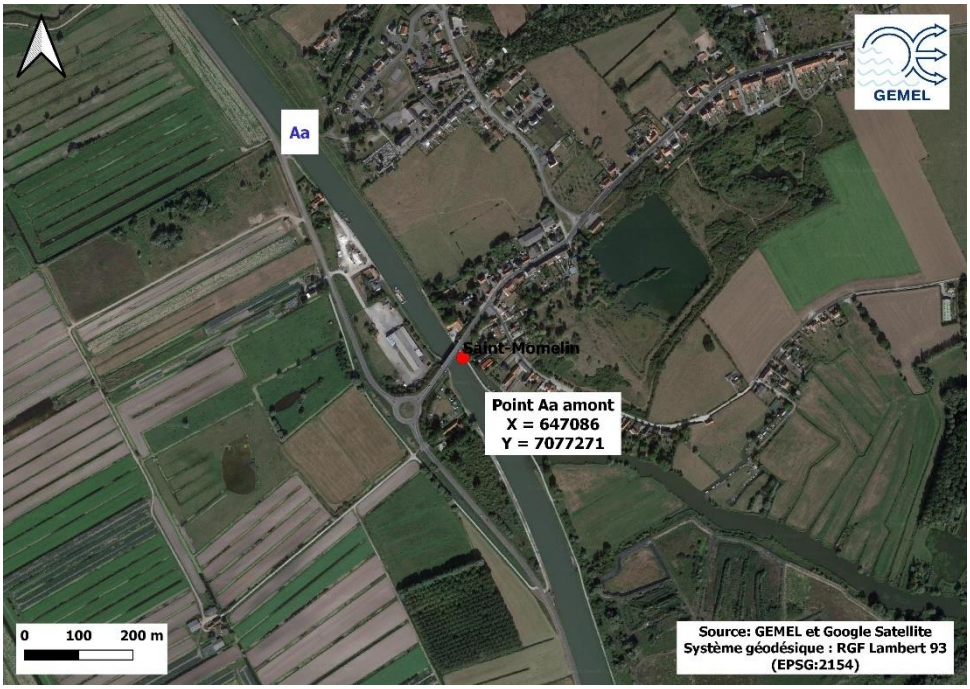

Figure 6 : Location of trap placement on the Aa at Saint-Momelin

Figure 7 : Upstream site of the Aa at Saint-Momelin

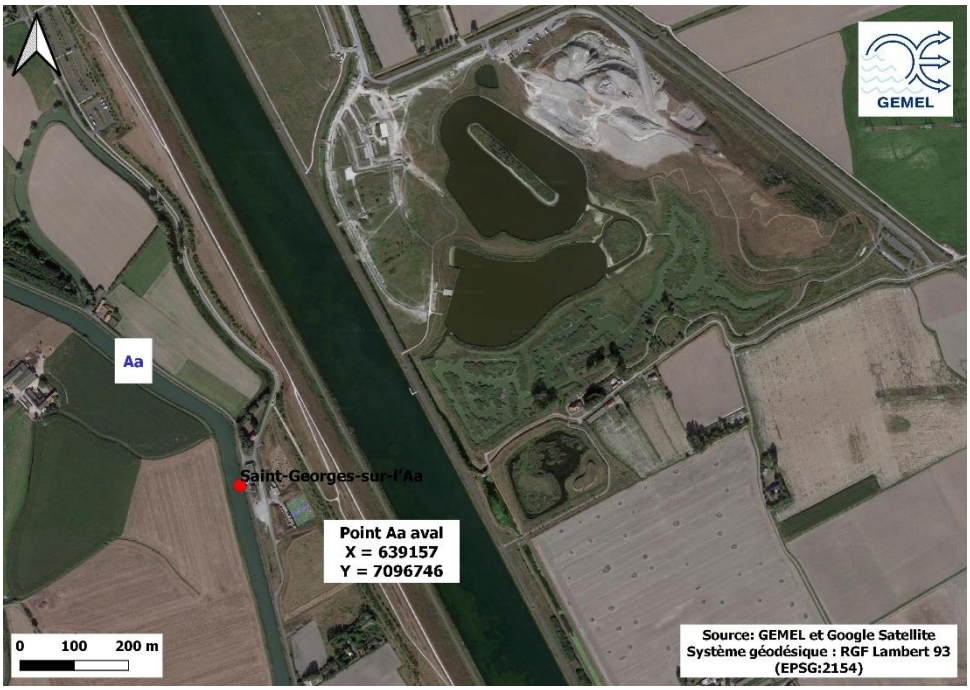

Figure 8 : Location of trap placement on the Aa at Saint-Georges-sur-l'Aa

Figure 9 : Downstream site of the Aa at Saint-Georges-sur-l'Aa

The rivers monitored in Pas-de-Calais are: the Slack, the Wimereux, the Liane, and the Canche (Figure 10).

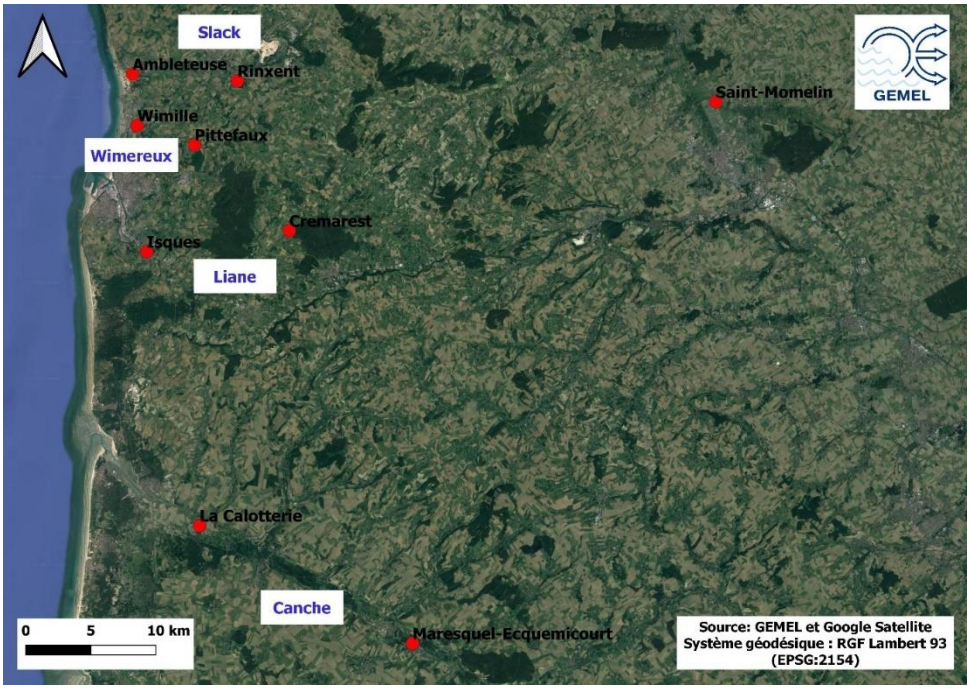

Figure 10 : Location of the eight municipalities associated with the rivers of the Slack, Wimereux, Liane, and Canche in the Pas-de-Calais department (62)

Two sites will be monitored on the Slack: Rinxent upstream (Figure 11 and Figure 12) and Ambleteuse (Figure 13 and Figure 14) downstream.

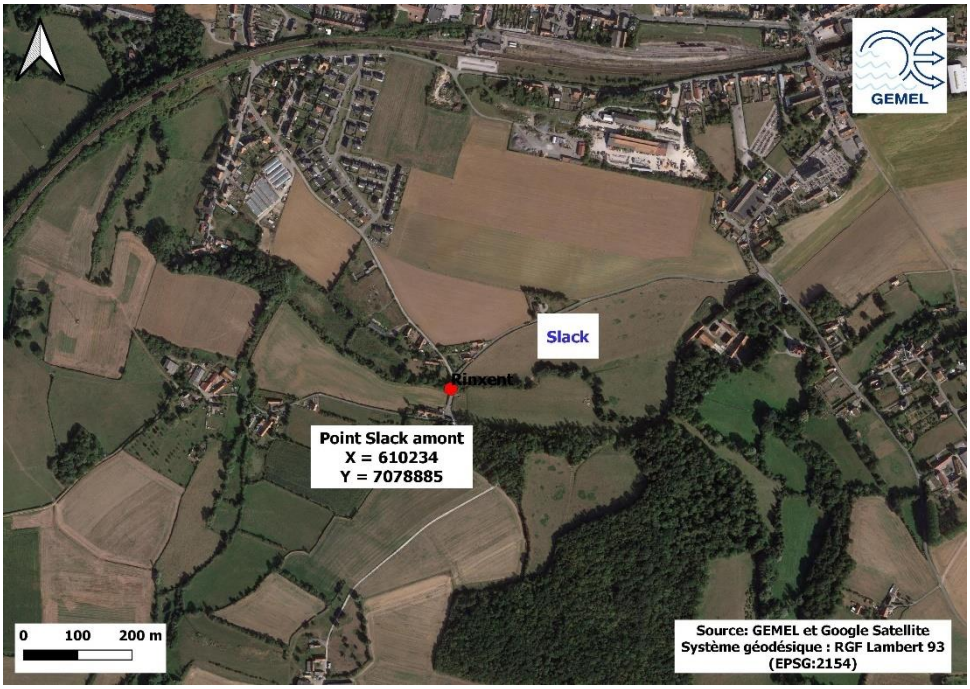

Figure 11 : Location of trap placement on the Slack at Rinxent

Figure 12 : Upstream site of the Slack at Rinxent

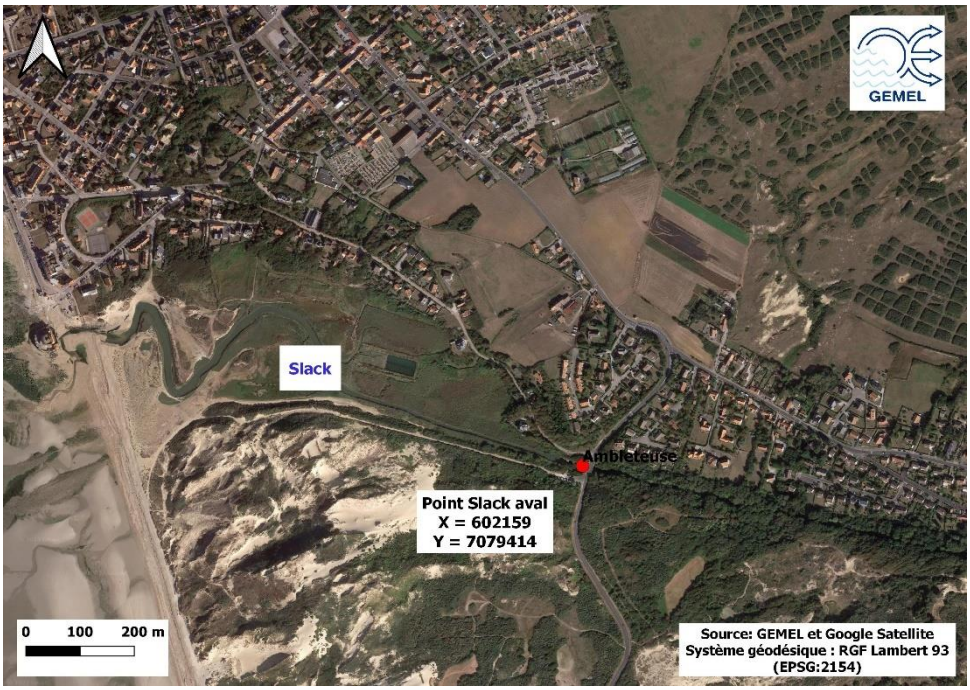

Figure 13 : Location of trap placement on the Slack at Ambleteuse

Figure 14 : Downstream site of the Slack at Ambleteuse

In order to monitor the invasion of the mitten crab on the Wimereux, traps will be placed at Pittefaux upstream (Figure 15 and Figure 16) and at Wimille downstream (Figure 17 and Figure 18).

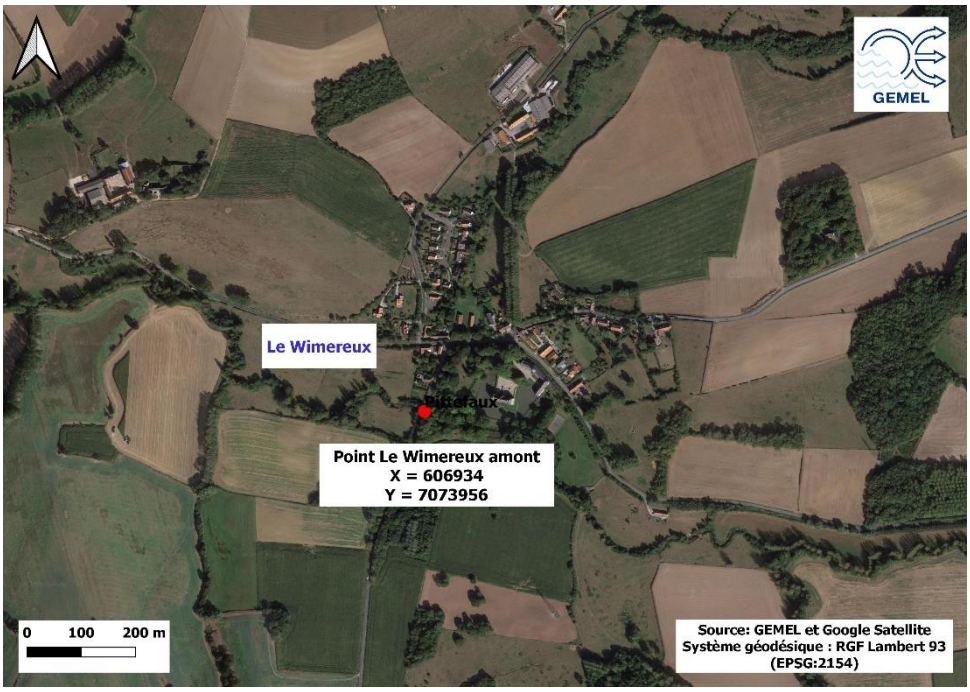

Figure 15 : Location of trap placement on the Wimereux at Pittefaux

Figure 16 : Upstream site of the Wimereux at Pittefaux

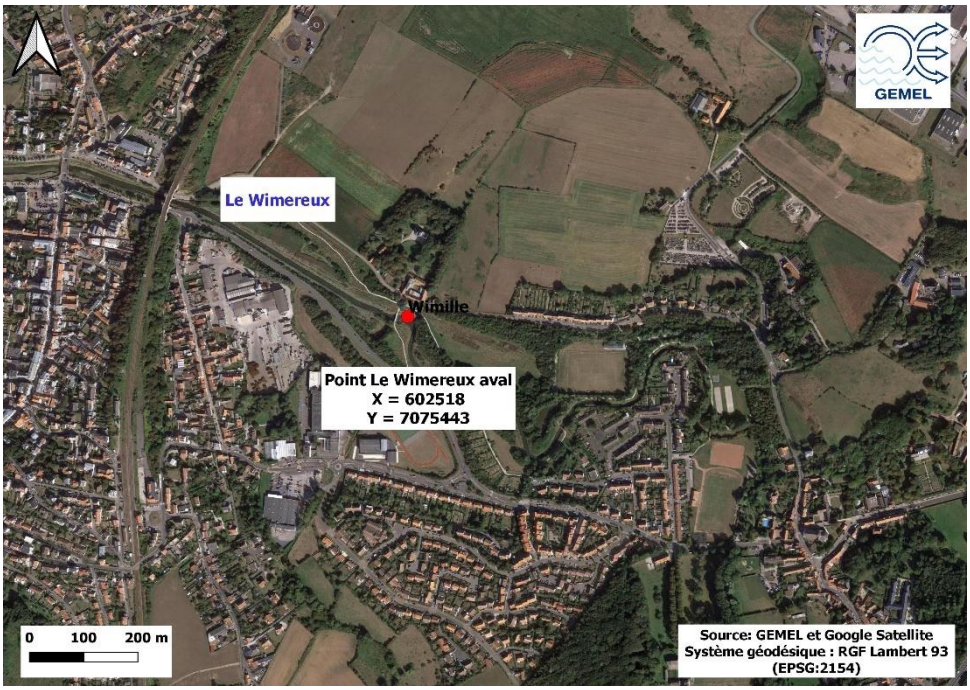

Figure 17 : Location of trap placement on the Wimereux at Wimille

Figure 18 : Downstream site of the Wimereux at Wimille

On the Liane, Crémarest, upstream (Figure 19 and Figure 20) and Isques, downstream (Figure 21 and Figure 22), have been selected for trap placement.

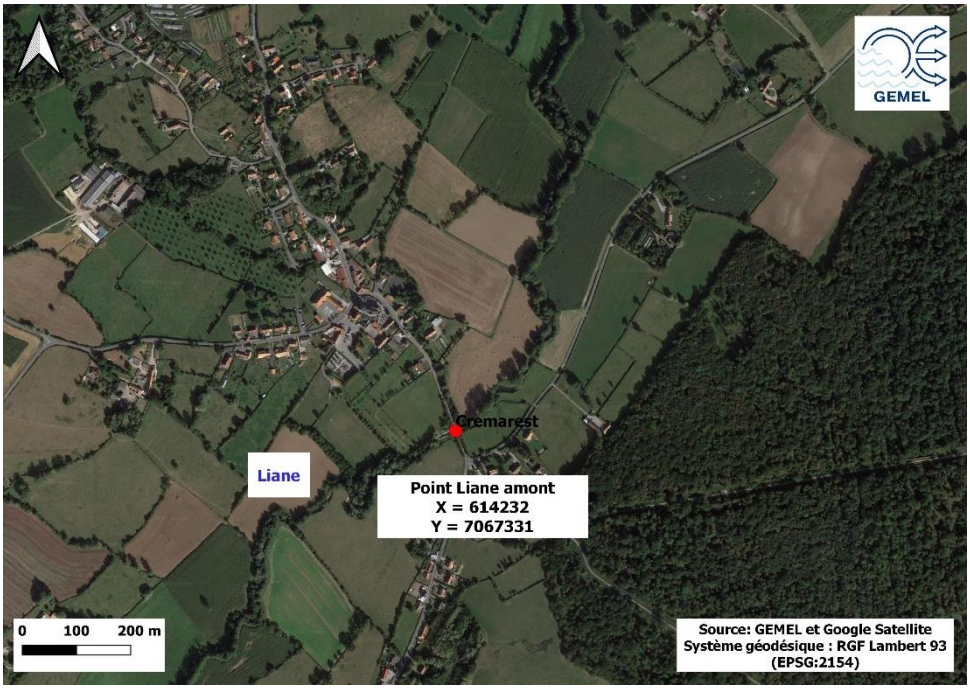

Figure 19 : Location of trap placement on the Liane at Crémarest

Figure 20 : Upstream site of the Liane at Crémarest

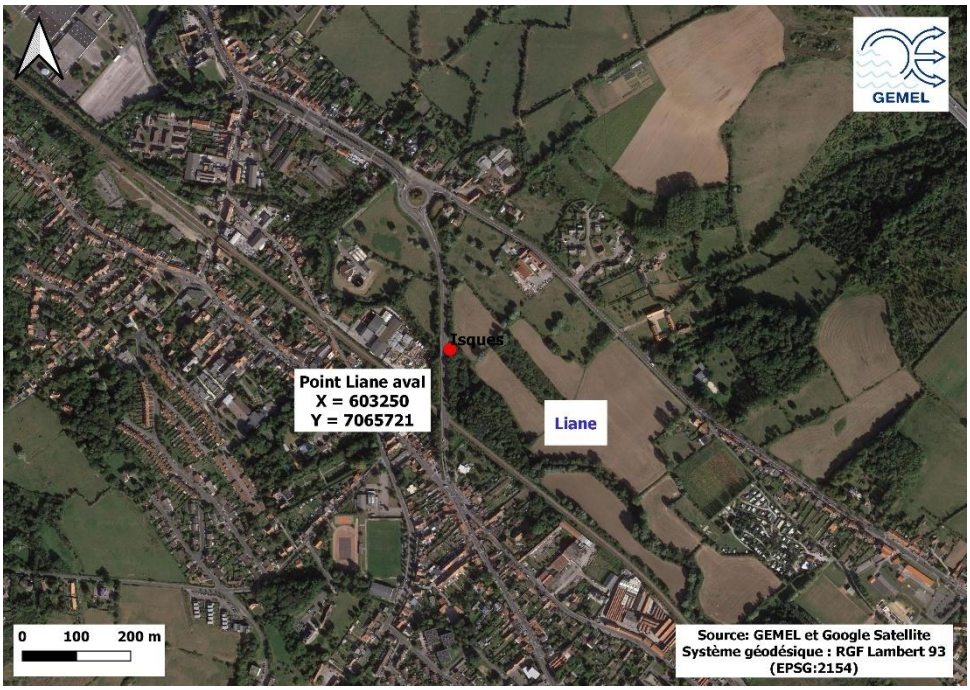

Figure 21 : Location of trap placement on the Liane at Isques

Figure 22 : Downstream site of the Liane at Isques

The traps will be set upstream of the Canche at Maresquel-Ecquemicourt (Figure 23 and Figure 24) and downstream at La Calotterie (Figure 25 and Figure 26).

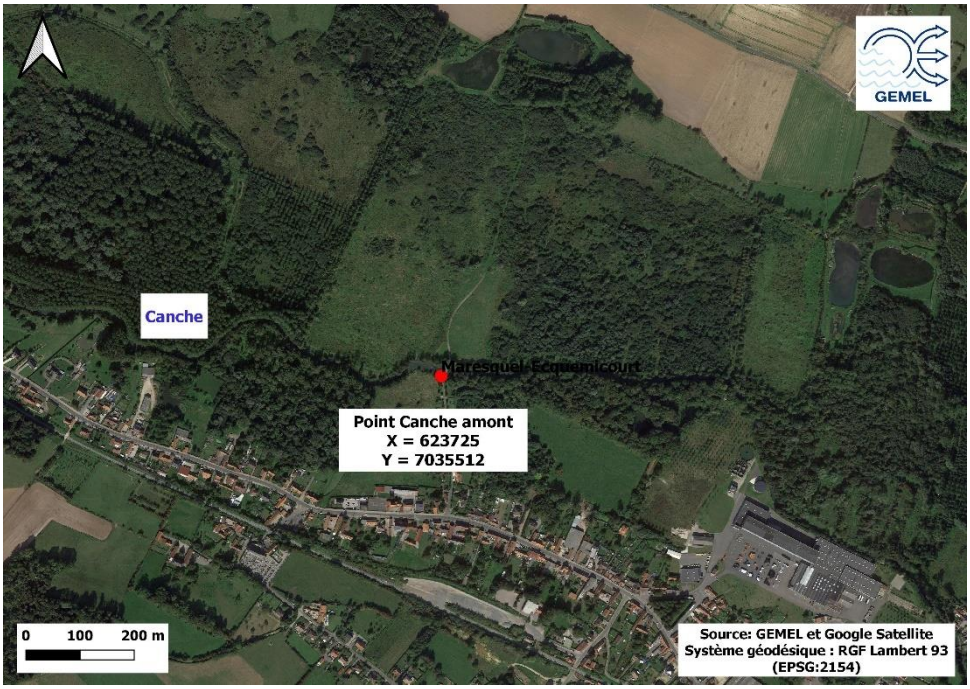

Figure 23 : Location of trap placement on the Canche at Maresquel-Ecquemicourt

Figure 24 : Upstream site of the Canche at Maresquel-Ecquemicourt

Figure 25 : Location of trap placement on the Canche at La Calotterie

Figure 26 : Downstream site of the Canche at La Calotterie

In the department of Somme, 5 rivers will be monitored as part of the CLANCY project: the Authie, the Retz Canal, the Maye, the Somme, and the Canal à Poissons (Figure 27).

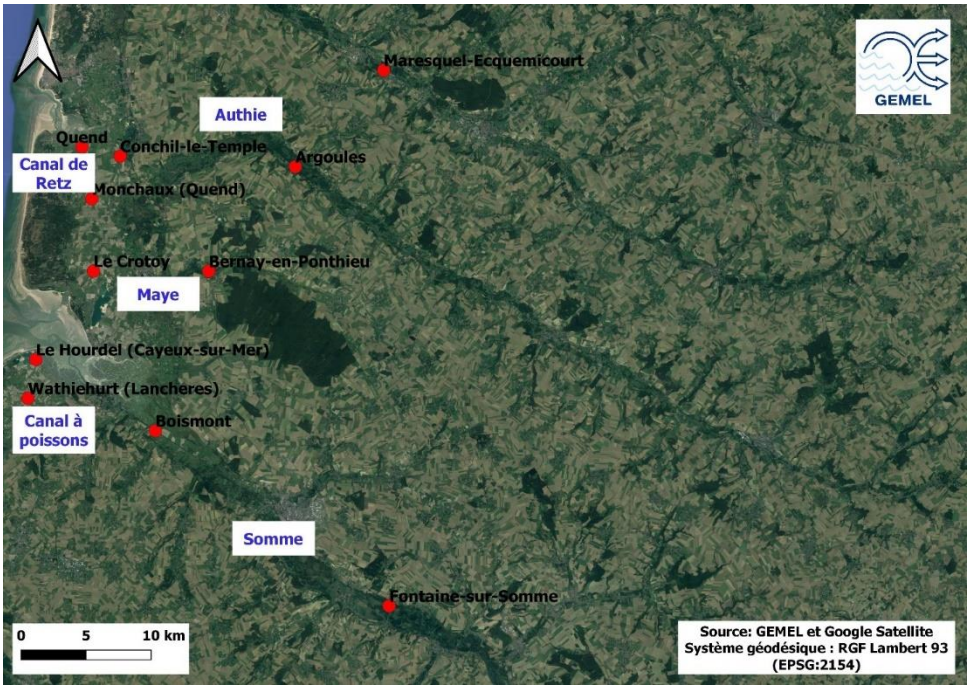

Figure 27 : Location of the ten municipalities in the Somme department (80) where monitoring will be carried out on the Authie, the Retz Canal, the Maye, the Somme, and the Canal à Poissons.

The municipality of Argoules, located upstream of the Authie (Figure 28 and Figure 29), and the municipality of Conchil-le-Temple, located downstream, will host traps (Figure 30 and Figure 31).

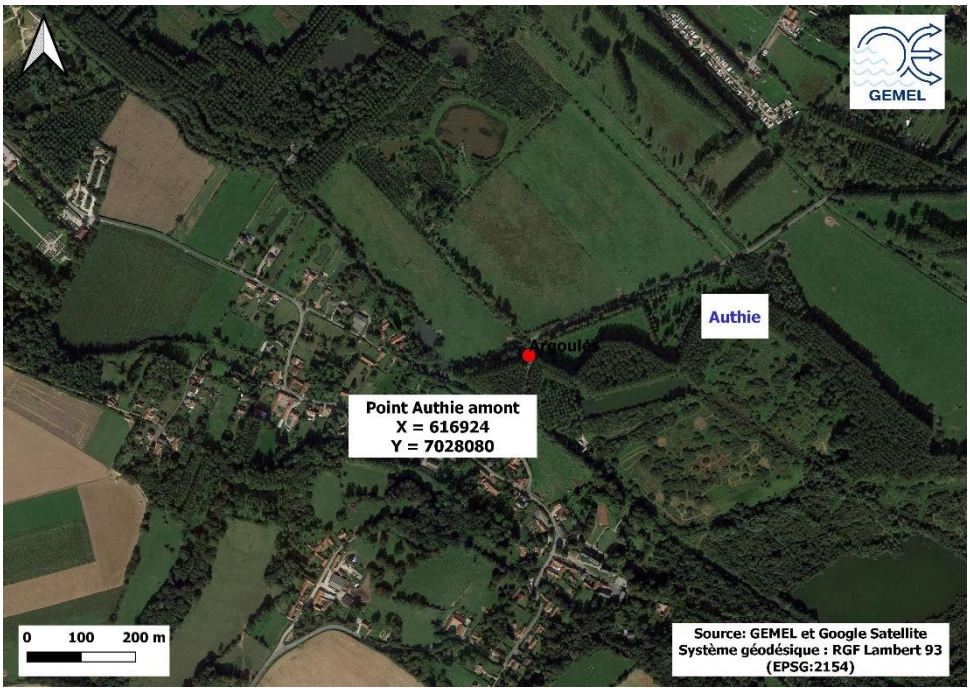

Figure 28 : Location of trap placement on the Authie at Argoules

Figure 29 : Upstream site of the Authie at Argoules

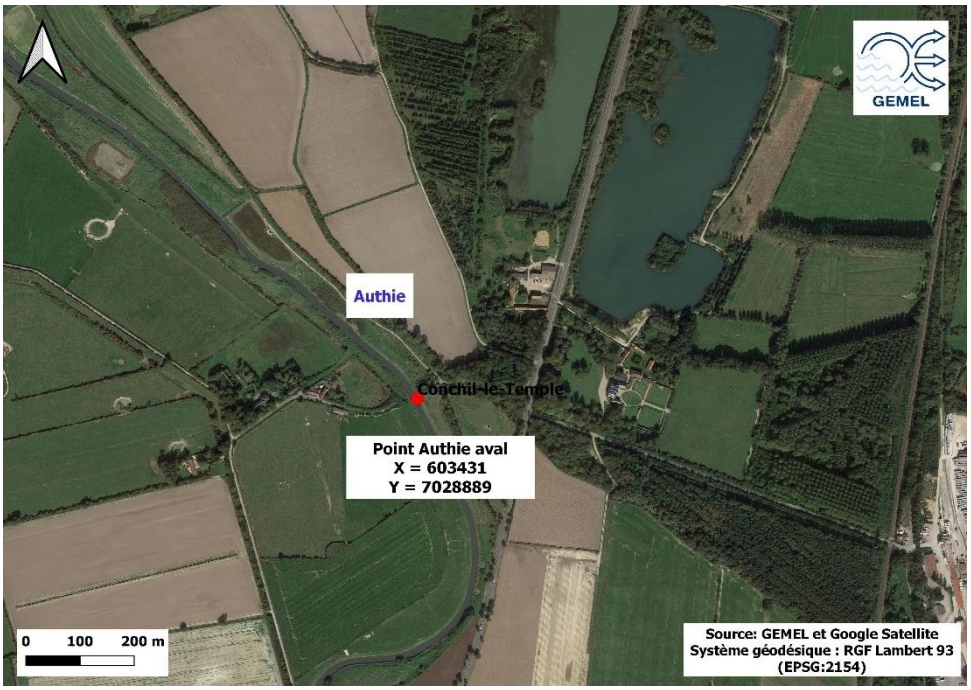

Figure 30 : Location of trap placement on the Authie at Conchil-le-Temple (stone bridge)

Figure 31 : Downstream site of the Authie at Conchil-le-Temple

On the Retz Canal, also known as the Canal du Marquenterre, traps will be placed at Monchaux (upstream; Figure 32 and Figure 33) and at Quend (downstream; Figure 34 and Figure 35).

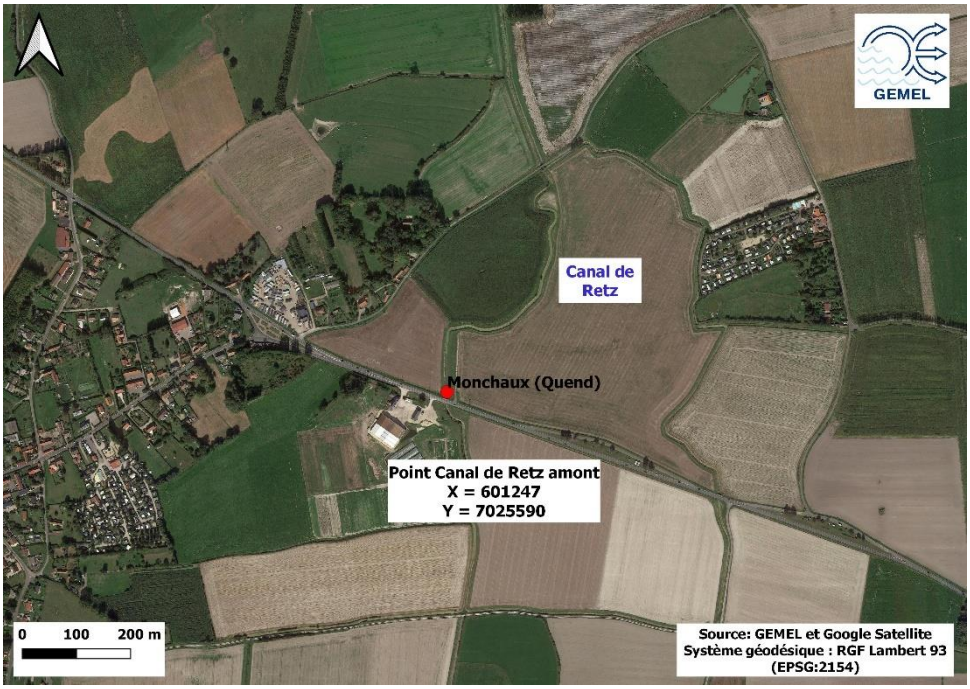

Figure 32 : Location of trap placement on the Retz Canal at Monchaux (Quend)

Figure 33 : Upstream site of the Retz Canal at Monchaux (Quend)

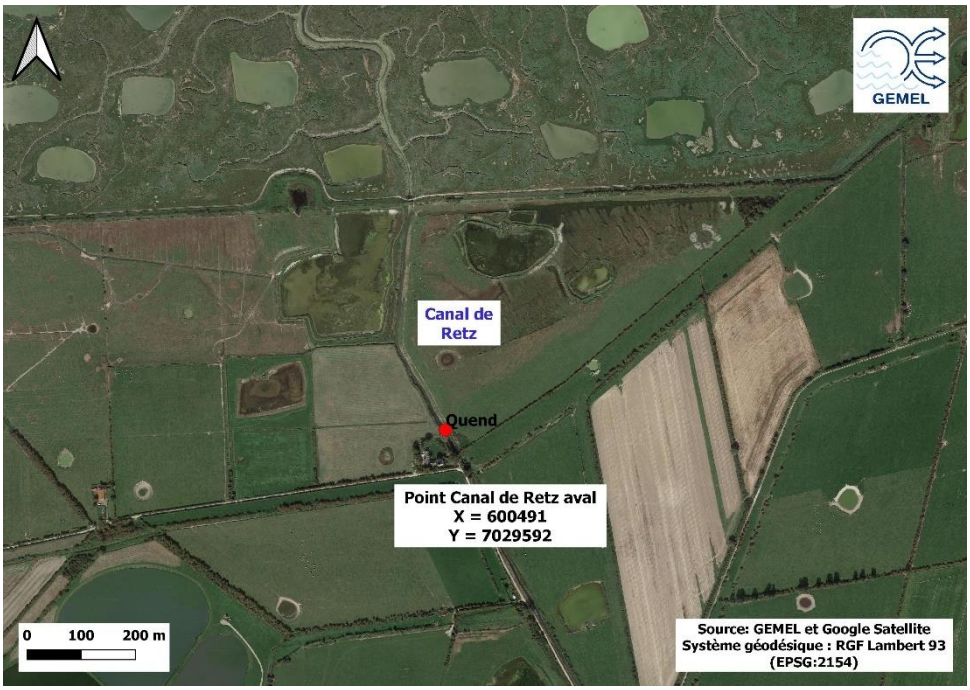

Figure 34 : Location of trap placement on the Retz Canal at Quend (Cœur de Baie guesthouse)

Figure 35 : Downstream site of the Retz Canal at Quend (Cœur de Baie guesthouse)

On the Maye, the municipalities of Bernay-en-Ponthieu (upstream ; Figure 36 and Figure 37) and Le Crotoy (downstream; Figure 38 and Figure 39) have been targeted for trap placement.

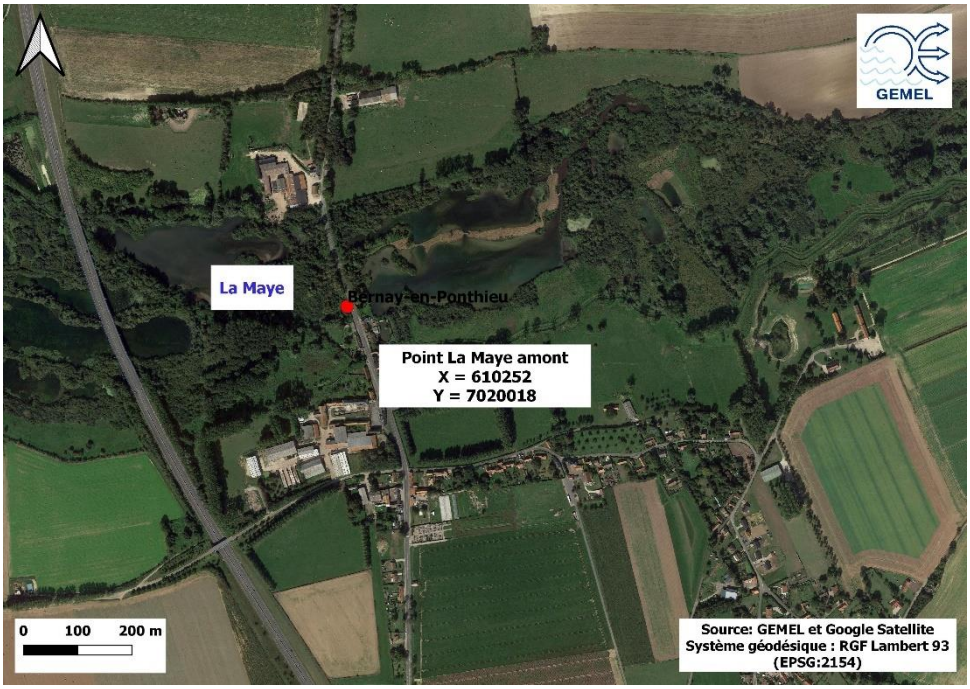

Figure 36 : Location of trap placement on the Maye at Bernay-en-Ponthieu

Figure 37 : Upstream site of the Maye at Bernay-en-Ponthieu

Figure 38 : Location of trap placement on the Maye at Le Crotoy

Figure 39 : Downstream site of the Maye at Le Crotoy

Two municipalities on the Somme will have traps placed: Fontaine-sur-Somme (Figure 40 and Figure 41) upstream and Boismont (Figure 42and Figure 43) downstream.

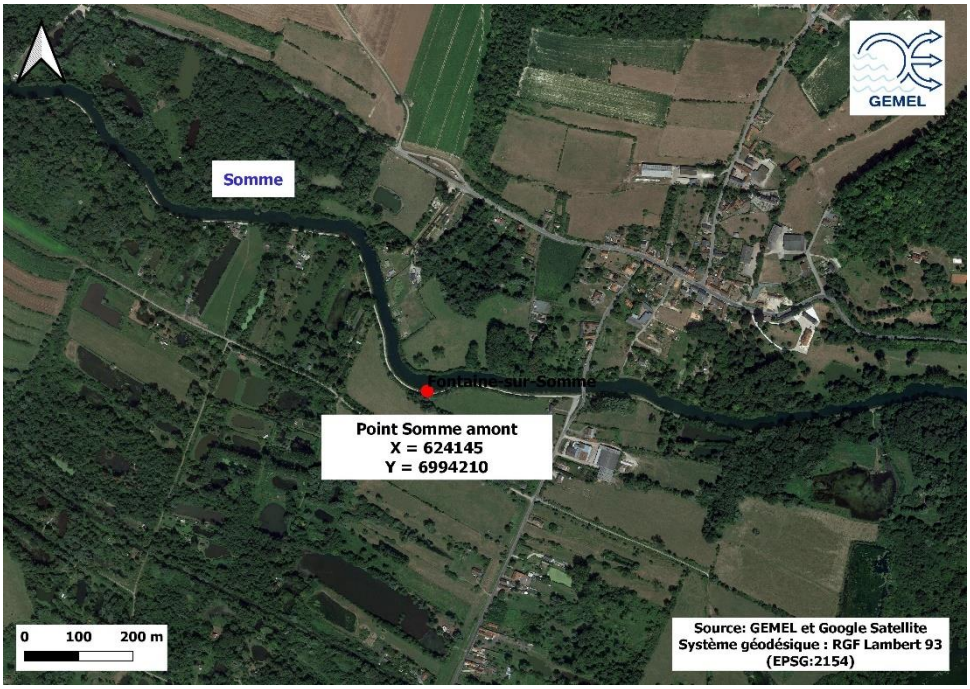

Figure 40 : Location of trap placement on the Somme at Fontaine-sur-Somme

Figure 41 : Upstream site of the Somme towards Fontaine-sur-Somme

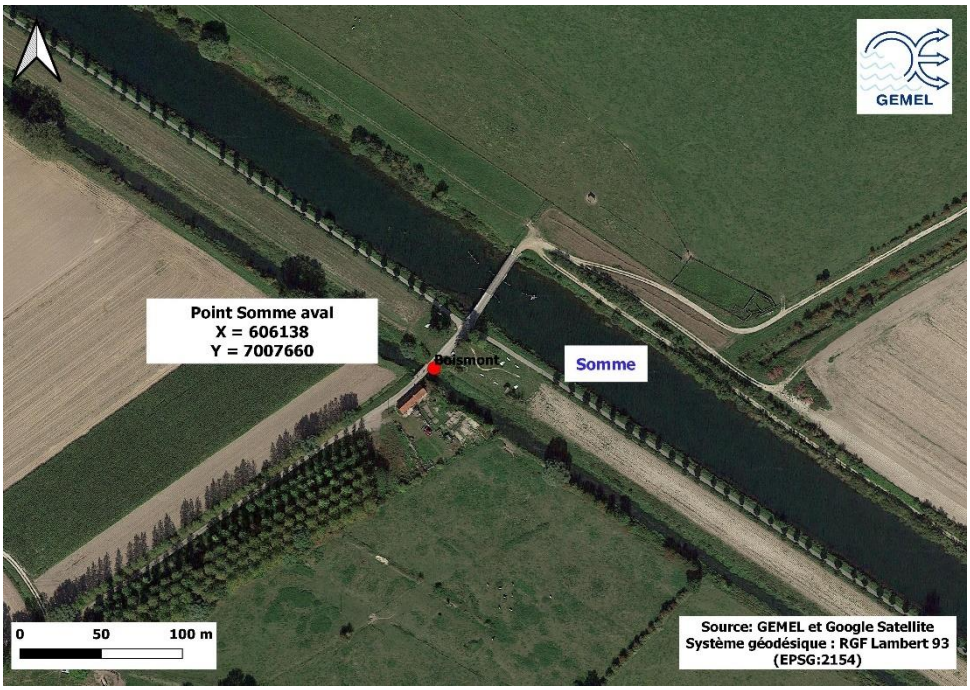

Figure 42 : Location of trap placement on the Somme at Boismont

Figure 43 : Downstream site of the Somme at Boismont

Traps will be placed upstream and downstream of the Canal à Poissons, at Wathiéhurt (Lanchères; Figure 44 and Figure 45) and at Le Hourdel (Figure 46 and Figure 47).

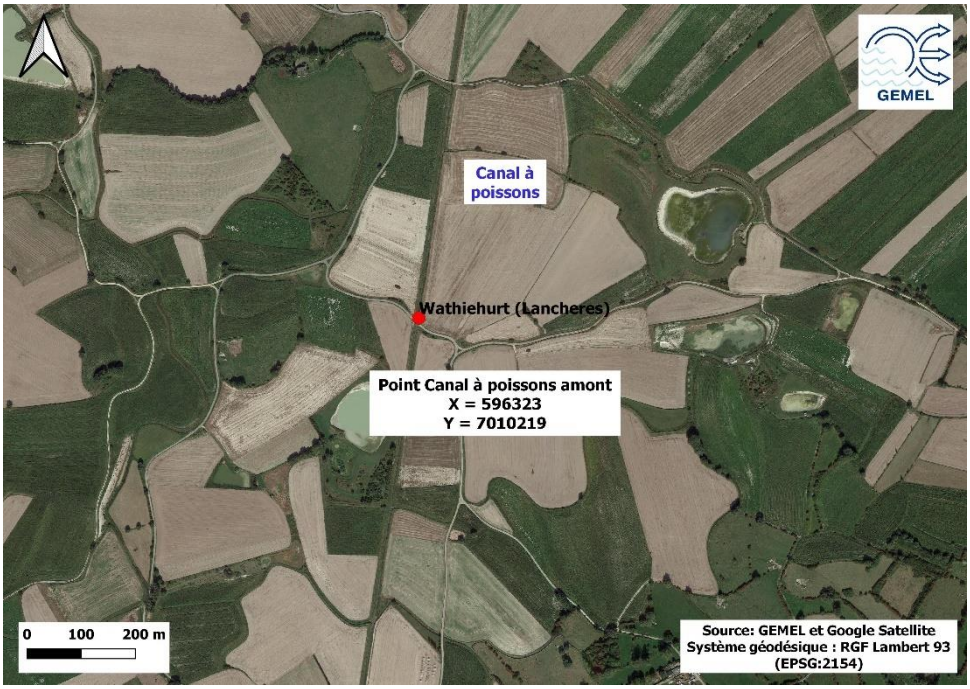

Figure 44 : Location of trap placement on the Canal à Poissons at Wathiéhurt (Lanchères)

Figure 45 : Upstream site of the Canal à Poissons at Wathiéhurt (Lanchères)

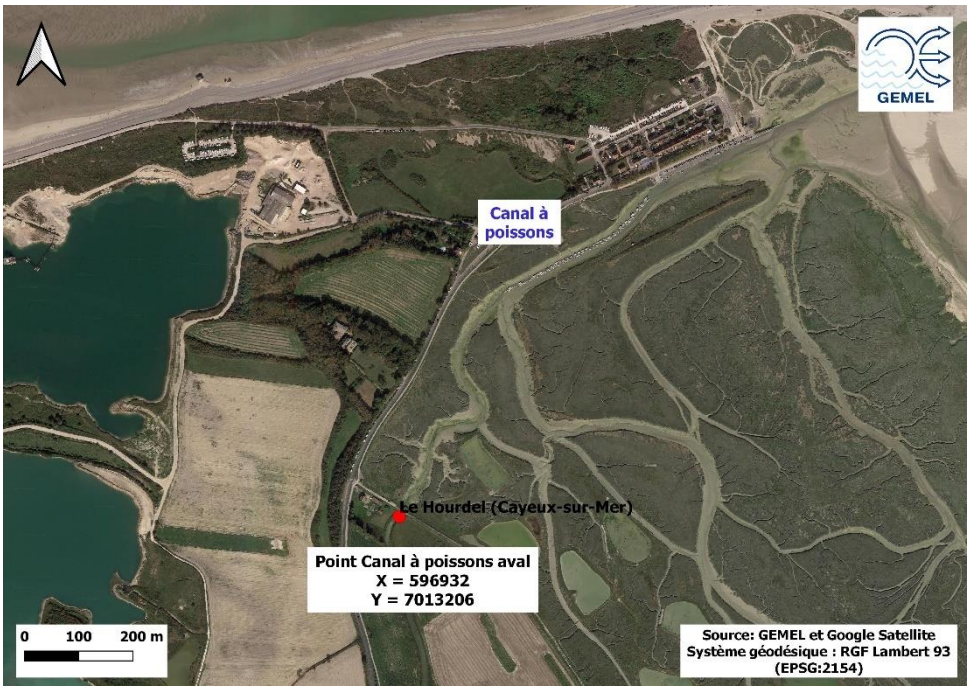

Figure 46 : Location of trap placement on the Canal à Poissons at Le Hourdel

Figure 47 : Downstream site of the Canal à Poissons at Le Hourdel

Finally, the last river monitored is located at the boundary between Somme and Seine-Maritime: the Bresle (Figure 48), marking the separation between the Hauts-de-France and Normandy regions and between the Artois-Picardie and Seine-Normandie basins.

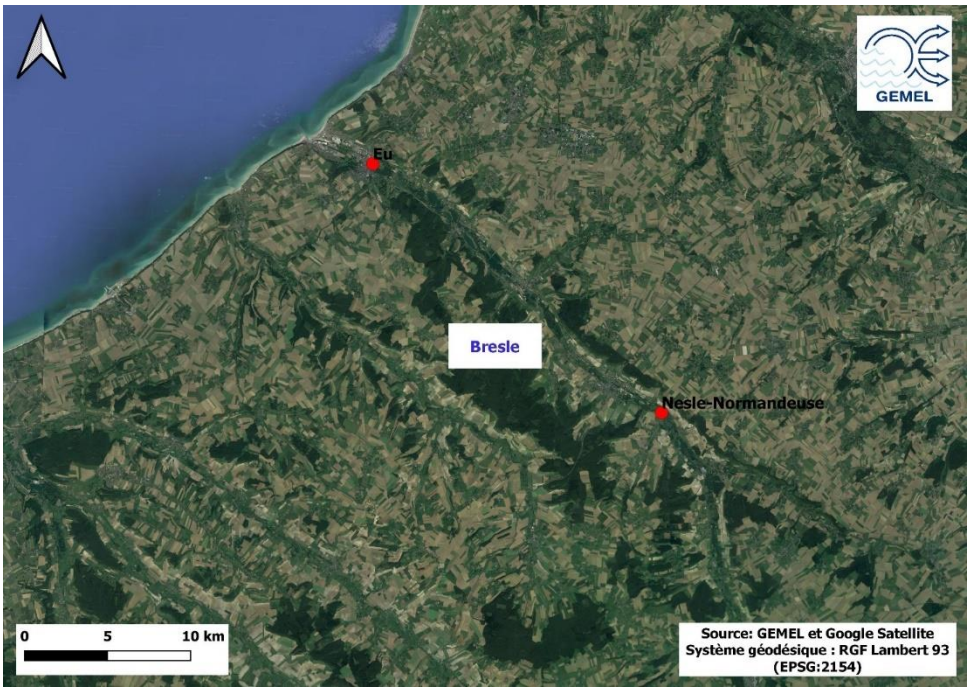

Figure 48 : Location of the two municipalities in the Seine-Maritime department (76) where monitoring will be carried out on the Bresle.

On this river, two traps will be set: one upstream at Nesle-Normandeuse (Figure 49 and Figure 50) and one downstream at Ponts-et-Marais (Figure 51 and Figure 52). A trap will also be set on the pond at Ponts-et-Marais in a private property (Figure 51).

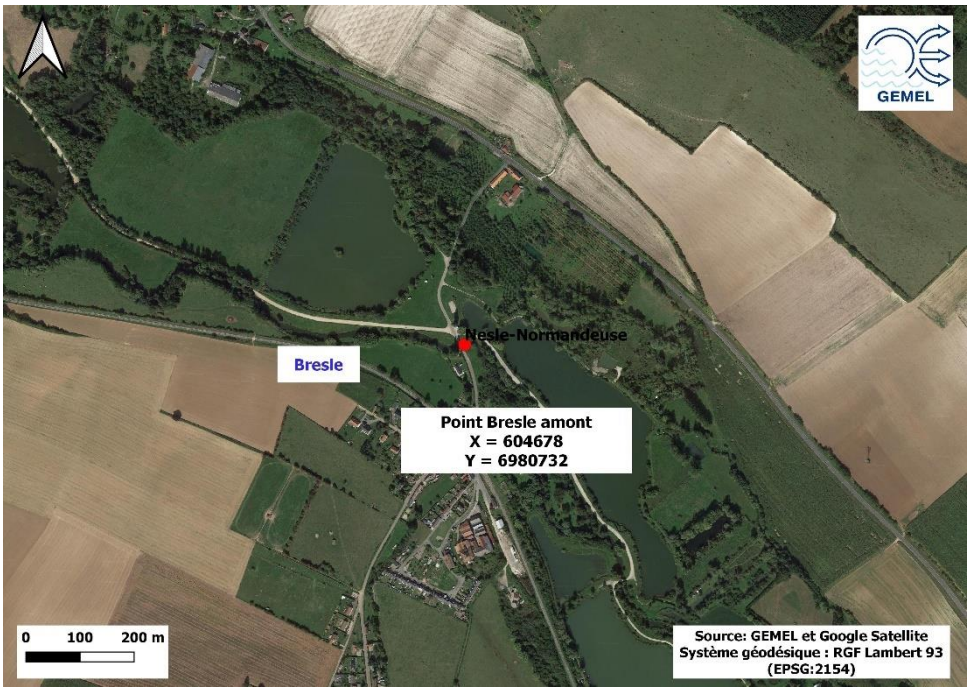

Figure 49 : Location of trap placement on the Bresle at Nesle-Normandeuse

Figure 50 : Upstream site of the Bresle at Nesle-Normandeuse

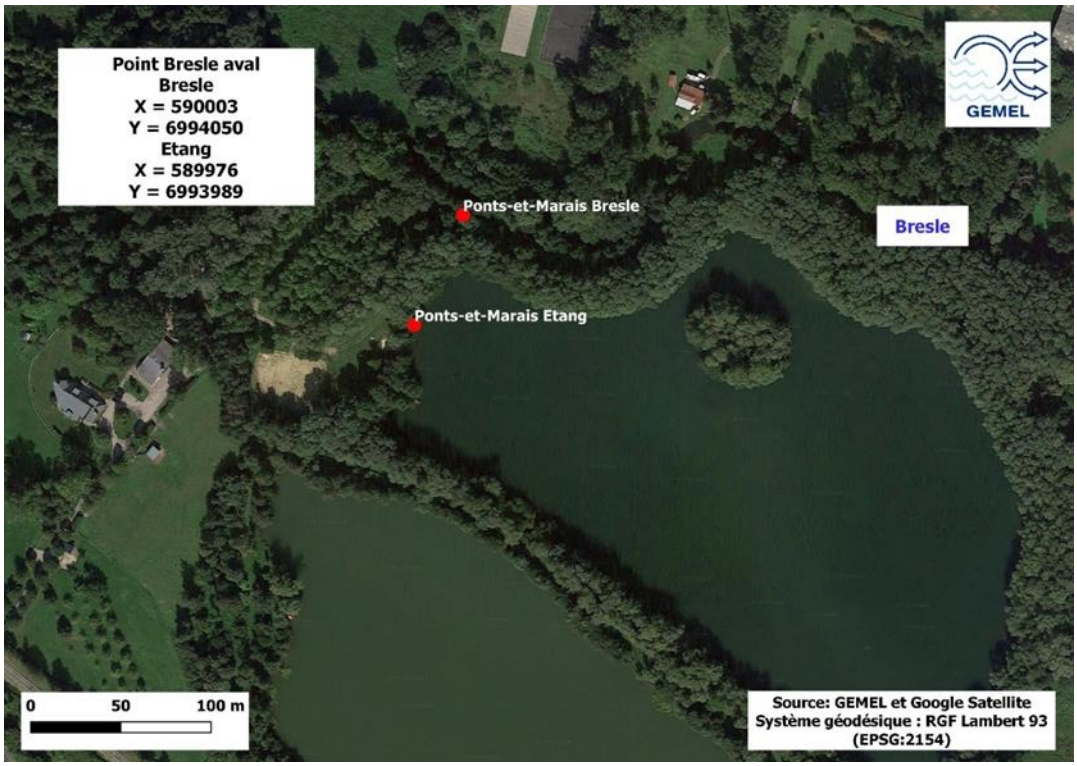

Figure 51 : Location of trap placement on the Bresle at Ponts-et-Marais

Figure 52 : Downstream site of the Bresle at Ponts-et-Marais

IV. SAMPLING CAMPAIGNS

A. FISHING GEAR AND METHODS

The fishing protocol involves the use of the following gear: modified bouquet traps made of black plastic on a metal frame, with a useful volume of 35 L, dimensions L 65 x Ø 31 cm, with two openings of 8 cm diameter and a mesh size of 5 mm (Figure 53).

Figure 53 : Modified bouquet trap used for the study

For each of the rivers, traps (or crustacean traps) are installed, one upstream and one downstream. These devices are positioned along the banks in the oligohaline or freshwater zone, using metal stakes and ropes. The traps are weighted with inert materials (such as "bricks" or "paving stones"). The traps are marked with the coordinates of GEMEL and the name and logos of the CLANCY project (Figure 54). The traps are set during the day and baited with pet food (such as "dog or cat kibble and pâté"). The traps are left in place for 7 days.

Figure 54 : Label placed on all crustacean traps

When the traps are checked, the captured individuals are sorted by species: invasive exotic species (i.e., Chinese crab and non-native crayfish) are placed in sealed containers; indigenous species are identified, counted, measured, and then immediately released at the capture site.

sed bait is removed and kept for disposal. All equipment used for sampling (traps, boots, etc.) is disinfected by spraying with a fungicide-bactericide solution and then left to dry before being used on another site, to avoid contamination of healthy sites by pathogens (notably crayfish plague).

Thus, the traps were set in mid-January on the rivers in the Somme and Seine-Maritime departments by two GEMEL agents. The operation was repeated on these rivers in mid-April for the spring campaign, early July for the summer campaign, and early October for the final autumn campaign. The rivers of Pas-de-Calais were monitored for the first time in early February due to delays in obtaining authorisations from the relevant authorities (received on 31 January 2024). However, due to the recent floods at the beginning of the year and the excessively high water flows, the campaign would have been compromised. The trap setting continued in the Pas-de-Calais department in mid-April, then early July, and finally, at the end of September. On the other hand, the Aa River, the only river monitored in the Nord department, could only be sampled from July onwards due to works carried out on the canal banks, which led to an increase in the river's flow.

During the trap setting and checks, environmental parameters were noted (weather, air temperature, water temperature, salinity, and conductivity).

During the checks, species were identified on-site for indigenous species and then returned to the water; non-native species, if any, were taken to the laboratory for euthanasia by freezing.

B. PROBLEMS ENCOUNTERED

Several problems were encountered during our monitoring campaigns in 2024. In addition to the administrative delays that caused setbacks in our schedule, the sometimes excessively high water levels were a real issue. While the floods at the end of 2023 and the beginning of 2024 caused the rivers to overflow and blocked roads, the return to normal conditions took a relatively long time, with water flows still high and highly sensitive to the slightest new rainfall (Figure 55).

Figure 55 : The Liane during the trap setting on 5 February 2024 (top) and two days later during the trap check on 7 February 2024 (bottom)

In addition to the unfavourable climatic and weather conditions, some campaigns were again compromised by acts of vandalism. A total of four traps were stolen: one on the Aa River at Saint-Momelin (July 2024), two on the Bresle River (November 2023), and one upstream on the Somme (April 2024). In the latter case, and thanks to the intervention of Mr Bruno Vilbert, President of the Fontaine-sur-Somme Fishing and Nature Association, we were able to

subsequently install our trap on a private property (i.e., 20 meters from the initial location), and we are grateful for that.

Another issue hindered the progress of our monitoring in spring 2024. A vehicle breakdown occurred during the trap setting in Pas-de-Calais in April. On that day, it was planned to go up to the Aa River to place the traps upstream and downstream. Unfortunately, by the time the breakdown was fixed, it was no longer possible to include these sites in the schedule. A request was made to the relevant authorities to place the traps in early May, but as the Prefectural Order only allowed trap setting from April onwards, we had to wait until July.

We also encountered a technical problem: the probe used to record environmental parameters malfunctioned. As a result, some parameters may have been missing during certain campaigns (mainly during the summer campaign). A new probe was purchased, and reliable measurements were taken during the autumn campaign.

V. RESULTS

At each campaign, during both the trap setting and the check, the following environmental parameters were recorded:

- ✓ The tidal coefficient and the time of high tide at downstream sites (which affect the water height and the accessibility of the site for trap setting and checking)
- ✓ The weather conditions (rain, overcast, or sunny)
- ✓ The air temperature (°C)
- ✓ The water temperature (°C)
- ✓ The salinity
- ✓ The conductivity (µS/cm)

A. THE AA (NORD)

1. Environmental parameters

The environmental parameters recorded during the four seasonal campaigns on the Aa are presented in Table 2. As previously explained, the winter and spring campaigns could not be carried out due to climatic conditions and a vehicle breakdown. Therefore, the summer campaign took place on 8 July 2024, with a check conducted one week later, on 15 July. The autumn campaign occurred on 30 September, and the check was performed on 7 October 2024.

In July, the air temperature was 17°C during the trap setting and 5°C higher during the check. Unfortunately, a probe malfunction compromised the measurement of water temperature and conductivity. Only the salinity during the trap setting could be recorded upstream and downstream of the Aa. This was 0.1.

During the autumn campaign trap setting, the air temperature was 16°C. Again, the water temperature, salinity, and conductivity could not be recorded due to a probe issue. However, during the check, while the air temperature was 15°C, the water temperature was 13.7°C, the salinity was 0.3 at each site, and the conductivity was 737 µS/cm downstream of the Aa and 706 µS/cm upstream.

Table 2 : Environmental parameters measured during the trap setting and check on the Aa River in the Nord department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Campaign not conducted											
Spring	Campaign not conducted											
Summer	AA downstream	GRAVELINES	D	2024-07-08	11:45	77	15:17	Cloudy	17	Probe issue	0.1	Probe issue
	AA upstream	WATTEN	D	2024-07-08	12:35	77	15:17	Cloudy	17	Probe issue	0.1	Probe issue
	AA downstream	GRAVELINES	R	2024-07-15	11:40	39	07:45	Sunny	22	Probe issue	Probe issue	Probe issue
	AA upstream	WATTEN	R	2024-07-15	12:25	39	07:45	Sunny	22	Probe issue	Probe issue	Probe issue
Autumn	AA downstream	GRAVELINES	D	2024-09-30	11:15	64	12:28	Rainy, windy	16	Probe issue	Probe issue	Probe issue
	AA upstream	WATTEN	D	2024-09-30	12:00	64	12:28	Rainy, windy	16	Probe issue	Probe issue	Probe issue
	AA downstream	GRAVELINES	R	2024-10-07	11:33	72	15:40	Sunny	15	13.3	0.3	737
	AA upstream	WATTEN	R	2024-10-07	12:37	72	15:40	Sunny	15	13.7	0.3	706

2. Captured fauna

The species captured on the Aa during the different campaigns are listed in Table 3. As a reminder, the winter and autumn campaigns could not be carried out.

In summer, at the downstream site, 2 common bullheads (*Cottus gobio*) were captured, identified, and released, along with 2 American crayfish (*Faxonius limosus*) measuring 7.5 cm and 5.5 cm (average 6.5 ± 1.4 cm), which were captured, identified, and euthanised (Figure 56). Unfortunately, during this campaign, the trap upstream of the Aa was stolen. Therefore, we cannot confirm the absence of mitten crabs.

Figure 56 Two common bullheads (*Cottus gobio*) and two American crayfish (*Faxonius limosus* trapped on the downstream Aa during the summer campaign.

In autumn, the downstream site of the Aa revealed no captures. However, at the upstream site, one ruffe (*Gymnocephalus cernua* ; Figure 57) and 3 common bullheads (*Cottus gobio*) were captured, identified, and released. Additionally, 5 American crayfish (*Faxonius limosus* ; Figure 57) were euthanised after being measured (8.9 cm; 8.6 cm; 8.85 cm; 8.3 cm and 10.75 cm, with an average of 9.08 ± 0.96 cm).

Figure 57 : Ruffe (*Gymnocephalus cernua*) on the left and American crayfish (*Faxonius limosus*) on the right, captured upstream of the Aa during the autumn campaign.

No mitten crabs were captured during the monitoring of the Aa during the two campaigns (summer and autumn) in 2024.

Table 3 : Species Recorded During the Sampling Campaigns on the Aa

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Campaign not conducted							
Spring	Campaign not conducted							
Summer	**AA downstream**	Saint-Georges-sur-l'Aa	2024-07-15	12:50	Bullhead	*Cottus gobio*	2	Released
	AA downstream	Saint-Georges-sur-l'Aa	2024-07-15	12:55	American crayfish	*Faxonius limosus*	2	Euthanized
	AA upstream	Saint-Momelin	2024-07-15	12:10	-	-	-	Stolen trap
Autumn	**AA downstream**	Saint-Georges-sur-l'Aa	2024-10-07	11:30	-	-	-	-
	AA upstream	Saint-Momelin	2024-10-07	12:30	American crayfish	*Faxonius limosus*	5	Euthanized
	AA upstream	Saint-Momelin	2024-10-07	12:10	Bullhead	*Cottus gobio*	3	Released
	AA upstream	Saint-Momelin	2024-10-07	12:10	Ruffe	*Gymnocephalus cernua*	1	Released

B. THE SLACK (PAS-DE-CALAIS)

1. Environmental parameters

The deployment of the traps on the Slack, located in the Pas-de-Calais, began on 5th February 2024, during the winter season. At the request of the French Office for Biodiversity (OFB), the traps were checked every two days to ensure there were no European eels (*Anguilla anguilla*) or to release them in case of accidental capture. Our team checked the traps on 7th February and retrieved them on 9th February. During spring, the traps were deployed on 15th April, with checks made on 17th and 19th April. Regarding summer, the traps were placed on 8th July, both upstream and downstream of the Slack, and checked and removed on 10th and 12th July. Finally, in autumn, the traps were deployed on 30th September and checked and retrieved on 2nd and 4th October.

The environmental parameters measured on the Slack during the 4 follow-up campaigns are shown in Table 4.

On the day of deployment in February, the weather was mild despite the cool external temperature, which was close to the water temperature (around 9°C). The water salinity was 0.1, both downstream and upstream. Conductivity was 483 µS/cm downstream and 447 µS/cm upstream. Two days later, it rained and the external temperature increased by 2°C. The water temperature varied between 8°C and 8.4°C. The salinity recorded at Ambleteuse and Rinxent was zero. However, conductivity was 270 µS/cm downstream (Ambleteuse) and 279 µS/cm upstream (Rinxent). On the retrieval day, the weather was clear, and the temperature was still 11°C. The water temperature was 9.1-9.2°C, and the salinity remained zero. Conductivity downstream was 308 µS/cm and 320 µS/cm upstream. Therefore, the values measured for the different parameters were quite similar between the two monitored points during the winter campaign.

In spring, on the day of deployment, the weather was rainy, with external temperatures of 10°C and water temperatures between 10.6°C and 11°C. Salinity was 0.1 upstream and downstream. As for conductivity, it was 506 µS/cm at Ambleteuse and 630 µS/cm at Rinxent. At the first retrieval, the weather had improved, and the temperatures had only slightly changed: 10°C for the external temperature and between 9.8°C and 10.3°C for the water

temperature. Salinity remained at 0.1. Conductivity readings were 518 µS/cm for the downstream site and 453 µS/cm for the upstream site. Finally, during the last retrieval, the weather was cloudy, and the external temperature was 10°C. The water temperature ranged between 10°C and 10.6°C. The salinity was identical to previous readings. However, conductivity was 513 µS/cm at Ambleteuse and 464 µS/cm at Rinxent. Thus, the measured values for the different parameters were similar between the two monitored points during the spring campaign.

During the summer campaign, the weather was variable: rain during the deployment, sunny during the first retrieval, and cloudy during the removal of the traps. External temperatures ranged from 15°C to 19°C, and the water temperature ranged from 15°C to 16.4°C. Due to a problem with the probe, environmental parameters could not be recorded on 12th July. Between 8th and 10th July, salinity ranged from 0 to 0.1, and conductivity ranged from 13.9 to 630 µS/cm.

The final campaign of the year 2024, carried out between September and October, saw external temperatures ranging from 13°C to 16°C, accompanied by rain, wind, sunny spells, and cloudy weather. As the probe was defective during the deployment of the traps, the water temperature was recorded on 2nd and 4th October. It varied between 13.5°C and 13.8°C on the first date and between 11.2°C and 11.3°C on the second. Conductivity was 522 µS/cm downstream and 535 µS/cm upstream during the check, and 565 µS/cm and 657 µS/cm, respectively, during the retrieval of the traps.

Figure 58 : Retrieval of environmental parameters using the probe on the Slack

Table 4 : Environmental Parameters Measured During the Deployment and Retrieval of the Traps on the Slack in the Pas-de-Calais Department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Slack downstream	Ambleteuse	D	2024-02-05	14:45	34	07:06	Sunny	9	9	0.1	483
	Slack downstream	Ambleteuse	R 1	2024-02-07	13:53	52	09:44	Rainy	11	8.4	0	270
	Slack downstream	Ambleteuse	R 2	2024-02-09	10:55	83	11:32	Sunny	11	9.2	0	308
	Slack upstream	Rinxent	D	2024-02-05	14:15	34	07:06	Sunny	9	9.3	0.1	447
	Slack upstream	Rinxent	R 1	2024-02-07	13:33	52	09:44	Rainy	11	8	0	249
	Slack upstream	Rinxent	R 2	2024-02-09	11:20	83	11:32	Sunny	11	9.1	0	320
Spring	Slack downstream	Ambleteuse	D	2024-04-15	13:50	49	05:15	Rainy	10	11	0.1	506
	Slack downstream	Ambleteuse	R 1	2024-04-17	13:00	30	07:31	Nice weather	10	10.3	0.1	518
	Slack downstream	Ambleteuse	R 2	2024-04-19	11:49	47	10:06	Cloudy	10	10.6	0.1	513
	Slack upstream	Rinxent	D	2024-04-15	14:15	49	05:15	Rainy	10	10.6	0.1	630
	Slack upstream	Rinxent	R 1	2024-04-17	13:25	30	07:31	Nice weather	10	9.8	0.1	453
	Slack upstream	Rinxent	R 2	2024-04-19	13:47	47	10:06	Cloudy	10	10	0.1	464
Summer	Slack downstream	Ambleteuse	D	2024-07-08	13:45	78	14:43	Rainy	18	16	0	Probe issue
	Slack downstream	Ambleteuse	R 1	2024-07-10	13:25	70	15:55	Sunny	17	16.4	0.1	630
	Slack downstream	Ambleteuse	R 2	2024-07-12	11:55	60	17:02	Cloudy	15	Probe issue	Probe issue	Probe issue
	Slack upstream	Rinxent	D	2024-07-08	14:15	78	14:43	Rainy	19	15	0.1	Probe issue
	Slack upstream	Rinxent	R 1	2024-07-10	13:55	70	15:55	Sunny	17	16.3	0	13.9
	Slack upstream	Rinxent	R 2	2024-07-12	13:30	60	17:02	Cloudy	15	Probe issue	Probe issue	Probe issue
Autumn	Slack downstream	Ambleteuse	D	2024-09-30	11:55	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Slack downstream	Ambleteuse	R 1	2024-10-02	12:10	83	12:50	Sunny	14	13.5	0.2	522
	Slack downstream	Ambleteuse	R 2	2024-10-04	12:04	86	13:46	Sunny	13	11.2	0.2	565
	Slack upstream	Rinxent	D	2024-09-30	13:50	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Slack upstream	Rinxent	R 1	2024-10-02	13:53	83	12:50	Cloudy	14	13.8	0.2	535
	Slack upstream	Rinxent	R 2	2024-10-04	13:50	86	13:46	Sunny	16	11.3	0.2	657

2. Captured fauna

The species captured on the Slack during the various sampling campaigns are detailed in Table 5.

During the first two sampling campaigns on the Slack, no species were captured in the traps. It was not until the summer campaign that 18 common minnows (*Phoxinus phoxinus ;* Figure 59) were captured during the first retrieval on the upstream site of the Slack. Then, a common minnow (*Phoxinus phoxinus*), a common bullheads (*Cottus gobio*) and a California crayfish (*Pacifastacus leniusculus ;* Figure 60) measuring 14 cm were captured during the second retrieval at the same site.

Figure 59 : Common minnows (*Phoxinus phoxinus*) captured upstream of the Slack during the first retrieval of the summer campaign.

Figure 60 : California crayfish (*Pacifastacus leniusculus*) captured upstream of the Slack during the second retrieval of the summer campaign.

In autumn, on the downstream site of the Slack, a European eel (*Anguilla anguilla*) measuring 25 cm was captured and then released during the first check (Figure 61). No other species were captured at this site. However, upstream, a common bullheads (*Cottus gobio*; Figure 61) was captured on October 2, and a common minnow (*Phoxinus phoxinus*) was captured on October 4

Figure 61 : European eel (*Anguilla anguilla*) captured downstream of the Slack (left) and common bullheads (*Cottus gobio*) captured upstream (right) during the autumn campaign.

No mitten crabs were captured during the 2024 monitoring campaigns on the Slack.

Table 5 : Species Recorded During the Sampling Campaigns on the Slack

Campaign	Site	Location	Retrieval	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Slack downstream	Ambleteuse	R1	2024-02-07	13:53	-	-	-	Empty
	Slack downstream	Ambleteuse	R2	2024-02-09	10:55	-	-	-	Empty
	Slack upstream	Rinxent	R1	2024-02-07	13:33	-	-	-	Empty
	Slack upstream	Rinxent	R2	2024-02-09	11:20	-	-	-	Empty
Spring	Slack downstream	Ambleteuse	R1	2024-04-17	13:00	-	-	-	Empty
	Slack downstream	Ambleteuse	R2	2024-04-19	11:49	-	-	-	Empty
	Slack upstream	Rinxent	R1	2024-04-17	13:25	-	-	-	Empty
	Slack upstream	Rinxent	R2	2024-04-19	13:47	-	-	-	Empty
Summer	Slack downstream	Ambleteuse	R1	2024-07-10	13:25	-	-	-	Empty
	Slack downstream	Ambleteuse	R2	2024-07-12	11:55	-	-	-	Empty
	Slack upstream	Rinxent	R1	2024-07-10	13:55	Minnow	*Phoxinus phoxinus*	18	Released
	Slack upstream	Rinxent	R2	2024-07-12	13:30	Minnow	*Phoxinus phoxinus*	1	Released
	Slack upstream	Rinxent	R2	2024-07-12	13:30	Bullhead	*Cottus gobio*	1	Released
	Slack upstream	Rinxent	R2	2024-07-12	13:30	California crayfish	*Pacifastacus leniusculus*	1	Euthanized
Autumn	Slack downstream	Ambleteuse	R1	2024-10-02	13:25	European eel	*Anguilla anguilla*	1	Released
	Slack downstream	Ambleteuse	R2	2024-10-04	11:55	-	-	-	Empty
	Slack upstream	Rinxent	R1	2024-10-02	13:55	Bullhead	*Cottus gobio*	1	Released
	Slack upstream	Rinxent	R2	2024-10-04	13:30	Minnow	*Phoxinus phoxinus*	1	Released

C. The Wimereux (Pas-de-Calais)

1. Environmental parameters

The placement of the traps on the Wimereux, located in Pas-de-Calais, began on February 5, 2024, during the winter season. At the request of the French Office for Biodiversity, the traps are checked every two days to ensure that no European eel (Anguilla anguilla) has been accidentally captured, or at least to release any such captures. As with the Slack site, our team checked the traps on February 7 and retrieved them on February 9. During the spring, the traps were placed on April 15, with checks on April 17 and 19. For the summer, the traps were deployed on July 8, both upstream and downstream, and checked and retrieved on July 10 and 12. Finally, in the autumn, the traps were placed on September 30, with checks and retrievals on October 2 and 4.

The environmental parameters measured on the Wimereux during the 4 monitoring campaigns are presented in Table 6.

On the first day of winter sampling, the weather was sunny with an outdoor temperature of 9°C. The water temperature was 9.7°C downstream and 9.1°C upstream. The salinity at both sites was 0.1. Conductivity ranged from 435 µS/cm upstream to 520 µS/cm downstream. During the first check, the weather was rainy. While the outdoor temperature was 11°C, the water temperature varied between 8.3°C and 8.4°C. Conductivity was 260 µS/cm at Wimille (downstream) and 222 µS/cm at Wimereux (upstream). Finally, during the last check, the weather was sunny, and the temperature was 11°C. The water temperature was 9.1-9°C. Salinity, like two days earlier, was zero. Downstream, conductivity was 300 µS/cm, and upstream, it was 271 µS/cm. The measured values for the different parameters were therefore similar between the two points followed during the winter campaign.

For the spring campaign, the weather was rainy with an outdoor temperature of 10°C on the first day, after which the weather improved (remaining at 10°C for the rest of the week). The water temperature ranged from 9.4°C to 11.3°C during this campaign. The highest conductivity encountered during this period was 757 µS/cm downstream on the Wimereux during the first check. The lowest was 481 µS/cm at the same site during placement. Salinity ranged from 0 to 0.3.

During the summer campaign, the weather was mostly cloudy, with occasional rain. The temperature fluctuated between 15°C and 18°C. A malfunction with the probe affected the measurement of salinity, water temperature, and conductivity during the last check. On the previous checks, water temperature ranged from 14.7°C to 16.7°C, and conductivity from 33.2 to 523 µS/cm. Salinity was almost negligible to zero.

Finally, during the last campaign in autumn, the weather was sunny for two days (during the checks and retrieval) while it was rainy during placement. The outdoor temperatures ranged from 13°C to 15°C, while the water temperature ranged from 11.1°C to 13.6°C. Again, a probe malfunction occurred, compromising the measurement of water temperature, salinity, and conductivity during the placement. During the first check at the downstream Wimereux site, salinity was 0.2, while during retrieval, it was 0.3. Conductivity started at 503 µS/cm and increased to 780 µS/cm. On the upstream Wimereux site, salinity was 0.1 during the first check, with conductivity at 473 µS/cm. By retrieval, salinity reached 0.2, and conductivity was 610 µS/cm.

Figure 62 : Recording of environmental parameters using the probe on the Wimereux.

Table 6 : Environmental parameters measured during the placement and retrieval of traps on the Wimereux in the Pas-de-Calais department.

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Wimereux downstream	Wimille	D	2024-02-05	15:05	34	07:06	Sunny	9	9.7	0.1	520
	Wimereux downstream	Wimille	R 1	2024-02-07	14:10	52	09:44	Rainy	11	8.4	0	260
	Wimereux downstream	Wimille	R 2	2024-02-09	10:40	83	11:32	Sunny	11	9	0	300
	Wimereux upstream	Pittefaux	D	2024-02-05	13:50	34	07:06	Sunny	9	9.1	0.1	435
	Wimereux upstream	Pittefaux	R 1	2024-02-07	13:15	52	09:44	Rainy	11	8.3	0	222
	Wimereux upstream	Pittefaux	R 2	2024-02-09	11:35	83	11:32	Sunny	11	9.1	0	271
Spring	Wimereux downstream	Wimille	D	2024-04-15	13:20	49	05:15	Rainy	10	11.2	0.1	481
	Wimereux downstream	Wimille	R 1	2024-04-17	11:47	30	07:31	Nice weather	10	10.7	0.3	757
	Wimereux downstream	Wimille	R 2	2024-04-19	11:30	47	10:06	Cloudy	10	11.3	0.1	609
	Wimereux upstream	Pittefaux	D	2024-04-15	13:15	49	05:15	Rainy	10	11	0	442
	Wimereux upstream	Pittefaux	R 1	2024-04-17	11:35	30	07:31	Nice weather	10	9.4	0.1	452
	Wimereux upstream	Pittefaux	R 2	2024-04-19	11:10	47	10:06	Cloudy	10	10	0	448
Summer	Wimereux downstream	Wimille	D	2024-07-08	12:20	78	14:43	Cloudy	18	15.4	0.1	523
	Wimereux downstream	Wimille	R 1	2024-07-10	11:40	70	15:55	Cloudy	17	16.7	0	35.4
	Wimereux downstream	Wimille	R 2	2024-07-12	11:35	60	17:02	Cloudy	15	Probe issue	Probe issue	Probe issue
	Wimereux upstream	Pittefaux	D	2024-07-08	12:00	78	14:43	Cloudy	17	14.7	0	Probe issue
	Wimereux upstream	Pittefaux	R 1	2024-07-10	11:25	70	15:55	Cloudy	17	15.8	0	33.2
	Wimereux upstream	Pittefaux	R 2	2024-07-12	11:15	60	17:02	Rainy	15	Probe issue	Probe issue	Probe issue
Autumn	Wimereux downstream	Wimille	D	2024-09-30	11:45	69	11:46	Rainy, Windy	14	Probe issue	Probe issue	Probe issue
	Wimereux downstream	Wimille	R 1	2024-10-02	11:46	83	12:50	Sunny	14	13.6	0.2	503
	Wimereux downstream	Wimille	R 2	2024-10-04	11:41	86	13:46	Sunny	13	12.6	0.3	780
	Wimereux upstream	Pittefaux	D	2024-09-30	11:30	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Wimereux upstream	Pittefaux	R 1	2024-10-02	10:28	83	12:50	Sunny	14	13.6	0.1	473
	Wimereux upstream	Pittefaux	R 2	2024-10-04	11:20	86	13:46	Sunny	13	11.1	0.2	610

2. Captured fauna

The species captured on the Wimereux during the various campaigns are listed in Table 7.

No species were captured during the winter campaign. In fact, at each site and at each check, the traps were empty.

However, a European eel (*Anguilla anguilla*) was captured on the downstream site of the Wimereux in spring (Figure 63). The individual measured 35 cm and was released immediately after measurement.

Figure 63 : European eel (*Anguilla anguilla*) captured on the downstream site of the Wimereux during the spring campaign.

It wasn't until summer that a few fish were captured again, still on the downstream site of the watercourse: two juvenile flounders (*Platichthys flesus*) were captured and released, one during the first check and the other during the retrieval of the trap (Figure 64).

Figure 64 : Flounder (*Platichthys flesus*) captured downstream of the Wimereux during the summer campaign.

A greater number of species were recorded during the autumn campaign. During the first check on the downstream site of the Wimereux, a juvenile flounder (*Platichthys flesus*), a minnow (*Phoxinus phoxinus*), and two European eels (*Anguilla anguilla*) measuring 13 cm and 8 cm were counted (Figure 65). On the same site, during the retrieval of the trap, a new European eel (*Anguilla anguilla*), measuring 20 cm, was present, along with three three-spined sticklebacks (*Gasterosteus aculeatus*) and a european green crab (*Carcinus maenas*) (Figure 66).

Figure 65 : European eels (*Anguilla anguilla*) captured downstream of the Wimereux during the first check of the autumn campaign

Figure 66 : European green crab (*Carcinus maenas*) captured downstream of the Wimereux during the retrieval of the trap in the autumn campaign

No mitten crabs were captured during the four monitoring campaigns conducted on the Wimereux in 2024.

Table 7 : Species recorded during the sampling campaigns on the Wimereux.

Campaign	Site	Location	Retrieval	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Wimereux downstream	Wimille	R1	2024-02-07	14:10	-	-	-	Empty
	Wimereux downstream	Wimille	R2	2024-02-09	10:40	-	-	-	Empty
	Wimereux upstream	Pittefaux	R1	2024-02-07	13:15	-	-	-	Empty
	Wimereux upstream	Pittefaux	R2	2024-02-09	11:35	-	-	-	Empty
Spring	Wimereux downstream	Wimille	R1	2024-04-17	11:47	-	-	-	Empty
	Wimereux downstream	Wimille	R2	2024-04-19	11:30	European eel	*Anguilla anguilla*	1	35 cm and released
	Wimereux upstream	Pittefaux	R1	2024-04-17	11:35	-	-	-	Empty
	Wimereux upstream	Pittefaux	R2	2024-04-19	11:10	-	-	-	Empty
Summer	Wimereux downstream	Wimille	R1	2024-07-10	11:40	Flounder	*Platichthys flesus*	1	Juvenile, released
	Wimereux downstream	Wimille	R2	2024-07-12	11:35	Flounder	*Platichthys flesus*	1	Juvenile, released
	Wimereux upstream	Pittefaux	R1	2024-07-10	11:25	-	-	-	Empty
	Wimereux upstream	Pittefaux	R2	2024-07-12	11:15	-	-	-	Empty
Autumn	Wimereux downstream	Wimille	R1	2024-10-02	11:50	Flounder	*Platichthys flesus*	1	Juvenile, released
	Wimereux downstream	Wimille	R1	2024-10-02	11:50	Minnow	*Phoxinus phoxinus*	1	Released
	Wimereux downstream	Wimille	R1	2024-10-02	11:50	European eel	*Anguilla anguilla*	2	Released
	Wimereux downstream	Wimille	R2	2024-10-04	11:30	Three-spined stickleback	*Gasterosteus aculeatus*	3	Released
	Wimereux downstream	Wimille	R2	2024-10-04	11:30	European eel	*Anguilla anguilla*	1	Released
	Wimereux downstream	Wimille	R2	2024-10-04	11:30	European green crab	*Carcinus maenas*	1	Released
	Wimereux upstream	Pittefaux	R1	2024-10-02	11:30	-	-	-	Empty
	Wimereux upstream	Pittefaux	R2	2024-10-04	11:20	-	-	-	Empty

D. THE LIANE (PAS-DE-CALAIS)

1. Environmental parameters

The environmental parameters measured on the Liane during the four monitoring campaigns are provided in Table 8.

The winter campaign on the Liane river took place on 5th, 7th, and 9th February 2024. At the beginning of the year, the external temperatures varied between 9 and 11°C and were associated with either sunny or rainy weather. The water temperature fluctuated between 8.4 and 9.2°C. The salinity at all sites, however, was found to be zero. As for conductivity, it was at a minimum of 187 µS/cm, recorded downstream of the Liane during the retrieval of the traps, or at a maximum of 420 µS/cm on the upstream site during the deployment of the traps.

The spring campaign took place on 15th, 17th, and 19th April. Over these three days, external temperatures remained constant at 10°C. However, the weather was quite variable: rain, good weather, and overcast skies. As for the water temperatures, they decreased and then increased, ranging from 12°C to 10°C and then to 10.5°C on the downstream site of the Liane, and from 10.8°C to 9.2°C to 10°C on the upstream site. On the Isques site (located downstream), conductivity was 450 µS/cm on the day of deployment, then 447 µS/cm on the day of the first check, and finally 442 µS/cm during the trap retrieval. On the Crémarest site (located upstream), conductivity was 615 µS/cm on the first day, 432 µS/cm at the first check, and 435 µS/cm during retrieval.

The weather during the summer campaign was rainy or overcast. The coolest temperature encountered was 15°C, while the warmest was 18°C. As with the previous watercourses on the same dates (10th and 12th July), a problem with the probe affected the readings of salinity and conductivity. On the downstream site of the Liane on the day of deployment, the water temperature was 15.4°C, salinity was zero, and conductivity was 495 µS/cm. Two days later, the water temperature was 15.3°C and the salinity remained zero (conductivity could not be measured). On the final day, only the water temperature could be recorded: 16.2°C. On the upstream site of the Liane, the water temperature was 14.3°C on the first day, salinity was zero, and conductivity was 478 µS/cm. Two days later, the water temperature was 15.3°C, salinity remained zero, and conductivity had decreased to 26.1 µS/cm. Finally, on the last day

of the sampling campaign on this site, the water temperature was 15.3°C. Salinity and conductivity could not be measured.

A problem with the probe was encountered again during the autumn deployment. The weather varied between rain, wind, and sunshine. Temperatures ranged from 12 to 15°C. On the second day of the campaign, the water temperature on the downstream site was 13.3°C and 13.2°C on the upstream site. The salinity was 0.2 at Isques (downstream) and 0.1 at Crémarest (upstream). Conductivity was 500 µS/cm downstream and 462 µS/cm upstream. During the retrieval, the water temperature was 11.4°C at Isques and 10.5°C at Crémarest. The salinity was 0.2 at both sites, and conductivity varied by 2 µS/cm between upstream and downstream.

Figure 67 : Environmental parameter retrieval using the probe on the Liane

Table 8 : Environmental parameters measured during the deployment and retrieval of traps on the Liane in the Pas-de-Calais department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Liane downstream	Isques	D	2024-02-05	15:30	52	09:29	Sunny	10	9.2	0	216
	Liane downstream	Isques	R 1	2024-02-07	14:47	52	09:44	Rainy	11	8.7	0	267
	Liane downstream	Isques	R 2	2024-02-09	10:05	83	11:32	Sunny	11	9.2	0	187
	Liane upstream	Crémarest	D	2024-02-05	12:20	34	07:06	Sunny	9	9.2	0	420
	Liane upstream	Crémarest	R 1	2024-02-07	11:00	52	09:44	Rainy	11	8.4	0	202
	Liane upstream	Crémarest	R 2	2024-02-09	11:55	83	11:32	Sunny	11	9.1	0	280
Spring	Liane downstream	Isques	D	2024-04-15	11:30	49	05:15	Rainy	10	12	0	450
	Liane downstream	Isques	R 1	2024-04-17	10:40	30	07:31	Nice weather	10	10	0	447
	Liane downstream	Isques	R 2	2024-04-19	10:17	47	10:06	Cloudy	10	10.5	0	442
	Liane upstream	Cremarest	D	2024-04-15	12:47	49	05:15	Rainy	10	10.8	0	615
	Liane upstream	Cremarest	R 1	2024-04-17	11:10	30	07:31	Nice weather	10	9.2	0	432
	Liane upstream	Cremarest	R 2	2024-04-19	10:50	47	10:06	Cloudy	10	10	0	435
Summer	Liane downstream	Isques	D	2024-07-08	10:57	78	14:43	Cloudy	17	15.4	0	495
	Liane downstream	Isques	R 1	2024-07-10	10:25	70	15:55	Cloudy	17	15.3	0	Probe issue
	Liane downstream	Isques	R 2	2024-07-12	10:15	60	17:02	Rainy	15	16.2	Probe issue	Probe issue
	Liane upstream	Cremarest	D	2024-07-08	11:38	78	14:43	Cloudy	18	14.3	0	478
	Liane upstream	Cremarest	R 1	2024-07-10	11:00	70	15:55	Cloudy	18	15.3	0	26.1
	Liane upstream	Cremarest	R 2	2024-07-12	10:55	60	17:02	Rainy	15	15.3	Probe issue	Probe issue
Autumn	Liane downstream	Isques	D	2024-09-30	10:35	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Liane downstream	Isques	R 1	2024-10-02	10:28	83	12:50	Sunny	14	13.3	0.2	500
	Liane downstream	Isques	R 2	2024-10-04	10:23	86	13:46	Sunny	12	11.4	0.2	618
	Liane upstream	Crémarest	D	2024-09-30	11:00	69	11:46	Rainy, Windy	14	Probe issue	Probe issue	Probe issue
	Liane upstream	Crémarest	R 1	2024-10-02	11:05	83	12:50	Sunny	14	13.2	0.1	462
	Liane upstream	Crémarest	R 2	2024-10-04	10:56	86	13:46	Sunny	12	10.5	0.2	616

2. Captured fauna

The species captured on the Liane during the different campaigns are provided in Table 9.

Few species were captured on the Liane. In fact, the traps were empty during the winter, spring, and autumn campaigns.

In summer, only 11 minnows (*Phoxinus* phoxinus; Figure 68) were recorded during the first check of the trap placed on the downstream site of the Liane, with 2 more captured two days late.

Figure 68 : Minnows (*Phoxinus phoxinus*) captured on the downstream site of the Liane during the first check of the summer campaign

No mitten crabs were captured during the four monitoring campaigns conducted in 2024 on the Liane.

Table 9 : Species recorded during the sampling campaigns on the Liane.

Campaign	Site	Location	Retrieval	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Liane downstream	Isques	R1	2024-02-07	14:47	-	-	-	Empty
	Liane downstream	Isques	R2	2024-02-09	10:05	-	-	-	Empty
	Liane upstream	Crémarest	R1	2024-02-07	11:00	-	-	-	Empty
	Liane upstream	Crémarest	R2	2024-02-09	11:55	-	-	-	Empty
Spring	Liane downstream	Isques	R1	2024-04-17	10:40	-	-	-	Empty
	Liane downstream	Isques	R2	2024-04-19	10:17	-	-	-	Empty
	Liane downstream	Cremarest	R1	2024-04-17	11:10	-	-	-	Empty
	Liane upstream	Cremarest	R2	2024-04-19	10:50	-	-	-	Empty
Summer	Liane downstream	Isques	R1	2024-07-10	10:25	Minnow	*Phoxinus phoxinus*	11	Released
	Liane downstream	Isques	R2	2024-07-12	10:15	Minnow	*Phoxinus phoxinus*	2	Released
	Liane downstream	Cremarest	R1	2024-07-10	11:00	-	-	-	Empty
	Liane upstream	Cremarest	R2	2024-07-12	10:55	-	-	-	Empty
Autumn	Liane downstream	Isques	R1	2024-10-02	10:25	-	-	-	Empty
	Liane downstream	Isques	R2	2024-10-04	10:20	-	-	-	Empty
	Liane downstream	Cremarest	R1	2024-10-02	11:00	-	-	-	Empty
	Liane upstream	Cremarest	R2	2024-10-04	10:55	-	-	-	Empty

E. THE CANCHE (PAS-DE-CALAIS)

1. Environmental parameters

The environmental parameters measured on the Canche during the 4 monitoring campaigns are provided in Table 10.

The winter campaign took place partly under the sun (5 and 9 February) and partly under the rain (7 February). The lowest outside temperature observed was 10°C, while the highest was 14°C. The water temperature varied between 8.9°C and 10.5°C, and the salinity ranged from 0 to 0.1. Finally, the lowest conductivity was observed at the upstream site of the Canche, with 403 µS/cm, while the highest conductivity encountered was 509 µS/cm, although these values were within the same range.

In spring, the weather varied more: rain, good weather, then cloudy. During this period, the outside temperature remained stable at 10°C. A car breakdown compromised the installation of the trap at the upstream site of the Canche in Maresquel-Ecquemicourt. The trap was therefore installed on the verification day, 17 April. The water temperature at both the upstream and downstream sites ranged between 10.5°C and 12°C. The salinity remained stable at 0.1. Finally, the conductivity of the water at the downstream site was 497 µS/cm on the installation day and at the first check, then 506 µS/cm at the retrieval. At the upstream site, conductivity was initially 495 µS/cm and increased by 3 µS/cm two days later, reaching 498 µS/cm. The measured parameters were therefore identical between the two monitored sites during the spring campaign.

Several data from the summer campaign on the Canche are missing due to a technical issue with the probe. This campaign took place on 8 July (cloudy sky and 17-18°C), 10 July (sunny weather and 19-20°C), and 12 July (cloudy again, 16°C). On the first day, only the water temperature at La Calotterie (downstream) was recorded (14.7°C). Two days later, this parameter was 18.1°C at the downstream site and 13.3°C at the upstream site of Maresquel-Ecquemicourt. Each day, the salinity was zero. However, the conductivity was 32.1 µS/cm at the downstream site on 10 July and 0.9 µS/cm at the upstream site on the same date.

During the autumn campaign, the weather was alternately rainy and windy, cloudy, or sunny. The outside temperatures ranged between 14 and 16°C. Between 2 October, the date of the

check, and 4 October, the date of the trap retrieval, the water temperature varied between 13.1°C and 11.8°C at the downstream site of the Canche, and between 12.3°C and 11°C at the upstream site. The salinity was 0.2 at each check. The minimum conductivity encountered was 622 µS/cm (downstream on 2 October), and the maximum conductivity was 659 µS/cm (upstream on 4 October).

Figure 69 : Retrieval of environmental parameters using the probe on the Canche

Table 10 : Environmental parameters measured during the installation and retrieval of traps on the Canche in the Pas-de-Calais department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Canche downstream	La Calotterie	D	2024-02-05	11:20	34	06:48	Sunny	10	8.9	0.1	509
	Canche downstream	La Calotterie	R 1	2024-02-07	10:53	52	09:44	Rainy	11	10.2	0.1	456
	Canche downstream	La Calotterie	R 2	2024-02-09	13:45	83	11:20	Sunny	14	10	0	405
	Canche upstream	Maresquel-Ecquemicourt	D	2024-02-05	10:35	34	06:48	Sunny	10	10.3	0.1	475
	Canche upstream	Maresquel-Ecquemicourt	R 1	2024-02-07	10:18	52	09:29	Rainy	11	10.5	0	437
	Canche upstream	Maresquel-Ecquemicourt	R 2	2024-02-09	14:25	83	11:20	Sunny	14	10.3	0	403
Spring	Canche downstream	La Calotterie	D	2024-04-15	10:20	49	05:15	Rainy	10	12.5	0.1	497
	Canche downstream	La Calotterie	R 1	2024-04-17	10:07	30	07:31	Nice weather	10	10.5	0.1	497
	Canche downstream	La Calotterie	R 2	2024-04-19	14:30	47	10:06	Cloudy	10	12	0.1	506
	Canche upstream	Maresquel-Ecquemicourt	D	2024-04-15		Vehicule issue						
	Canche upstream	Maresquel-Ecquemicourt	D	2024-04-17	14:40	30	07:31	Nice weather	10	10.7	0.1	495
	Canche upstream	Maresquel-Ecquemicourt	R	2024-04-19	15:10	47	10:06	Cloudy	10	10.8	0.1	498
Summer	Canche downstream	La Calotterie	D	2024-07-08	10:15	78	14:43	Nuageux	17	14.7	0	Probe issue
	Canche downstream	La Calotterie	R 1	2024-07-10	14:40	70	15:55	Sunny	19	18.1	0	32.1
	Canche downstream	La Calotterie	R 2	2024-07-12	14:25	60	17:02	Nuageux	16	Probe issue	Probe issue	Probe issue
	Canche upstream	Maresquel-Ecquemicourt	D	2024-07-08	16:15	78	14:43	Nuageux	18	Probe issue	Probe issue	Probe issue
	Canche upstream	Maresquel-Ecquemicourt	R 1	2024-07-10	15:20	70	15:55	Sunny	20	13.3	0	0.9
	Canche upstream	Maresquel-Ecquemicourt	R 2	2024-07-12	15:10	60	17:02	Nuageux	16	Probe issue	Probe issue	Probe issue
Autumn	Canche downstream	La Calotterie	D	2024-09-30	14:35	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Canche downstream	La Calotterie	R 1	2024-10-02	14:35	83	12:50	Nuageux	14	13.1	0.2	622
	Canche downstream	La Calotterie	R 2	2024-10-04	14:37	86	13:46	Sunny	16	11.8	0.2	637
	Canche upstream	Maresquel-Ecquemicourt	D	2024-09-30	15:15	69	11:46	Rainy, Windy	15	Probe issue	Probe issue	Probe issue
	Canche upstream	Maresquel-Ecquemicourt	R 1	2024-10-02	15:21	83	12:50	Nuageux	14	12.3	0.2	644
	Canche upstream	Maresquel-Ecquemicourt	R 2	2024-10-04	15:23	86	13:46	Sunny	16	11	0.2	659

2. Captured fauna

he species captured on the Canche during the different campaigns are listed in Table 11.

During the first trap retrieval on 7 February 2024, a three-spined stickleback (*Gasterosteus aculeatus*) was released at the downstream site of the Canche. This was the only capture made during this campaign.

The spring campaign did not result in any captures.

However, during the summer campaign, a European eel (*Anguilla anguilla*) measuring 50 cm was caught, measured, and then released at La Calotterie on the first retrieval date (Figure 71). Two days later, at the same site, three three-spined sticklebacks (*Gasterosteus aculeatus*) and one pumkinseed (*Lepomis gibbosus*; Figure 70) were trapped. While the three sticklebacks were released, the sunfish was transported to our laboratory and euthanised according to the protocol in place for invasive alien species.

Figure 70 : Pumkinseed (*Lepomis gibbosus*) captured upstream of the Canche during the summer campaign

Figure 71 : European eel (*Anguilla anguilla*) captured downstream of the Canche during the summer campaign

No mitten crabs were captured during the 4 monitoring campaigns conducted in 2024 on the Canche.

Table 11 : Species recorded during the sampling campaigns on the Canche

Campaign	Site	Location	Retrieval	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Canche downstream	La Calotterie	R1	2024-02-07	10:53	Three-spined stickleback	*Gasterosteus aculeatus*	1	Released
	Canche downstream	La Calotterie	R2	2024-02-09	13:45	-	-	-	Empty
	Canche upstream	Maresquel-Ecquemicourt	R1	2024-02-07	10:18	-	-	-	Empty
	Canche upstream	Maresquel-Ecquemicourt	R2	2024-02-09	14:25	-	-	-	Empty
Spring	Canche downstream	La Calotterie	R1	2024-04-17	10:07	-	-	-	Empty
	Canche downstream	La Calotterie	R2	2024-04-19	14:30	-	-	-	Empty
	Canche upstream	Maresquel Equemicourt	R	2024-04-19	15:10	-	-	-	Empty
Summer	Canche downstream	La Calotterie	R1	2024-07-10	14:40	European anguilla	*Anguilla anguilla*	1	Released
	Canche downstream	La Calotterie	R2	2024-07-12	14:25	Pumkinseed	*Lepomis gibbosus*	1	Euthanized
	Canche downstream	La Calotterie	R2	2024-07-12	14:25	Three-spined stickleback	*Gasterosteus aculeatus*	3	Released
	Canche upstream	Maresquel Equemicourt	R1	2024-07-10	15:20	-	-	-	Empty
	Canche upstream	Maresquel Equemicourt	R2	2024-07-12	15:10	-	-	-	Empty
Autumn	Canche downstream	La Calotterie	R1	2024-10-02	14:40	-	-	-	Empty
	Canche downstream	La Calotterie	R2	2024-10-04	14:25	-	-	-	Empty
	Canche upstream	Maresquel Equemicourt	R1	2024-10-02	15:20	-	-	-	Empty
	Canche upstream	Maresquel Equemicourt	R2	2024-10-04	15:10	-	-	-	Empty

F. THE AUTHIE (SOMME)

1. Environmental parameters

Unlike in Pas-de-Calais, the traps set in the Somme department were left for 7 consecutive days before being retrieved. The environmental parameters measured on the Authie during the 4 monitoring campaigns are provided in Table 12.

Thus, during the winter campaign, at the Conchil-le-Temple and Argoules sites on the day of deployment, the weather was sunny, but the temperatures were very cool (4°C and 3°C). The water temperature downstream was 6°C, while upstream it was 1.8°C warmer. The salinity downstream was 0, compared to 0.1 at the upstream site. Finally, the conductivity at Conchil-le-Temple was 88 µS/cm, and at Argoules it was 431 µS/cm. On the retrieval day, the weather was pleasant, and the temperatures had risen to 11°C. The water temperatures were 7.4°C downstream and 8.8°C upstream. Unfortunately, a probe issue prevented the measurement of salinity and conductivity parameters.

The spring campaign took place from 16 to 23 April. While rain and wind were present on the day of deployment, the retrieval occurred under sunny, but chilly, conditions (5°C). On the first day, the water temperature ranged from 11.4°C to 10.5°C, then, two days later, it fluctuated between 9.6°C and 10.3°C. While salinity was 0.1 at both sites on both dates, conductivity was 482 µS/cm upstream and 484 µS/cm downstream at deployment, then 475 µS/cm upstream and 478 µS/cm downstream at trap retrieval.

The summer campaign on the Authie took place from 11 July to 18 July, with sunny weather and temperatures ranging from 18°C to 29°C. A probe issue compromised the measurement of parameters such as water temperature, salinity, and conductivity.

During the final campaign, which took place in the autumn of 2024, the first day of deployment was sunny, followed by rain and clouds during the trap retrieval. The temperatures ranged between 11°C and 12°C. The water temperature varied between 12°C and 12.5°C. Salinity was 0.2 at each check, and the minimum conductivity recorded was 627 µS/cm (upstream Authie at retrieval), while the maximum was 646 µS/cm (downstream Authie at retrieval).

Table 12 : Environmental parameters measured during the deployment and retrieval of the traps on the Authie in the Somme department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Authie downstream	Conchil-le-Temple	D	2024-01-15	11:35	96	14:44	Sunny	4	6	0	88
	Authie downstream	Conchil-le-Temple	R	2024-01-22	13:40	51	09:15	Sunny	11	7.4	Probe issue	Probe issue
	Authie upstream	Argoules	D	2024-01-15	10:50	96	14:44	Sunny	3	7.8	0.1	431
	Authie upstream	Argoules	R	2024-01-22	12:45	51	09:15	Sunny	11	8.8	Probe issue	Probe issue
Spring	Authie downstream	Conchil-le-Temple	D	2024-04-16	14:30	35	06:07	Rainy /Windy	-	11.4	0.1	484
	Authie downstream	Conchil-le-Temple	R	2024-04-23	11:17	80	12:36	Nice weather	5	10.3	0.1	478
	Authie upstream	Argoules	D	2024-04-16	12:17	35	06:07	Rainy/Windy	-	10.5	0.1	482
	Authie upstream	Argoules	R	2024-04-23	10:55	80	12:36	Nice weather	5	9.6	0.1	475
Summer	Authie downstream	Conchil-le-Temple	D	2024-07-11	11:30	67	16:22	Sunny	18	14.7	Probe issue	Probe issue
	Authie downstream	Conchil-le-Temple	R	2024-07-18	14:05	45	10:10	Sunny	29	Probe issue	Probe issue	Probe issue
	Authie upstream	Argoules	D	2024-07-11	10:50	67	16:22	Sunny	18	13.5	Probe issue	Probe issue
	Authie upstream	Argoules	R	2024-07-18	11:50	45	10:10	Sunny	25	Probe issue	Probe issue	Probe issue
Autumn	Authie downstream	Conchil-le-Temple	D	2024-10-03	11:05	86	13:09	Sunny	12	12.5	0.2	638
	Authie downstream	Conchil-le-Temple	R	2024-10-10	11:45	40	16:56	Rainy	12	12.4	0.2	646
	Authie upstream	Argoules	D	2024-10-03	10:23	86	13:09	Sunny	11	12	0.2	627
	Authie upstream	Argoules	R	2024-10-10	10:30	40	16:56	Cloudy	12	12.1	0.2	628

2. Captured fauna

The species captured on the Authie during the different campaigns are listed in Table 13.

No species were captured during the winter campaign on the Authie.

A European eel (*Anguilla anguilla*) measuring 20 cm was recorded in the trap set at Conchil-le-Temple and was released (Figure 72). This was the only species captured during this spring campaign.

Figure 72 : Release of the European eel (*Anguilla anguilla*) captured upstream of the Authie during the spring campaign

A new European eel (*Anguilla anguilla*) was captured upstream of the Authie, this time in summer 2024. It measured 30 cm and was released.

Finally, a European eel (*Anguilla anguilla*) was caught in our trap set downstream of the Authie (Figure 73). It measured 25 cm and was released. A bullheads (*Cottus gobio*) was also observed in the trap set at Argoules. It was also released (Figure 73).

Figure 73 : European eel (*Anguilla anguilla*) captured downstream of the Authie (top) and a common bullheads (*Cottus gobio*) captured upstream of the Authie (bottom) during the summer campaign

No mitten crabs were captured during the 4 surveys conducted in 2024 on the Authie.

Table 13 : Species recorded during the sampling campaigns on the Authie

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Authie downstream	Conchil-le-Temple	2024-01-22	13:40	-	-	-	Empty
	Authie upstream	Argoules	2024-01-22	12:45	-	-	-	Empty
Spring	Authie downstream	Conchil-le-Temple	2024-04-23	11:17	European anguilla	*Anguilla anguilla*	1	Released
	Authie upstream	Argoules	2024-04-23	10:55	-	-	-	Empty
Summer	Authie downstream	Conchil-le-Temple	2024-07-18	14:05	-	-	-	Empty
	Authie upstream	Argoules	2024-07-18	11:50	European anguilla	*Anguilla anguilla*	1	Released
Autumn	Authie downstream	Conchil-le-Temple	2024-10-10	11:35	European anguilla	*Anguilla anguilla*	1	Released
	Authie upstream	Argoules	2024-10-10	10:30	Bullhead	*Cottus gobio*	1	Released

G. THE CANAL DE RETZ (SOMME)

1. Environmental parameters

The environmental parameters measured on the Canal de Retz during the 4 monitoring campaigns are detailed in Table 14.

The first campaign of 2024 on the Canal de Retz took place from 15 January to 22 January. The weather was sunny for all the sampling, with temperatures ranging from 4°C to 12°C. The water temperature downstream at the time of setting the traps was 4.1°C and had doubled in one week (reaching 8°C at the recovery). The temperature upstream was 3.9°C and had also doubled 7 days later. The salinity fluctuated between 0 and 0.1. The conductivity was initially 408 µS/cm downstream and decreased to 380 µS/cm 7 days later. Upstream, it was 465 µS/cm at the time of the setting and 510 µS/cm at recovery.

The second campaign, held in spring, began with rain and wind, but fine weather prevailed during the recovery. The water temperatures ranged from 9.8°C to 12.7°C. The salinity was higher than usual: 1.6 at the downstream site of the Canal de Retz at the time of the setting and 1.7 upstream, then 0 downstream and 1.1 upstream at recovery on the same day. The conductivity at the bay was 2530 µS/cm at the setting (value unknown for recovery due to a probe issue). At the upstream site, it was 2680 µS/cm at the setting and 1874 µS/cm at recovery.

The summer campaign took place under the sun, with temperatures ranging from 18°C to 31°C. The water temperature could only be recorded at the downstream site: it was 18.4°C on the day of setting the trap and 19.3°C at recovery. Environmental parameters such as salinity and conductivity could not be measured due to a probe malfunction.

The last campaign took place in autumn. On the day the traps were set, the weather was sunny and the temperature was 15°C. On the day of recovery, the weather was rainy and cloudy, and the temperature had dropped by 3°C (reaching 12°C). During this campaign, the water temperatures ranged from 13°C to 13.8°C, and the salinity ranged from 0.9 to 1.1. The conductivity was 1828 µS/cm at the downstream site of the Canal de Retz on the day of setting and 2330 µS/cm at recovery. At the upstream site of the Canal de Retz, the conductivity was initially 1590 µS/cm and then 2010 µS/cm.

Figure 74 : Environmental parameters being recorded using the probe on the Canal de Retz

Table 14 : Environmental parameters measured during the setting and recovery of traps on the Canal de Retz in the Somme department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Canal de Retz downstream	Quend (baie)	D	2024-01-15	12:05	96	14:44	Sunny	4	4.1	0.1	408
	Canal de Retz downstream	Quend (baie)	R	2024-01-22	14:05	51	09:15	Sunny	12	8	0	380
	Canal de Retz upstream	Quend (Monchaux)	D	2024-01-15	12:35	96	14:44	Sunny	4	3.9	0.1	465
	Canal de Retz upstream	Quend (Monchaux)	R	2024-01-22	14:40	51	09:15	Sunny	11	8	0.1	510
Spring	Canal de Retz downstream	Quend (baie)	D	2024-04-16	15:00	35	06:07	Rainy/Windy	-	11.9	1.6	2530
	Canal de Retz downstream	Quend (baie)	R	2024-04-23	12:00	80	12:36	Nice weather	5	9.8	0	Probe issue
	Canal de Retz upstream	Quend (Monchaux)	D	2024-04-16	15:30	35	06:07	Rainy/Windy	-	12.7	1.7	2680
	Canal de Retz upstream	Quend (Monchaux)	R	2024-04-23	13:30	80	12:36	Nice weather	5	11.2	1.1	1874
Summer	Canal de Retz downstream	Quend (baie)	D	2024-07-11	11:55	67	16:22	Sunny	18	18.4	Probe issue	Probe issue
	Canal de Retz downstream	Quend (baie)	R	2024-07-18	14:25	45	10:10	Sunny	29	Probe issue	Probe issue	Probe issue
	Canal de Retz upstream	Quend (Monchaux)	D	2024-07-11	12:25	67	16:22	Sunny	19	19.3	Probe issue	Probe issue
	Canal de Retz upstream	Quend (Monchaux)	R	2024-07-18	15:00	45	10:10	Sunny	31	Probe issue	Probe issue	Probe issue
Autumn	Canal de Retz downstream	Quend (baie)	D	2024-10-03	11:30	86	13:09	Sunny	15	13	0.9	1828
	Canal de Retz downstream	Quend (baie)	R	2024-10-10	12:10	40	16:56	Rainy	12	13.3	1.1	2330
	Canal de Retz upstream	Quend (Monchaux)	D	2024-10-03	12:03	86	13:09	Sunny	15	13.6	0.8	1590
	Canal de Retz upstream	Quend (Monchaux)	R	2024-10-10	13:48	40	16:56	Cloudy	12	13.8	1	2010

2. Captured fauna

The species captured on the Canal de Retz during the different campaigns are detailed in Table 15.

During the winter campaign, the trap placed downstream on the Canal de Retz did not capture any species. However, the trap placed upstream captured two muskrats (*Ondatra zibethicus*), which were found dead by drowning (Figure 75), and four three-spined sticklebacks (*Gasterosteus aculeatus*), which were released.

Figure 75 : Muskrats (*Ondatra zibethicus*) captured upstream of the Canal de Retz during the winter campaign.

On the downstream site of the Canal de Retz during the spring campaign, one three-spined stickleback (*Gasterosteus aculeatus*) and five Atlantic Ditch Shrimp (*Palaemonetes varians*) were captured and released. Upstream, two muskrats (*Ondatra zibethicus*) were captured again, as well as three three-spined sticklebacks (*Gasterosteus aculeatus*) and one Atlantic Ditch Shrimp (*Palaemonetes varians*) (Figure 76). The sticklebacks and shrimp were released.

Figure 76 : Three-spined stickleback (*Gasterosteus aculeatus*) (left) and marsh shrimp (*Palaemonetes varians*) captured upstream of the Canal de Retz during the spring campaign.

The summer fishing on the Canal de Retz downstream resulted in the capture of 25 three-spined sticklebacks (*Gasterosteus aculeatus*) and 9 Atlantic Ditch Shrimps (*Palaemonetes varians*), all of which were released. At the upstream site, one muskrat was found dead. The trap also contained three three-spined sticklebacks (*Gasterosteus aculeatus*) and two Atlantic Ditch Shrimps (*Palaemonetes varians*), which were released back into their natural habitat.

Finally, during the autumn campaign, eight three-spined sticklebacks (*Gasterosteus aculeatus*) and four marsh shrimp were trapped at the downstream site of the Canal de Retz. Upstream, one muskrat (*Ondatra zibethicus*), twenty-six three-spined sticklebacks (*Gasterosteus aculeatus*), and one Atlantic Ditch Shrimp (*Palaemonetes varians*) were captured. While the muskrat was found dead by drowning, the other species were released.

No mitten crabs were captured during the 4 monitoring campaigns conducted in 2024 on the Canal de Retz.

Table 15 : Species recorded during the sampling campaigns on the Canal de Retz

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Canal de Retz downstrea	Quend (baie)	2024-01-22	14:00	-	-	-	Empty
	Canal de Retz upstream	Quend (Monchaux)	2024-01-22	14:40	Muskrat	*Ondatra zibethicus*	2	Dead
	Canal de Retz upstream	Quend (Monchaux)	2024-01-22	14:40	Three-spined stickleback	*Gasterosteus aculeatus*	4	Released
Spring	Canal de Retz downstrea	Quend (baie)	2024-04-23	12:00	Three-spined stickleback	*Gasterosteus aculeatus*	1	Released
	Canal de Retz downstrea	Quend (baie)	2024-04-23	12:00	Atlantic Ditch Shrimp	*Palaemonetes varians*	5	Released
	Canal de Retz upstream	Quend (Monchaux)	2024-04-23	13:30	Muskrat	*Ondatra zibethicus*	2	Dead
	Canal de Retz upstream	Quend (Monchaux)	2024-04-23	13:30	Three-spined stickleback	*Gasterosteus aculeatus*	3	Dead
	Canal de Retz upstream	Quend (Monchaux)	2024-04-23	13:30	Atlantic Ditch Shrimp	*Palaemonetes varians*	1	Released
Summer	Canal de Retz downstrea	Quend (baie)	2024-07-18	14:25	Three-spined stickleback	*Gasterosteus aculeatus*	25	Released
	Canal de Retz downstrea	Quend (baie)	2024-07-18	14:25	Atlantic Ditch Shrimp	*Palaemonetes varians*	9	Released
	Canal de Retz upstream	Quend (Monchaux)	2024-07-18	15:00	Muskrat	*Ondatra zibethicus*	1	Dead
	Canal de Retz upstream	Quend (Monchaux)	2024-07-18	15:00	Three-spined stickleback	*Gasterosteus aculeatus*	3	Released
	Canal de Retz upstream	Quend (Monchaux)	2024-07-18	15:00	Atlantic Ditch Shrimp	*Palaemonetes varians*	2	Released
Autumn	Canal de Retz downstrea	Quend (baie)	2024-10-10	12:10	Three-spined stickleback	*Gasterosteus aculeatus*	8	Released
	Canal de Retz downstrea	Quend (baie)	2024-10-10	12:10	Atlantic Ditch Shrimp	*Palaemonetes varians*	4	Released
	Canal de Retz upstream	Quend (Monchaux)	2024-10-10	13:45	Muskrat	*Ondatra zibethicus*	1	Dead
	Canal de Retz upstream	Quend (Monchaux)	2024-10-10	13:45	Three-spined stickleback	*Gasterosteus aculeatus*	26	Released
	Canal de Retz upstream	Quend (Monchaux)	2024-10-10	13:45	Atlantic Ditch Shrimp	*Palaemonetes varians*	1	Released

H. THE MAYE (SOMME)

1. Environmental parameters

The environmental parameters measured on the Canal de Retz during the 4 monitoring campaigns are detailed in Table 16.

During the winter campaign conducted on the Maye, the weather was mild, despite cool temperatures (3-4°C at the start and 11°C at the end of the campaign). The lowest water temperature recorded was 4.9°C (downstream of the Maye on the day of setting the traps), and the highest was 9.3°C (upstream of the Maye on the day of trap retrieval). Due to a probe issue, only three out of four salinity and conductivity measurements were taken during this monitoring. Among the available readings, the lowest salinity was 0, and the highest was 0.1. As for conductivity, it was 111 µS/cm downstream of the Maye on the day of setting the traps and increased to 515 µS/cm at the same site upon retrieval. The conductivity upstream of the Maye was 447 µS/cm on the day of the trap placement.

During the spring campaign, water temperatures ranged between 9.6°C and 13.2°C. Salinity was 0.1 at all sites, and conductivity was measured at 522 µS/cm downstream and 481 µS/cm upstream on the day of trap placement. On the day of trap retrieval, conductivity was recorded as 490 µS/cm downstream and 493 µS/cm upstream.

Another probe issue was encountered during the summer campaign, preventing the measurement of parameters such as salinity, conductivity, and water temperature on a given date (18 July). Water temperature during trap placement was 20.3°C downstream of the Maye and 15.5°C upstream.

The final campaign conducted in autumn 2024 began with sunny weather during trap placement, which later became overcast during trap retrieval. Outdoor temperatures ranged from 11°C to 15°C over the course of the week. The lowest water temperature recorded was 11.8°C, while the highest was 14.1°C. Salinity was 0.4 downstream of the Maye on the first day of the campaign, increasing to 2.4 on the retrieval day. At the upstream site of the Maye, salinity was 0.2 on both dates. Conductivity was 857 µS/cm on the first day downstream and increased to 4590 µS/cm a week later at the same site. The same parameter was measured at

the upstream site of the Maye: it was 650 µS/cm on the first day of the campaign and 652 µS/cm on the trap retrieval day.

Table 16 : Environmental Parameters Measured During the Setting and Retrieval of Traps on the Maye in the Somme Department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Maye downstream	Le Crotoy	D	2024-01-15	13:00	91	15:24	Sunny	4	4.9	0	111
	Maye downstream	Le Crotoy	R	2024-01-22	15:10	58	10:08	Sunny	11	7.3	0.1	515
	Maye upstream	Bernay-en-Ponthieu	D	2024-01-15	10:25	96	14:44	Sunny	3	6.5	0.1	447
	Maye upstream	Bernay-en-Ponthieu	R	2024-01-22	12:20	51	09:15	Sunny	11	9.3	Probe issue	Probe issue
Spring	Maye downstream	Le Crotoy	D	2024-04-16	15:52	35	06:07	Rainy/Windy	-	13.2	0.1	522
	Maye downstream	Le Crotoy	R	2024-04-23	13:54	80	12:36	Nice weather	5	12.8	0.1	490
	Maye upstream	Bernay en Ponthieu	D	2024-04-16	11:40	35	06:07	Rainy/Windy	-	10.3	0.1	481
	Maye upstream	Bernay en Ponthieu	R	2024-04-23	10:30	80	12:36	Nice weather	5	9.6	0.1	493
Summer	Maye downstream	Le Crotoy	D	2024-07-11	12:55	67	16:22	Sunny	19	20.3	Probe issue	Probe issue
	Maye downstream	Le Crotoy	R	2024-07-18	15:25	45	10:10	Sunny	29	Probe issue	Probe issue	Probe issue
	Maye upstream	Bernay en Ponthieu	D	2024-07-11	10:20	67	16:22	Sunny	17	15.5	Probe issue	Probe issue
	Maye upstream	Bernay en Ponthieu	R	2024-07-18	11:25	45	10:10	Sunny	25	Probe issue	Probe issue	Probe issue
Autumn	Maye downstream	Le Crotoy	D	2024-10-03	12:30	86	13:09	Sunny	15	13.9	0.4	857
	Maye downstream	Le Crotoy	R	2024-10-10	14:25	40	16:56	Rainy	12	14.1	2.4	4590
	Maye upstream	Bernay en Ponthieu	D	2024-10-03	09:54	86	13:09	Sunny	11	11.8	0.2	650
	Maye upstream	Bernay en Ponthieu	R	2024-10-10	09:55	40	16:56	Rainy	11	12.4	0.2	652

2. Captured fauna

The species captured on the Maye during the different campaigns are listed in Table 17.

The first sampling campaign downstream of the Maye led to the capture of a common perch (*Perca fluviatilis*; Figure 77), a stone loach (*Barbatula barbatula*), and an American crayfish (*Faxonius limosus*) measuring 8.9 cm (Figure 78). Unlike the first two species, which are native, the latter is an invasive exotic species. Therefore, it was euthanized according to the established protocol.

Figure 77 : Common perch (*Perca fluviatilis*) captured downstream of the Maye during the winter campaign

Figure 78 : American crayfish (*Faxonius limosus*) captured downstream of the Maye during the winter campaign

No species were captured during the spring campaign.

During the summer campaign, a stone loach (*Barbatula barbatula*) and five Atlantic Ditch Shrimps (*Palaemonetes varians*) were captured at the downstream site and then released. Upstream, a European eel (*Anguilla anguilla*) measuring 15 cm was captured and released.

The autumn campaign resulted in the capture, at the downstream site of the Maye, of a muskrat (*Ondatra zibethicus*) as well as six American crayfish (*Faxonius limosus*) (9 cm; 9.6 cm; 10.3 cm; 9.1 cm; 9.4 cm; 10.4 cm; with an average length of 9.6 ± 0.6 cm) (Figure 79). Upstream, 2 bleaks (*Alburnus alburnus*) and one American crayfish (*Faxonius limosus*) were captured (Figure 80). All the American crayfish captured during this campaign were euthanized according to the established protocol.

Figure 79 : American crayfish (*Faxonius limosus*) (left) and muskrat (*Ondatra zibethicus*) (right) captured downstream of the Maye during the autumn campaign

Figure 80 : American crayfish (*Faxonius limosus*) (left) and bleak (*Alburnus alburnus*) (right) captured upstream of the Maye during the autumn campaign

No mitten crabs were captured during the 4 monitoring sessions conducted in 2024 on the Maye.

Table 17 : Species recorded during the sampling campaigns on the Maye.

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Maye downstream	Le Crotoy	2024-01-22	15:10	Perch	*Perca fluviatilis*	1	Released
	Maye downstream	Le Crotoy	2024-01-22	15:10	Stone loach	*Barbatula barbatula*	1	Released
	Maye downstream	Le Crotoy	2024-01-22	15:10	American crayfish	*Faxonius limosus*	1	Dead
	Maye upstream	Bernay-en-Ponthieu	2024-01-22	12:20	-	-	-	Empty
Spring	Maye downstream	Le Crotoy	2024-04-23	13:54	-	-	-	Empty
	Maye upstream	Bernay-en-Ponthieu	2024-04-23	10:30	-	-	-	Empty
Summer	Maye downstream	Le Crotoy	2024-07-18	15:25	Stone loach	*Barbatula barbatula*	1	Released
	Maye downstream	Le Crotoy	2024-07-18	15:25	Atlantic Ditch Shrimp	*Palaemonetes varians*	5	Released
	Maye upstream	Bernay-en-Ponthieu	2024-07-18	11:25	European anguilla	*Anguilla anguilla*	1	Released
Autumn	Maye downstream	Le Crotoy	2024-10-10	14:15	Muskrat	*Ondatra zibethicus*	1	Dead
	Maye downstream	Le Crotoy	2024-10-10	14:15	European anguilla	*Faxonius limosus*	6	Euthanized
	Maye upstream	Bernay-en-Ponthieu	2024-10-10	09:50	European anguilla	*Faxonius limosus*	1	Euthanized
	Maye upstream	Bernay-en-Ponthieu	2024-10-10	09:50	Bleak	*Alburnus alburnus*	2	Released

I. THE SOMME (SOMME)

1. Environmental parameters

The environmental parameters measured on the Somme during the 4 monitoring campaigns are listed in Table 18.

The winter campaign began with an issue with the sensor on the day of placement. On that day, the weather was sunny, and temperatures ranged from 4.8°C to 3°C. A week later, at the time of the traps' retrieval, the weather was cloudy or rainy, with an outdoor temperature of 9°C. During this campaign, the water temperature ranged from 3°C to 7.1°C. The salinities that could be measured were 0.1 for the downstream site and 0 for the upstream site. As for the conductivity, it was 710 µS/cm downstream and 516 µS/cm upstream.

The spring campaign was accompanied by good weather with temperatures ranging from 5°C to 9°C. The water temperature ranged from 10.3°C (minimum) to 12.3°C (maximum). Only the salinity at the downstream site of the Somme was not zero (0.1). The lowest conductivity recorded was 1.4 µS/cm (downstream at retrieval), while the highest was 475 µS/cm (downstream at the placement).

Just as for the previously presented rivers, the sensor that measures environmental parameters encountered an issue, which compromised the measurement of water temperature, salinity, and conductivity. The weather during this campaign was cloudy and rainy, with temperatures ranging from 16°C to 20°C. The water temperatures recorded on the first day were 14.5°C downstream and 19.5°C upstream.

The last campaign took place in October 2024 and was sunny, with temperatures ranging from 15°C to 18°C. The water temperatures ranged between 12.7°C and 14.3°C. The salinity was 0.2 at the upstream site on the retrieval day and at the downstream site on both monitoring dates. However, it was 0.1 at the upstream site on the day of the placement. The conductivity at the downstream site varied little between the two dates (638 µS/cm on October 1st and 636 µS/cm on October 8th) compared to the upstream site (417 µS/cm on the placement day and 570 µS/cm on the retrieval day).

Figure 81 : Retrieval of environmental parameters using the sensor on the Somme

Table 18 : Environmental parameters measured during the placement and retrieval of traps on the Somme in the Somme department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Somme downstream	Boismont	D	2024-01-16	14:00	91	15:24	Sunny	4	4.8	Probe issue	Probe issue
	Somme downstream	Boismont	R	2024-01-23	10:50	58	10:08	Cloudy/Rainy	9	7.1	0.1	710
	Somme upstream	Fontaine-sur-Somme	D	2024-01-16	13:20	91	15:24	Sunny	4	3	Probe issue	Probe issue
	Somme upstream	Fontaine-sur-Somme	R	2024-01-23	12:00	58	10:08	Cloudy/Rainy	9	4.9	0	516
Spring	Somme downstream	Boismont	D	2024-04-18	09:56	36	09:03	Nice weather	5	10.3	0.1	475
	Somme downstream	Boismont	R	2024-04-25	09:28	84	13:38	Nice weather	9	10.4	0	1.4
	Somme upstream	Fontaine sur Somme	D	2024-04-18	10:45	36	09:03	Nice weather	5	12.3	0	362
	Somme upstream	Fontaine sur Somme	R	2024-04-25	10:18	84	13:38	Nice weather	9	11.5	0	355
Summer	Somme downstream	Boismont	D	2024-07-09	10:25	76	15:03	Cloudy	20	14.5	Probe issue	Probe issue
	Somme downstream	Boismont	R	2024-07-16	10:30	36	07:35	Cloudy	16	Probe issue	Probe issue	Probe issue
	Somme upstream	Fontaine sur Somme	D	2024-07-09	11:10	76	15:03	Rainy	20	19.5	Probe issue	Probe issue
	Somme upstream	Fontaine sur Somme	R	2024-07-16	11:30	36	07:35	Cloudy	16	Probe issue	Probe issue	Probe issue
Autumn	Somme downstream	Boismont	D	2024-10-01	10:15	77	12:08	Sunny	15	12.7	0.2	638
	Somme downstream	Boismont	R	2024-10-08	10:09	63	15:25	Sunny	16	12.7	0.2	636
	Somme upstream	Fontaine sur Somme	D	2024-10-01	11:15	77	12:08	Sunny	15	14.3	0.1	417
	Somme upstream	Fontaine sur Somme	R	2024-10-08	11:44	63	15:25	Sunny	18	13.1	0.2	570

2. Captured fauna

The species captured on the Somme during the different campaigns are listed in Table 19.

No fauna was captured during the winter campaign.

In spring, the trap placed downstream at Boismont was empty. However, the one placed upstream of the Somme, at Fontaine-sur-Somme, was stolen. After speaking with a local resident, she informed us that she had seen an unhappy fisherman cutting the chain of our trap (which was secured with a lock), despite the labeling being in place (Figure 54). The individual was not found, but the President of the Association Pêche et Nature of Fontaine-sur-Somme got in touch with us and was very supportive. Thanks to his help, we are now able to place our trap at a nearby resident's property (i.e., 20 meters from the initial point), who is very interested in our study. Each campaign is an opportunity for our team to discuss the progress of the project with them.

In summer, downstream on the Somme, only one muskrat (*Ondatra zibethicus*) was found dead (Figure 82). On the upstream site, an American crayfish (*Faxonius limosus*) measuring 7.6 cm was captured and euthanized (Figure 83).

Figure 82 : Muskrat (*Ondatra zibethicus*) Captured Downstream of the Somme During the Summer Campaign

Figure 83 : American crayfish (*Faxonius limosus*) captured upstream of the Somme during the summer campaign

During the autumn campaign, an American crayfish (*Faxonius limosus*) measuring 8.05 cm was trapped downstream of the Somme, and a second American crayfish (*Faxonius limosus*) measuring 8.8 cm was trapped upstream of the Somme (Figure 84). Both were euthanized by freezing.

Figure 84 : American crayfish (*Faxonius limosus*) captured downstream of the Somme (top) and upstream of the Somme (bottom) during the autumn campaign

No mitten crabs were captured during the 4 surveys conducted in 2024 on the Somme.

Table 19 : Species recorded during the sampling campaigns on the Somme.

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Somme downstream	Boismont	2024-01-23	10:50	-	-	-	Empty
	Somme upstream	Fontaine-sur-Somme	2024-01-23	12:00	-	-	-	Empty
Spring	Somme downstream	Boismont	2024-04-25	09:28	-	-	-	Empty
	Somme upstream	Fontaine-sur-Somme	2024-04-25	10:18				Stolen trap
Summer	Somme downstream	Boismont	2024-07-16	10:25	Muskrat	*Ondatra zibethicus*	1	Dead
	Somme upstream	Fontaine-sur-Somme	2024-07-16	11:25	American crayfish	*Faxonius limosus*	1	Euthanized
Autumn	Somme downstream	Boismont	2024-10-08	10:00	American crayfish	*Faxonius limosus*	1	Euthanized
	Somme upstream	Fontaine-sur-Somme	2024-10-08	10:45	American crayfish	*Faxonius limosus*	1	Euthanized

J. THE CANAL A POISSONS (SOMME)

1. Environmental parameters

The environmental parameters measured on the River Somme during the four monitoring campaigns are listed in Table 20.

Outdoor temperatures during the winter campaign on the Fishing Channel ranged from 1 to 3°C on the day of trap deployment, and were 11°C on the day of trap retrieval. The water temperature during this week of sampling ranged between 2.2°C and 8°C. Two values were obtained for salinity and conductivity due to a probe issue. Thus, on the day of trap retrieval, salinity downstream of the Fishing Channel was 0.7, and conductivity was 1125 µS/cm. Upstream, salinity was 0.2, and conductivity was 577 µS/cm.

The spring campaign took place under sunny weather, with temperatures of 5°C on the first day of trap deployment and 9°C on the day of retrieval. The water temperature ranged between 10.8°C and 13.6°C, while salinity fluctuated between 0 and 0.9. Conductivity, which could only be measured on the day of trap deployment, was 1635 µS/cm downstream of the Fishing Channel and 602 µS/cm upstream.

During the summer campaign, only the water temperature could be recorded on the day of trap deployment. This parameter was 17.3°C downstream and 16.5°C upstream, with outdoor temperatures of 20°C on that day.

The final campaign, held in autumn, took place in sunny weather, with temperatures around 15°C (maximum 18°C). The water temperature was 15.3°C and 12.8°C on the day of deployment, respectively downstream and upstream, and was 12.8°C and 16.1°C on these same sites on the day of retrieval. The minimum salinity encountered was 0.1 (upstream of the Fishing Channel, on the last day of the campaign) and the maximum was 1.3 (at the downstream site during retrieval and at the upstream site during deployment). The minimum conductivity recorded during this campaign was 365 µS/cm, with a maximum of 2590 µS/cm..

Table 20 : Environmental parameters measured during the deployment and retrieval of traps on the Fishing Channel in the Somme department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Canal à Poissons downstream	Le Hourdel	D	2024-01-16	10:25	91	15:24	Sunny	1	2.2	Probe issue	Probe issue
	Canal à Poissons downstream	Le Hourdel	R	2024-01-23	14:30	58	10:08	Cloudy/Rainy	11	7	0.7	1125
	Canal à Poissons upstream	Wathiéhurt	D	2024-01-16	10:40	91	15:24	Sunny	3	Probe issue	Probe issue	Probe issue
	Canal à Poissons upstream	Wathiéhurt	R	2024-01-23	14:20	58	10:08	Cloudy/Rainy	11	8	0.2	577
Spring	Canal à Poissons downstream	Hourdel	D	2024-04-18	13:30	36	09:03	Nice weather	5	13.6	0.9	1635
	Canal à Poissons downstream	Hourdel	R	2024-04-25	14:45	84	13:38	Nice weather	9	11.5	0	Probe issue
	Canal à Poissons upstream	Wathiéhurt	D	2024-04-18	13:15	36	09:03	Nice weather	5	12.2	0.1	602
	Canal à Poissons upstream	Wathiéhurt	R	2024-04-25	14:09	84	13:38	Nice weather	9	10.8	0	Probe issue
Summer	Canal à Poissons downstream	Hourdel	D	2024-07-09	09:57	76	15:03	Cloudy	20	17.3	Probe issue	Probe issue
	Canal à Poissons downstream	Hourdel	R	2024-07-16	14:00	36	07:35	Cloudy	18	Probe issue	Probe issue	Probe issue
	Canal à Poissons upstream	Wathiéhurt	D	2024-07-09	13:35	76	15:03	Rainy	20	16.5	Probe issue	Probe issue
	Canal à Poissons upstream	Wathiéhurt	R	2024-07-16	13:40	36	07:35	Cloudy	18	Probe issue	Probe issue	Probe issue
Autumn	Canal à Poissons downstream	Hourdel	D	2024-10-01	13:35	77	12:08	Sunny	15	15.3	0.3	833
	Canal à Poissons downstream	Hourdel	R	2024-10-08	09:35	63	15:25	Sunny	15	12.8	1.3	2590
	Canal à Poissons upstream	Wathiéhurt	D	2024-10-01	09:45	77	12:08	Sunny	15	12.8	1.3	2480
	Canal à Poissons upstream	Wathiéhurt	R	2024-10-08	12:32	63	15:25	Sunny	18	16.1	0.1	365

2. Captured fauna

The species captured on the Fishing Channel during the different campaigns are listed in Table 21.

No species were found in the trap placed at the upstream site of the Fishing Channel during the winter campaign. However, a three-spined stickleback (*Gasterosteus aculeatus*) and a bleak (*Alburnus alburnus*) were recorded downstream (Figure 85).

Figure 85 : Three-spined stickleback (*Gasterosteus aculeatus*) (top) and bleak (*Alburnus alburnus*) (bottom) captured downstream of the Fishing Channel during the winter campaign

In spring, the trap placed downstream captured 10 Atlantic Ditch Shrimps (*Palaemonetes varians*), one common prawn (*Palaemon serratus*), and one sand goby (*Pomatoschistus minutus*). The trap placed upstream was empty.

During the summer campaign, three Atlantic Ditch Shrimps (*Palaemonetes varians*), four European green crabs (*Carcinus maenas*), and two three-spined sticklebacks (*Gasterosteus aculeatus*) were caught at the downstream site of the Fishing Channel. All individuals were released.

In the final campaign, five European green crabs (*Carcinus maenas*) and one Atlantic Ditch Shrimps (*Palaemonetes varians*) were captured downstream of the Fishing Channel. No species were captured at the upstream site.

No mitten crabs were captured during the four monitoring campaigns conducted in 2024 on the Fishing Channel.

Table 21 : Species recorded during the sampling campaigns on the Canal à Poissons

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Canal à Poissons downstream	Le Hourdel	2024-01-23	14:30	Three-spined stickleback	*Gasterosteus aculeatus*	1	Released
	Canal à Poissons downstream	Le Hourdel	2024-01-23	14:30	Bleak	*Alburnus alburnus*	1	Released
	Canal à Poissons upstream	Wathiéhurt	2024-01-23	14:20	-	-	-	Empty
Spring	Canal à Poissons downstream	Le Hourdel	2024-04-25	14:45	Atlantic Ditch Shrimp	*Palaemonetes varians*	10	Released
	Canal à Poissons downstream	Le Hourdel	2024-04-25	14:45	Common prawn	*Palaemon serratus*	1	Released
	Canal à Poissons downstream	Le Hourdel	2024-04-25	14:45	Sand goby	*Pomatoschistus minutus*	2	Released
	Canal à Poissons upstream	Wathiéhurt	2024-04-25	14:09	-	-	-	Empty
Summer	Canal à Poissons downstream	Le Hourdel	2024-07-16	14:00	Atlantic Ditch Shrimp	*Palaemonetes varians*	3	Released
	Canal à Poissons downstream	Le Hourdel	2024-07-16	14:00	European green crab	*Carcinus maenas*	4	Released
	Canal à Poissons downstream	Le Hourdel	2024-07-16	14:00	Three-spined stickleback	*Gasterosteus aculeatus*	2	Released
	Canal à Poissons upstream	Wathiéhurt	2024-07-16	13:40	-	-	-	Empty
Autumn	Canal à Poissons downstream	Le Hourdel	2024-10-08	09:30	Atlantic Ditch Shrimp	*Palaemonetes varians*	1	Released
	Canal à Poissons downstream	Le Hourdel	2024-10-08	09:30	European green crab	*Carcinus maenas*	5	Released
	Canal à Poissons upstream	Wathiéhurt	2024-10-08	13:05	-	-	-	Empty

K. The Bresle (Seine-Maritime)

1. Environmental parameters

The environmental parameters measured on the Bresle during the four monitoring campaigns are listed in Table 22.

Three sites are monitored on the Bresle: one upstream site at Nesle-Normandeuse and two downstream sites at Ponts-et-Marais (i.e. located on private property). One of these concerns the river itself, while the other concerns a pond located nearby.

The winter campaign took place from 16th to 26th January. On the day of trap deployment at the different sites, the weather was sunny and the outdoor temperature was 4°C. On this day, salinity was zero at all sites. However, the water temperatures were 4.7°C at the downstream site of the Bresle, 4.7°C at the pond, and 4.9°C at the upstream site of the Bresle. Unfortunately, the probe was defective during deployment, so it was not possible to obtain conductivity data. A week later, when the traps were retrieved, the water temperatures had increased: 8.2°C for the downstream site of the Bresle, 5.3°C for the pond, and 8.3°C for the upstream site of the Bresle. Conductivity was 406 µS/cm, 235 µS/cm, and 397 µS/cm, respectively.

In spring, the weather was pleasant but the temperatures were cool (5 to 9°C). Water temperatures ranged from 9.9°C to 14.3°C over the week. Salinity measured was zero at all sites. Finally, conductivity could only be measured on the day of deployment for the downstream sites of the Bresle. At the Bresle, conductivity was 438 µS/cm, and at the pond, it was 304 µS/cm. Upstream of the Bresle, conductivity was 424 µS/cm at deployment and had increased by 2 µS/cm one week later.

In summer, few environmental parameters could be recorded due to a probe issue. Rain was present throughout the campaign, with temperatures ranging from 17°C to 20°C. The water temperature upstream of the Bresle was 14.2°C, while the water of the pond downstream was 19.3°C, and the river water was 15.1°C.

The final campaign, held in autumn, took place on sunny days. Outdoor temperatures were 15°C on the first day and 18°C on the day of trap retrieval. Water temperatures ranged from 12.9°C to 16.8°C. Salinity was 0.1 in the pond on both dates and 0.2 upstream and downstream

of the Bresle. Conductivity at the Ponts-et-Marais (Bresle) site was 567 µS/cm at deployment and 570 µS/cm at retrieval. At the pond, it was 363 µS/cm, rising to 365 µS/cm a week later. Finally, conductivity upstream of the Bresle was initially 561 µS/cm and reached 570 µS/cm on the day of trap retrieval.

Figure 86 : Retrieval of environmental parameters using the probe on the Bresle

Table 22 : Environmental parameters measured during the deployment and retrieval of traps on the Bresle une the Seine-Maritime Department

Campaign	Site	Municipality	Deployment or retrieval	Date	Hour	Tide coefficient	High tide time	Weather	Outdoor temperature (°C)	Water temperature (°C)	Salinity	Conductivity (µS/cm)
Winter	Bresle downstream	Ponts-et-Marais (Bresle)	D	2024-01-16	11:40	91	15:23	Sunny	4	4.7	Probe issue	Probe issue
	Bresle downstream	Ponts-et-Marais (Bresle)	R	2024-01-23	13:35	58	10:05	Cloudy/Rainy	9	8.2	0	406
	Bresle downstream	Ponts-et-Marais (Etang)	D	2024-01-16	11:30	91	15:23	Sunny	4	4.7	0	Probe issue
	Bresle downstream	Ponts-et-Marais (Etang)	R	2024-01-23	13:30	58	10:05	Cloudy/Rainy	9	5.3	0	235
	Bresle upstream	Nesle-Normandeuse	D	2024-01-16	12:25	91	15:23	Sunny	4	4.9	Probe issue	Probe issue
	Bresle upstream	Nesle-Normandeuse	R	2024-01-23	12:55	58	10:05	Cloudy/Rainy	9	8.3	0	397
Spring	Bresle downstream	Ponts-et-Marais (Bresle)	D	2024-04-18	12:30	36	09:03	Nice weather	5	10.8	0	438
	Bresle downstream	Ponts-et-Marais (Bresle)	R	2024-04-25	11:51	84	13:38	Nice weather	9	10.4	0	Probe issue
	Bresle downstream	Ponts-et-Marais (Etang)	D	2024-04-18	12:25	36	09:03	Nice weather	5	14.3	0	304
	Bresle downstream	Ponts-et-Marais (Etang)	R	2024-04-25	11:37	84	13:38	Nice weather	9	13.2	0	Probe issue
	Bresle upstream	Nesle-Normandeuse	D	2024-04-18	11:35	36	09:03	Nice weather	5	10	0	424
	Bresle upstream	Nesle-Normandeuse	R	2024-04-25	11:03	84	13:38	Nice weather	9	9.9	0	426
Summer	Bresle downstream	Ponts-et-Marais (Bresle)	D	2024-07-09	13:00	76	15:01	Rainy	20	15.1	Probe issue	Probe issue
	Bresle downstream	Ponts-et-Marais (Bresle)	R	2024-07-16	13:00	36	07:32	Rainy	17	Probe issue	Probe issue	Probe issue
	Bresle downstream	Ponts-et-Marais (Etang)	D	2024-07-09	12:55	76	15:01	Rainy	20	19.3	Probe issue	Probe issue
	Bresle downstream	Ponts-et-Marais (Etang)	R	2024-07-16	13:05	36	07:32	Rainy	17	Probe issue	Probe issue	Probe issue
	Bresle upstream	Nesle-Normandeuse	D	2024-07-09	12:00	76	15:01	Rainy	20	14.2	Probe issue	Probe issue
	Bresle upstream	Nesle-Normandeuse	R	2024-07-16	12:15	36	07:32	Cloudy	17	Probe issue	Probe issue	Probe issue
Autumn	Bresle downstream	Ponts-et-Marais (Bresle)	D	2024-10-01	12:50	77	12:04	Sunny	15	13.3	0.2	567
	Bresle downstream	Ponts-et-Marais (Bresle)	R	2024-10-08	12:27	63	15:20	Sunny	18	13.4	0.2	570
	Bresle downstream	Ponts-et-Marais (Etang)	D	2024-10-01	12:45	77	12:04	Sunny	15	16.8	0.1	363
	Bresle downstream	Ponts-et-Marais (Etang)	R	2024-10-08	12:32	63	15:20	Sunny	18	16.1	0.1	365
	Bresle upstream	Nesle-Normandeuse	D	2024-10-01	12:00	77	12:04	Sunny	15	12.9	0.2	561
	Bresle upstream	Nesle-Normandeuse	R	2024-10-08	11:44	63	15:20	Sunny	18	13.1	0.2	570

2. Captured fauna

The species captured on the Bresle during the different campaigns are listed in Table 23.

No species were captured at the upstream site of the Bresle (at Nesle-Normandeuse) during any season.

However, four American crayfish (*Faxonius limosus*) measuring 9.7 cm, 7.5 cm, 9.6 cm, and 9.2 cm (one of which was an ovigerous female; Figure 87) were trapped during the spring campaign at the pond (thus an average size of 9.0 ± 1.0 cm). Downstream of the Bresle, a bullhead (*Cottus gobio*) was captured and then released (Figure 88).

Figure 87 : Ovigerous female American crayfish (*Faxonius limosus*) captured at the Ponts-et-Marais pond during the spring campaign.

Figure 88 : Common bullhead (*Cottus gobio*) captured downstream of the Bresle during the spring campaign

In summer, two more American crayfish (*Faxonius limosus*) were trapped, measuring 5.4 cm and 7.8 cm (with an average size of 6.6 ± 1.7 cm) at the pond. A perch (*Perca fluviatilis*) was also identified (Figure 89).

Figure 89 : Common perch (*Perca fluviatilis*) captured at the Ponts-et-Marais pond during the summer campaign

No species were recorded during the autumn period at the downstream site (i.e. Bresle and pond).

No mitten crabs were captured during the four monitoring campaigns conducted in 2024 on the Bresle and the pond near the Bresle.

Table 23 : Species recorded during the sampling campaigns on the Bresle.

Campaign	Site	Location	Date	Hour	Common name	Scientific name	No. Of individuals	Comment
Winter	Bresle downstream	Ponts-et-Marais (Bresle)	2024-01-23	13:35	-	-	-	Empty
	Bresle downstream	Ponts-et-Marais (Etang)	2024-01-23	13:30	-	-	-	Empty
	Bresle upstream	Nesle-Normandeuse	2024-01-23	12:55	-	-	-	Empty
Spring	Bresle downstream	Ponts-et-Marais (Bresle)	2024-04-25	11:51	Bullhead	*Cottus gobio*	1	Released
	Bresle downstream	Ponts-et-Marais (Etang)	2024-04-25	11:37	American crayfish	*Faxonius limosus*	4	Euthanized
	Bresle upstream	Nesle-Normandeuse	2024-04-25	11:03	-	-	-	Empty
Summer	Bresle downstream	Ponts-et-Marais (Bresle)	2024-07-16	12:50	-	-	-	Empty
	Bresle downstream	Ponts-et-Marais (Etang)	2024-07-16	12:55	American crayfish	*Faxonius limosus*	2	Euthanized
	Bresle downstream	Ponts-et-Marais (Etang)	2024-07-16	12:55	Perch	*Perca fluviatilis*	1	Released
	Bresle upstream	Nesle-Normandeuse	2024-07-16	12:10	-	-	-	Empty
Autumn	Bresle downstream	Ponts-et-Marais (Bresle)	2024-10-08	12:20	-	-	-	Empty
	Bresle downstream	Ponts-et-Marais (Etang)	2024-10-08	12:25	-	-	-	Empty
	Bresle upstream	Nesle-Normandeuse	2024-10-08	11:40	-	-	-	Empty

VI. CONCLUSIONS ON THE MONITORING IN 2024

During the monitoring campaigns conducted in 2024, **no Chinese mitten crabs** were recorded at the 22 monitored sites of the 11 rivers studied in the Hauts-de-France region. However, it was captured in the Bay of Somme in late May 2024 by the fishermen from Le Hourdel and by the Fédération de Pêche 80 in July and September 2024 during electric fishing on the Amboise (a tributary of the Somme). However, it was not sampled this year during the DCE fish fauna monitoring conducted by CSLN in the Bay of Somme and the Bay of Authie (Bastien Chouquet, personal communication).

Other invasive alien species were, however, captured during our monitoring under the CLANCY project, including American crayfish (Faxonius limosus; the most abundant species) and the California crayfish or signal crayfish (Pacifastacus leniusculus). The American crayfish was recorded in the Aa, Maye, Somme, and Bresle, while the Pacific crayfish was recorded in the Slack. Regarding vertebrates, the sunfish (Lepomis gibbosus) was recorded in the Canche, and the muskrat (Ondatra zibethicus) was recorded in the rivers of the Somme department (Retz Canal, Authie, and Somme).

Diversity in 2024 varied from 1 species recorded on the Liane to 7 species recorded on the Maye. Smaller rivers showed higher sampled abundances (Retz Canal, Fishing Channel, Wimereux, Maye) compared to larger rivers like the Aa, Canche, Authie, and Somme. The species assemblages of the downstream sites of small rivers such as the Fishing Channel draining into the Bay of Somme and the Retz Canal draining into the Bay of Authie were very similar. They were primarily characterised by marsh shrimp and three-spined sticklebacks.

Notably, the European eel was present on half of the monitored rivers: Slack, Wimereux, Canche, Authie, and Maye. During our monitoring, its abundances were higher in the Wimereux and Authie. All individuals were released back into their natural habitat after being measured.

Environmental parameters were recorded whenever possible at each site and each season (except in cases of probe issues or abnormal values not taken into account). Water temperatures and conductivities showed little variation between the "upstream" and

"downstream" sites of the same river in the same season. However, salinities were often zero at the "upstream" sites, confirming that these were freshwater locations, and were higher (though still low) at the "downstream" sites, indicating an oligohaline zone. It should be noted that conductivities were higher in small coastal rivers such as the Fishing Channel and Retz Canal. 2024 marked the first year of environmental parameter measurements. These will be recorded again in future monitoring years, allowing for interannual comparisons at our sites for the same season (i.e., the monitoring is always conducted at the same time: end of January, end of April, end of July, and end of September/beginning of October).

In November 2024, all the partners of the CLANCY project began **environmental DNA (eDNA)** monitoring at one of the sites where the presence of the Chinese mitten crab is confirmed. GEMEL carried out a water sample collection following a protocol defined by Brys et al. (2024) at Le Hourdel, at the confluence of the Fishing Channel and the Somme (Figure 90). Indeed, this is the area where fishermen captured individuals in May 2024, and these individuals were provided for genetic analysis. The sample collected was frozen, and a new sample will be taken in spring 2025. Both samples will then be sent to the scientists at VMM to determine whether the DNA of the Chinese mitten crab can be detected in the water at Le Hourdel (Bay of Somme). If it is detected, the presence of the Chinese mitten crab will be confirmed, even though we have not captured any.

Figure 90 : Water sampling at Le Hourdel (left) and water filtration at the GEMEL laboratory (right)

VII. FUTURE ACTIONS

A. MONITORING OF THE CHINESE MITTEN CRAB

A new sampling campaign is scheduled for the week of 20 January 2025. This will be carried out across all the monitored rivers, namely: the Aa, the Slack, the Wimereux, the Liane, the Canche, the Authie, the Retz Canal, the Maye, the Somme, the Fishing Channel, and the Bresle.

Just like our French partners from the Cellule de Suivi du Littoral Normand, as well as our border partners, we would like to set up a fixed trap on one of the rivers to maximise the chances of capturing the mitten crab, following the model in Figure 90. Unlike the fixed trap initially proposed by our Belgian partners, this one is less costly and more adaptable to our rivers. Indeed, this setup does not require any trenching or permanent installation (Figure 91 and Figure 92).

Figure 91 : Construction of the trap during the Partners' Exchange in February 2024

Figure 92 : Model of the fixed trap under consideration (credit: VMM)

While, for logistical reasons, we initially targeted the Fishing Channel (a site located just a few minutes from our station), we were contacted in October by the Federation of the Somme for Fishing and the Protection of Aquatic Environments. They informed us that in July and September 2024, as part of scientific electrofishing conducted by Piscipôle (FDAAPPMA80 and AMEVA), two Chinese Mitten Crabs (Eriocheir sinensis) had been captured on the Amboise (Figure 93). This river, a tributary of the Somme, is located between Saint-Valery-sur-Somme and Pendé, making it easily accessible for our team for optimal monitoring (to prevent theft and damage to equipment) and weekly checks. Two GEMEL agents scouted the area in early December to find the ideal location for this setup. Once the suitable spot is determined, administrative procedures similar to the previous ones will be undertaken: contacting the local municipalities and property owners for their approval, followed by an official request to the DDTM80, the French Biodiversity Agency (OFB), and the Federation of Fishing 80.

Figure 93 : Chinese Mitten Crabs (Eriocheir sinensis) (female on the left, male on the right) captured on the Amboise by Piscipôle (FDAAPPMA80 and AMEVA) (Photos by Théau Brasseur, study officer at the Federation of the Somme for Fishing and the Protection of Aquatic Environments)

The **Federation of Fishing of the North** (59) has also set up a participatory survey among fishermen in the Nord department to report the presence of the species in its watercourses (https://www.peche59.com/). This survey is available in the form of a Google Form on the website of the Federation of Fishing 59 (https://docs.google.com/forms/d/e/1FAIpQLSeQq5BlOwhA40vpsZ07oeQP_5_r2UzW-rDc91P9FErIaBglcw/viewform) (Figure 94).

Figure 94 : Participatory survey launched in 2024 by the Federation of Fishing

B. EXCHANGES WITH PARTNERS

At the beginning of the year, on 19th and 20th February 2024, two agents from GEMEL travelled near Ghent, to Merelbeke, to meet our Belgian partners from the Flemish Environment Agency (VMM). Together, they participated in a workshop to build the "low-cost" fixed trap presented earlier (Figure 90). This meeting allowed us to consider an evolution of our monitoring protocol; the crustacean trap, while suitable for catching crayfish, does not seem ideal for capturing the Chinese mitten crab.

During the spring trap collections from the Somme, Canal à Poissons, and Bresle, Mr. Arnaud Abadie, marine environment study officer at the Artois-Picardie Water Agency, accompanied us. He was able to observe the implementation of the protocol as well as the difficulties we encounter (Figure 95). In fact, while he was present, the trap set at Fontaine-sur-Somme, upstream of the Somme, had disappeared, despite the chain and lock, as well as the label on our trap. A local resident then confessed that an unhappy fisherman had removed it and preferred to remain anonymous.

Figure 95 : Trap collection during the spring campaign with Mr. Abadie from the Artois-Picardie Water Agency

On the 15th and 16th of May 2024, three agents from GEMEL participated in the meeting in Le Havre (Figure 96), organised by our French partner, the Cellule de Suivi du Littoral Normand. Each partner provided an update on the progress of the project. A site visit was organised to inspect locations where some of CSLN's traps are installed. We took the opportunity to meet with our partners from the University of Antwerp and hand over mitten crabs captured by fishermen at Le Hourdel (individuals caught by trawl in the Baie de Somme) for genetic analysis in order to determine the origin of the crabs (Chinese or Japanese subspecies).

Figure 96 : Partners of the INTERREG CLANCY project during the meeting in Le Havre in May 2024 (© Bjorn Suckow)

On October 15, 2024, Céline Rolet presented a progress report on the Clancy project to the Office Français de la Biodiversité, the Agence de l'Eau Artois-Picardie and the DREAL at a meeting of coastal experts at IFREMER in Boulogne-sur-Mer.

A new meeting is scheduled in Dresden, Germany, on the 13th, 14th, and 15th of May 2025.

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