Plan national d'action pour le
Vison d'Europe

Intermediate National Action Plan for the European mink (*Mustela lutreola*) Review 2019 - 2021

European mink (© Julien STEINMETZ - OFB)

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Temporality

This document establishes the review of the actions implemented in the framework of the intermediate National Action Plan (2015-2021) for the period 2019-2021. It thus completes the assessment already published for the years 2015-2018 (link).

Acknowledgements

The editorial team would like to thank all the participants in the European mink surveys or in the American mink raft controls, because without them a good part of the actions could not be carried out. We also think of all those who are involved in protecting this species, whether in the breeding centres or in the wild, and of all those who keep an eye out, watch and call us because a mustelid has come into their cage or into their field of vision!

Let us hope that this commitment will continue during the implementation of the 3rd National Action Plan (link) and that new complementary partnerships will be created to save the European mink in France and in Europe.

Finally, we also thank the financial partners of the programmes:

Table of contents

List of abbreviations

(i)NAP: (Intermediate) National Action Plan

ADPAD: Association des Piégeurs Agrées de Dordogne / Association of Certified Trappers in the county of the Dordogne

ADPAG: Association Départementale des Piégeurs Agrées de Gironde / Association of Certified Trappers in the county of the Gironde

AFB: Agence Française pour la Biodiversité / French Agency for Biodiversity

AGERAD: Association de Gestion Ecologique Ressource Agriculture Dérivés / Association Ecological Management Agricultural Resources

CAPB: Communauté d'Agglomération du Pays Basque / Urban Community of the Basque Country

CD16: Conseil Départemental de la Charente / County Council of the Charente

CD33: Conseil Départemental de la Gironde / County Council of the Gironde

CD64: Conseil Départemental des Pyrénées-Atlantiques / County Council of the Pyrénées-Atlantiques

CNPN: Conseil National de la Protection de la Nature / National Nature Protection Council

COPIL: Comité de Pilotage / Steering Committee

DDT(M): Direction Départementale des Territoires (et de la Mer) / County Directorate for territories (and Sea)

DREAL NA: Direction Régionale de l'Environnement, de l'Aménagement et de Logement Nouvelle-Aquitaine / Regional Environment, Planning and Housing Directorate for the Nouvelle-Aquitaine Region

EAFRD: European Agricultural Fund for Rural Development

EEP: European Endangered Species Program

FDC: Fédération Départementale des Chasseurs / County Hunting Federation

GREGE: Groupe de Recherche et d'Investigation sur la Faune Sauvage / Environment Management Research and Study Group

GRIFS: Groupe de Recherche et d'Investigation sur la Faune Sauvage / Wildlife Research and Investigation Group

IUCN: International Union for Conservation of Nature

LPO: Ligue pour la Protection des Oiseaux / League for the Protection of Birds

MIFENEC: Maison d'Initiation à la Faune Sauvage et aux Espaces Naturels / House of Initiation to Wildlife and Natural Spaces

MNHN: Muséum Nation d'Histoire Naturelle / French National Natural History Museum

OFB: Office Français de la Biodiversité / French Biodiversity Agency

ONCFS: Office National de la Chasse et de la Faune Sauvage / National Hunting and Wildlife Agency

SC: Comité Scientifique / Scientific Committee

SDF: Standard Data Forms

SMBI: Syndicat Mixte du Bassin versant de l'Isle / Joint Association for the Isle Catchment area

SYER : Syndicat des Eaux et Rivières des Coteaux de Dordogne / Waters and Rivers Syndicate of the Hillsides of Dordogne

List of figures

List of tables

1 Background and objectives

The European Mink (*Mustela lutreola) is* a protected mammal, classified as Critically Endangered at the global, European and French levels in the International Union for Conservation of Nature - IUCN red lists (MNHN, 2020). Residual wild populations are distributed locally in Russia (but the situation is uncertain), in the Danube Delta between Romania and Ukraine, in northern Spain and in southwestern France. A small population has also been reintroduced on the island of Hiiumaa in Estonia.

In 2014, a programme of priority actions was defined for the interim period prior to the drafting of a 3rd National Action Plan (NAP). The Regional Environment, Planning and Housing Directorate for the Nouvelle-Aquitaine Region (DREAL NA) is coordinating this named intermediate National Action Plan (INAP - DREAL and ONCFS, 2015a), in conjunction with the French Biodiversity Agency (OFB[1]) in charge of scientific and technical facilitation, and with the association Cistude Nature and, from April 2021, the Wildlife Research and Investigation Group (GRIFS), which will facilitate the network of partners.

Various actions have been implemented with particular emphasis on:

- Updating knowledge of the distribution of the European mink in France, based primarily on a programme of targeted surveys. These surveys are carried out in areas where the species has recently been present, according to a detailed protocol applied in a homogenous way;
- The conservation of European mink populations by acting against the threat factors, in particular by fighting against American mink. This action aims to protect the territories occupied by the European mink from the expansion of American mink populations. It is based on the implementation of a coordinated strategy of surveillance and targeted fight;
- The development of conservation breeding centres for European mink;
- The implementation of transversal actions of coordination, animation, communication, financial management and finally the elaboration of the 3rd NAP.

[1] The OFB is the result of the merger of the National Hunting and Wildlife Agency (ONCFS) with the French Agency for Biodiversity (AFB) on 1er January 2020

2 Monitor trends in the territory of application of the iNAP

2.1 Databases

The updating of the database aimed at gathering, as exhaustively as possible, all the existing data of presence of European mink and American mink (*Mustela vison*) within the iNAP's area of implementation of action has been pursued over the past three years.

This action is carried out throughout the iNAP and requires monitoring of the data compiled in the national and regional platforms for recording opportunistic observations. It also requires regular contact with numerous partners, particularly to clarify the observations made. In 2019, the emphasis was placed on working with the County Directorate for territories (and Sea) (DDT(M)) to incorporate trapping data from previous seasons. In 2020, all the data from the European Mink and American Mink fighting protocols have been incorporated. In 2021, all catch data from the iNAP monitoring programmes and the LIFE VISON programme (LPO *et al.*, 2017) have been added. However, the database will soon have to be completed with all the genetic and telemetric data obtained within the framework of LIFE VISON. It will also be necessary to update the trapping data as well as the opportunistic data from the online data entry platforms.

The database dedicated to biological samples (hair, cadavers, faeces, etc.) has also been regularly updated. In addition, an effort was made to group together the samples stored in the various OFB sites in order to establish more secure storage. Then, at the end of 2021, this database was merged with the global database in order to avoid having too many separate databases.

2.2 Surveys European mink

The European mink is a very discreet animal and difficult to observe. It is also difficult to distinguish from other species, such as the European Polecat (*Mustela putorius*) or the American Mink, both in terms of visual observations and in terms of signs of presence (footprints, droppings, meal remains) which are similar to those of other small carnivores.

Various techniques can be used to try to identify the presence of the species and to gain a better understanding of its range. The only currently standardised method is that of capture cages (non-killing), the results of which are presented below. Alternative methods are being developed within the framework of LIFE VISON and the iNAP.

2.2.1 Targeted cage surveys

The method uses capture cages distributed systematically over the field. When the animals are captured, it is easy to confirm that they are European mink. After rapid handling in the cage (taking photographs, weighing, sexing and removing a tuft of hair), the animals are quickly released on site. These operations require an authorisation by name issued by the Ministry of the Environment. The OFB oversees the implementation of this scientific capture protocol. Within this framework, with the help of the network of partners' facilitator, it trains

the participants and issues them with an authorisation. In addition, they are required to have prior trapper's certification.

Various partner organisations (nature protection associations, trapper associations, fishing and hunting federations, land managers, local authorities, etc.) are involved in this monitoring locally.

The current survey protocol (updated annually) for the European mink provides for 595 campaigns spread over the entire possible, probable or certain range of the species (data after 2004). The prioritisation of sectors to be surveyed is likely to change each year depending on the results of the previous year's surveys. Similarly, the number of campaigns changes according to the field data collected.

The annual breakdown of the campaigns carried out is shown below (Table 1).

Table 1 : Number of survey campaigns carried out per year

Year	Number of campaigns carried out
2016	36
2017	126
2018	130
2019	73
2020	80
2021	83

The first survey campaigns started at the end of October 2016. Heavy flooding which led to the suspension or cancellation of several campaigns marked the end of 2019. Similarly, in 2020 and 2021, some surveys initially planned during the containment periods had to be postponed due to the COVID-19 health crisis. **An extension of the survey protocol has therefore been initiated: it may continue until it has been finalised**. The necessary authorisations were obtained from the Ministry of the Environment in early 2020.

Around 40 organisations have been involved since 2016 (Figure 1). 534 survey campaigns out of the 595 planned were carried out, i.e. 90%. In total, 36 campaigns made it possible to attest to the presence of European mink (Figure 2). Counting captures and recaptures, there have been 69 European mink captures since 2016. Thanks to the ongoing LIFE VISON programme (genotyping of individuals), we know **that 21 different individuals were caught per cage between October 2016 and December 2021.** In addition, 21 survey campaigns have also resulted in 24 American mink being taken. These 5 survey seasons (2017, 2018, 2019, and 2020) represent 52,005 trap nights at an average of 97 trap nights per campaign.

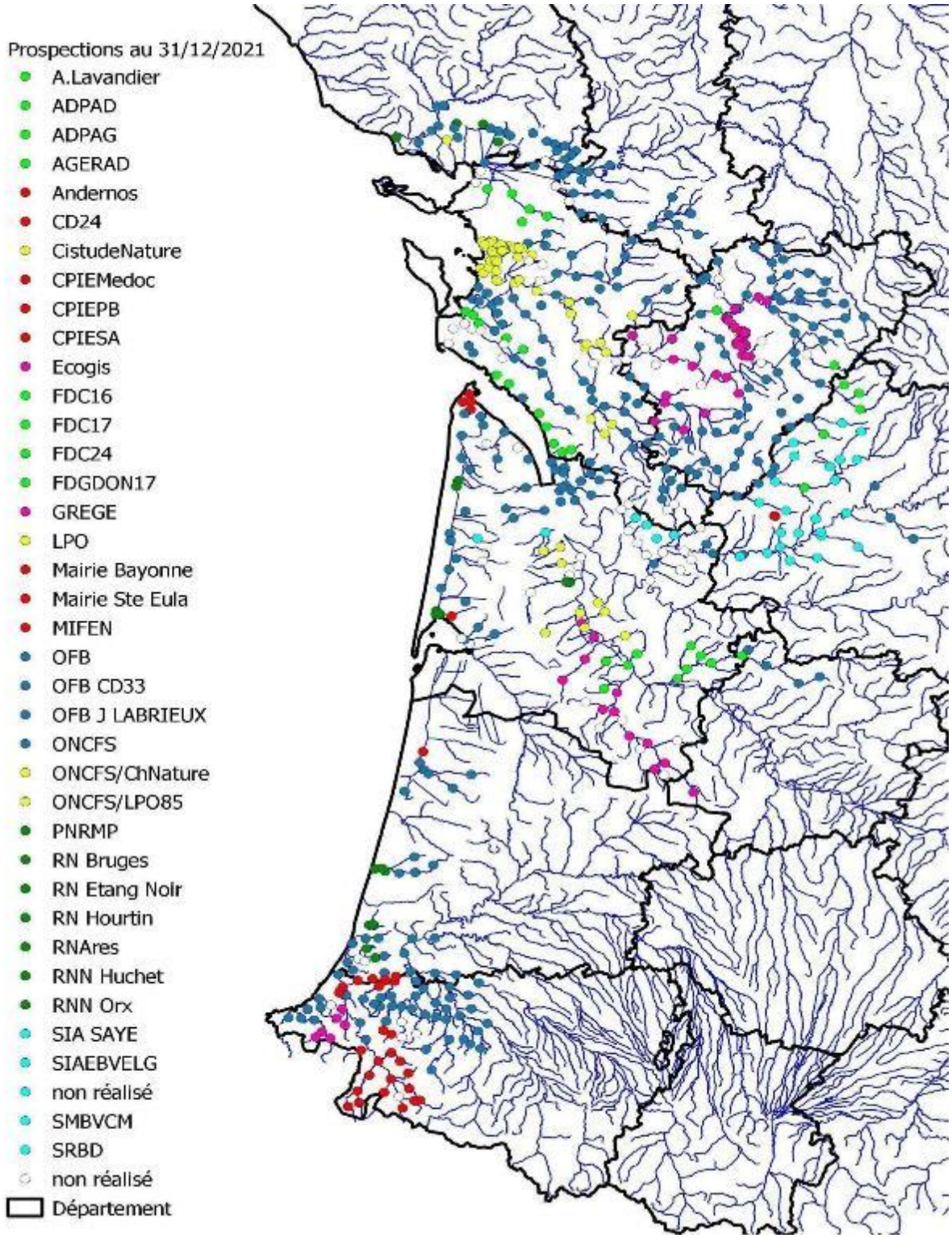

Figure 1 : Location of European mink campaigns and identification of participating partners

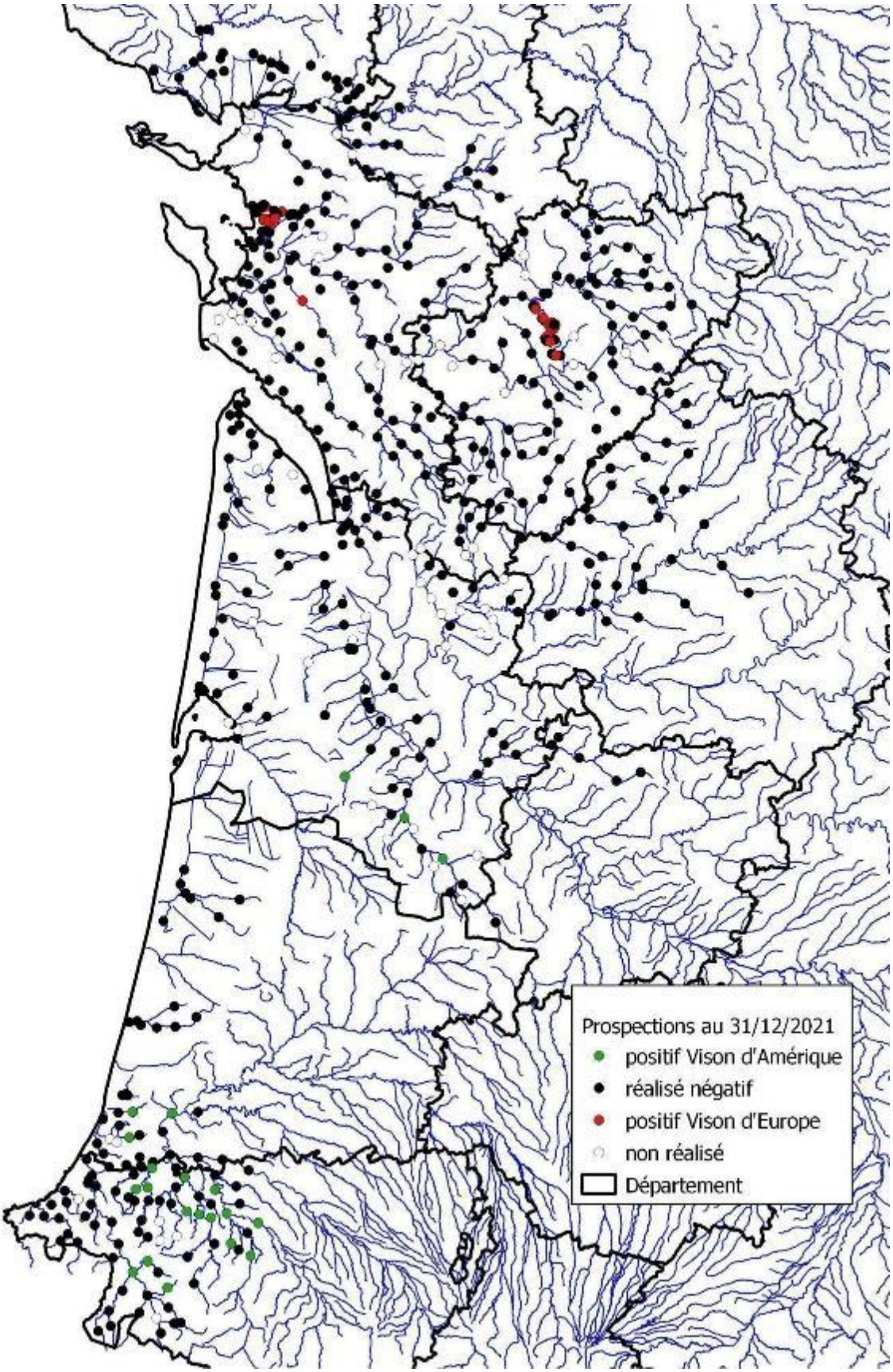

Figure 2 : Location of European and American mink catches during European mink surveys

2.2.2 Surveys using alternative methods

In parallel with the cage trap surveys, alternative methods are being tested (hair and footprint traps, camera traps), particularly in the context of the LIFE VISON programme. A review is planned at the end of this programme (2023) in order to compare methods.

The biological material collected from the hair traps made it possible to identify nine individuals still different (seven females, one male and one unsexed individual) from those caught in the capture cages. Another individual was caught in March 2019 near Bayonne (Pyrénées-Atlantiques) as part of an American mink-fighting programme. Two different individuals were also caught in 2020 by the County Hunting Federation (FDC) of Charente-Maritime near the Rochefort core and in 2021 on the Tude by a trapper. In addition, four individuals found dead by road collision have also been identified. Moreover, five young born in the natural environment were observed.

Finally, it should be noted that some of the individuals caught in cages were equipped with a tracking system. Their monitoring, by telemetry, has shown that the Charente basin upstream of Angoulême is used extensively, with individuals travelling over vast territories (results currently being published).

Thus, the current data, subject to analyses still in progress, allow us to identify a minimum of 42 different individuals in the iNAP' area of implementation between October 2016 and December 2021.

During 2020, the teams of the iNAP, the Environment Management Research and Study Group (GREGE) and the House of Initiation to Wildlife and Natural Spaces (MIFENEC) also joined forces to propose a new series of surveys (hair traps, camera traps) targeted in eight Natura 2000 sites. Indeed, various information coming from these sites requires additional investigations. These sites are the Gironde Estuary (Blayais and North Shore marshes), the Braud-et-Saint-Louis and Saint-Ciers-sur-Gironde marshes, the marshes and cliffs of the Gironde hillsides, the Lary and Palais valleys, the Adour Barthes, and the Nive and Nivelle catchment areas. The objective of the project is to attempt to identify the presence of European mink by combining different indirect survey methods. This project was accepted in the framework of the call for projects "Natura 2000 scientific monitoring" from the DREAL NA and the Call for expressions of interest "64 fantastic" from the County Council of the Pyrénées-Atlantiques (CD64), and started in autumn 2021.

3 Act against threat factors in the wild

The Ministry in charge of the environment regularly called the expertise of the iNAP team on various issues. In addition, a regulatory inconsistency leaves the possibility of shooting American mink while hunting, with the risk of a misidentification occurring. The INAP informed the Ministry of this problem in 2020.

3.1 Limiting mortality due to the effects of control of SOD species[2]

During 2019, there was no new training for county referents. Nevertheless, a watch was kept on the updating of county decrees. Thus, only the decrees of the counties 79, 32 and 65 could not be updated.

An update of the training material for the referents started in 2019 and was finalised in 2020 in order to be able to continue the animation of the referents' network.

With the arrival of the GRIFS in 2021, this network of referents was able to resume. Thus, all the county decrees were updated between May and September 2021. In addition, all requests for information from referents were honoured and all referents were invited to an update on the progress of the iNAP's actions in autumn 2021. Thus, six meetings, bringing together the 11 counties of the NAP, were organised at this time, while at the same time new training sessions were organised for new referents in 2022. In particular, training materials were made available to the Dordogne FDC and Association of Certified Trappers in the county of the Gironde (ADPAG) for internal communication and distribution.

Finally, with the creation of the OFB, the personnel formerly present within the AFB have been added to the network of referents. To support them, training courses have been provided in each OFB county during 2021, with the exception of the Dordogne, Gers and Hautes-Pyrénées, which are planned for early 2022.

3.2 Fighting against the American mink

3.2.1 Control of sources of introduction of American mink

In France, the American mink is listed in Annex I of the Order of 14 February 2018 (Ministry of Ecological Transition and Solidarity, 2018) on the prevention of the introduction and spread of invasive alien animal species on the metropolitan territory. As such, its possession is only authorised in establishments for public display and in farms with a certificate of capacity and prefectural authorisation to open, and this from the first individual (Ministry of Ecology and Sustainable Development, ministerial order of 10 August 2004).

In 2019, there were still five farms in France producing American mink for the fur industry. The last remaining farm in the area of implementation of the iNAP was located in the Pyrénées-Atlantiques and closed at the end of 2020. Furthermore, in September 2020, a

[2] *SOD: Susceptible of causing damage = new name for "harmful species"*

ministerial announcement was made to close all American mink farms in France by the end of 2025. The law implementing this announcement was published on 30 November 2021 (Government, 2021). Following this announcement and cases of COVID-19 in American mink in some French fur farms, as of 1er January 2022, there is only one farm in the process of being closed in the Orne region. In addition, one farm is still authorised but not productive in the Doubs.

Finally, American mink are still kept by private owners as pets, including in the iNAP action area.

3.2.2 Fight against American mink in the wild

The American mink is an increasing species on the western side of France. It is particularly present in Brittany and Pays-de-la-Loire (southern limit in the Vendée), in the west of Occitanie region and in the south of Nouvelle-Aquitaine region, finding its northern limit in the southern third of the Gironde county. A fighting strategy has been defined in order to slow down or even stop the progression of the species (Figure 3).

This strategy aims to block the colonisation of the American mink:

- **To the last known areas of certain presence of the European mink in France (Gironde, Charente, Charente-Maritime and Pyrénées-Atlantiques);**
- **Reduce the pressure on the Spanish populations of European mink, especially in the Basque Country.**

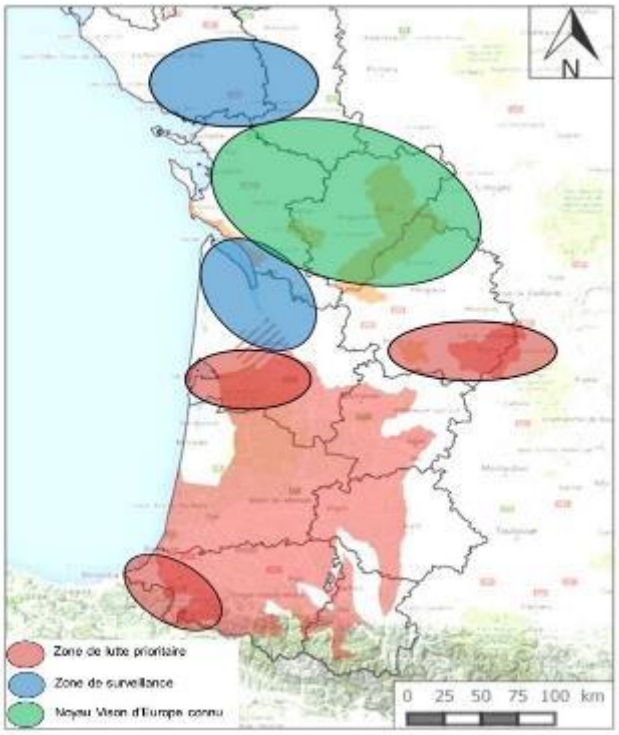

Figure 3 : Priority areas for American Mink fight

This strategy is based on the implementation of a network of fingerprint rafts allowing the detection of American mink and their trapping (Figure 4).

Figure 4 : Picture of a footprint raft, basket with footprints, clay smoothing (© T. Ruys and P. Filiol)

As a reminder, the protocol to fight against American mink, via fingerprint rafts, includes several modes of activation:

- *"Normal watch" mode*: the rafts are positioned every 5 or 10 km of river, depending on the sector, and are checked once a month. If necessary, the rafts are maintained and refurbished to ensure operational monitoring.
- *"Reinforced surveillance" mode*: this mode is intended to provide better knowledge of the spatial use of the sector and to better target possible trapping operations. It is activated in the event of the discovery of a doubtful footprint or one attributed to the Mink/European polecat complex. Checks are then carried out twice a month and the number of rafts is increased.
- *"Trapping" mode*: if new prints attributed to the Mink/European polecat complex are detected on the rafts, traps are then set in the raft and those surrounding it, as well as on the banks. The aim is to maximise the efficiency of the trapper by maximising the number of traps that can be checked in one morning. This mode can only be activated between September and the end of March (outside the European mink breeding period) in order to comply with the regulations in force on trapping.

Recovery of American mink corpses
As this question is often asked, the NAP confirms that all American mink corpses are collected and stored by the OFB throughout the NAP's implementation area, with the exception of the Landes, Gers and Hautes-Pyrénées. The NAP facilitators must be contacted quickly in order to repatriate the remains**.**

The network of rafts installed within the framework of the iNAP and LIFE VISON currently comprises **more than 700 rafts** spread over all the fighting and surveillance sectors (Figure 5).

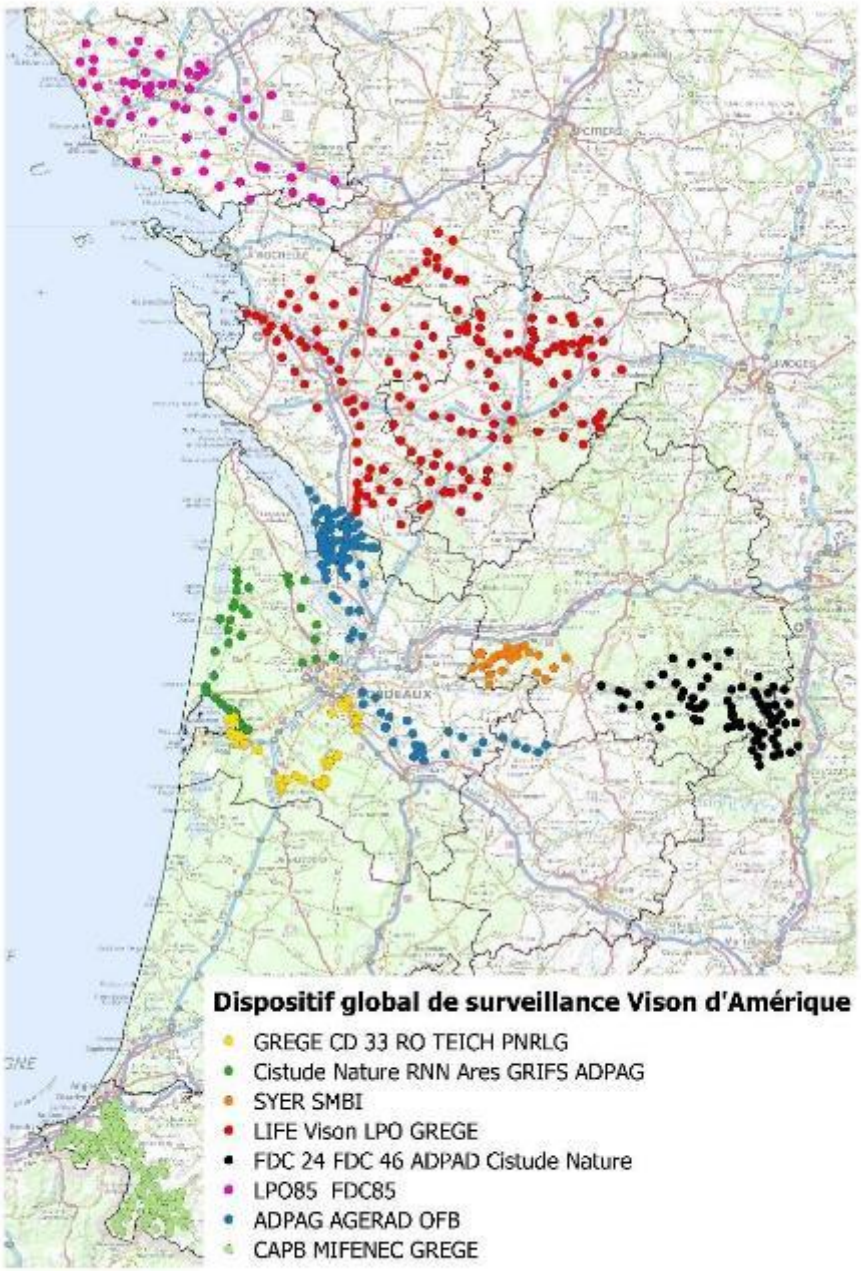

Figure 5 : Location of rafts installed under the IPNAP and LIFE VISON as of 31/12/2021

The results of the LIFE raft monitoring are shown in the map below from the LIFE VISON progress report from 01/01/2021 to 31/12/2021 (LPO *et al.*, 2022). It should be noted that some rafts showed Vison sp. prints and that two American mink were taken (capture and collision, males) on the fringe of the initial rafting scheme. Therefore, in order to verify the isolation of those individuals, additional rafts were installed within the framework of the LIFE VISON programme (Figure 6).

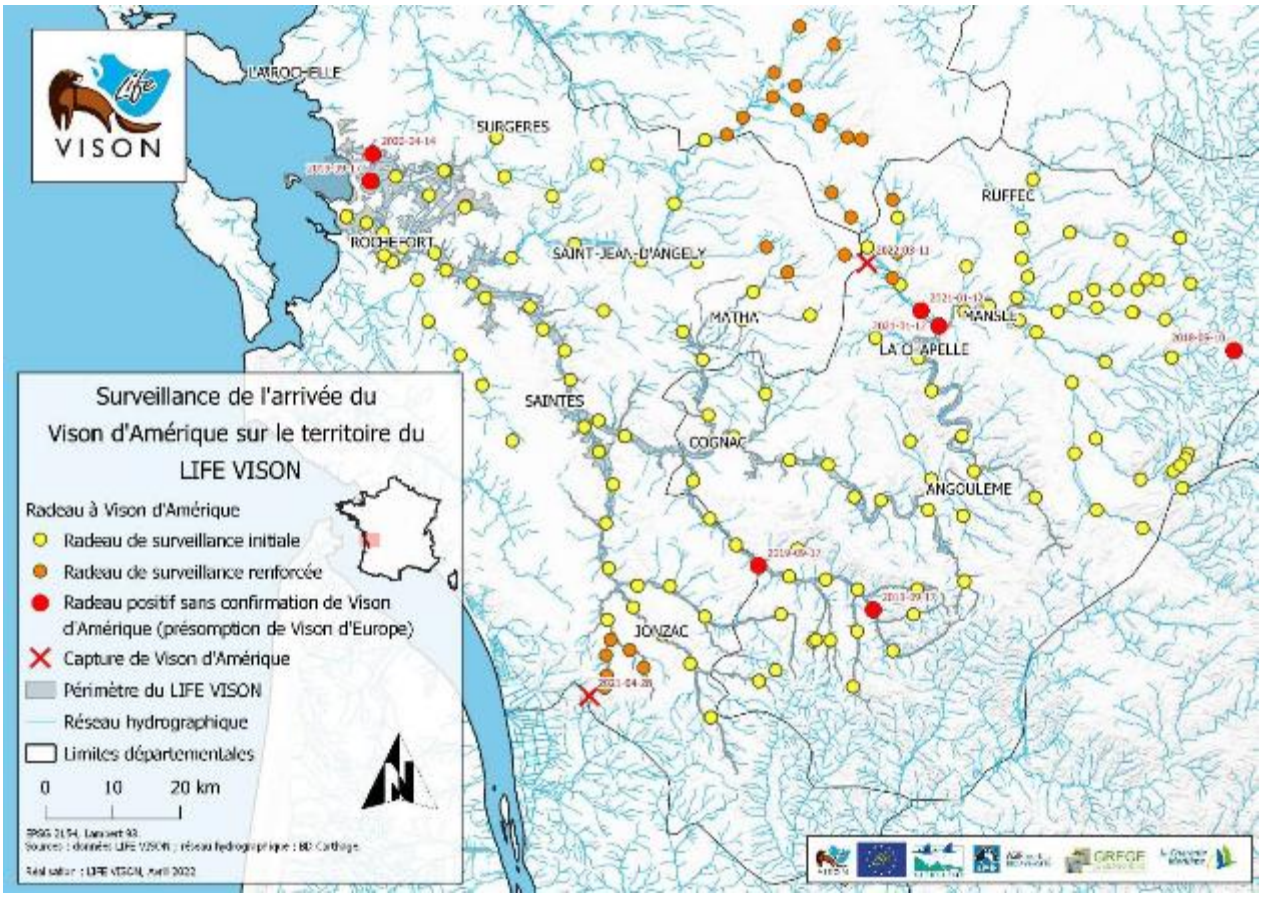

Figure 6 : Status 2021 American mink monitoring LIFE VISON

The results of the monitoring of the rafts installed within the framework of the iNAP are presented below sector by sector.

3.2.2.1 Vendée sector

Since the end of 2018, a network of 34 rafts has been installed in the Vendée and is monitored by the FDC of Vendée and the League for the Protection of Birds (LPO) of Vendée. This system was set up following the capture, in September 2018, of an American mink in the commune of La-Bretonnière-La-Claye, but also in light of recent trapping data in the Vendée. It should be remembered that until March 2018, the Vendée was still home to an American mink farm in the commune of Landeronde to the northwest of La Roche-sur-Yon. However, this farm was not optimally sealed.

In 2019, a visit of a raft permit to identify a questionable footprint (Figure 7). As the print was not of good quality, there was still some doubt as to whether it belonged to a mustelid. In order not to take any risks, a reinforcement of the surveillance was put in place. Nevertheless, no other suspicious footprint were subsequently observed on this same raft or on the rest of the device in the Vendée. The same situation was repeated in 2020 on two other rafts (Figure 8), different from the one in 2019 (Figure 7).

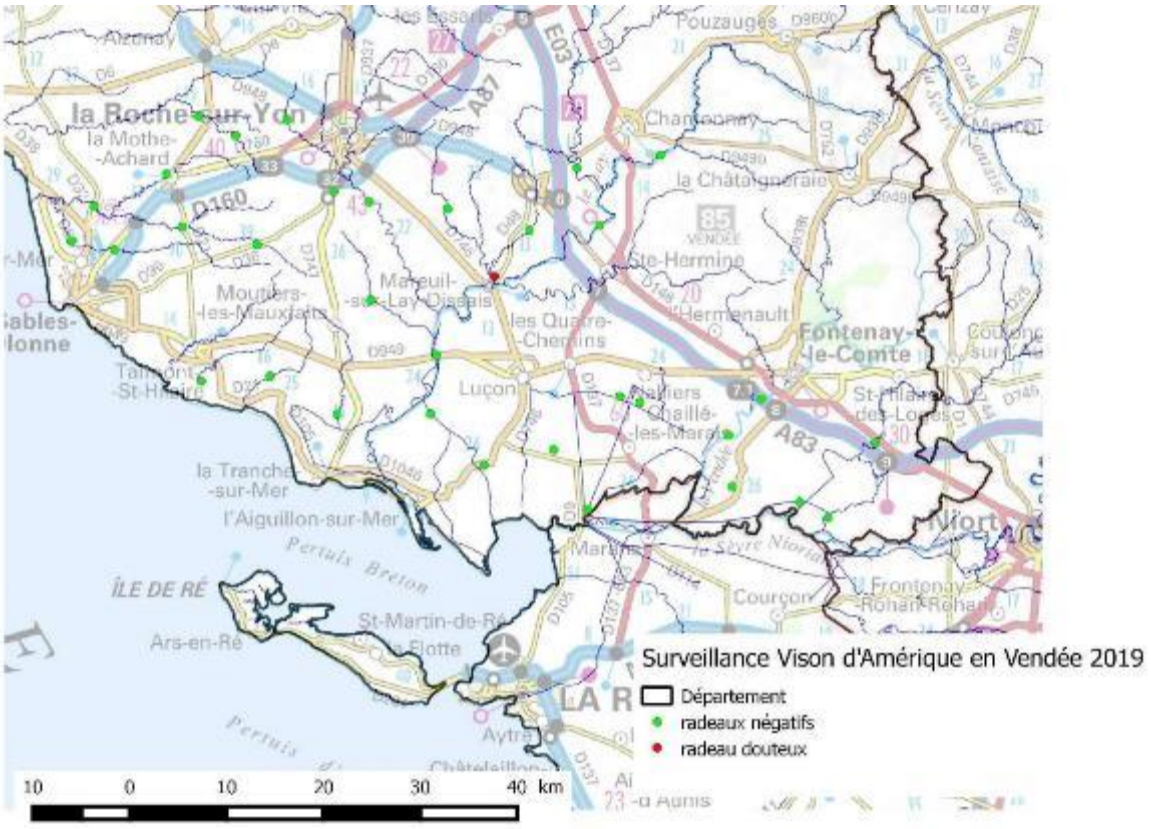

Figure 7 : Results of raft monitoring in the Vendée sector in 2019

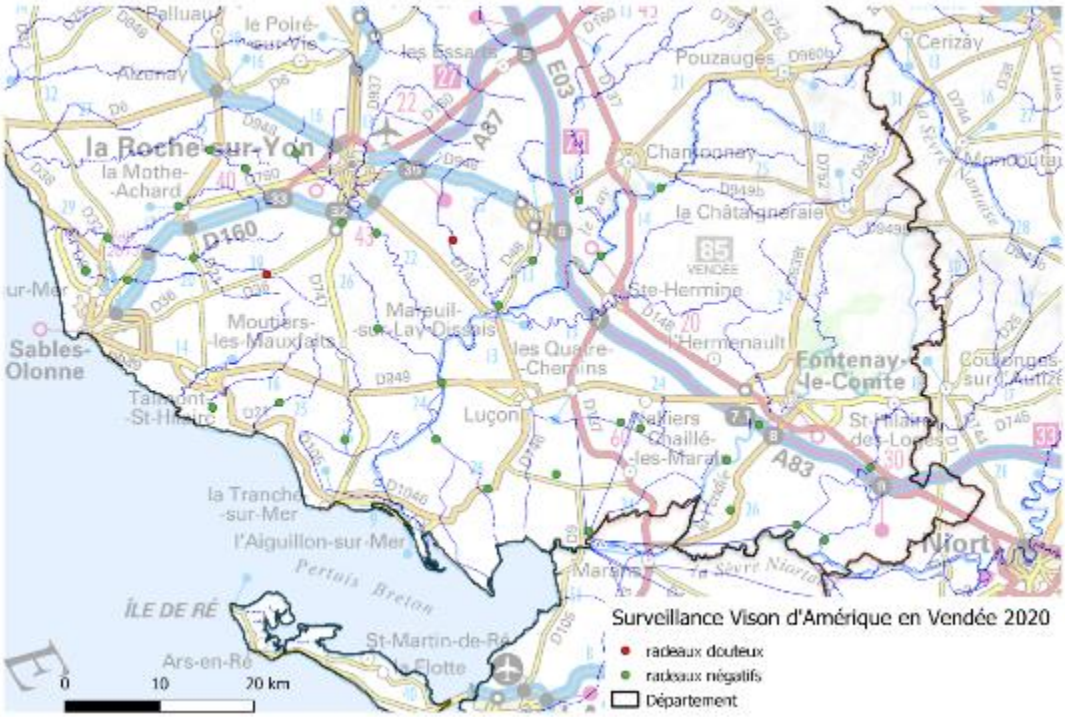

Figure 8 : Results of raft monitoring in the Vendée sector in 2020

In addition, on the initiative of the DREAL Pays de Loire and the FDC of Vendée, a project was set up in 2020 to complete the monitoring system by installing rafts a little further north than the sector already covered under the iNAP. The aim is to verify the presence of American mink, particularly around the former Landeronde farm, but also to monitor the risks of the species arriving from the Loire-Atlantique County. The iNAP team assisted the FDC of Vendée in setting up the project in order to position the rafts judiciously and to carry out the financial estimates. This additional system, consisting of 18 rafts, was installed in 2021 by the FDC of Vendée (Figure 9). The iNAP team continues to support this additional system by helping to compile monitoring data.

During 2021, four additional rafts were also installed within the framework of the iNAP in addition to the project described above. Thus, by the end of 2021, the Vendée network will comprise 56 rafts, the monitoring of which has not revealed any suspicious footprint.

The map below shows the entire rafts system in the Vendée at the end of 2021, as well as the American mink data for the period of the iNAP (2015-2021) in the Vendée and Deux-Sèvres (mainly trapping data). Since 2018, the year in which the Landeronde farm was closed and the beginning of the fight with rafts, American mink data seems to be absent in the south of the Vendée. This initial observation at the end of the iNAP should encourage the combined action of the vigilance of the network of Vendée trappers and the raft monitoring carried out by the FDC of Vendée and the LPO de Vendée to hope to contain the American mink in its northern distribution.

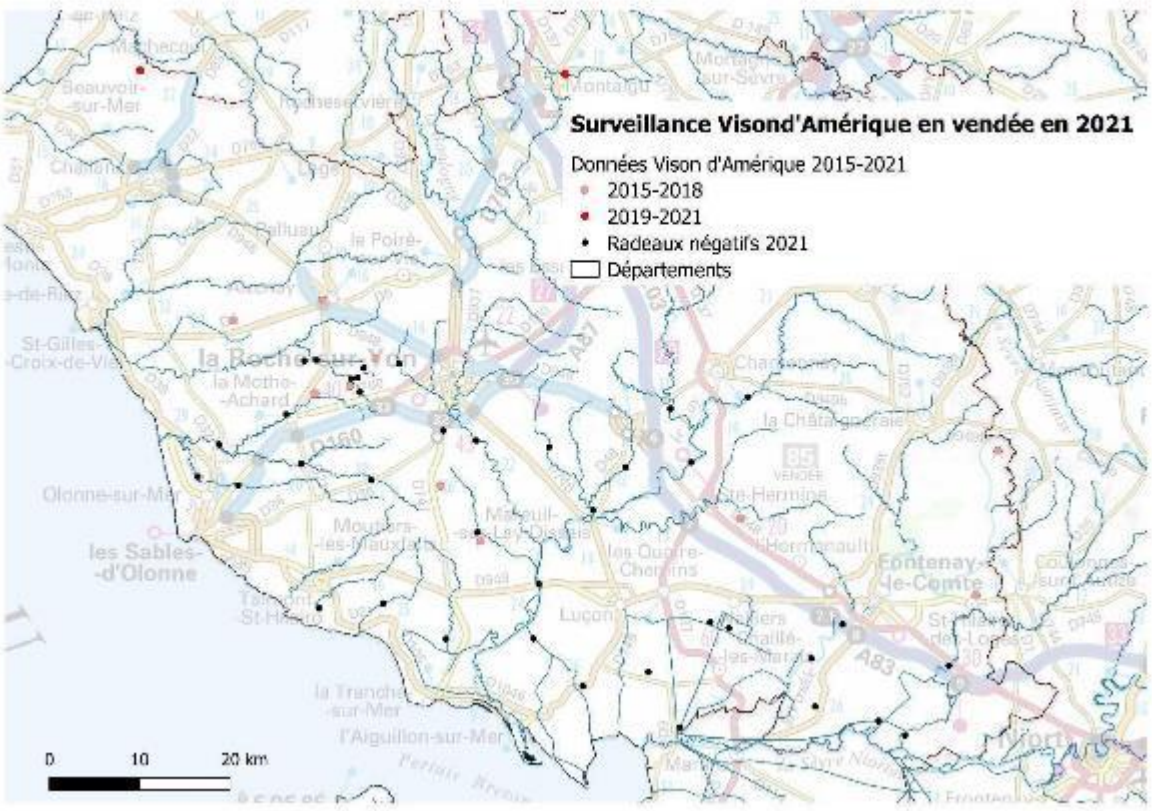

Figure 9 : Raft locations at the end of 2021 and American mink data 2015-2021 in the Vendée

3.2.2.2 Gironde sector

In Gironde, by the end of 2021, 209 rafts had been installed in both fighting and surveillance zones. Some of them have been operational since 2015 and nine partner organisations are responsible for monitoring and maintaining this fighting system (Figure 10).

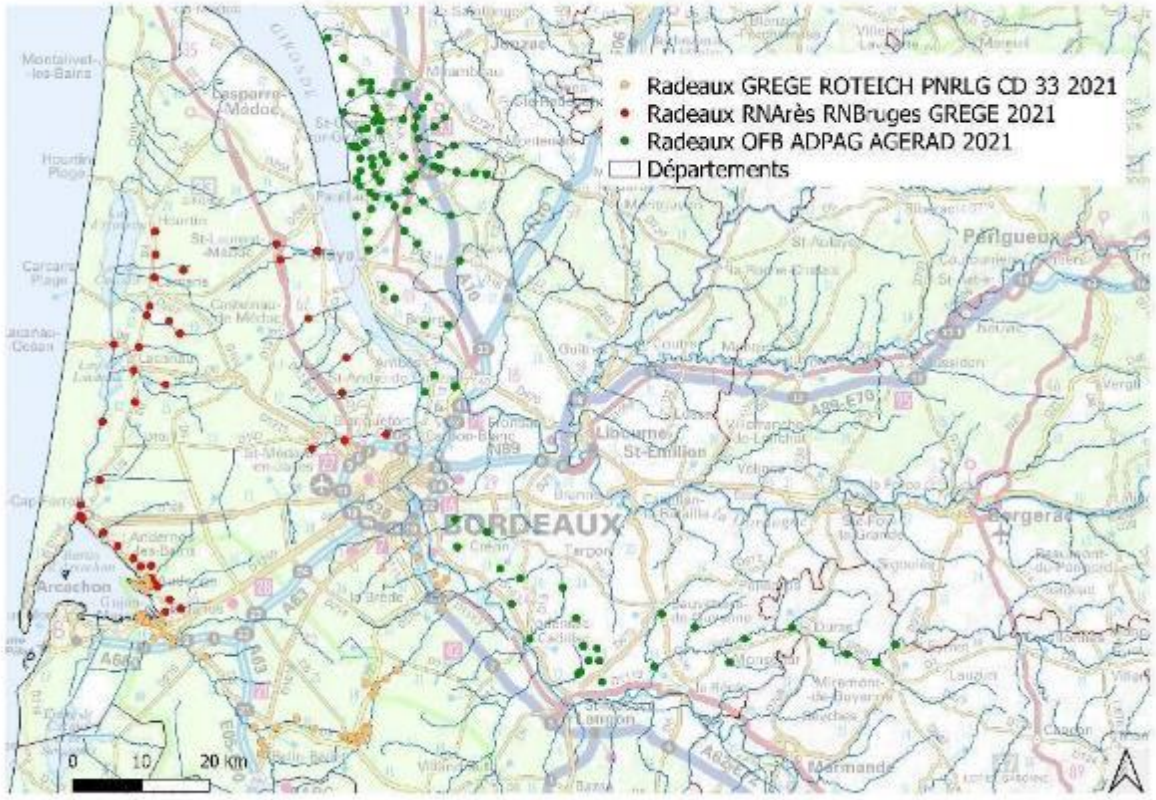

Figure 10 : Location of rafts in the Gironde sector on 31/12/2021

3.2.2.2.1 "Entre-Deux Mer" and "Blayais" sub-sectors

In the monitoring area in the north of the Gironde county (green - Figure 10), the rafts were installed following a collision of an American mink (male) in 2017. Positive prints were then observed on the rafts in 2017 and 2019, but were not confirmed during the reinforced monitoring (Figure 11). No tracks were observed in 2020. Nevertheless, between the difficulties of network animation in 2019 and the health crisis linked to COVID-19 in 2020, there were a few months without real monitoring during these two years.

In 2021, no positive footprint were found on the Blayais rafts, but three rafts showed doubtful footprints (footprints of poor quality that do not allow a certain conclusion – see Figure 11), which were not subsequently confirmed by the reinforced monitoring. In addition, one American Mink (male - Figure 15) was captured in the commune of Mirambeau in Charente-Maritime, to the north of the fighting system and therefore closer to the known populations of European mink. This is why, during 2021, the locations of the rafts were optimised within the framework of the iNAP and LIFE VISON in order to cover this capture area as closely as possible and to verify the isolated nature of this individual. In addition, during 2021, with the help of the Community of municipalities of the Estuary and the DDTM of the Gironde County, a Natura 2000 contract was created to help finance the raft monitoring. The Association

Ecological Management Agricultural Resources (AGERAD) manages this contract with the assistance of the NAP facilitators. In addition, in 2021, on the Entre-Deux-Mers sector, three rafts were found to be positive at the end of the year (Figure 11), without confirmation by the subsequent reinforced monitoring. At the same time, an American mink (male - Figure 15) was captured in the commune of Naujan on the Engranne, a little further north than the system. As a result, the ADPAG has increased the density of the raft network and the equipment of the sector of Engranne is planned for 2022 to verify the isolated nature of this individual.

The passage of dispersing males is documented in the international literature, so these results are not very surprising. They highlight the importance of maintaining this monitoring system over long term and of raising the awareness of trappers in Gironde to prevent the American mink from becoming established.

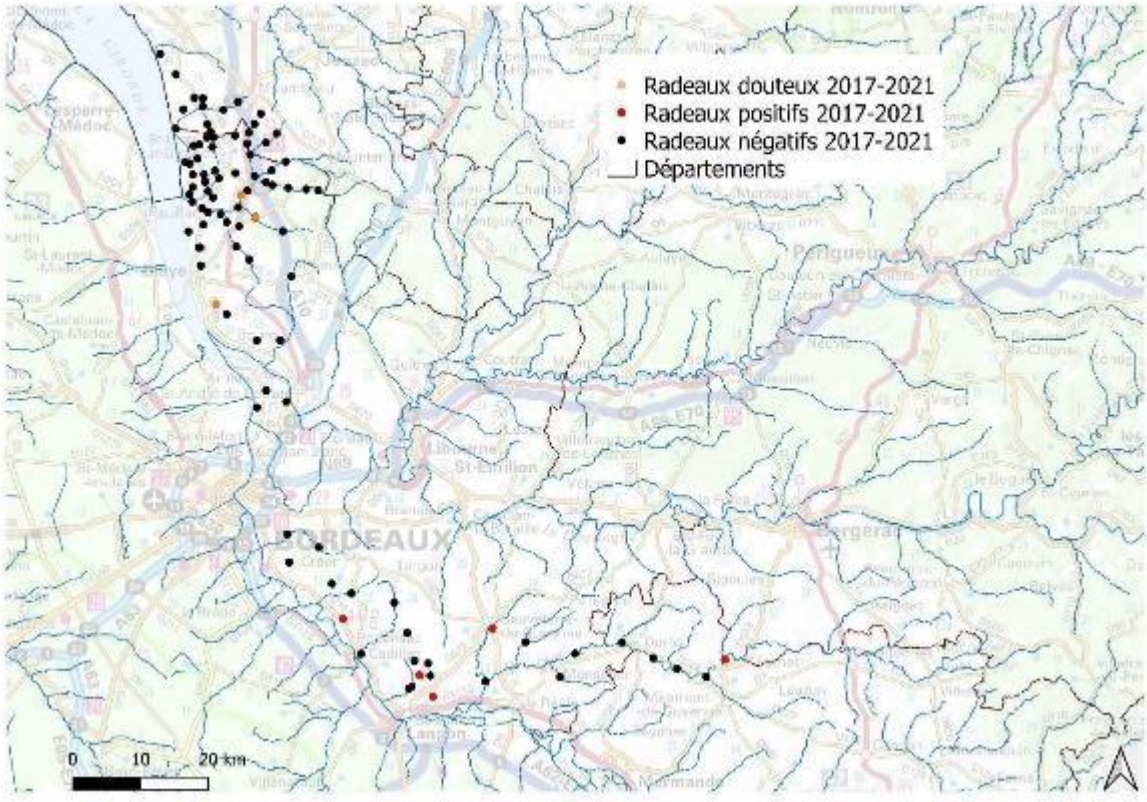

Figure 11 : Results of the Blayais and Entre-Deux-Mers raft monitoring 2017-2021

3.2.2.2.2 "Médoc" sub-sector

In the Médoc surveillance zone (in red - Figure 10), the rafts have been in place since 2017 following the accidental trapping of a male American mink. However, no rafts were subsequently found to be positive in 2017, 2018, 2019 and 2020. In 2021, following the cessation of the raft monitoring mission by the association Cistude Nature, only two passes were made on the rafts in the first half of the year, before regular monitoring was resumed in the second half of the year by the GREGE. A positive footprint was observed only once in this sector in 2021 (Figure 12). This raft is close to the known American mink population in the south of the Arcachon Basin and calls for vigilance in order to avoid a northward migration of individuals.

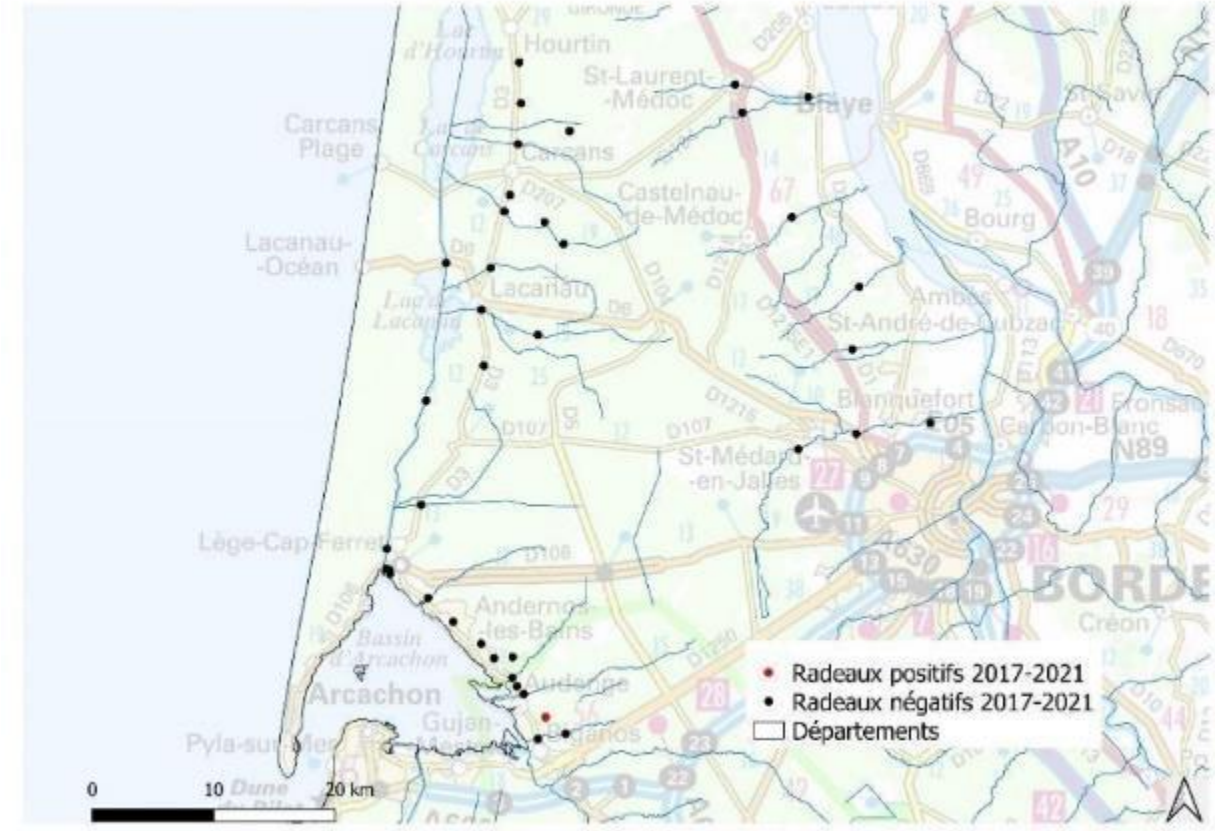

Figure 12 : Results of the Medoc raft monitoring 2017-2021

3.2.2.2.3 "South Gironde" sub-sector

On the Southern Gironde part (in orange - Figure 10), the first rafts were installed in October 2016. Recurrent American mink data are noted in this fighting sector. From the very first months of monitoring, some rafts became positive on several occasions, with the activation of a reinforced watch around Hostens and on the Gât-Mort (Figure 13). This was confirmed in 2017 in these same sectors but also towards the Ornithological Reserve of Le Teich (where observations and photos were taken) and around Belin-Beliet (Figure 13). Three trapping sessions were organised in 2017, allowing the capture of three individuals (Figure 15). In 2018, a new densification of the rafts around the Leyre Delta was carried out following recurrent observations of footprints and accidental captures. The positive rafts remain on the Leyre, Hostens and the Gât-Mort, with an almost constant reinforced watch throughout the year. Four trapping sessions were carried out with the capture of an individual around Hostens (Figure 15). Finally, there were some difficulties in monitoring the large volume of rafts.

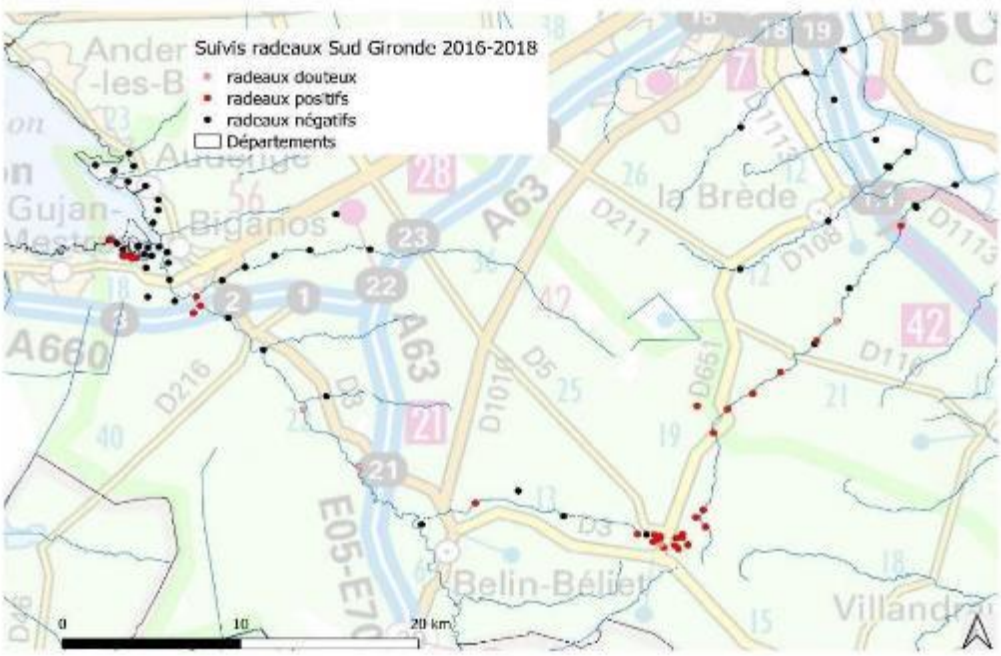

Figure 13 : Results of raft monitoring in South Gironde 2016-2018

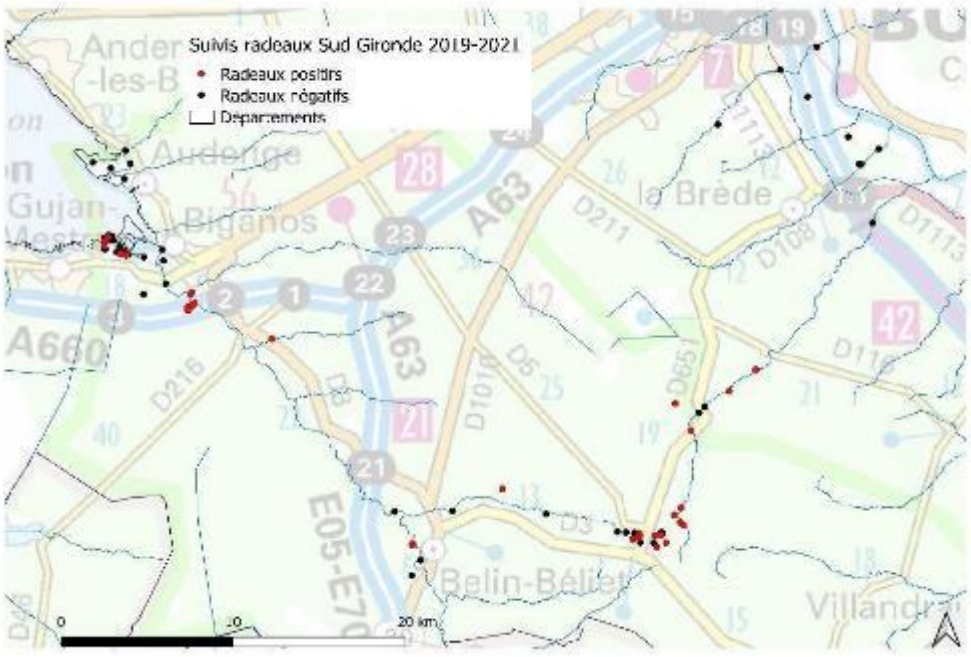

Figure 14 : Results of the monitoring of rafts in the South Gironde 2019-2021

In 2019, the positive rafts are still in the same sectors: Ornithological Reserve of Le Teich, Delta de la Leyre, Hostens and Gât-Mort (Figure 14). However, the footprints are less regular on the rafts, which makes it more difficult to decide to switch to trapping mode. Repeated observations of American mink by the agents of the Ornithological Reserve of Le Teich were made, as well as photos showing a distrust of the rafts. Five trapping campaigns were organised in 2019 without success, despite extensive baiting to try to fix the individuals. As the site is rich in food, the effect of the bait is probably not optimal.

In 2020, raft monitoring was greatly disrupted by the containments linked to the COVID-19 health crisis, and could not be carried out in full. In addition, there were flooding episodes with some material losses. The positive rafts were mainly located in a recurrent manner around the Leyre Delta and a few episodic footprints were noted on the Gât-Mort. Observations of American mink continued in the Ornithological Reserve of Le Teich. Three trapping campaigns were organised and resulted in the capture of three individuals, one of which unfortunately managed to escape (Figure 15).

In 2021, new floods and containments disrupted the monitoring but to a lesser extent than in 2020. The positive rafts remain located around the Leyre Delta, Hostens, on the Gât-Mort and near Belin-Beliet. However, observations in the Ornithological Reserve of Le Teich have been reduced since July 2020. One capture session near Belin-Beliet resulted in the capture of one individual and three other individuals were caught near the Leyre Delta (fish farm) during two capture sessions.

3.2.2.2.4 Summary of the fight 2015-2021 in the different sectors of Gironde

All years, various American mink were captured, whether accidentally as part of Coypu (myocastor coypus) trapping programme, in a targeted manner by experienced trappers or during surveys targeting European mink. The map below shows all the data (visual observations, captures, camera traps, etc.) of American mink over the period 2015-2021 and the location of the raft network at the end of 2021 (Figure 15).

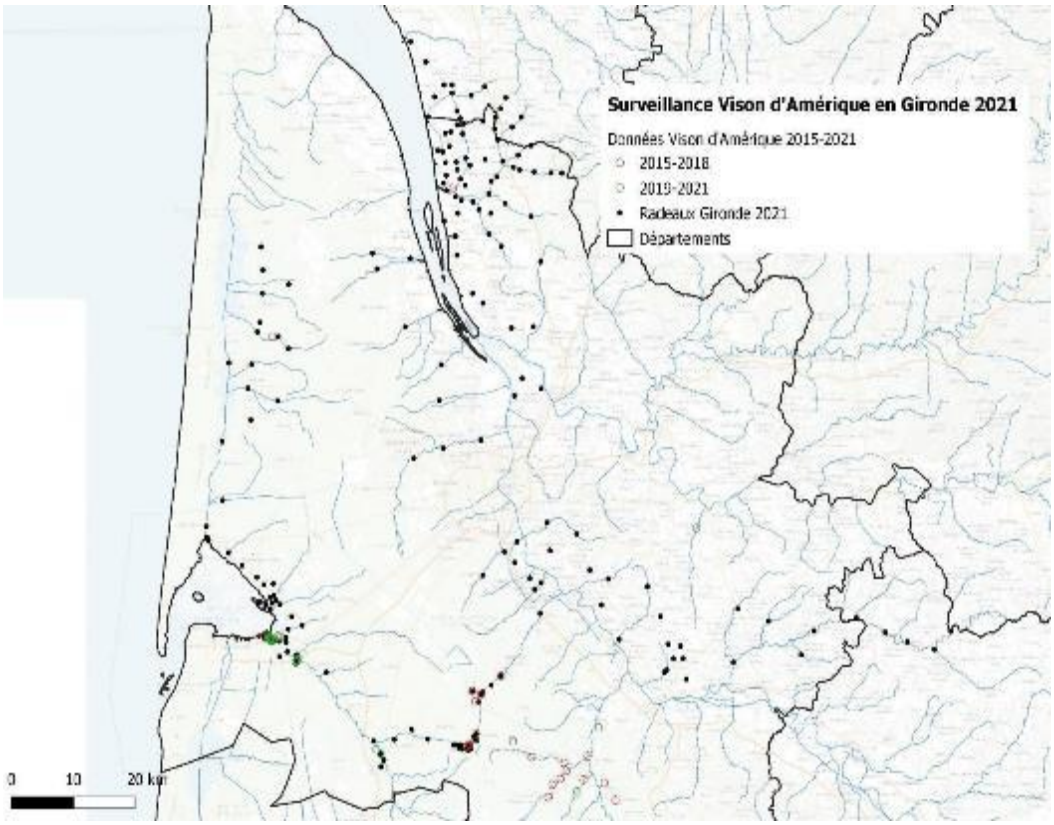

Figure 15 : Raft locations at the end of 2021 and American mink data 2015-2021 in Gironde

The rafting system has been installed progressively since 2015 following occasional data on American mink (Carcans, Blayais, St Rémy sur Lidoire) and more recurrent data in the south of the county. Since then, the various catches made on rafts or as part of fighting operations seem to maintain the situation at the status quo. Only the two data from 2021 in the south of Charente-Maritime and on the Engranne (dispersing males) required a reorganisation of the raft system to ensure that these individuals were solitary.

It is now necessary to maintain the course in the long term, by continuing the captures in the southern part of the county and by supporting the trappers in Gironde to maintain a coordinated action in the county.

3.2.2.3 Dordogne sector

3.2.2.3.1 Dordogne West sub-sector (Saint-Rémy-sur-Lidoire)

This sector has been equipped with 40 rafts since the beginning of 2018, following the collision of an American mink in 2017 in the commune of Saint-Rémy-sur-Lidoire. The rafts are monitored by the Joint Association for the Isle Catchment area (SMBI) and the Waters and Rivers Syndicate of the Hillsides of Dordogne (SYER). A positive footprint was identified in August 2018 with no confirmation of this attendance in the following months.

In 2019, SMBI had to deal with work stoppage within its team. As a result, the rafts could not be monitored from February to September. On the SYER side, between the change of the iNAP facilitator and that of the technician in charge of monitoring, the rafts were not monitored in April/May and November/December. Of all the months that could be monitored, no suspicious footprint were found in 2019.

In 2020, again, the rafts could not be monitored monthly due to the COVID-19 health crisis. For SMBI and SYER, there were two months and four months of downtime respectively, resulting in many inoperable rafts. In September, a questionable footprint was found (Figure 16), without confirmation during the following months.

Finally, in 2021, SMBI monitoring continued until June. After discussion with the iNAP team, the decision was taken to withdraw the rafts given the absence of footprint since 2018 (northern part). For SYER, the number of rafts was reduced in order to ensure minimum monitoring on the most strategic rafts. A positive footprint was observed in December 2021 and monitoring will continue in 2022.

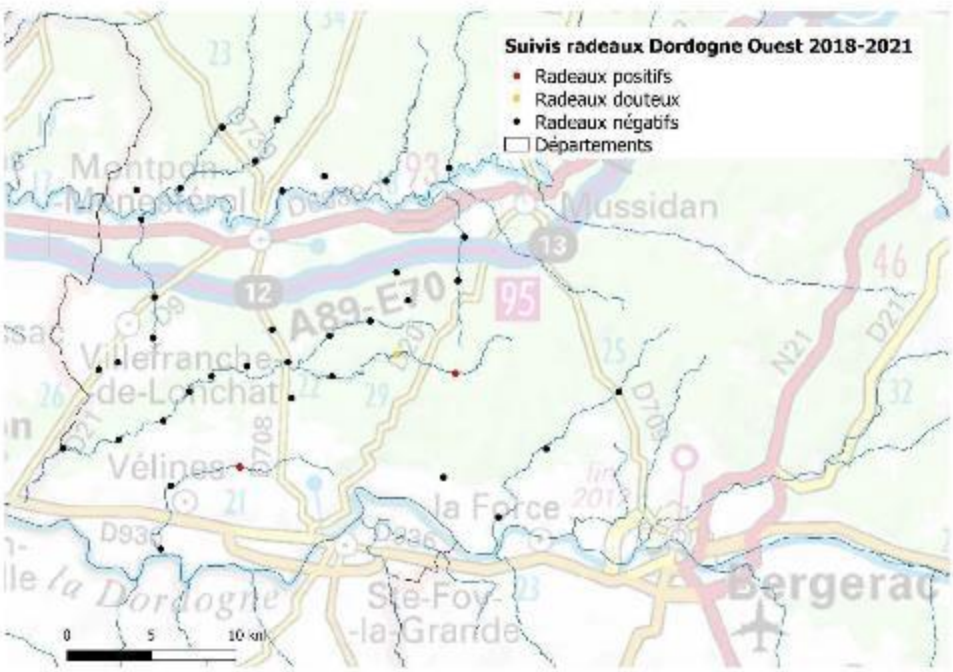

Figure 16 : Monitoring results for the Dordogne West sub-sector 2018-2021

3.2.2.3.2 Dordogne East and Lot sub-sector (Saint-Cybranet)

At the end of 2017, this sector was equipped with 82 rafts in an attempt to contain the American mink population present following the vandalism of the Saint-Cybranet farm in 2009.

The Zoological Reserve of Calviac, which has been strongly involved since the beginning of the project, was responsible for monitoring this network in 2018. However, for internal reasons at the Zoological Reserve of Calviac (workload, unavailable staff...), it was not possible for them to continue the monitoring beyond the first quarter of 2019. Thus, only a few follow-ups could be carried out. During this period, rafts were positive, mainly on the Céou River and a little on the Dordogne River. No capture sessions could be organised.

During 2019, OFB took charge of two successive trainees in order to continue the monitoring and to ensure that these rafts were maintained in good condition. For technical and logistical reasons related to the internships, the entire network could not be monitored. Thus, there were only five months of partial monitoring between January and September 2019. In September 2019, the iNAP team approached the Dordogne and Lot FDCs and the Association of Certified Trappers in the county of the Dordogne (ADPAD) in order to take over and relaunch a homogeneous monitoring of all these rafts. Thus, ADPAD was mandated to take over the monitoring in the Dordogne and FDC 46 in the Lot. In the end, due to time and distance constraints caused by the restoration and monthly monitoring of the raft network, ADPAD was unable to ensure complete and regular monitoring. Nevertheless, positive rafts were again found on the Céou. A capture session was carried out on the Céou in November-December but did not result in the capture of any individuals.

In 2020, monitoring was able to find a more regular rhythm thanks to the temporary participation of the association Cistude Nature. However, the months of containment linked to the COVID-19 health crisis disrupted the monitoring from time to time. No positive rafts were observed.

In 2021, the monitoring carried out by FDC 46 in the Lot is now regular and no positive rafts have been identified (Figure 17). In the Dordogne, monitoring was only able to resume in October thanks to the participation of FDC 24, but there was a lot of equipment to replace. Some rafts nevertheless quickly became positive in the autumn on the Céou and on the Nauze. A capture session on these two sectors was attempted with the contribution of ADPAD in December, without success.

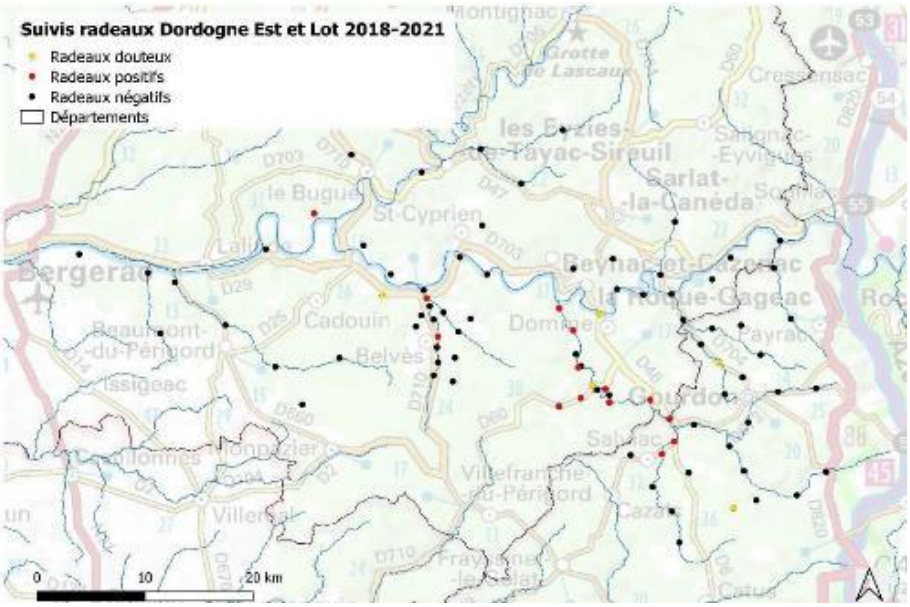

Figure 17 : Results of the Dordogne East monitoring 2018-2021

This sector, which straddles the eastern Dordogne and the Lot, illustrates the difficulties of monitoring a network of rafts in a sustainable manner. The monitoring undertaken by the two FDCs is now taking place at a pace that is more compatible with the monitoring protocol provided for by the iNAP. Let us hope that this dynamic will bear fruit.

3.2.2.3.3 Summary of the fight 2015-2021 on the different sectors in Dordogne

All years, no American mink were captured in the Dordogne thanks to the rafts. The difficulties of monitoring and the lack of regularity meant that it was not possible to identify the most frequented rafts, and therefore to optimise the capture. Captures were attempted but, without recurrent positive footprints, it is complicated to achieve convincing results. This is why the iNAP facilitators are doing everything possible to ensure that the momentum achieved by the end of 2021 continues. Indeed, even if there are not many American mink data for this sector over the period (Figure 18), it is important to know where this population stands in order to act before it becomes too large. This is especially true since trapping practices in this sector seem to generalise the opening of mink traps all year round, which reduces the possibilities of catching and providing information on American mink during the months of August to March (non-compulsory period for trapping).

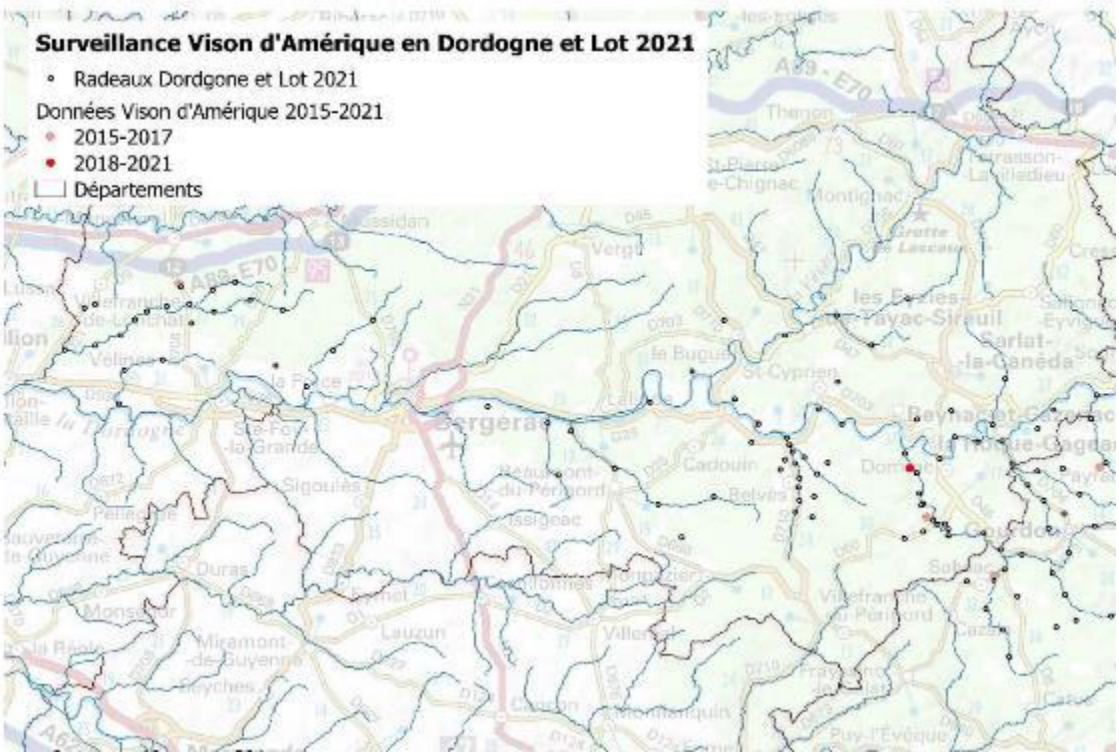

Figure 18 : Raft locations at the end of 2021 and American mink data 2015-2021 in the Dordogne and Lot

3.2.2.4 Pyrénées-Atlantiques sector

As a reminder, a few rafts were first installed in a test phase in 2016-2017 in the Aldudes sector (upstream of the Nive river) in order to check the possible behaviour of the rafts on a mountain river. Following this conclusive test, a network of 20 rafts was deployed in the same sector in 2017. Since 2018, a GREGE-MIFENEC partnership supported by the Urban Community of the Basque Country (CAPB) within the framework of a Natura 2000 contract, has been monitoring a network of more than 220 rafts in the Nive and Nivelle catchment areas. Between 2018 and 2021, 127 American mink were captured thanks to the implementation of an average of five trapping sessions per year. The results are summarised in Table 2.

Table 2 : summary of American mink catches in Natura 2000 contracts for the upper Nive, lower Nive and Nivelle

Sector	Dates	Results	Males	Females
Upstream Nive (2018-2021)	February 2019 to March 2019	32 minks	14	18
	September 2019 to March 2020	31 mink	15	16
	September 2020 to March 2021	44 mink	21	23
	August 2021 to December 2021	4 minks	2	2
Lower Nive and Nivelle (2021)	October 2021 to December 2021	16 minks	7	9

In detail, in **2019,** new flooding episodes disrupted the monitoring, leading to numerous repairs to the rafts. Nevertheless, the monitoring revealed many positive rafts (Figure 19). The 6 capture sessions enabled 59 individuals to be caught quickly with a balanced sex ratio (Figure 20). The autopsies carried out showed that many females were contributing to reproduction, indicating a dynamic population. In the autumn of 2019, the partners began to think about equipping the lower Nive and the Nivelle via a Natura 2000 contract.

In **2020,** many rafts were damaged by winter flooding. In addition, the COVID-19 health crisis did not allow monitoring between March and May inclusive. However, in the autumn of 2020, several trapping sessions were organised on the positive rafts. These sessions once again resulted in the capture of 24 individuals, although the trapping times were extended (Figure 20). The captures were mainly concentrated near the most important rivers. Numerous captures also took place near fish farms, which seem to be points of attraction for American mink. It should also be noted that the signing of an amendment to the Natura 2000 contract (2020-2022) has enabled the extension of monitoring on the upper Nive with the addition of 11 rafts in the Irissarry sector. In addition, a coordination meeting with our Spanish counterparts at the end of 2020 enabled us to verify the complementarity of the monitoring and fighting networks against American mink on both sides of the border.

In **2021** on the upstream Nive, the choice was made to adapt the protocol to better respond to the observation of longer trapping sessions. Thus, more time was devoted to trapping and monitoring was spaced out and concentrated on sectors with positive footprints. It was also decided to secure the rafts for the late spring floods to avoid too much loss of material. Several individuals were captured at the beginning of the year and then less so at the end of the year, with a less marked recurrence of footprints on the rafts. A new Natura 2000 Contract (2021-2024), still led by MIFENEC and GREGE, was set up to complete the system on the lower Nive (59 rafts) and the Nivelle (55 rafts) (Figure 19). Those rafts were installed in early autumn and positive footprints were quickly observed. The trapping mode was therefore triggered from the first months of monitoring with great success. In total, over 2021, 44 individuals were captured: 28 on the upper Nive, 9 on the lower Nive and 7 on the Nivelle (Figure 20). It should be noted that a very significant flooding episode occurred in December 2021, which again led to numerous raft repairs. At the end of 2021, a call for expressions of interest (called "Les 64 fantastic") launched by the CD64 enabled a dossier to be submitted for, in particular, the population, health and toxicological monitoring of American mink on the Nive and Nivelle rivers. The aim of these two projects is to continue the implementation of a fighting "barrier" between France and Spain and thus limit the progression of the species towards the last nuclei of European mink in Spain. Thus, a renewal of the market on the upstream Nive is planned between 2022 and 2024 so that all the monitoring in this zone (upstream and downstream Nive and Nivelle) is consistent until the end of 2024.

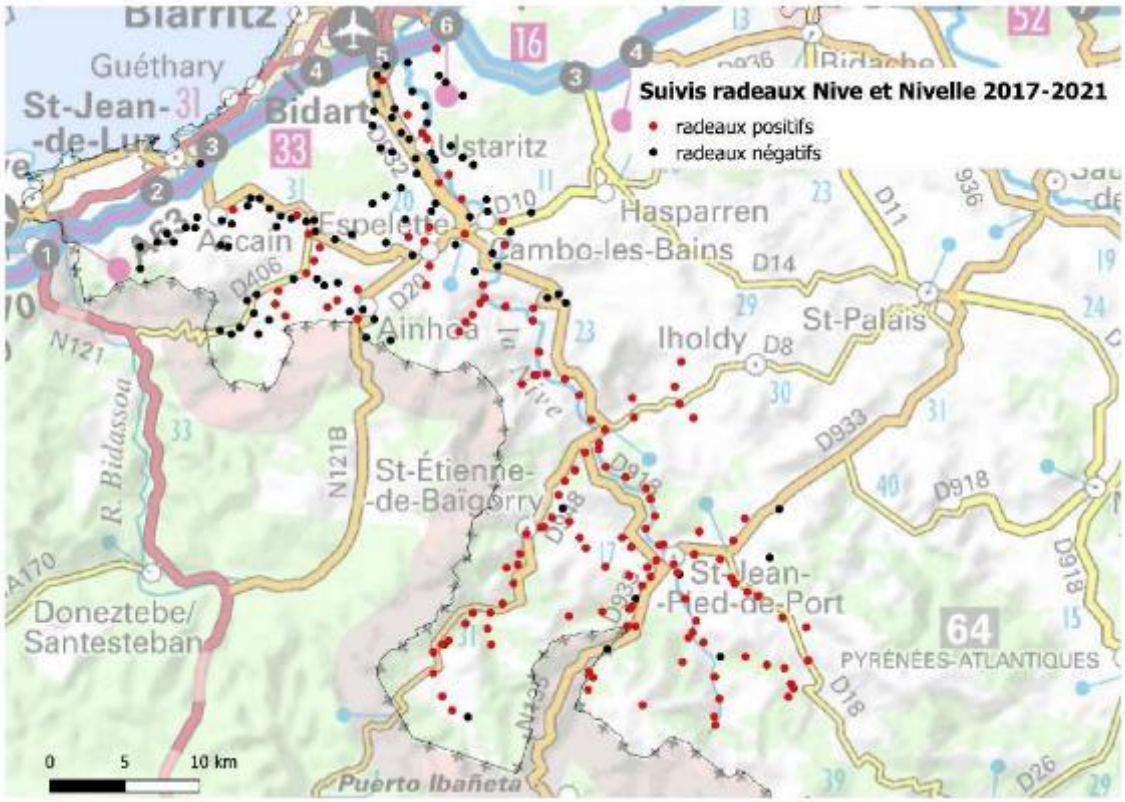

Figure 19 : Results of the Nive and Nivelle monitoring 2017-2021

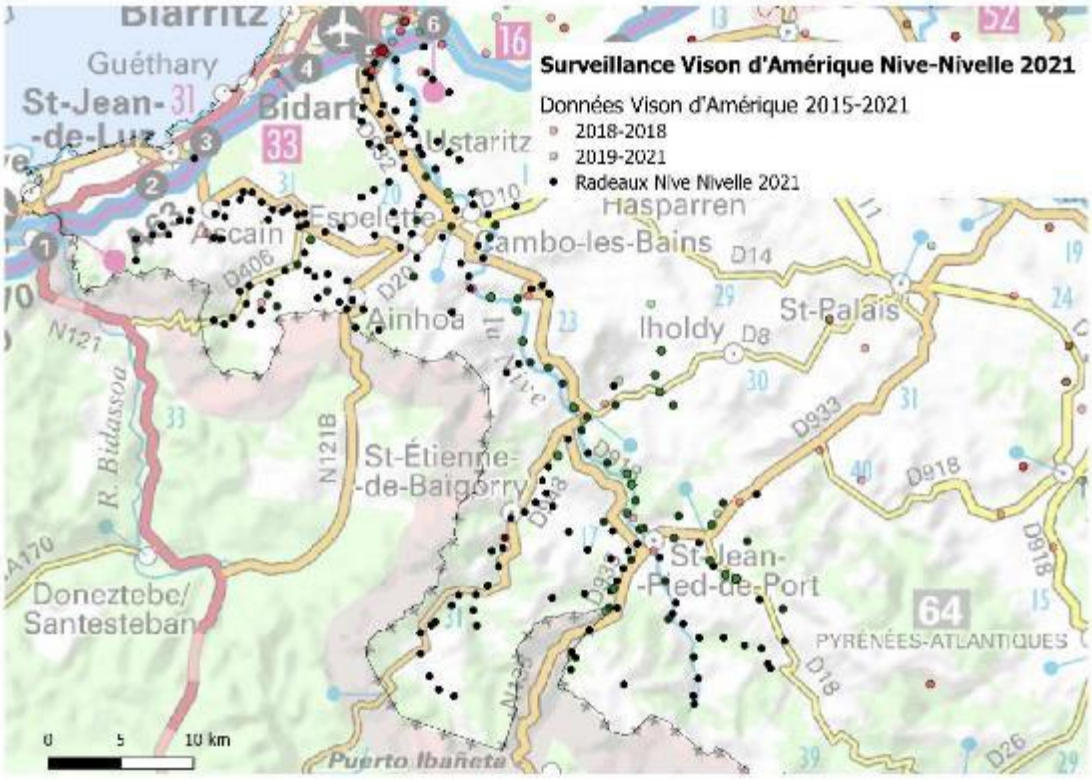

Figure 20 : Raft locations at the end of 2021 and American mink data 2015-2021 Nive-Nivelle

With regard to the objective of reducing the pressure of American mink towards the Spanish catchment areas close to the areas where European mink are present, the equipment of the Nive and Nivelle basins with a monitoring and fighting system is now operational and effective. Ideally, the few coastal rivers in the west of the Pyrénées-Atlantiques County, where some data on the presence of American mink are still in evidence, should still be equipped. The year 2022 will allow us to verify whether the downward trend in positive rafts and captures on the upper Nive is confirmed.

3.2.2.5 Review of American mink fighting operations

For the time being, the results are consistent with the known presence of American Mink in different areas. The surveillance sectors do not seem to be colonised. In the fighting sectors, catches are continuing despite some recalcitrant individuals. A major effort was made in the Pyrénées-Atlantiques County with numerous catches in a sector with a strong presence of the species. This work, which has been going on for several years, has certainly already reduced the density of individuals and the pressure exerted on the environment.

The challenge of those fighting operations is to maintain surveillance and fight over time and in a rigorous manner. Indeed, it is not always easy to maintain motivation when the rafts have no corresponding footprint. However, it is an indication of the success of the fight.

In addition, in the fighting sectors, the last individuals to be captured always require more effort. It is therefore necessary to maintain motivation and determination.

3.3 Consideration of the European mink in management programmes and plans

The facilitators of the European Mink iNAP are responsible for ensuring that the definition and implementation of management programmes for natural areas are in line with the conservation issues of the species. In this respect, many actions have been carried out since 2019.

Firstly, the "Note to planners and responses to requests from consultancy firms in the context of land development projects" (DREAL and ONCFS, 2015) has been updated in order to answer the many questions on the areas where the European mink must always be taken into account.

In addition, all the Standard Data Forms (SDF) of the Natura 2000 sites concerned by the European mink were re-read and, if necessary, corrections were notified to be made by the DREAL NA. In addition, the iNAP facilitators responded to various requests from the Natura 2000 site facilitators: European mink distribution area, assistance in taking account of the European mink in the objective documents, in site extension projects, in management actions, participation in the regional meeting of Natura 2000 facilitators.

Responses were also given to requests from managers of natural areas, particularly nature reserves or regional nature parks, to take account of the European mink in their planning documents and to implement actions favourable to the European mink. Work has also been

carried out with LIFE VISON to ensure that their habitat restoration actions are as appropriate as possible (ponds, alluvial woodlands, refuge areas, etc.).

The iNAP for the European mink also helped to ensure the proper application of the compensation measures by providing assistance during the renewal of the management plans for the compensation sites. The goal was to ensure that the actions planned in these documents would contribute to the conservation objectives defined in the iNAP. Thus, the NAP's facilitators were mobilised particularly for the Aire sur l'Adour compensation site from 2019, but also for all 18 compensation sites on the highway A65 from 2020. The iNAP has also been mobilised for the highway A63 compensation sites, whether by the concessionaires Atlandes or Autoroute Sud France (now Vinci Autoroute). The iNAP also participates in the monitoring of accompanying measures and in the various committee involved in these compensatory measures (monitoring committees, technical committees, and meetings specific to European mink).

Finally, the iNAP team contributed to the updating of the guide to good management practices for the European mink. In fact, within the framework of the partnership between the iNAP and the LIFE VISON programme, a guide to good management practices was jointly drafted. This document will be as exhaustive as possible on existing practices in the territory where the European mink is potentially present. Thus, each recommendation will be a concrete alternative to practices unfavourable to the species. For the time being, the structure of the document has been defined and a reflection on silvicultural practices in wet woodlands has been conducted. This work should continue in 2022, in particular with the identification of practices that are more favourable to the European mink.

3.4 Limiting the risk of road traffic collisions

Within the framework of the iNAP, the facilitators are committed to reducing the risks of road mortality by helping to re-establish ecological continuities that are favourable to the European mink. To this end, starting in 2019, a survey was carried out of stakeholders who have already been mobilised or who have carried out diagnostics (number of road collisions, traffic density, technical feasibility, etc.) to target structures to be rehabilitated. These are generally river crossings requiring the installation of a dry passage for the European mink. Wherever necessary and possible, these structures were combined with protection measures (fences, barriers, and grid) to direct the animals towards the crossing. For all of this work, the iNAP had a financial envelope as part of the accompanying measures linked to the construction of the highway A65 by the concessionaire A'LIENOR. Thus, 80% of the financing of the improvements was covered by this budget. Finally, work to improve ecological continuity in favour of the European mink was also financed by the Recovery Plan linked to the COVID-19 health crisis and the Green and Blue Framework.

Thus, an agreement was signed in 2019 with the County Council of the Gironde (CD33), which has been involved for several years in a programme to combat black spots caused by road collisions with wildlife. After an inventory and prioritisation of structures by the CD33, the DREAL NA, the iNAP and the GREGE, the rehabilitation of 36 structures spread over four catchment areas was undertaken:

- Isle-Dronne (Libournais) with 11 structures;
- Beuve (Langonnais) with 13 structures;
- Brion (Langonnais) with 7 structures;
- Grusson (Langonnais) with 4 structures.

This work was completed in November 2019 (Figure 21) and are monitored annually to check the condition and effectiveness of the installations. Numerous signs of terrestrial fauna passage were found, proving the functionality of the systems installed. The heavy flooding in the spring of 2020 damaged some of the facilities. Due to successive containments because of the COVID-19 health crisis, the repair work was resumed in 2021 by the CD33 and the facilities are once again functional.

Figure 21 : Example of a layout for the ecological transparency of a structure by the installation of a corbelling (© CD33)

In 2019, the CD33 also invested in the rehabilitation of nine structures in the Livenne-Blayais watershed via the European Agricultural Fund for Rural Development (EAFRD). In addition, following expert assessments carried out in 2019 in collaboration with the GREGE, the CD33 should continue in 2022 the rehabilitation of ten structures in the Ciron Valley, one structure in the Cirès, one structure in Lacanau and at least ten structures in the "Lisos Bassane" catchment area (Figure 22).

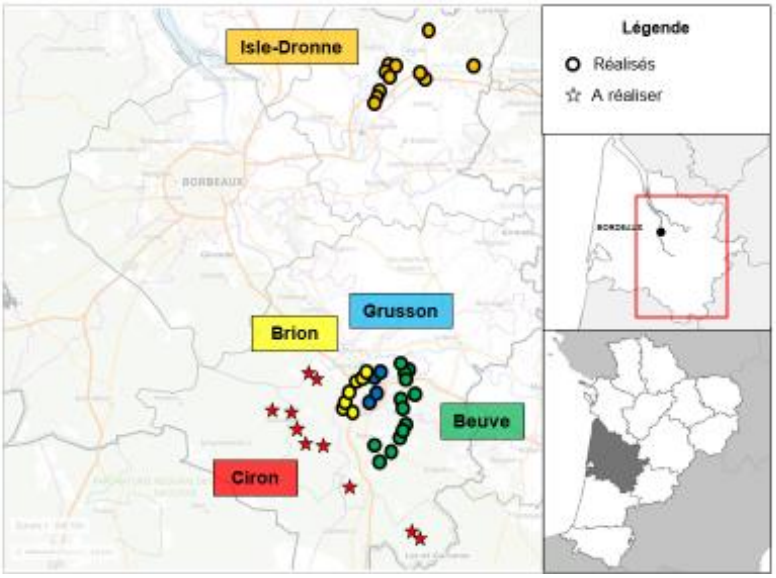

Figure 22 : Completed or planned layout CD33 (May 2021)

Following surveys carried out in 2019 and 2020 in collaboration with LIFE VISON on more than 53 structures, the County Council of the Charente (CD16) completed a series of rehabilitation of five structures at the end of 2021. In addition, the development of at least 15 other structures has started in the Charente basin upstream of Angoulême (Figure 23). Completion of the works is planned for 2022. A few additional structures in the Tude catchment area are also planned. These works are also financed via the A'LIENOR concession envelope, the Recovery Plan and the Green and Blue Framework.

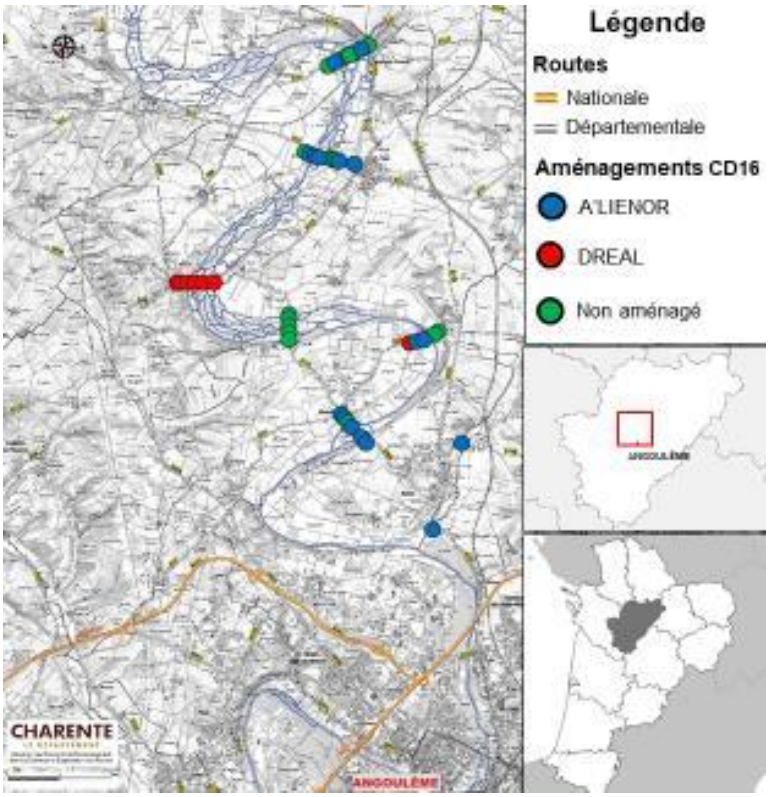

Figure 23 : Completed or planned layout CD16 (May 2021)

Following the capture of a European mink in March 2019 near Bayonne, surveys were carried out in 2019 and 2020, in collaboration with the GREGE and the CD64. At the end of 2021, the rehabilitation of 3 structures not far from the Plaine d'Ansot was decided and will be carried out during 2022. In addition, during 2020, the iNAP participated in the CD64 initiative called the "ANIMO project", which consists of identifying the major wildlife collision areas on the county's roads. The objective of this project is to propose measures to reduce the risk of collisions (devices to restore continuity, signposting, slowing down, raising awareness, etc.). For this purpose, the road wildlife collision data collected by the OFB were transmitted.

Finally, a programme of rehabilitation of structures is being carried out by the LIFE VISON programme in Charente Maritime County in collaboration with the Charente-Maritime Council.

All the initiatives or rehabilitation projects identified since 2019 by the iNAP facilitators are now regularly monitored in order to provide the necessary support or to direct any possible sources of funding that may arise. In addition, the survey is now ongoing.

The iNAP also assisted the Landes County (on the roads D626 and RD12), the Dordogne County, the Metropolis of Bordeaux, the Agglomeration of Bayonne and Vinci Autoroute (highway A64) in the context of discussions on the rehabilitation of structures. Finally, it should be noted that 2 structures were also adapted in favour of the European mink on the Natura 2000 site of the Nizonne in 2020 (Dordogne county).

4 Conservation and breeding strategy for the European mink

4.1 French conservation breeding centres for European mink

Two French zoos have breeding centres for the European mink: Zoodyssée (Villiers-en-Bois, Deux-Sèvres) and the Zoological Reserve of Calviac (Calviac-en-Périgord, Dordogne). These animals were provided and belong to the European Endangered Species Program (EEP).

The year 2019, at Zoodyssée (60 enclosures), was devoted to the installation of additional equipment within the European mink breeding centre. Thus, a video surveillance system was installed in ten enclosures, making it possible to monitor contact, study the animals' behaviour and adapt their breeding on a daily basis. A veterinary care room has also been installed and equipped so that care can be provided as quickly as possible and as close as possible to the breeding enclosures. Enrichments have also been added regularly to the enclosures. All these improvements facilitate the work of the keepers, increase their knowledge and guarantee the well-being of the animals. Finally, in October 2019, Zoodyssée's animal keepers visited the Spanish conservation breeding centres in order to benefit from their feedback on the best practices to implement.

Two new individuals were added to the population already present in Zoodyssée at the beginning of 2019. The investments and efforts made (see previous paragraph) were rewarded by the **first French births of European mink in captivity**: two litters, for five mink cubs (Figure 24). One of the mothers lost her young, born during a heat wave, but the second succeeded in raising her four young without any problems (two males and two females). They were each able to be weaned and discover their new individual enclosure at the end of 2019. On the other hand, it should be noted that an adult male died, without any cause being identified despite numerous investigations.

Figure 24 : Photos of mink pups born in 2019 at Zoodyssée (© Zoodyssée)

In 2020, new fittings were made to provide more shade for the enclosures and misters were installed. Three females gave birth to 14 young (nine females and five males) of which ten became adults. The four deaths observed in two different litters seem to be due to the inexperience of the mothers (primiparous) and the very unfavourable weather conditions. Finally, a meeting between the Zoodyssée and iNAP teams enabled a better assessment of the avenues for improvement and consistency between captive breeding and future translocations in the wild.

In 2021, the COVID-19 health crisis forced the EEP to prohibit any transfer of individuals to Zoodyssée (3rd largest breeding centre in Europe) because the European mink is probably sensitive to COVID-19. In addition, drastic sanitary conditions and access to the breeding centre have been put in place. An event-based surveillance plan was also requested by the State in case of symptomatic animals. Despite these very special conditions, two litters were nevertheless born (five females and four males) and all individuals developed well. Two other old individuals, no longer able to reproduce, were transferred from Zoodyssée to the Park of Isle (Saint-Quentin, Aisne County) in order to raise public awareness. Finally, at the end of the year, Zoodyssée's team of animal keepers was enlarged in order to take better care of the breeding of European mink.

No pups born between 2019 and 2021 could be released into the wild so they all become captive breeders. However, the work prior to future translocations of captive-born mink into the wild has been initiated. In particular, an exchange took place at the end of 2020 with the coordinators of the Estonian and Spanish conservation programmes in order to obtain their feedback on breeding in captivity with a goal of translocations. It is already planned to deepen this work during the 3rd NAP.

As regards the breeding centre of the Zoological Reserve of Calviac (6 enclosures), the ageing individuals did not allow for successful breeding in 2019 and two of them died. In 2020, three new individuals arrived via the EEP but did not give birth to any pup. Finally, in 2021, an additional individual arrived, allowing the observation of a mating but which was not followed by a birth.

4.2 Contributions to the European Endangered Species Program

The iNAP teams, in collaboration with the Maison Alfort veterinary school, continued to develop a study project on artificial insemination. This would make it possible to solve the problem of captive individuals unable to contribute to reproduction because of aberrant behaviour (over-aggressiveness or passivity towards females in heat). As the European mink is a critically endangered species, the study would begin by testing methods on the domestic ferret (*Mustela putorius furo*). A brochure presenting the project was drawn up in 2020 in order to find the necessary funding. Initial contact has also been made with the EEP, which has no problem with the project as long as it is not to the detriment of the genetic quality of the captive population or the implementation of field actions in favour of the European mink. Finally, the possibility of cryobanking European mink seeds was also mentioned, although the project has not really been initiated.

In parallel, the University of Liège, Belgium, carried out a study on the microbiome of the European and American mink in collaboration with other partners. The aim was to study and compare the intestinal bacteria (colon) of captive individuals with those of wild individuals. For this purpose, individual genotyping was carried out and some Zoodyssée individuals were considered. This study resulted in two scientific publications at the end of 2021 (Van Leeuwen *et al.*, 2021a; Van Leeuwen *et al.*, 2021b). Although the study of the microbiome could not be linked to the aberrant behaviour observed in some captive males, this parameter could potentially play a role in pair matching in captivity as well as in the adaptive capacities of individuals translocated into the wild.

5 Cross-cutting actions and development of the 3rd NAP

5.1 Coordination and facilitation

5.1.1 Internally iNAP

In order to ensure good coordination between the members of the iNAP team (DREAL, OFB, Cistude Nature and then GRIFS), monthly meetings were organised and were the subject of reports that made it possible to monitor the progress of ongoing actions. In addition, an online collaborative space dedicated to the iNAP for the European mink was created for OFB agents.

A new person joined the Cistude Nature association in 2019 to manage the network of partners for the iNAP. This person has endeavoured, gradually, to make contact with the multitude of partners involved. However, the years 2019 and 2020 were marked by interruptions in this activity due to temporary work stoppages and the gradual cessation of Cistude Nature's involvement in this mission. In fact, during 2020, the OFB has tried as much as possible to facilitate the network of partners in addition to its mission as scientific and technical facilitator. Despite this effort, certain actions of the iNAP have suffered. At the end of June 2020, Cistude Nature association withdrew from its role as facilitator of the network of partners. The DREAL NA and the OFB then worked together to find a way to fulfil this role again. Thus, at the beginning of 2021, the GRIFS joined the iNAP team by taking over the function of partner network facilitator. This arrival was accompanied by comprehensive information to all the iNAP partners in order to guarantee the greatest possible fluidity in the continuity of actions.

5.1.2 Between the iNAP and other ongoing programmes for the European mink

The iNAP and LIFE VISON teams regularly discuss the respective progress of the two programmes in order to ensure the best possible coordination. At least two annual meetings allow the teams to meet: the LIFE VISON steering committee and the iNAP-LIFE technical meeting. However, exchanges between the teams are much more frequent, either by telephone or by email.

Regular exchanges also take place with the Estonian and Spanish teams, which are also involved in the conservation of the European mink. Particular attention is paid to the consistency of the actions carried out by each country on either side of the Spanish border. In addition, the iNAP team has ongoing exchanges with the head of the European mink-breeding programme (Tiit MARAN, Estonia).

Finally, in 2019, contacts were initiated with Denmark with the aim of setting up a LIFE programme for monitoring and fighting against American mink on a European scale. However, the COVID-19 health crisis and the impact it may have had on the American mink industry have halted the discussions initiated.

5.2 Training and communication

5.2.1 Assessment of training courses related to the iNAP

The change of the partner network facilitator in 2019 (see paragraph 5.1.1) did not allow the organisation of review meetings or training for the network of referents. In 2020, the containments linked to the COVID-19 health crisis led to the postponement of these training sessions. The relaunch of their organisation was therefore a priority in 2021. Thus, six "**assessment and referent training network**" meetings were organised in the autumn of 2021 for all 11 counties concerned by the area of implementation of the iNAP.

An **internal DREAL NA training course** was used to complete the knowledge of the European mink on the instructors of regulatory files and to remind them of the existence and sufficiency of the "note to planners and responses to requests from consultancy firms in the context of land development projects" (DREAL and ONCFS, 2015b). A short **educational film** supplemented this training.

Internal OFB training sessions were organised in seven of the eleven counties of the iNAP in 2020 in order to update the knowledge of agents on the actions implemented in favour of the European mink and the results obtained. The four missing counties will be the subject of training in 2022.

In 2020, mustelids were **naturalised** to facilitate training and in particular to raise awareness of the high risk of confusion between the European Mink, the American Mink and the European Polecat.

At the end of 2021, a **general slide show on the European mink and the actions of the iNAP** was developed to allow the partners to take ownership of the topic and present it independently at the local level. This slide show is still being tested and will be improved in 2022 based on the feedback received.

5.2.2 Assessment of communication actions

In March 2019, an **information leaflet** (A4 format, 20,000 copies) and **a poster** (A2 format, 7,000 copies) on the European mink were produced and distributed. They provide an overview of the European mink "issues" and summarise (Figure 25):

- A general explanation of the National Action Plans ;
- The biology and ecology of the European mink ;
- Its "critically endangered" status;
- The main threats to the species ;
- The presentation of the American Mink ;
- The actions of the iNAP.

These two communication materials were distributed to all potential and active partners of the iNAP, as well as to all the actors in the territory who may have a link with the European mink. They are also available in digital form, or on request in paper form, and have been updated in 2021 (contact details of the facilitators).

Figure 25 : Information leaflet (left) and poster (right) on the European mink and its NAP

The **page dedicated to the European mink** on the DREAL NA website (link) was updated in 2019 and provides access to all documents useful for the conservation of the European mink in France. It is intended to be as complete as possible, in terms of both history and descriptions of current actions, and is updated regularly.

The iNAP team participated in various seminars, congresses, conferences and events:

- **Regional seminar on NAPs** (Artigues-près-de-Bordeaux, March 2019) organised by DREAL NA ;
- **European Symposium on Mustelids** (Lisbon, October 2019) where a poster was presented by the OFB on the actions carried out by France in favour of the European Mink;
- **Spanish H2O seminar** (Donostia, October 2019) on invasive alien species via a joint French presentation with LIFE VISON France by GREGE;
- **Conference on reintroductions** (Aix-les-Bains, November 2019) with a presentation by Zoodyssée on the actions implemented in favour of the European mink, including its conservation breeding;
- **Nature Film Festival** (Grenoble, December 2019) with the screening of the film "Let's save the European mink" followed by an exchange with the audience;
- **Poitou-Charentes Naturalists Gathering** (Melle, February 2019) with a presentation of the iNAP ;
- **Ménigoute festival in the Deux-Sèvres county** (Ménigoute, 2019 and 2021) where a presentation and a round table were held in conjunction with the LIFE VISON programme;
- **Nature Festival** (Guîtres en Gironde, May 2021) with a presentation on the otter and the European mink by the GRIFS;
- **Inter LIFE seminar** (Chateillon beach, September 2021) co-organised by the LIFE VISON team;
- **World Conservation Congress** (Marseille, September 2021) organised by IUCN with a presentation on the European Beaver and European Mink by the OFB;
- **Conservation days** (Zoodyssée, October 2021) where Zoodyssée presented the conservation breeding centres and a poster showing the interest of the study of microbes for the conservation of the European mink;

- **Meetings for the biosphere reserve trophy** (Calviac, November 2021) where the Calviac Zoological Reserve presented its European mink conservation breeding centre.

Lastly, the iNAP organised a **seminar** (online, May 2020) on the actions in favour of the European mink financed under the A'LIENOR financial envelop. In particular, this made it possible to promote the experience acquired in restoring ecological continuity to other structure owners (see paragraph 3.4).

Various publications have also been produced on the initiative of the iNAP or its partners in:

- The **Annual Newsletter of the European Mink Conservation and Breeding Programme** (February 2019) to present the actions carried out in France in favour of the European Mink during 2018;
- The **Cistude Nature newsletter** (September 2019) to announce the 1ère French birth of European mink at Zoodyssée;
- The **Courrier de la Nature** magazine (March 2020) with an article aimed at the general public on the European mink, written jointly with LIFE VISON;
- The **Federal Report of the Dordogne Hunting Federation** (April 2020) with an article specifically devoted to European mink;
- The magazine **Terre Sauvage** (June 2020), in the section "echoes of nature", for a large format on the European mink in France;
- **Faune Sauvage** magazine (July 2020) on the contribution of long-term monitoring to the evaluation of the conservation status of species in Europe, including the European mink;
- **Posters, placards and newsletter** in Natura 2000 sites: Middle valley of the Charente, Seugnes and Coran (December 2019), Moors of Touvérac (September 2020), exhibition of the County Council of Charente-Maritime (October 2020), Valley loaf the Tude (July 2021) ;
- The magazine **Le chasseur vendéen** (February 2021) with a special report on the European mink;
- The website **Threatened Species** (February 2021) with an article on the risk posed by COVID-19 to mustelids, including the European Mink;
- The **Journal of trappers of Hautes-Pyrénées county** (March 2021) with a special report on the European mink;
- The **Fragile Fauna** book (July 2021) illustrated with paintings by the artist Sandrot, including pages dedicated to the European Mink. In this context, the IUCN and the artist were welcomed at Zoodyssée and the iNAP team joined the meeting in order to answer questions on the actions implemented for the preservation of the species;
- The **Invasive Alien Species Resource Centre** (September 2021) with an update of the American Mink page;
- The **SYER hillsides of Dordogne website** (23 November 2021) with an article on the European mink and its risk of confusion with the American mink;
- **Social networks** for the launch of the drafting of the 3rd PNA, the births and growth of mink (2019, 2020, 2021), the risk of confusion between European mink and American mink (July 2019), a podcast on the OFB's actions in favour of European mink (October 2021), a quiz on the Facebook page of the Zoological Reserve of Calviac (December 2021);

- The **local and national press** for the births of mink in Zoodyssée (2019, 2020, 2021), following the confirmation of the presence of the species in certain sectors of historical presence, on the potential impact of COVID-19 on mustelids (September 2020), on various solicitations to raise awareness of the conservation issues of the European mink.

In 2019, the Ministry of the Environment has entrusted the iNAP team with the task of proofreading the sheet on the European mink in the **Red List of mammals in Aquitaine** (coordinated by the Aquitaine Wildlife Observatory). Finally, the team is also in charge of the co-editing of the monograph on the European Mink and the proofreading of the one on the American Mink for the **Atlas of Carnivores and Primates of France** (coordinated by the French Society for the Study and Protection of Mammals and the French National Natural History – MNHN), which will be published in early 2023.

The iNAP team, or its partners, also participated in television and radio programmes:

- **France Info Radio** (September 2020) in collaboration with other organisations involved in the conservation of the European mink;
- **France 3 TV** (November 2020), by Zoodyssée, on measures to protect European mink from the COVID-19 threat;
- **France Bleu Périgord** (December 2021), by the OFB, following a recent report of the presence of European mink in the Dordogne county.

Finally, a group of students from the AgroParisTech school interviewed the iNAP team as part of a Master's **school project.**

5.3 Elaboration of the 3rd NAP for the European mink

The drafting of the 3rd NAP was launched in April 2019. Indeed, it was during the first Steering Committee (COPIL) that the iNAP team validated the document, drafted beforehand, assessing the actions carried out (2015-2018) within the framework of the iNAP (DREAL and ONCFS, 2019). This report was also presented to and validated by the National Nature Protection Council (CNPN) in June 2019.

In order to define the various issues and actions to be implemented within the framework of the 3rd NAP, five technical groups met on 28 and 29 May 2019: knowledge, European mink breeding centres, communication and training, threats to European mink, and the fight against American mink. These technical groups made it possible to identify the first actions and sub-actions to be implemented. All the minutes were sent to all the members of the COPIL by the DREAL NA are available on its website (link).

A first Scientific Committee (SC) was then held in June 2019, in order to present the results of the iNAP (2015-2018) and the actions proposed by the technical groups for the 3rd NAP. All of the documents presented at the SC, as well as the minutes, have been translated into English and are available on the DREAL NA website.

Since August 2019, the iNAP team has been working on drafting the action sheets of the future 3rd NAP as well as the knowledge synthesis corresponding to the first part of this document.

To do this, a major bibliographic compilation has been carried out. Then, at the end of 2020, the entire document was the subject of a consultation with all the NAP partners as well as the members of the COPIL and the SC. Each structure was thus able to make comments and suggestions. Once these had been analysed and integrated, the remaining points (which were the subject of disagreement or questioning) were presented and then decided by the SC in May 2021. The latter enabled substantive and prioritisation decisions to be taken. These decisions were then explained to the COPIL during the presentation of the 3rd NAP on 1st June 2021. Finally, the CNPN validated this document on 30 June 2021, stressing in particular the need to carry out translocation actions quickly and the need for human and financial resources adapted to the scale of the 3rd NAP.

Once the CNPN's additional requests had been satisfied, the 3rd NAP was submitted for inter-ministerial and public consultation. Thus, in October 2021, the last and final version of the 3rd NAP 2021-2031 (DREAL *et al.*, 2021) was sent to the Ministry in charge of the environment.

Finally, the drafting of this review (2019-2021) was started at the end of 2021 in order to be able to enter into the implementation of the 3rd NAP. As a result, the next reviews will be written according to the order and nomenclature of the 3rd NAP actions.

6 Other achievements

6.1 Care protocol for European Mink “in distress”

In order to be able to react optimally in the event of the discovery of a European mink in distress, the iNAP team has developed a specific protocol. For this purpose, a group of veterinarians specialised in wildlife care met several times between 2019 and 2020. These meetings were supplemented by numerous dematerialised exchanges, leading to a protocol shared by all at the end of 2021. This protocol will be submitted to the SC of the 3rd NAP in 2022 for its opinion and final validation.

This protocol makes it possible, based on an analysis grid of the animal's physical condition, to identify whether it is to be considered as "in distress". If the animal is considered to be in distress, a protocol for its management is detailed, according to a defined decision scheme.

Since knowledge of the physiology of the European mink is still incomplete and field experience is limited, it was decided that the decision on whether or not to take charge of an individual in distress should not be made by a single person. The group of seven veterinarians has therefore been made permanent in the form of a diagnostic unit that will be called upon in the event of the recovery of a European mink considered to be in a distress situation.

This protocol is also intended to evolve and be continuously improved according to experience. The role of the diagnostic unit will also be to compile these experiences and propose the necessary changes.

6.2 The ERGA project for a European mink reference genome

The ERGA (European Reference Genome Atlas) project is a European grouping of researchers and genomics centres aiming to build a catalogue of reference genomes of animal species to understand and preserve biodiversity. The ultimate goal is to put these genomes in the public domain.

Species whose preservation is under severe threat are particularly targeted by this project, which works based on the voluntary participation of participants proposing species to be included. For France, the MNHN proposed to integrate the European Mink into the project, a proposal that was accepted!

Thus, the sequencing of the genome of an individual captured in 2006 (during the 1st NAP) could be launched in 2021 and should be completed in early 2022. At the time, the GREGE took a blood sample and a biopsy, the cells of which have since been cryopreserved at the MNHN. When this European mink genome is available, it will allow advanced genetic studies to be carried out to gain better knowledge of genetic diversity, inbreeding, the level of hybridisation with the European polecat, etc., on a European scale with international collaborations (work in progress led by the University of Liège, in partnership with Spanish and Estonian colleagues). A good understanding of these genetic phenomena will make it possible to better guide management measures for the conservation of the European mink.

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