# Eurasian Otter (*Lutra Lutra*) – The Netherlands

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|---|---|
| Conservation status | IUCN Global: Near Threatened<br>IUCN EU25: Near Threatened<br>NL: U2 (+) |
| Protection status | HD: Annex II and IV<br>Bern Convention: Appendix II |
| Population (2007-12) | EU27: > 54,000 – 85,700 individuals<br>NL: 80 – 120 individuals |
| MS with genuine improvement | AT, BE (ATL), DE (ATL, CON), IE, IT (MED), NL, SE (CON) |
| Other MS | BE (CON), BG, CZ, DE (ALP), DK, EE, ES, FI, FR, GR, HU, IT (ALP), LT, LU, LV, PL, PT, RO, SE (ALP), SE (BOR), SI, SK, UK |

**Summary**: The Eurasian Otter became extinct in the Netherlands, due to habitat loss, poor water quality and traffic kills. In 1988 an Otter Recovery Plan came into action, through cooperation of national and local governments, water boards and nature management organisations. The plan included measures on habitat restoration and water quality improvement, a breeding program combined with reintroduction/repopulation of the species, connecting habitats and creating safe routes for movement and dispersal, as well as scientific research and educational activities. Improved water quality resulted mainly from more general international and national policy, but in otter habitats water pollution was more strictly prohibited. As the otter is considered to be a good indicator species for overall environmental quality, and also an iconic species for the river delta, a large budget was provided for these measures. The combination of measures has resulted in a population of about 200 individuals which is still spreading and increasing. However, ongoing road kills and the limited genetic diversity of the population are problems to be dealt with.

## Background

### Status and EU occurrence

The Eurasian Otter (*Lutra lutra)*[1] has one of the widest distributions of all Palearctic mammals. Its range covers parts of three continents: Europe, Asia and Africa. Its current distribution in Europe is marked by a large corridor, stretching from central Denmark, via the western parts of Germany, the Netherlands, Belgium, Luxembourg, the eastern parts of France, Switzerland, the western parts of Austria to central Italy, where the otter is extinct or reduced to small and sometimes isolated subpopulations. Information for Russia, which forms a link between Europe and Asia, is fragmented. It seems that the otter is distributed throughout the country except for the tundra and the northern regions with permafrost.

In Europe the otter has recovered after dramatic declines in the 1960s and 1970s. It continues to recover in many parts of its former distribution except in most of central Europe. In the east of the Netherlands, the otter was reintroduced during 2002-2008, and has since spread to the south and west. In the Atlantic, Pannonian and Steppic biogeographical regions the species' conservation status is favourable, but it is unfavourable-inadequate in the Alpine, Black Sea and Continental regions (Annex 1). Only in the Boreal region is the status unfavourable-bad (but improving) due to an unfavourable-bad status in Sweden. The future prospects are favourable for most of the regions. The initial Bulgarian favourable assessment was downgraded for the regional assessments as the species is reported as vulnerable in the Bulgarian Red Data Book and WWF-Bulgaria suggests that the modelling system used by Bulgaria provides too optimistic values (EEA Art 17 report –online).

[1] Reporting code 1355

### Ecological requirements

The otter is a semiaquatic carnivore, that can live in a wide variety of aquatic habitats, including highland and lowland lakes, rivers, streams, marshes, swamp forests and coastal areas. In Europe they are found from sea level up to 1,000 m in the Alps.

In most parts of its range, its occurrence is correlated with the presence of bankside vegetation, showing the importance of this to otters. Otters in different regions may depend upon differing features of the habitat, but to breed, they need holes in the river bank, cavities among tree roots, piles of rock, wood or debris. Most of the species' activity is concentrated on a narrow strip on either side of the interface between water and land. Otter distribution in coastal areas, especially the location of holts, is strongly correlated with the presence of freshwater.

Like most species of otter, fish is the major prey of Eurasian Otters, sometimes exceeding more than 80% of their diet. In addition, a whole range of other prey items have been recorded in their diet in variable proportions. These include aquatic insects, reptiles, amphibians, birds, small mammals, and crustaceans. The Eurasian Otter is capable of taking fish as large as 9 kg, however, many studies in Europe have revealed that the fish consumed by the species are relatively small with a median length of 13 cm.

The Eurasian Otter is largely solitary and defends his territory. Adult otters tend not to associate with other adults except for reproduction. The family group of mother and offspring is the most important unit of otter society.

In most of its range the Eurasian Otter is predominantly nocturnal. Otter activity has been linked to that of its prey species, with the favoured marine species more vulnerable in daylight and those in freshwater easier to catch at night. In coastal habitats, tidal patterns influence otter activity, with significant preference shown for feeding at low tide, both in Shetland and on the Scottish west coast (Roos *et al*. 2015).

### Pressures and threats

The aquatic habitats of otters are extremely vulnerable to man-made changes. Canalisation of rivers, removal of bank side vegetation, dam construction, drainage of wetlands, aquaculture activities and associated man-made impacts on aquatic systems are all unfavourable to otter populations. Pollution of water is a major threat to the otters in western and central Europe, the main pollutants posing a danger to the species being the organochlorines dieldrin (HEOD) and DDT/DDE, polychlorinated biphenyls (PCBs) and the heavy metal mercury (Lammertsma and Van den Brink, 2012). Coastal populations are particularly vulnerable to oil spills. Acidification of rivers and lakes results in the decline of fish biomass and reduces the food resources of the otter. The same effects are known to result from organic pollution by fertilisers, untreated sewage, or farm slurry. In addition, major causes of mortality are drowning and road kills.

In the Netherlands, high rates of mortality from traffic is now considered the primary threat, followed by low reproduction rates (otters start reproducing relatively late and produce low numbers of offspring per year). Fyke nets set for eels or for fish as well as creels set for marine crustaceans have a great attraction to otters and a high risk to those that successfully enter these traps. A further potential threat is entanglement in transparent, monofilament drift nets. Another potential risk comes from traps designed to kill other species, especially underwater cages constructed to drown muskrats. Illegal hunting is still a problem in many parts of their distribution range. In several European countries political pressure especially by fishermen has resulted in granting of licenses for killing otters. There is an ongoing discussion about the problem of reintroduction of otters. In recent years it is feared that this may contaminate the genetic structure of native populations (Roos *et al*. 2015).

## Drivers of improvements: actors, actions and their implementation approaches

#### Organisers, partners, supporters and other stakeholders

In 1988, the last otter living in the Netherlands was killed by traffic. The species became extinct, but a large group of organisations applied for a reintroduction plan. As a result, a species protection plan (Otter Recovery Program) came into action (MinL&V, 1989). This involved broad cooperation between the responsible nature management organisations (Staatsbosbeheer, Natuurmonumenten), national government, provinces, water boards and private nature conservation organisations. Scientific research and the creation of education and information centres were also part of the plan.

**Contributions / relevance of strategic plans**

The Otter Recovery Program has had a huge impact on the otter population and on the ecological knowledge on their conservation. In the Netherlands the otter is part of the Dutch Network Ecological Monitoring (NEM) initiative, and such monitoring was also vital to their recovery. Monitoring included the mapping of the distribution and dispersion of the species via registration of dead animals, specifically the location of traffic victims. Genetic monitoring of species by DNA-analyses of faeces also produces detailed information.

**Measures taken and their effectiveness**

No conservation measures were listed by the Netherlands in their Article 17 report.

Measures included in the Otter Recovery Program plan were:

- Management of the quality and quantity of water, by specific hydrological measures focused on retaining local clean water in otter areas, by separating them from polluted water sources such as drainage canals. Other laws, not specific to the otter were also beneficial in evoking source-oriented controls of pollution and contaminants, the most important ones being the national Wet Surface Water Pollution Act (WVO in Dutch, 1969), the Rhine Action Plan invoked by the Rhine bank states (1986) and more recently, the Water Framework Directive (WFD).
- Restoration of habitat, starting in the North Eastern part of the Netherlands. Creation of nature-friendly banks and borders along water courses, such as through the fencing of banksides, planting of reeds, trees and shrubs, and the creation of otter holts.
- Modifying infrastructure to aid the movement of otters (e.g. by creation of dedicated fauna passages under bridges, allowing both aquatic and terrestrial animals to pass-through, or by creating tunnels with fences), thereby reducing the need for otters to cross roads. Connecting suitable habitats by implementing the National Ecological Network (NEN) – see box below.
- Scientific research on water quality, connecting of vital areas.
- A monitoring program on reproduction, behaviour of otters and habitat requirements.
- A breeding program for otters in captivity followed by their reintroduction.
- The monitoring of otter movements by means of radio transmitters.
- Adaptations to agriculture, such as regulating pesticide use and adapting grass and reed mowing schedules.
- Zoning measures to regulate recreation, like fences and warning signs to keep tourists away.
- Safeguarding by improving the statutory legal protection of the otter and its habitat.
- Purchasing important habitats.

**National Ecological Network**

The National Ecological Network in The Netherlands (NEN) is made up of existing and planned nature areas, and is designed to link nature areas more effectively with each other, and with surrounding farmland. The provinces are responsible for maintaining the NEN.

The NEN encompasses existing nature conservation areas, including the 20 National Parks, all Natura 2000 areas, areas where new wildlife habitats are being created, land under agri-environmental schemes and over six million hectares of water: lakes, rivers, the North Sea coastal zone and the Wadden Sea. The NEN is linked to and part of the Pan-European Ecological Network.

The main targets of the plans have been achieved: the otter has returned, is breeding and colonising new habitats that have become suitable. However, opportunities to move about (e.g. for dispersal and feeding) without crossing roads are not sufficient, as continuing road kills show. Also, as the genetic diversity of new otter populations is limited, inbreeding may be a problem for the sustainability of the populations (Kuiters et al, 2016). A program of genetic monitoring by DNA analysis of faeces shows that otters in the Netherlands are mixing with populations in Germany, which was not expected, but might be favourable (Koelewijn et al, 2010, Kuiters et al, 2016).

**Funding sources (current and long-term) and costs (one-off and ongoing)**

Funding for the Otter Recovery Program was provided by the Dutch government. No LIFE projects for the Netherlands have been established and no other EU subsidies are known to have contributed. Further information on the funding of the recovery plan is not available.

**Future actions**

The Dutch Prioritised Action Framework (PAF) for Natura 2000 in 2014-2020 mentions the Otter Recovery Program as one of the relevant governmental and non-governmental plans (MinEz, 2016). Nature management organisations have also included maintenance of relevant habitats in their regular management plans, so there is no direct concern for the longer term.

## Achievements

**Impacts on the target species**

The number of otters present in the Netherlands have grown from zero in 2002 to 200 in 2016. However, the number of otters known to be killed by traffic has also risen from three in 2003 to 43 in 2016 (CLO, 2016).

**Other impacts (e.g. other habitats and species, ecosystem services, economic and social)**

The otter recovery program has largely contributed to an increase of ecological knowledge on the otter and has provided much experience on favourable nature management practices. It has also contributed to improved habitat quality that can be expected to have benefited many associated species. Fauna passages that were created for otters are also being used by other species so habitat connectivity has been improved for them as well.

## Conclusions and lessons learnt

**The key targeted conservation measures that led to the improvements**

- A combination of habitat restoration, connecting and defragmenting habitats, water quality improvement, breeding and reintroduction appears to have been effective.
- Creation of dedicated fauna passages under bridges allowing both aquatic and terrestrial pass-through facilitates movements, although they are not fully effective as road kills continue.
- Creation of nature-friendly river banks and borders helped to create suitable habitats that are being colonised.
- Connecting of suitable habitats contributed to the construction of the National Ecological Network (NEN).

**Conservation measures that have not been sufficiently effective**

- Otters are territorial, and therefore when individuals were introduced in locations that were already occupied by other otters, they were forced to move and often were killed by traffic while doing so. This was due to an insufficient source pool of otters suitable for reintroduction and a limited reintroduction area. Also, some captured otters that were reintroduced were too old and had a tendency to move back to their territory of origin (homing behaviour).
- The plan for creating the NEN have not been completed, so otters still need to cross roads and are occasionally being killed by traffic.

**Factors that supported the conservation measures**

- Water quality also improved by measures resulting from the WVO, WFD and the Rhine Action Plan.
- Spontaneous genetic exchanges between otter populations in the Netherlands and Germany improved genetic diversity.

**Factors that constrained conservation measures**

- Road kills of otters not only diminished population growth, but also evoked negative sentiments in the general public, shedding a negative light on the Otter Recovery Program.

**Quick wins that could be applied elsewhere for the species**

Where the prerequisites of clean water and suitable habitat (through restoration if necessary) have been fulfilled the following measures may provide additional quick benefits:

- Create fauna passages for otters under roads with sufficient fencing, which helps to reduce the need for crossing dangerous roads.
- Mow the borders of vegetation near roads, as this dissuades otters from crossing roads. An open space between water and roads limits occasional migratory movements.
- Lowering of maximum speed on those secondary roads that provide crucial barriers to otter movements.
- Installing stop-grids in fish fykes, as this prevents adult otters from drowning in them.

**Examples of good practice that could be applied to other species**

- This case illustrates a well-balanced combination of conservation and restoration activities, based on sound ecological knowledge and dedicated scientific research; and the need for new projects to be based on tailored measures.

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## Authorship

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## Annex 1 Eurasian Otter (*Lutra lutra*) conservation status at EU and Member State levels

| Favourable | FV | Unknown | XX | Unfavourable - inadequate | U1 | Unfavourable - bad | U2 |
|---|---|---|---|---|---|---|---|

Qualifier (+) improving (-) deteriorating (=) stable (x) unknown (n/a) not reported

| | 2001-06 | 2007-12 | | | | |
|---|---|---|---|---|---|---|
| | Overall | Range | Population | Habitat for species | Future | Overall (with trend) |
| AT | U2 | U1 | U1 | FV | U1 | U1 (+) |
| BG | N/A | FV | FV | FV | FV | FV (0) |
| DE | XX | XX | XX | XX | XX | XX (0) |
| ES | XX | FV | FV | FV | XX | FV (0) |
| FI | FV | FV | FV | FV | FV | FV (0) |
| FR | N/A | U2 | U2 | FV | FV | U2 (+) |
| PL | FV | FV | FV | FV | FV | FV (0) |
| RO | N/A | FV | FV | FV | FV | FV (0) |
| SE | FV | U1 | U1 | U1 | FV | U1 (+) |
| SI | U1 | FV | U1 | U1 | U1 | U1 (X) |
| SK | U1+ | U1 | FV | U1 | FV | U1 (+) |
| BE | U2 | U2 | U2 | U2 | U2 | U2 (+) |
| DE | U1 | U1 | U1 | U1 | FV | U1 (+) |
| DK | FV | FV | FV | FV | FV | FV (0) |
| ES | XX | FV | FV | FV | XX | FV (0) |
| FR | FV | FV | FV | FV | FV | FV (0) |
| IE | U1 | FV | FV | FV | FV | FV (0) |
| PT | FV | FV | XX | FV | FV | FV (0) |
| UK | FV | FV | FV | FV | FV | FV (0) |
| BG | N/A | FV | FV | FV | FV | FV (0) |
| RO | N/A | FV | FV | FV | FV | FV (0) |
| EE | FV | FV | FV | FV | FV | FV (0) |
| FI | FV | FV | FV | FV | FV | FV (0) |
| LT | FV | FV | FV | FV | FV | FV (0) |
| LV | FV | FV | FV | FV | FV | FV (0) |
| SE | U2+ | U2 | U2 | U2 | U2 | U2 (+) |
| AT | U1 | FV | FV | FV | XX | FV (0) |
| BE | U2+ | U2 | XX | U1 | U2 | U2 (-) |
| BG | N/A | FV | FV | FV | FV | FV (0) |
| CZ | FV | FV | FV | FV | FV | FV (0) |
| DE | U1 | FV | U1 | U1 | FV | U1 (+) |
| DK | U2+ | U2 | U1 | XX | U2 | U2 (X) |
| FR | FV | U1 | U1 | FV | FV | U1 (+) |
| PL | FV | FV | FV | FV | FV | FV (0) |
| RO | N/A | FV | FV | FV | FV | FV (0) |

| | | | | | | |
|---|---|---|---|---|---|---|
| SE | N/A | U2 | U2 | U2 | U2 | U2 (+) |
| SI | U1 | FV | U1 | FV | FV | U1 (+) |
| GR | XX | XX | XX | XX | XX | XX (0) |
| ES | XX | FV | FV | FV | XX | FV (0) |
| FR | FV | U2 | U2 | FV | FV | U2 (+) |
| IT | U1+ | FV | FV | FV | FV | FV (0) |
| PT | FV | FV | XX | FV | FV | FV (0) |
| CZ | FV | FV | FV | FV | FV | FV (0) |
| HU | FV | FV | FV | FV | FV | FV (0) |
| RO | N/A | FV | FV | FV | FV | FV (0) |
| SK | U1 | U1 | U1 | U1 | U1 | U1 (=) |
| RO | N/A | FV | FV | FV | FV | FV (0) |
| IT | N/A | U1 | U1 | FV | FV | U1 (+) |
| NL | N/A | U2 | U2 | FV | U2 | U2 (+) |
| LU | U2 | U2 | U2 | U2 | U1 | U2 (=) |

**Source:** Member State Article 17 reports as complied by ETC-BD on EIONET
https://bd.eionet.europa.eu/article17/reports2012/