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STATUS AND DISTRIBUTION OF MAMMALS IN THE NETHERLANDS SINCE 1800

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ABSTRACT – The recent and historical status and distribution of 64 Dutch wild mammals are described. In the last two centuries there have been a lot of changes in this field. Some species are increasing, but others are decreasing. Greater horseshoe bat *Rhinolophus ferrumequinum* (in 1984), lesser horseshoe bat *Rh. hipposideros* (in 1983), wolf *Canis lupus* (in 1869), otter (in 1988, but a very small number of solitary individuals is still present) and Eurasian beaver (in 1826, but reintroduced in 1988) got extinct.

Key words: Biogeography, Mammals, The Netherlands

INTRODUCTION

In the Netherlands since 1800 64 wild mammal species are known, exclusive Cetacea. Occasional stragglers like greater noctule *Nyctalus lasiopterus* (Verbeek, 1993) and raccoon dog *Nyctereutes procyonoides* (Broekhuizen and Müskens, 1993) and introduced species, which have only populations in enclosures, like mouflon *Ovis orientalis musimon* have been excluded also.

The first atlas of the mammals of the Netherlands was published by Van Wijngaarden, Van Laar and Trommel (1971). In 1986 a specific bat atlas was published (Glas, 1986). Recently a new mammal atlas has appeared with a lot of information on status and distribution (Broekhuizen et al., 1992). Information from a specific bat atlas (Limpens et al., 1997) has also been used for this article. The history of the relatively poor but very interesting mammal fauna of the Wadden Sea islands has been described in detail by Van Laar (1981). Our article has benefited a lot from a study for a Red List of threatened mammals in the Netherlands (Hollander and van der Reest, 1994).

INSECTIVORA

Erinaceus europaeus L., 1758; *Sorex araneus* L., 1758; *Sorex coronatus* Millet, 1828; *Sorex minutus* L., 1766; *Neomys fodiens* (Pennant, 1771); *Crocidura leucodon* (Hermann, 1780); *Crocidura russula* (Hermann, 1780); *Talpa europaea* L., 1758.

The western hedgehog *Erinaceus europaeus* is very common and widespread in the Netherlands.

The common shrew *Sorex araneus* is widespread also, but is not present on the Wadden Sea islands with the exception of Terschelling. It is more common in the western and northern part then in the southeastern half, whereas Millet's shrew *Sorex coronatus* is not precent in the north and the west.

The pygmy shrew *Sorex minutus* is widespread on the mainland, but occurs only on two Wadden Sea islands, namely Terschelling and Ameland.

The water shrew *Neomys fodiens* is rare but widespread, however on the Wadden Sea islands it is only present on Texel. It is the only shrew on this island and lives there in a wide range of biotopes. The numbers of this species seem to be declining.

The range of the bi-coloured white-toothed shrew *Crocidura leucodon* in the Netherlands has contracted much in this century. It used to be present in the south east and centre (Overijssel, Gelderland, Noord-Brabant and Limburg) and in the region Zeeuwsch-Vlaanderen. After 1944 it was not found any more in the provinces of Gelderland and Noord-Brabant and after 1952 no more in Limburg. At the moment populations are only present in Zeeuwsch-Vlaanderen and in a small part of Overijssel along the German border. On the contrary the range of the greater bi-coloured shrew *Crocidura russula* is expanding. Nowadays this species is widespread, whereas in the periode 1879-1946 no records are known from the northern provinces of Croningen, Friesland and Drenthe.

In Noord- and Zuid-Holland the expansion is still going on. It does not occur on the Wadden Sea islands, with the exception of Schiermonnikoog.

The common mole *Talpa europaea* is very common and widespread, but it occurs not on the Wadden Sea islands.

CHIROPTERA

Rhinolophus ferrumequinum (Schreber, 1774); *Rhinolophus hipposideros* (Bechstein, 1880); *Myotis mystacinus* (Kuhl, 1817); *Myotis brandtii* (Eversmann, 1845); *Myotis emarginatus* (Geoffroy, 1806); *Myotis nattereri* (Kuhl, 1817); *Myotis bechsteinii* (Kuhl, 1817), *Myotis myotis* (Borkhausen, 1797); *Myotis daubentonii* (Kuhl, 1817); *Myotis dasycneme* (Boie, 1825); *Pipistrellus pipistrellus* (Schreber, 1774); *Pipistrellus nathusii* (Keyserling and Blasius, 1839); *Nyctalus noctula* (Schreber, 1774); *Nyctalus leisleri* (Kuhl, 1817); *Eptesicus serotinus* (Schreber, 1774); *Vespertilio murinus* (L., 1758), *Barbastella barbastellus* (Schreber, 1774); *Plecotus auritus* (L., 1758), *Plecotus austriacus* (Fischer, 1829).

There is a unique series of counts of more then 50 years of bats hibernating in marl caves in the youth of the province of Limburg. An analysis of these counts has been made by Weinreich and Oude Voshaar (1992).

Only the common pipistrelle *Pipistrellus pipistrellus* and the serotine *Eptesicus serotinus* have populations on the Wadden Sea islands, other bat species are at most migrants or occasional visitors to these islands.

The greater and the lesser horseshoe bats *(Rhinolophus ferrumequinum* and *Rh. hipposideros*), which used to be present in the southern part of the provincie of Limburg, have disappeared from the Netherlands. *Rh. ferrumequinum* established itself shortly before 1940, but got extinct in 1980. *Rh. hipposideros*, which was not rare 50 years ago (over 500 hibernating individuals in the marl caves in south Limburg), disappeared in 1983.

The whiskered bat *Myotis mystacinus* is widespread but probably not common; less then 20 nursing colonies are known. It occurs mainly in wooded regions. Brandt's bat *Myotis brandtii* is possibly confined to the south of the province of Limburg, but in fact the distribution is not sufficiently known, because very often

this species is not distinguished from *M. mystacinus*.

Geoffroy's bat *Myotis emarginatus* has got only one nursing colony (c. 100 individuals) in the Netherlands, which is in the province of Limburg. The number in the marl caves in Limburg decreased from about 300 in 1940 to about 50 nowadays. Natterer's bat *Myotis nattereri* is not common and mainly confined to wooded regions in the east, the centre and the south of the Netherlands. Bechstein's bat *Myotis bechsteinii* is a very rare (0-3 individuals each winter) hibernating visitor in the south of the province of Limburg.

The number of hibernating greater mouse-eared bats *Myotis myotis* in the marl caves in Limburg has decreased over the last 50 years from more then 200 to about 40. Very few are hibernating in other parts of the Netherlands. Nowadays *M. myotis* is observed in summer only in very small numbers in Limburg, whereas before 1950 it was widespread in the centre and the south eastern part of the country. No nursing colony has been found in the last 25 years.

In the marl caves in Limburg the number of hibernating Daubenton's bats *Myotis daubentonii* has increased sharply from about 100 in 1960 to about 1300 nowadays. Colonies are known from all over the country.

About 30 colonies are known from the pond bat *Myotis dasycneme*, all in the west and the north of the Netherlands. The hibernating number in the marl caves in Limburg is decreasing, but the numbers in other winter quarters are increasing.

The common pipistrelle *Pipistrellus pipistrellus* is very common all over the Netherlands. Nathusius' pipistrelle *Pipistrellus nathusii* is a common visitor from central and eastern Europe. Only one nursing colonies is known from the Netherlands. It was found in 1994.

The noctule *Nyctalus noctula* is widespread. It prefers wetlands to forage. Leisler's bat *Nyctalus leisleri* is a rare species in the Netherlands. Only two nursing colonies have been found, both in the provincie of Limburg.

The serotine *Eptesicus serotinus* is widespread in the Netherlands, but more common in the north then in the south. The bi-coloured bat *Vespertilio murinus* was observed in 1977 for the first time. Now it is a yearly visitor in very small numbers.

The barbastelle *Barbastella barbastellus* is almost extinct in the Netherlands. Nowadays very few (less then five) individuals are known from one locality in Zeeuws-Vlaanderen. They are present both in summer and in winter.

The brown long-eared bat *Plecotus auritus* is widespread, but occurs mainly in wooded regions. The grey long-eared bat *Plecotus austriacus* is present only in the provinces of Noord-Brabant and Limburg and in Zeeuws-Vlaanderen.

CARNIVORA

Canis lupus, L., 1758; *Vulpes vulpes* (L., 1758); *Procyon lotor* (L., 1758); *Mustela erminea* L., 1758; *Mustela nivalis* L., 1766; *Mustela putorius* L., 1758; *Mustela vison* Schreber, 1777; *Martes foina* (Erxleben, 1777); *Martes martes* (L., 1758); *Meles meles* (L., 1758); *Lutra lutra* **(L.,** 1758).

The last wolves *Canis lupus* (two cubs and an unknown number of adults) were observed in 1869 (Flaton, 1989).

Red foxes *Vulpes vulpes* are widespread in the Netherlands, with the exception of the western part (provinces of Zeeland, Noord- and Zuid-Holland), where they are

local but increasing. After an absence of at least three centuries the fox returned to the dunes of the provinces of Noord- and Zuid-Holland in 1968.

The raccoon *Procyon lotor* established itself from in Germany introduced populations in the Netherlands about 1961. The species is rare and mainly confined to wooded regions in the centre and east (Limburg, Gelderland, Utrecht and Overijssel).

The stoat *Mustela ernzinea* is widespread in the Netherlands. It occurs on the Wadden Sea island Texel. It was introduced on the islands Terschelling en Schiermonnikoog, but there it disappeared. The numbers seem to be declining, especially in the dunes of Noord- and Zuid-Holland.

The weasel *Mustela nivalis* and the polecat *Mustela putorius* are widespread, but do not occur on the Wadden Sea islands. The numbers of the weasel are possibly declining, whereas the numbers of the polecat seem to be more or less stable.

The American mink *Mustela vison* established itself about 1957. However there are very few proven cases of reproduction of feral individuals. Probably the feral population can not maintain its own numbers.

In the period 1850-1945 the beech marten *Martes foina* was observed in every province, but the range was declining already before 1900. In the period 1946-1969 it was not observed any more in the provinces of Groningen, Drenthe, Noord-Holland and Utrecht. Between 1970 and 1978 there are only observations from the extreme east and from Zeeuwsch-Vlaanderen. About 1979 however the beech marten started to recover.

Nowadays this species covers the area east from the line Groningen-Nijmegen-Maastricht.

The pine marten *Martes martes* has got only one big population, namely in the Veluwe region. There are small populations in the border region **of** Friesland and Drenthe, in the east of Overijssel, in Utrecht and possibly in a part of the dunes in Noord-Holland. Outside the Veluwe the numbers seem to be declining.

About 1900 the badger *Meles meles* was widespread in the east and the centre of our country. It is estimated that by that time about 4000 badgers lived in the Netherlands, but in 1980 only about 1500. Nowadays the population is recovering and its size is about 2200.

The last Dutch population of the otter *Lutra lutra* lived in the province of Friesland. Since 1988 there have been observations of only very few individuals, in total 3-5, in Limburg (Winter, 1993) and Friesland. Nowadays there is no population present in the Netherlands.

PINNIPEDIA

Phoca vitulina L., 1758; *Halichoerus grypus* (Fabricius, 1791).

The common seal *Phoca vitulina* used to have two populations in the Netherlands. About 1900 there were at an estimate about 16,000 common seals in the Dutch part of the Wadden Sea (Dankers *et al.* 1990) and about 11,500 in the south western part of the Netherlands, mainly Zeeland (Reijnders, 1994). The population in Zeeland disappeared almost completely in 1968. The numbers are still very low in that region and very few young are born. The population in the Dutch part of the Wadden Sea declined to a number **of** about 500 in the seventies.

The reason was problems with the reproduction, caused by chlorinated hydrocarbons. Nowadays the numbers in the Wadden Sea are increasing. In 1996 there were about 1600 individuals again.

The grey seal *Halichoerus grypus* used to live in the Netherlands until the early Middle Ages. It was not present in the first half of this century. In 1955 the first individual was observed again in the Dutch part of the Wadden Sea, but a real population established itself not until 1980. Nowadays there is a reproducing population of about 220 individuals.

ARTIODACTYLA

Sus scrofa L., 1758; *Cervus dama* L., 1758; *Cewus elaphus* **L.,** 1758; *Capreolus capreolus* (L., 1758)

The wild boar *Sus scrofa* was almost extinct in the Netherlands about 1830. Starting in the year 1904 wild boars were reintroduced in the Veluwe region. Now there are about 1560 individuals in that region, of which about 1100 in free range, and about 50 in the province of Limburg (Hazebroek and Groot Bruinderink, 1994).

Fallow deer *Cervus dama* was introduced in the Netherlands in the beginning of the sixteenth century, possibly even earlier. Most of the introduced populations have disappeared again. It now lives in small numbers in the Veluwe region (c. 125, of which c. 50 in free range) and on three sites in the coastal dunes (10-15, 60 and 15 individuals) (Hazebroek and Groot Bruinderink, 1994). The oldest populations (Veluwe) are about one century.

Red deer *Cervus efaphus* is nowadays only present in the Veluwe region (c. 1610, of which c. 1030 in free range) and since 1992 also in a nature reserve in Flevoland (c. 170 in 1995), where they were introduced (Hazebroek and Groot Bruinderink, 1994). Long ago the red deer was widespread in the Netherlands, but by 1810 it only remained in the Veluwe region (de Rijk and Pelzers, 1991). Their number was very low in the nineteenth century. After the Second World War the number has increased rapidly. In 1959 there were about 2050 individuals. Because of forest protection nowadays there is a policy to keep the number low.

In the beginning of the nineteenth century the roe deer *Capreolus capreolus*, which used to be widespread, only survived in the Veluwe region. Since about 1855 the roe deer started to recover. Nowadays it is widespread in the Netherlands again. The number is estimated at about 30,000.

RODENTIA

Sciurus vulgaris L., 1758; *Tamias sihiricus* (Laxmann, 1769); *Castor fiber* L., 1758; *Cricetus cricetus* (L., 1758); *Clethrionomys glareolus* (Schreber, 1780); *Arvicola terrestris* (L., 1758); *Ondatra zibethicus* (L., 1766), *Pitymus subterraneus* (De Séllys-Longchamps, 1836); *Microtus agrestis* (L., 1761), *Microtus arvalis* (Pallas, 1779); *Microtus oeconomus* (Pallas, 1776); *Micromys minutus* (Pallas, 1771); *Apodemus flavicollis* (Melchior, 1834); *Apodemus syfvaticus* (L., 1758); *Rattus norvegicus* (Berkenhout, 1769); *Rattus rattus* (L., 1758); *Mus domesticus* Rutty, 1772; *Muscardinus avellanarius* (L., 1758); *Eliomys quercinus* (L., 1766); *Myocastor coypus* (Molina, 1782)

The red squirrel *Sciurus vulgaris* is widespread in the centre, south and east of

the Netherlands. It is not present in the western part, with the exception of parks in the cities of Amsterdam and Rotterdam and of the dunes of the provinces of Noord- and Zuid-Holland. In the dunes it was introduced about 1860. In the beginning of the sixties a disease decimated the Dutch red squirrel population. Data from the province of Overijssel (R. van Apeldoorn, in litt.) show that the species is increasing nowadays, but after 30 years in some parts of the Netherlands the population still has not recovered completely.

There is one feral population of Siberian chipmunk *Tumias sibiricus* in the Netherlands. It is in a park in a town in the province of Noord-Brabant. The population originated in I972 from a group which was left behind after the removal of a small zoo.

The Eurasian beaver *Castor fiber* was exterminated in the Netherlands in 1826. Beavers from the Elbe region in Germany were reintroduced in the Biesbosch region in the provincie of Noord-Brabant in 1988. After initialproblems the population of about 40 individuals seems to be doing well now. In the autumn of 1994 Eurasian beavers have been introduced in the region where the Rhine enters the Netherlands.

The common hamster *Cricetus cricetus* lives in the southern half of the province of Limburg. Possibly the range of the Hamster increased to the north in the period 1879-1940, but nowadays the numbers are decreasing rapidly (Krekels and Gubbels, 1996). However, the actual situation is not exactly known.

The bank vole *Clethrionomys glareolus* is common in the centre, the south and the east of the Netherlands, but inthe provinces of Noord-Holland it is mainly confined to the dunes. To some extent this applies also to Zuid-Holland. In Zeeland it only occurs in Zeeuws-Vlaanderen. It does not occur on the Wadden Sea islands with the exception of Terschelling, where it was first discovered in 1987.

The northern water vole *Arvicola terrestris* is widespread in the Netherlands, but is not present on the Wadden Sea islands. The numbers seem to be declining.

The muskrat *Ondatra zibethicus* invaded the Netherlands from two different directions. It was first observed in the Netherlands in 1941 in the south of the province of Noord-Brabant. Probably these animals originated from a group which had escaped between 1928 and 1930 from a fur farm at Begijnendijk (Belgium) about 40 km south of the Dutch border. In 1967 the first descendants from the introduction in Czechia in the year 1905 reached the eastern part of the Netherlands through Germany. Nowadays they are widespread in the Netherlands.

The common pine vole *Microtus subterraneus* occurs only in the south of the Netherlands (Zeeland, Noord-Brabant and Limburg) and in a small area in the east of Gelderland at the German border.

The field vole *Microtus agrestis* is widespread in the Netherlands with the exception of the provinces of Noord-and Zuid-Holland, where it is very local. On the Wadden Sea islands it occurs on Ameland and Texel, where it was first found in 1984 and 1985 respectively. The range in the Netherlands seems to be increasing.

The common vole *Microtus arvalis* is widespread in the Netherlands, with the exception of the Wadden Sea islands, where it occurs only on Ameland. On the long term the numbers are declining because of more intensive management of the agricultural grasslands.

The root vole *Microtus oeconomus* has a fragmented range in the west and north

of the Netherlands (Friesland, Noord-Holland, Zuid-Holland and Zeeland). The range is contracting. The isolated Dutch population has been described as a separate endemic subspecies *(M. o. arenicola)* by Van Wijngaarden and Zimmermann (1965).

The harvest mouse *Micromys minutus* is widespread in the Netherlands.

In the extreme south of the province of Limburg there is a small population of the yellow-necked mouse *Apodemus flavicollis*. This species was found first in the Netherlands in 1939. The range in the Netherlands seems to be expanding.

The wood mouse *Apodemus sylvaticus* is widespread and common in the Netherlands.

The brown rat *Rattus norvegicus* is widespread also, but the numbers are decreasing since the sixties. It appeared in the Netherlands in 1727.

The numbers of the black rat *Rattus rattus*, which used to be declining at last since the beginning of thenineteenth century, have recovered since about 1968. They have found a special niche in pig stables in the province of Noord-Brabant. Outside this province nowadays the black rat is very local and mainly confined to sea and inland harbours.

The house mouse *Mus domesticus* is widespread in the Netherlands.

The common dormouse *Muscardinus avellanarius* and the garden dormouse *Eliomys quercinus* live in the Netherlands only in the south of the province of Limburg. In recent years the numbers of the common dormouse seem to be stable or perhaps even increasing, whereas the numbers of the garden dormouse seem to be decreasing.

The coypu *Myocastor coypus* has got several population in the south of the Netherlands, mainly along the river Meuse. It established itself in 1963.

LAGOMORPHA

Lepus europaeus Pallas, 1778; *Oryctolagus cuniculus* (L., 1758)

The brown hare *Lepus europaeus* is widespread in the 'Netherlands. The population has decreased in the seventies, but from bag records it seems that the numbers are recovering recently (Anonymus, 1994).

The rabbit *Oryctolagus cuniculus* is also widespread, but in some peat and clay areas in Noord- and Zuid-Holland and Friesland it **is** local. The first feral populations are known from the 13th century.

RED LIST

In 1994 an official Red List of mammals was published (Lina and van Ommering, 1994). There are 25 species on this list:

-094 in the Netherlands extinct or nearly extinct species: *Rhinolophus ferrumequinum, Rh. hipposideros,* bottlenose dolphin *Tursiops truncatus* and *Lutra lutra* (species which got extinct before 1900, like *Canis lupus*, were not considered)

-091 critical species: harbour porpoise *Phocoena phocoena*

-093 endangered species: *Myotis emarginatus*, *Myotis myotis* and *Cervus dama*

-096 vulnerable species: *Neomys fodiens*, *Myotis nattereri*, *Martes martes, Phoca vitulina, Microtus oeconomus* and *Eliomys quercinus*

-0911 susceptible species: *Crocidura leucodon, Myotis brandtii, Myotis*

bechsteinii, Barbastella barhastellus, Plecotus austriacus, Halichoerus grypus, *Sus scroja, Cervus elaphus*, *Castor fiber*, *Apodemus flavicollis* and *Muscardinus avellanarius.*

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