LIFE Otter :

appraisal of 5 years actions in favour of an emblematic species of our rivers

Layman's Report
LIFE-Nature project "Restoration of the Otter's habitats"
2005 – 2011

With the financial support of :

Life Loutre

Life

NATURA 2000

Wallonie

LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

The LIFE otter Project: context and aims

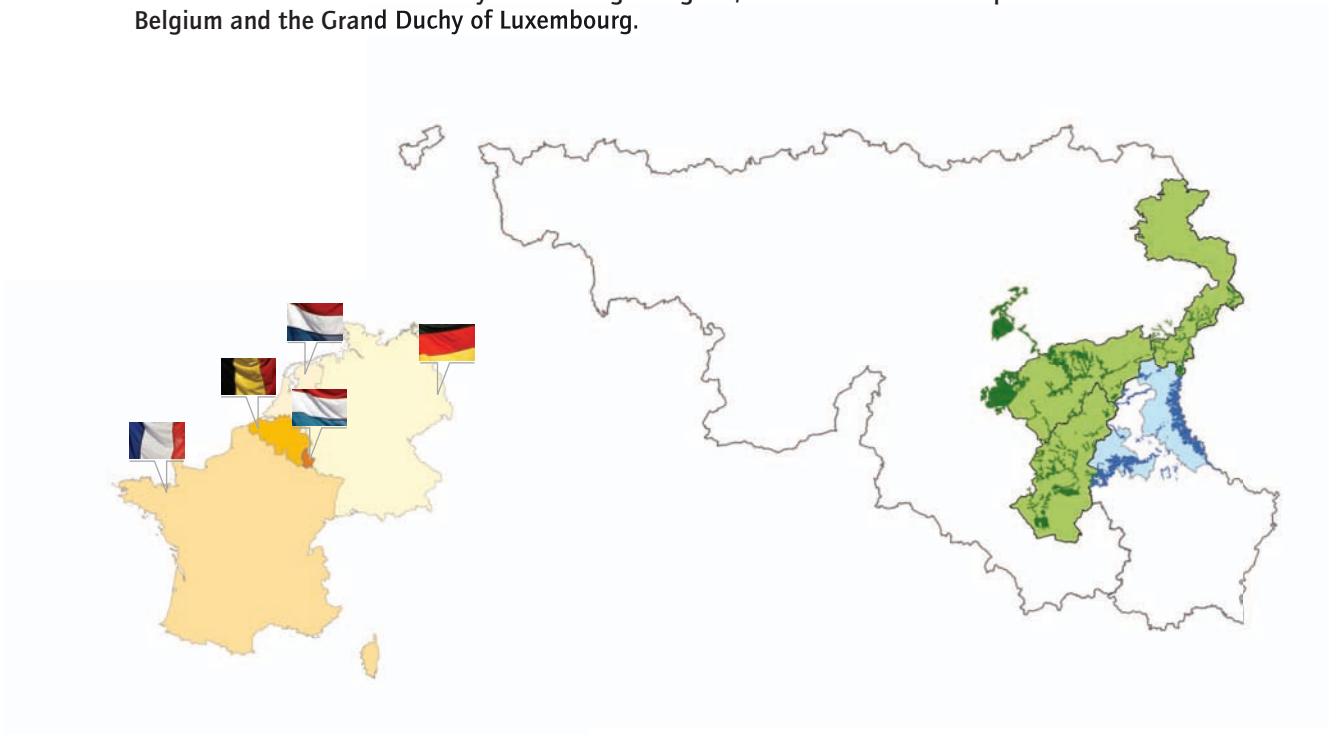
Launched by the European Commission in 1992, LIFE (L'Instrument Financier pour l'Environnement) is one of the cornerstones of the European Union's environmental policy.

By March 2011, the LIFE programme had already co-funded more than 3322 environmental protection projects throughout Europe.

The LIFE-Nature project "Restoration of the Otter's habitats" is funded by the European Commission, Wallonia and the Grand Duchy of Luxembourg. It has been implemented by three Nature parks in Wallonia (Haute-Sûre Forêt d'Anlier, Deux Ourthes and Hautes Fagnes-Eifel), two Nature parks in Luxembourg (Haute-Sûre and Our), the Centre de Recherche Public – Gabriel Lippmann and the Foundation Hëllef fir d'Natur.

The action perimeter of the LIFE otter project is made up of the hydrographic basins of the Our, the Sûre and the Ourthe (250,000 ha).

Other than the Ourthe that only runs through Belgium, the two other basins span the borders between Belgium and the Grand Duchy of Luxembourg.



The covered Region of the LIFE –Nature project:

- *Walloon Nature Parks*
- *Luxemburgish Nature Parks*
- *Walloon Natura 2000 sites*
- *Luxemburgish Nature 2000 sites*

Otters in our midst?

The European otter has always been present in Wallonia and the Grand Duchy of Luxembourg. In the last ten years, and despite the complete protection of the species, the indications of its presence have become increasingly rare. In 2006, a footprint in the snow was found in the basin of the Semois, but since then, very few indications have been found. Otters are doubtlessly no longer present, with the exception of a few nearly totally isolated individuals. Despite this, our region can be considered as an important link for maintaining the species across Europe, for which it is a corridor of potential connections for contacts between population groups in the north (Germany) and in the south (France).

How to restore habitats?

The floodplain, and river environments in general, are experiencing considerable pressure from agriculture and forestry and domestic or industrial pollution. The otter is indirectly suffering from the decrease of water quality and from the loss of biodiversity observed in watercourses.

The objectives of the LIFE otter project were to strengthen the ecological network, to improve natural fish productivity, to decrease the impacts related to the presence of cattle alongside waterways (installation of drinking troughs, fences), to promote more adapted tree species and to encourage the early cutting of spruce in the bottom of the valley, to exploit the woods while respecting watercourses, to encourage connections between catchment areas by the planting of riverside vegetation and the digging of ponds, to encourage secure passageways under bridges for small mammals, to create natural reserves and otter havens .

Like all of the LIFE-Nature projects, the restoration actions were carried out within the Natura 2000 sites.

The completed alterations will allow for the natural re-colonizing of rivers in the medium term (15 to 20 years) coming from neighbouring countries (Netherlands, France and Germany) that have growing otter populations.

The otter, an emblematic species of our rivers

Improving habitats and potential resting places

1. Burrow
2. Cavities under roots
3. Dense clump of blackthorn

In Wallonia and the Grand Duchy of Luxembourg, the river is the primary living environment for otters, but they can also be found in ponds or wetlands, provided that they can find sufficient food.

The presence of vegetation on the riverbanks and the land surrounding watercourses is a key element for the species; indeed, otters use a great number of resting places of various types: a daytime resting place, a resting place for the birth and raising of young otters, known as a burrow, and even a place to rest during a night of hunting. Beds are arranged in the dense vegetation (brambles, compact stands of willow trees or blackthorn, wood heaps...), while shelters are built in hollow trunks, webs of roots of riparian trees, rocky cavities or already used muskrat holes. The otter changes its resting place on a regular basis, sometimes daily, except when raising its cubs; it therefore needs several dozen resting places per year, all the more so as the settling and reproduction of the species are intimately linked with the number of potential resting places. One of the project's objectives was therefore to preserve existing resting places, but also to create new shelters by means of planting riparian trees (trees alongside waterways) and the creation of otter havens (see page 12).

Improving water quality: impact of some pollutants on the health of otters

A study of the evolution of the content of polychlorinated biphenyls, also known as PCBs, was carried out on 4 fish species (stone loach, eel, chub, barbel) in 20 stations in Luxembourg and Wallonia. This insulating substance was formerly used in electrical transformers, condensers or as an isolator. Placed in rubbish tips, PCBs are washed by the rain and find their way into river water, but also into the fatty matter of certain fish upon which the otter feeds, only to accumulate PCBs in turn. PCBs have an impact on the otter's fertility rate, but also on its metabolism, notably with regard to vitamins.

While we have noted a decrease of 5 to 10 times in the level of PCBs compared to 1995, latent PCB pollution nevertheless remains in the Ourthe River, in the downstream part of the Our and the Wiltz Rivers.

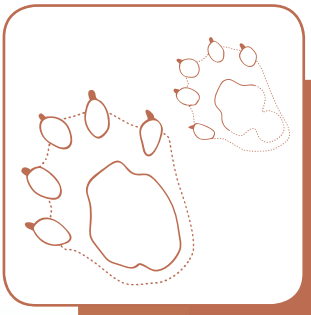
The bioaccumulation of PCBs in the livers of otters as a result of contaminated fish generates effects on the otter's health that can be calculated as ranging from "no effect" to "critical", according to the watercourse in question.

Barbel

An observer's network for the otter...

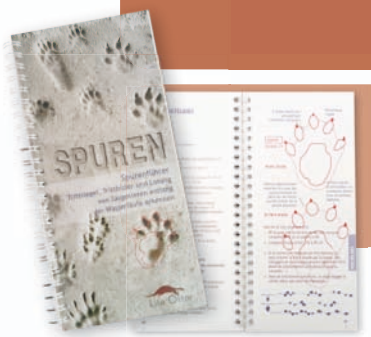
From the start of the project, each field trip by the technical team was an opportunity to look for the famous footprint. Given the size of the territory to be covered, a call was made for volunteers to establish a network of observers. After training in the recognition of tracks and other hints for the identification of mammals, each network member was assigned an area to cover, to be examined once a year according to the international standardised method (ISOS). To boost the group and continue the training, dedicated weekends were organised to track search. These efforts led to the collection of more than 700 data samples on mammals encoded in the databases in Wallonia and Luxembourg.

1. Observers
2. Otter footprint



THE FOOTPRINT :

five digits linked by webbing (rarely dominant); fairly oval but well separated digital pads, in a nearly perfect semicircle; claws that are directly attached to the digital pads; the footprint fits within a square measuring 6 to 7 cm, unlike the tracks of other Mustelidae, which are generally in a rectangle.



Published as part of the project, the "Traces" book is a field guide devoted to the recognition of riverside mammals. This book was used as the training material for the observer's network

After two years in operation, the hidden cameras have still not provided definitive proof of the otter's presence. However, many other species have had their pictures taken!

Raccoon

Badger

Photo trap

Restoring humid floodplains in order to offer good quality habitats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1. Clearing of trees on the "Belle Meuse" in Nadrin
2. Clearing of trees on the Schwärzerbaach
3. Nature reserve of Orti in St Ode
4. Loading of timber

One of the causes for the disappearance of the otter is the loss of habitat, i.e. the disappearance of areas for resting and tranquillity. Otters are active at night, during which time they move around, seek food and raise their cubs. By day, they spend their time sheltered away from prying eyes, in a burrow or bramble bushes.

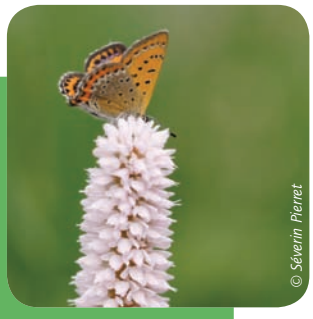
At the start of the last century, the spruce was extensively planted in our areas. In well-drained ground above 500 m of altitude, the spruce is suitable. However, it poorly tolerates water-soaked ground, resulting in the need for drainage of these areas, meaning the disappearance of wetlands that are particularly important for otters, but also for many species of amphibia, dragonflies or butterflies.

The restoration of the floodplains carried out as part of the LIFE project involves the deforestation by the clear cutting of 150 ha of softwoods belonging to private owners. These owners received the proceeds from the sale of the wood, as well as a compensation for the early cutting of trees. Through an agreement signed on a voluntary basis, the owners have undertaken not to replant softwoods for 30 years; however, they can plant suitable local hardwood species (common alder, ash, maple...).

Some of the owners preferred to sell the wooded land after felling the trees. Around 100 ha, most often bottom woods or non-cultivated lands, were purchased in order to create new nature reserves or to complete the existing ones. In Wallonia, these lands were assigned to the Wallonia Region; the Nature and Forestry Department (DNF) looks after their management. In Luxembourg, the owner is the *Hëllef fir d'Natur foundation*, which will look after the management of the sites.

The Violet copper *(Lycaena helle)*

The Violet copper is a remarkable butterfly from the Ardennes massif. In Wallonia, it is found only in the Ardennes and in the north of Belgian Lorraine (Semois Valley), where it reproduces in sunny but sheltered damp areas: damp fields and in the vicinity of peat bogs, that are partially wooded or located on the edge of the forest. The presence of knotweed is indispensable for the development of the caterpillars, as this plant is their exclusive source of food.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"Le Fond des prés", a jewel of nature in Wallonia

"Le Fond des prés" is a new nature reserve located at Les Fossés, in the town of Léglise. The site is made up of a mosaic of plots of land, soaked with water for most of the time: areas with springs, swamp, meadows covered with knotweed and meadowsweet; it had previously been used as hayfields. Part of these lands were planted with spruce trees in the 1960s and 70s.

As part of the LIFE project, the spruce trees were felled and 6 ha of land were purchased in order to restore the site's biodiversity. Ponds were dug in order to encourage the reproduction of amphibia, but also odonates (dragonflies and damselflies). The interest value in botanical (Field scabious, Buckbean, cotton Grass, purple Marshlocks) and ornithological (common stonechat, great grey shrike and red-backed shrike) terms is undeniable. The good news was undisputedly the first observation of the Violet copper on the site in 2010.

The "Schwärzerbaach", a tributary of the Sûre restored in Luxembourg

The "Schwärzerbaach" is a stream with two tributaries, having their respective sources near Bigonville and the Riesenhaff. It feeds into the Sûre near the "Bruechtel" bend. The little stream's name is very apt (Schwaarz = black), given the significant stands of spruce trees that, up until recently, covered nearly 6 km of its riverbanks of both tributaries.

The LIFE project brought light into these two glens, through the deforestation of 12 ha of spruce trees located alongside the stream. Approximately 5 ha of these lands were purchased and integrated into the *Hëllef fir d'Natur foundation* network of nature reserves, but the entire valley was restored. Amongst the significant acquisitions, part of the wetland located near the source of the "Schwärzerbaach".

The LIFE otter in numbers

In Wallonia:

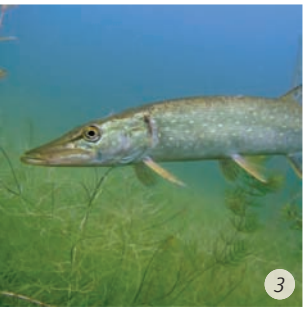
- 84 ha of new state nature reserves
- 130 ha of softwoods cleared from the floodplain

In Luxembourg:

- 21 ha purchased by the *Hëllef fir d'Natur foundation*
- 20 ha of softwoods cleared from the floodplain

1. Whinchat
2. Western marsh Orchid
3. Red-blacked shrike
4. Devils-Bit scabious

Protecting rivers to ensure the food resource



1. Iris
2. Pond weed
3. Pike

Given that otters primarily feed on fish, one component of the project involved the restoration of the natural productivity of waterways. This effort targets in particular the restoration of spawning grounds (fish reproduction areas) and backwaters, as well as the unrestricted circulation of fish by removing uncrossable obstacles (culverts under bridges, dams, etc.).

Restoration of the Monville spawning ground in the basin of the Ourthe

The spawning ground is located at Monville, near Hotton; it was rendered non-functional as a result of several problems. Firstly, a barrage bay located upstream of the spawning ground resulted in a permanent current in this area; secondly, trampling by horses grazing in the meadow prevented the development of helophytes (plants with their roots underwater, but with stems, leaves and flowers above water). These plants are indispensable for the reproduction of the Northern pike, the European perch and the roach, which uses them as support for the laying of eggs.

The work carried out in June 2009 involved removing the circular pipes that allowed water to enter upstream from the spawning ground, enlarging the spawning surface, creating lateral channels to prevent fish from being trapped during periods of fall of water, planting helophytes in July 2009 (Sweet-grass and Bulrush) and the installation of a fence and drinking troughs for horses.

The results were quick, notably in terms of the recovery of the vegetation; the spawning ground is unwatered in the summer, which encourages the recovery of the vegetation. Now can be found Sweet-grass, Bur-reed, Reedmaces, Irises, Water Plantain, Loosestrife, Marsh scorpion grass, Bulrush, Cyperus-like Sedge and brown Galingale.

The spawning ground of Monville in the winter

The spawning ground of Monville in the summer

Removal of obstacles on the Wiltz in Luxembourg

In the past, the Wiltz River had a series of schist and concrete dams that served to re-direct part of the water flow towards water mills and the natural fertilization from the meadows (enrichment of the grasslands with the suspended matters in the winter floodwaters). Two concrete dams near the Schimpach railway-station (municipality of Wincrange) were removed in order to allow the fish to circulate freely within the waterway. The concrete structures were replaced with gently sloping banks, protected by a covering of coconut and willow cuttings. The significant height difference was replaced by a coarse ramp (bed of stones in a gentle slope in order to allow fish to cross it). The farmer involved in the project agreed to install a fence, as well as a footbridge and a solar drinking trough.

1. Dam on the Wiltz

Restoration of a backwater in the Valley of the Ulf

The Ulf is a tributary of the Our River; it is a stream that has been profoundly adjusted, and in which the alluvial plain had been planted with spruce trees in many locations. Between Oudler and Burg-Reuland, the deforestation of softwoods over approximately 5 ha followed by the acquisition of the land made it possible to envisage returning the watercourse to its former bed, by digging out an old bend.

Given the presence of pearl mussels downstream in the Our River, the suspension of sediment in the water during the work had to be limited. The solution was to spread the work over two years in order to allow the vegetation to fix the banks before water was released into the structure. Thanks to this work and the status as a state nature reserve, the Ulf will find new natural dynamism at this location.

Restoration of the backwater on the Ulf

The LIFE otter in numbers

In Wallonia:

- Restoration of 6 spawning grounds on the Ourthe and Sûre Rivers
- 8 obstacles removed (Sûre, Ourthe and Our Rivers)
- Restoration of a backwater on the Ulf

In Luxembourg:

- 13 obstacles removed on the Wiltz and Tretterbaach Rivers

Protecting rivers to ensure the food resource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1. Solar drinking-trough
2. Footbridge for cattle
3. Barrel drinking-trough
4. Pump with muzzle drinking-trough

In agricultural areas, when livestock is watered directly from the river, we generally see areas of trampling. During rain periods or flooding, the stripped banks are eroded and the mud is washed into the stream. It is deposited on the bed and contributes to what is known as the clogging of spawning grounds (spawning zone for some fish species). This is problematic during the reproduction of fish. Trout, for example, look for gravel areas in order to lay their eggs; if the gravel is loaded with sediment (mud), the eggs cannot survive due to the lack of oxygen.

Efforts were made to raise the awareness of farmers with regard to this problem. Without this close collaboration, the project would not have succeeded. Extensive dialogue was engaged with them in order to protect the banks of watercourses through the installation of fences, drinking troughs and footbridges. The planting of trees on the riverbanks serves to create corridors that facilitate the movement of fauna, while contributing to the fight against soil erosion.

Many ponds were dug; they provide a setting with greater biodiversity and a supplement to the otter's diet, notably at the time of the reproduction of amphibia. In the springtime, otters can preferably feed themselves with frogs and toads. The ponds are also worthwhile for other species: dragonflies and various aquatic plants rapidly make their way there.

Buckbean

Preserving the otter's habitat

Improving the otter's habitat means preserving the indigenous vegetation that it uses for shelter (brambles, stands of willow trees, spiniferous bushes...), as well as the structures that it uses as dens: burrows, rocky cavities, piles of wood... though it also means avoiding the colonization by exotic plants.

The colonization of the riverbanks of our watercourses by invading "exotic" species can result in the trivialization of the setting. Indeed, these invasive species develop quickly and occupy the lengths of the streams with such density that they enter into competition with the indigenous vegetation. And how would this impact the otter, you ask? Well, this vegetation does not offer the same potential for dens and shelters as large thorny stands, brambles and other willow bushes.

Targeted management efforts have been carried out in collaboration with many partners, for the Giant hogweed, the Japanese knotweed, the Spirea and Himalayan balsam, that are very present in the basin of the Ourthe River in Wallonie, but also alongside the Our and the Sûre Rivers in Luxembourg.

Giant hogweed

1. Spirea
2. Japanese Knotweed
3. Himalayan Balsam

The LIFE otter in numbers

In Wallonia:

- 49 km of fences and 230 drinking troughs installed
- Construction of 19 cattle footbridges
- Planting of 14 km of riparian barriers
- Management of 187 ha of invasive species

The LIFE otter in numbers

In Luxembourg:

- 12 km of fences and 33 drinking troughs installed
- Construction of 4 cattle footbridges
- Planting of 9 km of riparian barriers
- Management of 2 ha of invasive species

Improving the otter's living conditions

Safeguarding its movements

In most European countries that are home to the otter, a high mortality rate due to road accidents is observed. This is especially true on high traffic roads and bridges that do not allow the animal to cross via the banks. The otter then prefers to bypass the bridge and cross the road, running the risk of being run over.

Otter passageways have been installed under 9 bridges in order to reduce the mortality risks. Automatic cameras have been installed under certain bridges in order to check that the structures are being used. The bridges are fitted with partially buried fences intended to direct the animal towards the passageway. These passageways are used by otters, but also by polecats and foxes. In short, a structure that can easily accommodate various species of small mammals, as well as small fauna.

Otter Havens

Otter Havens are sites that have been provided with a series of measures to ensure the otter's tranquillity, that the owner undertakes to respect and/or set up: respect for the tranquillity of the areas by hikers and fishermen, preservation of vegetation along the river banks, hunting by lying in wait rather than driving... These measures have been set down in a 10-year agreement signed by the various parties.

Artificial burrows

The term burrow can be likened to burrowing away in a corner. A burrow is the reproduction spot for otters. The young are born there, and raised for approximately a year. The burrows that we have installed are either made of recycled plastic, or of wood. They can equally accommodate otters or other passing mammals, such as polecats.

1. Dry culvert in Neimillen
2. Bridge on the Wark River in Warken
3. Bridge below Sassel on the Troine

Wood otter Holt

Tools for learning about otters, events, training...

Awareness-raising is an important element of all LIFE projects. The otter has been an extraordinary ambassador for reaching children. It has been able to charm and convince them to act in favour of nature so that, one day, they will have the opportunity to see otters while walking along rivers. And adults have not been overlooked; a great many have taken part in the various events organised. The awareness-raising tools produced as part of the project are still available and will live on through the events organised by the Nature parks, partners of the project.

Educational file "On the tracks of the otter":

Intended for the elementary school (children from 8 to 12 years old), this file helps you to learn more about otters, but also explains biodiversity, the food chain and the relationships between various species. The file revolves around 10 topics; each topic consists of a card intended for teachers, and another for the students.

A travelling exhibition

It is built around five modules and four meanders that provide an opportunity for field trips to discover the otter's living environment. Each meander illustrates a more or less favourable section of the river, or one specially arranged for otters. The modules provide an introduction to and understanding of the intimate life of this species, its food supply, where it lives, the causes for its regression, the difficulties observing it; all in three dimension and with a focus on interactivity and audience participation.

Explanatory panels

Several explanatory panels (covering otters, wetlands, ponds, nature reserves) have been installed along hiking trails.

Make way for the otter's return!

Illustration : Sonia Marx

The otter is doing badly in our region! Despite this finding, significant budgets have been devoted to this species, so does this make sense? The answer is YES, without hesitation! Firstly because we're doing the groundwork for the otter to return, making its way back from France or Germany, and even the Netherlands. In fact, in neighbouring countries, otters are doing well. Each year, they take over new territories covering an average rhythm of 10 km per year. Also because everything carried out as part of the LIFE project is beneficial to other species: dragonflies, butterflies, fish, frogs and even black storks. The otter is something that we can refer to as an "umbrella" species... any action carried out in its favour benefits a whole range of species that do not get the same media coverage. And the results have been quick in coming, with the observations of dragonflies and butterflies that had not previously been seen in the project's areas.

Blue-tailed damselfly *(Ischnura pumilio)*

The blue-tailed damselfly is considered to be something of a pioneer. It can be found in recently created wetlands, ponds with little vegetation or even temporary ponds. Quite rare in Belgium, in 2010 it was spotted in the vicinity of ponds dug in January of that same year in the basin of the Sûre.

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The Southern skimmer *(Orthetrum brunneum)*

The Southern skimmer is not a very common dragonfly. It is included in the Wallonia red list under "vulnerable" status. It's a southern species that seems to be taking advantage of global warming in order to develop in our region. Like the blue-tailed damselfly, it was discovered last summer in a pond dug in Hollange (basin of the Sûre).

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The project's quantified results

Overall across the areas in Wallonia and Luxembourg, the investments involve:

Action type	What was planned	What was carried out
Restoration of damp floodplains		
Clearing of softwoods and restoration of floodplains	133	150 ha
Digging of ponds	40	178 ponds
Purchases of lands for the creation of nature reserves	57	105 ha
Collaboration with farmers		
Installation of fences along waterways	54	61 km of fences
Installation of drinking troughs, muzzle-operated, gravity fed, solar or wind powered	96	263 drinking troughs
Installation of footbridges for cattle	14	23 footbridges
Planting of hedges or trees along streams	28	23 km of planting
Layout and management of watercourses		
Restoration of spawning grounds or backwaters	8	6 spawning grounds and 1 backwater
Removal of obstacles for the migration of fish	20	21 obstacles removed
Creation of otter havens	25	31 havens of peace
Installation of artificial burrows	9	9 burrows
Secure passageways for mammals under bridges	7	9 otter passageways
Management of invasive plants: Giant hogweed, Himalayan Balsam, Spirea, Japanese knotweed	96	189 ha

But also many events intended for school children, families and nature lovers, the creation of a guide to recognising tracks, of an educational file and exhibition, the set-up of a network of observers, the organisation of an international conference, the creation of a nature discovery path, the installation of explanatory panels...

With thanks to
A considerable team has worked on the LIFE otter project: employee or volunteer, government agency or non-profit organisation, friend or family... We take this opportunity to offer our deepest thanks for the energy, enthusiasm and encouragement that have led to the success of this project.

The LIFE Project "Restoration of the habitats of the otter"
LIFE 05/NAT/B/000085

Project duration: 5.5 years (October 2005 – March 2011)

Location: basins of the Sûre, the Ourthe and the Our in Belgium and in Luxembourg

Project funding
The European Commission
The Wallonia Region - Agriculture, Natural Resources and Environment Operational General Department
The Grand Duchy of Luxembourg: Ministry for Sustainable Development and Infrastructures and Ministry of the Interior and the Greater Region

Budget : €3,891,663, with 50% coming from the European Commission (€1,945,031), €1,273,832 from the Wallonia Region and €672,000 from the Grand Duchy of Luxembourg

Beneficiary :
Haute-Sûre Forêt d'Anlier Nature Park - Belgium

Belgian partners :
Nature Park of the Deux Ourthes
Hautes Fagnes-Eifel Nature Park

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