The wildcat (*Felis silvestris*) finally recorded in the Netherlands

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Abstract: Over recent years in the Netherlands a few cats have been found or seen in the field that showed characteristics of the wildcat. These observations are critically analysed here. Firstly a short overview is presented of the internal and external differences between the wildcat (*Felis silvestris*) and the domestic cat (*Felis catus*), and of the taxonomy and distribution of the wildcat. Important internal differences are the length of the intestinal tract (wildcat: <170 cm; domestic cat: >155 cm) and the intracranial volume (wildcat: >31 cm^3; domestic cat: <38 cm^3). The most distinguishing external differences are outlined. There are four recognisable groups of *Felis silvestris*: a. the thickset, heavily furred forest cats of Europe – the *silvestris* group; b. the light-bodied steppe cats of Asia – the *ornata* group; c. the slim, long-legged cats from Africa – the *lybica* group; and d. the domestic cat which can be found all over the world – the *catus* group. The closest wildcat habitats to the Netherlands lie to the south (in the Eifel hills, Germany, and the Ardennes, Belgium) and the east (in the area between the river Weser and the Harz mountains, Germany). Knowledge about the presence of the wildcat in the Netherlands in (pre)historical times is reviewed. Results of excavations show that the species lived in the Netherlands at least until the Roman Period. Shortly afterwards, the wildcat appears to have disappeared from the Netherlands, possibly because of deforestation. Although it cannot be excluded that it continued to live in the Netherlands after the Roman Period, we do not know of any records to confirm this. It is striking that in contrast to the wildcat, the presence and disappearance of other species of interest from the Netherlands, such as the beaver, otter, lynx and wolf, received much more attention. From the 1950s and the 1960s there have been observations of cats mainly from the province of Limburg, in the far south of the Netherlands. These findings showed one or more characteristics that pointed in the direction of wildcat. Nevertheless, not one definite positive observation has been obtained. And, in spite of persisting rumours, we have not been able to obtain any convincing information about observations from the 1970s, 1980s and early 1990s. On 13 June 1999 a dead wildcat was found near Groenlanden, close to Nijmegen. The intracranial volume of this animal measured 40.0 cm^3 and the processus condylaris was longer than the processus angularis; identification as wildcat was supported by the colour and pattern of the fur. On 1 November 2002 a road casualty, a female, was found near Vaalsbroek Castle near Vaals, South-Limburg, whose external characteristics all looked like wildcat. On 1 March 2004 a young male wildcat was caught near Heeze (province of Noord-Brabant); the external appearance of a wildcat was supported by identification by DNA analysis; this cat was released after being measured. However, it later emerged that this cat was an unintentional introduction brought back as a domestic pet from the Vosges (France), which later strayed. Besides these three, positive observations, our intensive investigations have yielded three other observations of, what could have been, wildcats: two finds, in 1995 and 2001, and a sighting in 2004. Although the presence of the wildcat in the Netherlands has now been proven, reproduction and the presence of a sustainable population have not been determined. The most obvious place of origin of the wildcats seen in the Netherlands seems to be the Eifel in Germany, although the Ardennes in Belgium might also be a source. The population in the Eifel has grown strongly during the last 15 years, resulting in an estimated total of 250 animals in 2005 alone in the northern Eifel. Several possible explanations can be given for the presence of the wildcat in the Netherlands now. These include more extensive, and

more suitable, habitat, changes in the management of nature reserves, growing tolerance by humans towards wildcats and vice versa, and an overflow from neighbouring areas, especially the Eifel, where wildcats live. Further research is needed to show the relative importance of these and other factors. In view of the legal status of the wildcat, heavily protected by national law and by several international treaties, the, small but real, chance of an encounter with a wildcat in the Netherlands has important consequences for nature management. Current legislation permits the shooting of domestic cats running wild. This is already problematic due to the uncertainty in determining, in the field, whether or not an animal is 'running wild'. More care now needs to be exercised to determine whether one is dealing with a feral domestic cat or a wildcat. We therefore urge responsible organisations to start a campaign to inform nature-managing institutions, in particular hunting clubs, about this new situation. We recommend that individual site managers and hunters do not shoot supposed domestic cats running wild, but catch them alive to ensure a correct identification and to exclude a possible violation of the law.

Keywords: wildcat, *Felis silvestris*, domestic cat, *Felis catus*, distribution, the Netherlands, nature conservation, management.

Introduction

At the end of the 1990s possible wildcat sightings were reported from the southeast of the Netherlands and the discussion about the occurrence of the wildcat in this country started once again. This article deals with these records and their implications, especially for site management and the control of feral cats.

The wildcat (*Felis silvestris*) is larger and more heavily built than the domestic cat (*Felis catus*) and has a large head, sturdy legs and a bushy tail ending in a blunt tip (see also: Piechocki 1990, Hemmer 1993). With its longer hairs (see also: Vogt 1991) the wildcat has a rougher coat than the domestic cat, with faint tiger-like body stripes and a black dorsal stripe from the shoulders to the hips. The coat is grey in colour, with a yellowish-brown tinge. The end of the tail has three to five black rings. At first glance a wildcat may look like a striped tabby-coloured domestic cat, but the stripes on the back, sides and legs are less prominent (Vogt 1991) and the domestic cat is also more slender. Some of the most typical external characteristics of the wildcat and of the domestic cat are listed in table 1 (see also: photograph 1).

There are also several differences in internal characteristics. The two most distinguishing are the length of the intestinal tract and the intracranial volume. Piechocki (1990) gives the following measurements for the length of the intestinal tract: wildcat: ♂ 120-170 cm, ♀ 110-165 cm; domestic cat: ♂ 165-254 cm, ♀ 155-220 cm. Hemmer (1993) gives the following figures for the intracranial volume: domestic cat at most 38 cm^3, wildcat at least 31 cm^3. If the intracranial volume is lower than 38 cm^3, then for a wildcat the index of Schauenberg (1969) – condylobasal length (in mm)/intracranial volume (in cm^3) – is lower than 2.75 and higher for a domestic cat. Other differences can be found in the skull. The skull of a domestic cat has a concave glabella; in other words there is a hollow where the nasal and frontal bones meet. The glabella of the wildcat is more or less flat. The wildcat's coronal suture, between the frontal bones and the parietal bones is more indented and it crosses the sagittal suture at a right angle, whereas with the domestic cat this angle is sharp, as the coronal suture curves to the front (Kratochvíl 1973). The lower jaw has another distinguishing characteristic, the length of the processus angularis. In the wildcat this articulate bone partially projects beyond the processus condylaris or reaches at least just as far to the back. In the domestic cat the processus condylaris is distinctly shorter than the processus angularis (Kratochvíl 1973). When the jaw of a wildcat is placed upright, it will stay in this vertical position. However the jaw of a domestic cat will fall over (Piechocki 1990).

The domestic cat has evolved from the bay cat (*Felis silvestris lybica)* that is widely spread over

large parts of Africa and can be also be found further east towards India and China (Heptner & Sludskii 1972, Zhang 1997). Domestication occurred at least 9,200 years ago (Vigne et al. 2004) in the Near East, possibly in Palestine (Brentjes 1965) or Egypt (Clutton-Brock 1999). Sunquist & Sunquist (2002) distinguish four groups: a. the thickset, heavily furred forest cat from Europe and Asia Minor, the *silvestris* group; b. the light-bodied steppe cat from Asia, the *ornata* group; c. the slim, long-legged desert cat from Africa, the *lybica* group *sensu stricto*; and d. the domestic cat, the *catus* group. Recently Johnson et al. (2006) presented new insights, on the basis of an extensive study of DNA samples of all the Felidae, about among others the taxonomic relations within the genus *Felis*. This genus became subdivided at several moments – with the most recent split being into a. the ancestors of *Felis lybica* (in Africa) and of *Felis bieti* (in Eurasia) and into b. ancestors *Felis silvestris* and of *Felis catus* (both in Eurasia). Following Johnson et al., *Felis catus* did not evolve from *Felis lybica,* but from an ancestor that is common to *Felis silvestris*. Thus, *Felis catus* is more closely related to *Felis silvestris* than to *Felis lybica*.

Since the ranges of the European forest cat, the Asian steppe cat and the African desert cat are adjacent and fertile hybrids do occur, we concur with Piechocki (1990) and Hemmer (1993) in considering them to belong to one species *Felis silvestris*. The latter author considers the European forest cat as being a group with at least four subspecies: *tartessia* from the southern part of the Iberian Peninsula, *grampia* from Scotland, *caucasica* from the Caucasus and Asia Minor and *silvestris* (*sensu stricto*) from the large other parts of the range on the European continent.

The European forest cat occupies a varied habitat, especially heavily wooded landscapes in Europe (mainly deciduous woodland) and an adjacent small area in Asia. This area extends from Portugal and Scotland in the west to the Caucasus and Asia Minor in the east (Sunquist & Sunquist 2002). This cat avoids areas where snow is prevalent, because of reduced availability of food resources, mainly small rodents, hares and rabbits (see also: Piechocki 1990) and because it also moves with great difficulty in snow since it is relatively short-legged (Sunquist & Sunquist 2002).

Table 1. Some external characteristics of wildcat and tabby-coloured domestic cat. These characteristics can be used for sightings, provided that the viewing conditions are excellent (after Piechocki 1990, Stahl & Leger 1992, Hemmer 1993).

Characteristic	Wildcat	Domestic cat (tabby colour)
appearance	robust, bulky	more slender
coat	thick, full, long-haired	shorter haired
coat colour	yellowish to brownish (light)grey	different colour and glossy
coat pattern	vague pattern of stripes (tabby or with tiger like pattern)	pattern mostly prominent
tail	thick, black and blunt tip (“black knob”), with 3-5 fairly well visible black continuous rings on the distal part	thin, tapered, discontinuous rings
dorsal stripe	vague, narrow, black interrupted stripe, between hips and shoulders (see also: photograph 1)	different
vibrissae	(conspicuously) white and large	less white and not that large
muzzle	light to white colour	different
nose leather	light colour	mostly darker
ear	(by longer hairs) looking small	appear larger
bib	white, mostly prominent (sometimes also a white patch between the front legs and the hind legs)	less prominent
colour and pattern hind foot	irregular black pattern around toes	completely black
nails	light keratin colour	light or dark keratin colour

Photograph 1. Skins of a wildcat (*Felis silvestris*) (left) and a tabby-coloured domestic cat (*Felis catus*): besides differences in the colour pattern (less pronounced for the wildcat, with the stripes less visible) and the tail (thicker in the wildcat), the wildcat clearly shows a narrow dorsal stripe that does not cross the shoulders and that extends as far as the tail. *Photograph: Gerard Müskens.*

There are two separate wildcat populations quite close to the Netherlands (Stahl & Leger 1992, Raimer 1994, Hemmer 1999, Sunquist & Sunquist 2002). One covers a large area in the northeast of France, the Ardennes, Luxemburg, and the southwest of Germany, including the Eifel hills. The other population is further away and covers the area of central Germany between the river Weser and the Harz mountains.

Van Bree published (see below) records of wildcat in the Dutch Province of Limburg in the 1950s and 1960s. However in all these cases, conclusive identification could not be established (van Bree et al. 1971). One case however (at Heerlen in Limburg Province in 1963) remained the subject of debate after Van Bree's review (see below).

Occurrence of the wildcat in the Netherlands in the past

Prehistoric times and Roman Period

Archaeological excavations of settlements and hunting camps in the Holocene delta soils of the Netherlands have turned up bones that are attributed to wildcats. The oldest finds date from about 8500 BC and the most recent from the Roman Period. Examples are excavations at Zutphen (circa 8500 BC) (Groenewoudt et al. 2001), Hardinxveld-Giessendam (5500-5000 BC) (Wijngaarden-Bakker et al. 2001), Swifterbant (Flevoland; circa 4000 BC) (Zeiler 1997), Ypenburg (near Rijswijk, Zuid-Holland) (circa 3500 BC) (de Vries & Laarman 2004), Hekelingen (near Spijkenisse, Zuid-

Holland; circa 2800 BC) (Prummel 1987), Kolhorn (near Schagen, Noord-Holland; circa 2650 BC) (Zeiler 1997), Vlaardingen (circa 2200 BC) (van Bree 1961), Leiden (circa 350 BC) (van Heeringen 1983), Velsen (circa 250 BC) (IJzereef et al. 1992), Zandvoort (circa 150 BC) (IJzereef et al. 1992), Velsen (circa 20 AD) (van Wijngaarden-Bakker 1988), and Valkenburg (150-200 AD) (Gehasse 1997). Van Heeringen (1992) gives the dates of the sites of Leiden, Velsen and Zandvoort.

It has to be stressed that all remains have been found in the low-lying wetland part of the Netherlands. In the dry soil of the uplands organic matter is not conserved. Therefore there is no information about the prehistoric occurrence of the wildcat on the large Pleistocene sandy areas in the centre, east and south of the Netherlands. Since 2000 BC the number of wildcat remains found at individual archaeological sites is lower than in the preceding eras. In the Stone Ages the wildcat was hunted for fur (Louwe Kooijmans 1993). It is possible that Bronze Age people lost interest in hunting wildcats since they kept more sheep and could use their wool for clothing (W. Prummel, personal communication).

The fact that no remains of wildcats have been found at post-Roman sites is not conclusive proof that the wildcat had become extinct in the Netherlands by that time. Nevertheless there is some evidence that the extinction may have occurred by that time. In the Holocene climatic optimum of the Atlanticum and Subboreal the wildcat occurred as far north as Sweden and as far east as Estonia and the river Don in the Ukraine (Bauer 2001). This former maximum range had already started to contract in prehistoric times in response to the deterioration of the climate (Hemmer 1993). This climate deterioration at the transition of the Subboreal to the Subatlanticum, happened around 850 BC (van Geel 1996). The wildcat became extinct in Denmark in the Bronze Age (Degerbøl 1935). In the west of the Netherlands, at least, deforestation may have contributed to an early extinction during the Roman Period.

There are further doubts about the occurrence of the wildcat in the Netherlands in the Roman Period (F. Laarman, personal communication), as this period also saw the first appearance of domestic cats in the Netherlands (Prummel 1993). The oldest, more or less exactly, dated finds of domestic cats are from the dwelling mound at Tritzum near Franeker (circa 100 AD) (Clason 1980), a native settlement in The Hague (circa 125 AD) (Carmiggelt et al. 1998), and the first construction phase of the cellar of a Roman villa at Maasbracht (circa 150 AD) (Kooistra 1996). Clason (1967) reports the remains of a young domesticated cat and an adult wildcat from the Roman castellum Valkenburg, which was used between 39 and 400 AD (de Hingh & Vos 2005). However, in a later publication (Clason 1980) she prefers to call this adult cat *Felis* sp. Thus it is not clear if this was a wildcat or a domestic cat. The site of the castellum Valkenburg was inhabited again in the Early Middle Ages. The remains of the young domesticated cat were found together with Carolingian shards, so it is also possible that the cats' remains date from circa 800 AD (Clason 1967). Other places where remains of domestic cats from the Roman Period have been found include Groningen (Brinkhuizen & Prummel 2004), Rijswijk (Clason 1978), Castricum (Lauwerier & Laarman 1999), Houten (Laarman 1996) and Schagen (Zeiler 1996). The oldest remains of the domestic cat in Belgium are from a Roman villa at Piringen, near Tongeren (circa 80 AD) (Van Neer 1990, Van Neer, personal communication).

Occurrence between Roman Period and 1950

As far as we can ascertain, there is no specific information on the occurrence of the wildcat in the Netherlands in post-Roman times. The authoritative 17th century manuscript on hunting in the west of the Netherlands, edited by Swaen (1948), only mentions the domestic cat. Nineteenth century Dutch books on fauna (Bennet & van Olivier 1822, Schlegel 1862, van Bemmelen 1864 all mention, in general terms, that the wildcat probably occurred in former times, but that it had disappeared.

Bennet & van Olivier (1822) wrote (all citations in the original Dutch) "Gelijk er voldoende redenen zijn, om de ware kat onder de voormalige Nederlandsche dieren te kunnen rekenen, zoo meent men op goede gronden dezelve thans als uit Nederland verjaagd of voor geheel uitgeroeid te moeten houden, ..." [italics by Bennet & van Olivier] ("There are reasons to consider the wildcat to be a former part of the Dutch native fauna, and it is generally thought that the species has been extirpated from the Netherlands."). Schlegel (1862) mentions that there is no evidence "dat de wilde Kat in vroegere tijden hier te lande geleefd heeft; ofschoon dit niet onwaarschijnlijk is, daar zij nog heden in het naburige Duitschland, en in het Ardenner woud zelfs vrij algemeen voorkomt." ("... that the wildcat actually lived in the Netherlands, although its present occurrence in neighbouring Germany is not improbable, while the species may even be common in the Ardennes.") And, next, quoting Van Bemmelen (1864), the wildcat has "bijna zeker in vorige eeuwen […] ons land bewoond, hoewel [hem] gene bepaalde opgaven bekend zijn. De berigten van het schieten van wilde Katten, die men zelfs nu nog enkele malen in nieuwsbladen vermeld vindt, betreffen verwilderde [italics by Van Bemmelen] voorwerpen." ("... almost certainly lived in our country in former centuries, although records are unknown. Reports on shooting of wildcats, which may still be found in newspapers, concern stray animals.") So, there is nothing new under the sun.

The comprehensive Dutch mammal handbook by IJsseling & Scheygrond (1943) does not add any further information on wildcats to the 19th century sources. Thissen & Hollander (1996) do not include the wildcat in their review of the status of mammals in the Netherlands since 1800.

Thus we have not been able to identify any records about the occurrence of the wildcat in the Netherlands between Roman times up to 1950. This is an indication that the wildcat did not occur in the Netherlands in post-Roman times. A different approach to the subject, that of undertaking a study on place names associated with wildcats (as has been done for beavers, badgers and otters by Van Wijngaarden (1966) and Van Wijngaarden & Van de Peppel (1964, 1970)) does not seem very useful because of the confusion that would be caused by the existence of the domestic cat. This would make it almost impossible to attribute a place-name unequivocally to a wildcat. Moreover there are cat place-names that have nothing to do with this animal (L. Brouwer, personal communication).

Much has been published on the (pre)historical occurrence and disappearance from the Netherlands of other mammal species of interest, like the beaver (*Castor fiber*), the otter (*Lutra lutra*), the lynx (*Lynx lynx*), the wolf (*Canis lupus*), the brown bear (*Ursus arctos*), and the wild boar (*Sus scrofa*) (see: van Wijngaarden 1966, van Wijngaarden & van de Peppel 1970, de Rijk 1987, Pelzers 1988, Verhagen 1989, van de Veen & Lardinois 1991, Mulder 1992, Ervynck 1993). It is remarkable that wildcat was never discussed in the debate about the (re)introduction of carnivores, such as the wolf and the lynx, in the Netherlands. Some of these species have now been purposefully re-introduced into the Netherlands.

In Germany the remains of wildcats from historical times have been found at excavations and in caves from the Middle Ages, but also from the 19th century (Piechocki 1990). Piechocki (1990) mentions that after the Middle Ages, massive deforestation led to the range of the wildcat in Germany being restricted to wooded hill ranges. More recent records, from Westphalia, the eastern part of the German federal state of Nordrhein-Westfalen, show evidence of the presence of wildcats in hill ranges, such as the Teutoburger Wald and the Sauerland in the nineteenth and early twentieth centuries (Feldmann 1984). In Belgium there is evidence that the wildcat was present after the Middle Ages; Tack et al. (1993) mention that, in the period 1586-1783, there were 64 occasions when wildcats were registered in the bounty administration for vermin in the viscountcy of Gent, although the wildcat itself had no bounty on its head. So the wildcat appears to have survived for much longer in neighbouring countries that it did in the Netherlands.

Possible occurrence in the 1950s and 1960s

There are a number of striking records of cats in the wild in the Netherlands that date from the 1950s and 1960s. Van Bree (1959, 1963), later the curator of mammals at the Zoological Museum of Amsterdam, and several other authors, have discussed these records in publications (Anonymous 1959, 1961, 1962, 1965, de Haan 1970). At this time it was legal to kill feral domestic cats throughout the year. Some cats shot in this period are reported to have had characteristics similar to those of a wildcat, for example their coat colour, pattern and a bushy ringed tail. Incited by the first uncertain observations and the publications in this period the public was possibly more eager to find 'wildcats'. However, in all those cases where the animal could be checked for internal characteristics (see above), it appeared that at least one crucial feature did not allow identification as a true wildcat.

Thus, no single record of the wildcat in the 1950s and 1960s can be proven to be completely conclusive. Van Bree et al. (1971) eventually concluded that there was no indisputable evidence to support the occurrence of the wildcat in the Netherlands at this time. Consequently the presence of this carnivore in the Netherlands remained unsupported. Yet, one young tomcat caught close to Ter Worm Castle, west of Heerlen, in 1963 (presently in the collection of the Natuurhistorisch Museum Maastricht, Maastricht: NHM St.951 z) was claimed to be a wildcat (e.g. Moonen 1975, Vergoossen & van der Coelen 1986). However, as Van Bree et al. (1971) argued its measurements did not exclude it being a domestic cat (see also: Moonen 1975).

In the text of the first mammal atlas of the Netherlands Van Wijngaarden et al. (1971) mention only the dubious record from Heerlen (van Bree 1963), although the reference list also cites a publication about an alleged wildcat at Haelen (van Bree 1959).

It is thought that at this time there might have been a small, but stable, population in the Rothaar hill range (Sauerland) in Westphalia, Germany (Feldmann 1984).

Possible occurrence in the 1970s, 1980s and early 1990s

We could find no records of wildcats in the Netherlands in the 1970s and 1980s. The second mammal distribution atlas of the Netherlands (Broekhuizen et al. 1992), which covers the period 1970-1988, does not mention the wildcat at all. Yet, Lange et al. (1994) stated that the wildcat, if not already present in the Netherlands, was approaching the borders of our country. Evidence for this statement stems from the finding of footprints by one of the authors (A. van Diepenbeek) on 6 May 1991, which were attributed to wildcat. This was at Eyneburg Castle near Hergenrath in Belgium, just over six kilometres from the Dutch border, south of Vaals. Broekhuizen (1996) takes more or less the same line, speaking about "the steady expansion of the distribution area of the wildcat in the direction of southern Limburg, the Netherlands". Parent (1986) however, in his publication on the current occurrence and legal status of carnivores in Belgium and the Netherlands, only mentions the wildcat in passing, in the context of it only being indirectly protected by the Dutch Hunting Act.

In the forest of Reichswald in Germany, just across the border near Nijmegen, Gerard Müskens and one of the authors (J. Thissen) found a road casualty cat (NL RD-coordinates: 203/417) on 19 April 1987. Van Bree (personal communication), who examined the badly damaged remains (ZMA 23.331), identified this animal as a hybrid between a wildcat and a domestic cat.

In the course of the 1990s there were rumoured sightings of wildcats on several occasions in southern Limburg, the Netherlands. We managed to trace these rumours to observations made in the surroundings of Vaals, the most southeastern part of Limburg, by Leo Backbier. As Backbier died in 2004, we have not been able to make further inquiries. His zoological archives are not currently accessible (E. Gubbels, personal communication) and, as far as we could find out, nothing has been published on these observations. There are no photographs of any wildcat traces. Since there is no physical or

recorded evidence we cannot confirm these observations (however see below, under the heading 'Possible origin').

Recent, but uncertain, records from the Netherlands and adjacent areas in Germany and Belgium

Our investigations have led us to unearth some more unverified records (see also table 2):

- On 11 March 1995 a road casualty cat was found near Maasbree (province of Limburg). The marbled pattern, massive body, weight (5.5 kg), black tipped tail with five rings (although tapered), large head, pink nose leather and conspicuously white whiskers all indicated a wildcat. Its external measurements were: head and body length 52 cm; tail length 31 cm; hind foot length 12 cm (excluding nails); hind foot width: >35 mm; ear length 52 mm. It had a light cream coloured, not sharply delimited, bib. As the cat had small testicles and the canine teeth showed no wear it was probably a young animal. Since the tail length was >50% of the head and body length, it was assumed at the time to be a hybrid, following Halthenorth (1957). However, Schauenberg (1977) and Piechocki (1990) have shown that relative tail length is not a distinguishing characteristic. Most wildcats have tails that measure more than half of the head and body length. No samples were collected for later internal investigation or DNA analysis.
- On 1 March 2001 a road casualty cat was found at Stramproy (province of Limburg). Gerard Müskens and one of the authors (H. Jansman) (both Alterra, Wageningen University and Research Centre) performed an autopsy on the body. It was an adult male, tabby-coloured cat, head and body length 51.2 cm; tail length 27 cm; hind foot length (inclusive nail): 11.8 cm; ear length: 58 mm; length of intestinal tract: 161 cm; skull: concave glabella, i.e. a hollow behind the nasal bones; tail: rather thick, but tapered. The conclusion of the autopsy report read: "Characteristics of wildcat: tail width, partly coat colour; characteristics of hybrid or feral domestic cat: tail length, head and body length, colour pattern and length of hind foot." Samples were retained for later investigation.
- On 7 November 2004 a rather robust cat was observed in the Millingerwaard near Nijmegen. The animal had a bushy, more or less blunt tail with a black tip and a number of black rings and was extremely shy (see also: Wijsman 1998). Notably this location is close to where the Groenlanden cat was later found (see below); approximately eight kilometres further east along the river Waal and within the same extensive rough and diverse riverbank habitat that lies between Nijmegen and the German border.

We have been unable to positively identify any recent records of wildcat in the area of Germany between the Dutch Province of Limburg and the Rhine (M. Trinzen – Biostation Euskirchen, Eifel, personal communication; R. Hutterer – Universität Bonn, personal communication). In Belgium, the Flemish Institute for Forestry and Game Management has, since 1996, been systematically collecting dead carnivores. It has been asked on several occasions to identify a possible wildcat. However, each time it concluded that it was not a wildcat. These conclusions were based on a combination of characteristics: coat colour, tail, lower jaw, skull sutures, and glabella (K. Van Den Berge, personal communication).

Records of wildcat in the Netherlands since 1995

The cat found at Groenlanden, near Nijmegen

On 13 June 1999 a dead cat was found near Groenlanden, a hamlet near Nijmegen (see also table 2). On the spot photographs were taken of the corpse, which show the following characteristics (see: photographs 2 and 3): the body is bulky to robust; there is a faint striping of the coat, which looks thick and long-haired; the tail is thick and blunt and it has a black tip and 3-4

Table 2. Uncertain and certain records of wildcats (*Felis silvestris*) in the Netherlands since 1995.

Status	Date	Type of record	RD-coordinates	Sex	Most striking and / or convincing features (for more details see text)	Material collected	Observer
uncertain	11 III 1995	road casualty	198/374	♂	coat pattern, tail, body size, whiskers, nose leather	no	Annemarie van Diepenbeek
	1 III 2001	road casualty	174/356	♂	coat pattern (however external sizes indicate domestic cat)	collection Alterra, Wageningen University and Research Centre	Theo van den Berkmortel
	7 XI 2004	sighting	196/431	?	tail, size, behaviour	–	Martin van Lokven
certain	13 VI 1999	found dead	191/431	?	intracranial volume, lower jaw	skull (private collection)	Kor Goutbeek
	1 XI 2002	road casualty	197/308	♀	coat pattern, external measures	skin (collection Klaas Arends, Heerlen)	no longer traceable
	1 III 2004	caught and	169/376	♂	DNA pattern	some hair samples (collection A. van Diepenbeek, Veghel)	Mari de Bijl (Landscape of Brabant Trust) and Annemarie van Diepenbeek released

black rings; the muzzle has a light colour around the mouth. On the original colour photographs the coat looks light yellow-greyish. According to site warden, H. Woesthuis (personal communication), this cat may have lived in this area for about two years

Only the skull of the cat was retained and it is now in a private collection. After examination of the skull Van Bree (personal communication) confirmed (on 1 October 2001) that, in view of its measurements and the intracranial volume, it was definitely a wildcat. On 31 May 2004 two of the authors (K. Canters & H. Jansman) measured the skull again. In addition a tissue sample for DNA analysis was collected from the root channel of one of the molars (see below).

The skull has the following measurements (in mm): condylobasal length: 92.9; length of mandible: 68.1; teeth row length (lower jaw): 34.3; teeth row length (upper jaw): 32.1; interorbital constriction: 19.8; postorbital constriction: 34.2; brain case breadth: 73.0; molar row length (upper jaw): 23.0; molar row length (lower jaw): 19.7; intracranial volume: 40.0 cm^3. The Schauenberg index is 2.3. Furthermore, put in a vertical position, the jaw of this cat stayed upright.

Photograph 2. The wildcat (*Felis silvestris*) found on 13 June 1999 near Groenlanden (near Nijmegen): the pattern of the trunk is visible, but not rich in contrast. On the original photograph the light basic colour is visible: yellowish grey; note the light coloured chin and corners of the mouth. *Photograph: Kor Goutbeek.*

Photograph 3. Tail of the wildcat (*Felis silvestris*) found on 13 June 1999 near Groenlanden (near Nijmegen): the tail is thick and has four, more or less, clearly visible rings and a blunt and black end. *Photograph: Kor Goutbeek.*

The cat found at Vaalsbroek, southern Limburg

On 1 November 2002 a female road casualty cat was found close to Vaalsbroek Castle near Vaals (south of Limburg) (see also: table 2). As the animal was crushed, only the skin was collected. The fur of this cat has the following characteristics (see also: photographs 4, 5, and 6): a long-haired and woolly coat with very thick underfur; coat colour: uniform salt-and-pepper with a yellowish tinge; blunt tail with black tip, on the distal end 4(-5) black continuous rings; between

Photograph 4. Side-view of the wildcat (*Felis silvestris*) found on 1 November 2002 as a road casualty near Vaalsbroek (province of Limburg); note the light colour and faint stripes, the white muzzle and bib, and the thick tail with four clearly visible rings and a black knob. *Photograph: Annemarie van Diepenbeek.*

shoulders and hips a prominent dorsal stripe; sole of hind foot partly with black fields around the toes, white spots between the pads on all four feet; all claws of a light keratin colour; whiskers: white but not conspicuously large; some central, smaller whiskers: black or with a black base; nose leather: light colour; muzzle around mouth: light colour; small white bib. Some external measurements were also taken: head and body length: circa 61 cm; tail length: 22.5 cm (i.e. without hairs); hind foot: circa 14.5 cm; ear length: 39 mm (i.e. without hairs).

Photograph 5. Dorsal view of the wildcat (*Felis silvestris*) found on 1 November 2002 as a road casualty near Vaalsbroek (province of Limburg); note the faint narrow and black interrupted dorsal stripe. *Photograph: Klaas Arends.*

Photograph 6. Tail of the wildcat (*Felis silvestris*) found on 1 November 2002 as a road casualty near Vaalsbroek (province of Limburg); note the tick tail, the more or less clearly visible rings and the black knob. *Photograph: Annemarie van Diepenbeek.*

The cat caught near Heeze (province of Noord-Brabant)

On the 1st of March 2004 a cat was caught in a wire trap cage in a coop at the edge of the "Hubertusbossen" forest, near Heeze, in the Province of Noord-Brabant (see also table 2). This forest, located directly east of the town of Heeze, is a nature area of 750 ha, mainly consisting of varied deciduous and coniferous woods. The surroundings are diverse, with brook valleys, pastures, arable land and the Strabrechtse Heide, a wood and heathland area of 1,100 ha. The trap cage was set because in previous nights two chickens had been killed in the hen house and partially eaten. The trap cage was baited with one of the dead chickens.

Once trapped the cat behaved extremely shyly and snarled furiously. It was anaesthetised by the local veterinarian to enable one of the authors (A. van Diepenbeek) to measure the animal, and collect a hair sample for DNA analysis. Later the same evening the animal was released in the Hugterheide, a nature area about eight kilometres from where the animal was captured. The owner of the chickens objected to the cat being released close to where it was trapped and he promised to improve the fencing of the chicken run in order to prevent predators from breaking in.

Physically this was a rather meagre tomcat of about one year old (see photographs 7-9) with developed, but not large, testicles. The yellowish grey coloured fur was more or less clearly visibly striped; the tail was rather thick and blunt, with a black tip and with 3-5 black rings distributed over the whole tail, the nose leather was

Photograph 7. Side-view of the wildcat (*Felis silvestris*) trapped on 1 March 2004 near Heeze (province of Noord-Brabant): the relatively short and thick tail has three or four rings (see also: photograph 8) and a black end; the pattern on the trunk is not strongly defined; note the whitish lower lip and white chest. *Photograph: Annemarie van Diepenbeek.*

Photograph 8. Back and side-view of the wildcat (*Felis silvestris*) trapped on 1 March 2004 near Heeze (province of Noord-Brabant): one can see a faint, dark dorsal stripe and the ring pattern on the tail. *Photograph: Annemarie van Diepenbeek.*

Photograph 9. Front-view of head of the wildcat (*Felis silvestris*) trapped on 1 March 2004 near Heeze (province of Noord-Brabant): white whiskers, nose leather and lower lip light coloured and a white bib. The eyes were treated with salve during the anaesthesia to prevent them from drying out. *Photograph: Annemarie van Diepenbeek*

light coloured; the muzzle was white around the mouth and the animal had a white bib; the black dorsal stripe did not continue along the tail. A hair sample was collected for DNA analysis (see below). The following external measurements were taken, total length: at least 85 cm; head and body length: 52.5 cm; tail length: 31 cm (including hair: 33 cm); hind foot length: 13.8 cm (including nails: 14.6 cm): ear length 60 mm (with hair: 68 mm); weight: 3700 g.

In the course of 2005 it became clear that this was an unintentional introduction. The cat was found as a young stray in the summer of 2003 in a forest in the Vosges mountains (France) and was taken away to Heeze (The Netherlands), in the belief that it was a domestic cat. It prospered in its new home in Heeze until disappearing one day in the winter of 2004.

DNA analyses

Tissue material from two cats, the ones from Groenlanden and from Heeze was available for DNA analysis. These samples had been conserved in an ATL-buffer. DNA was extracted from these samples at Alterra Research Institute, using the DNeasy Tissue Kit, following the protocol of the manufacturer (Qiagen Inc.). Tongs were used to pulverize the sample taken from the root channel of the Groenlanden cat in order to get better access to the DNA. A third sample of DNA, from a domestic cat, was extracted for reference purposes.

Since the wildcat and domestic cat are closely related, it is presently not easy to make a genetically clear distinction between them. However, we can analyse the DNA on microsatellites, because there are differences in the alleles and their frequencies. This requires access to a comprehensive DNA collection, containing material of many wild and domestic cats, and preferably of wildcats originating from close to the Netherlands. Since Alterra does not have such a data base, we sent the samples for further analysis to the Instituto Nationale per la Fauna Selvatica 'Lozano Emilia' in Bologna, Italy (for more technical details see: Jansman et al. 2003, Lecis et al. 2006). Their DNA collection includes samples of wildcats from the Eifel hills.

The genetic distance of each sample was measured and the samples were assigned to the most related genetic cluster, using the computer programme STRUCTURE (Pritchard et al. 2000). The outcomes of such an analysis with the material of different cats should give two clusters, one with wildcat, the other with domestic cat. The overlap of the clusters illustrates the genetic resemblance and may be indicative of the presence of hybrids. Although this technique does not provide 100% certainty on the identity of a specimen, the degree of uncertainty is much smaller if the tested sample lies outside the overlap area of both clusters.

The reference sample of the domestic cat was inside the domestic cat cluster and only bore a 20% resemblance to the wildcat cluster. The hair sample taken from the cat from Heeze had a 90% fit with the wildcat cluster, providing us with another argument to identify this cat as a wildcat. It was not possible to obtain results from the Groenlanden cat, probably because the DNA material was too degraded, owing to the method of preservation that had been used.

Discussion

The occurrence of the wildcat in the Netherlands

Based on the intracranial volume of 40.0 cm^3, the cat found at Groenlanden can be positively identified as a wildcat, even though failure of the DNA analysis of the root channel sample means that this identification could not be confirmed genetically. As all the external characteristics of the Vaalsbroek cat indicate a wildcat (see also: table 1), we also consider this animal to be a wildcat. Although we cannot exclude the possibility that these two positive records are also cases of introduction, intentional or not, we think that this is unlikely. For example, Heike Weber (of Nordhorn Zoo, Germany) informed us that there had been: "definitely no escapes from our zoo since 1990".

The DNA analysis of the hair sample of the cat caught at Heeze convincingly demonstrates that this can be considered to be a true wildcat. However, the information on the history of this animal shows that this case was an unintentional introduction from the Vosges, and not a result of spontaneous settlement.

We do not consider the other observations, over the past decade, of cats that show some resemblance to the wildcat, to be positive records. Possibly these are hybrids. These observations do however provide circumstantial evidence of the presence of wildcat in the area. Moreover, the appearance of hybrids is more likely in the event of the incidental occurrence of individual pure wildcats.

We strongly recommend that, from now onwards, anyone making field observations of yellowish to brownish grey-coloured cats in the Netherlands to be alert to the possibility of a wildcat. We urge that such observations should be meticulously recorded, and reported to the database of the (Dutch) Society for the Study and Conservation of Mammals ('Zoogdiervereniging VZZ') in Arnhem. This will help document the pattern of future arrivals of wildcat in the Netherlands, and help underpin future analysis and research. The external characteristics that distinguish wildcats from domestic cats can be found in table 1.

We would like to stress that many of the characteristics listed in table 1 are gradual differences. The possible occurrence of hybrids complicates this matter even more. One has to try to find out as much as possible about the relevant characteristics to be able to definitively identify the animal. It is extremely difficult to in the field distinguish a wildcat from a domestic cat.

Settlement in the Netherlands

Two positive records, and a few observations of possible hybrids, are not sufficient proof of the wildcat settling, or taking up permanent residence in the Netherlands. For that, evidence of reproduction would be required, preferably several cases. In this respect the difficulty of distinguishing young wildcats from young tabby-coloured domestic cats poses a problem. Young wildcats have a prominent pattern of stripes, whereas in adult wildcats this pattern becomes less pronounced, as the guard hairs grow (Piechocki 1990).

Possible origin

The southeast of the Netherlands borders on the German federal state of Nordrhein-Westfalen (to the east) and Flemish district of the Voerstreek (to the south). The south of the Voerstreek is directly adjacent to the heavily wooded Ardennes in Wallonia. Vandendriessche & Verkem (2004) mention that between 1987 and 2002 the range of the wildcat in Wallonia came close to the Voerstreek, although they point out a lack of confirmed observations in the Voerstreek. Libois (1991) mentions that the wildcat was frequently observed in the Hautes Fagnes, about 25 km away from the Dutch border of southern Limburg, in the 1970s and 1980s. The previously discussed record of foot prints of a wildcat near Hergenrath, six kilometres south of the Dutch town of Vaals, shows that the species is present just south of the border. The find of a wildcat near Vaalsbroek corroborates this. However, there is no information from this period (the 1990s) on the occurrence of the wildcat along other parts of the Dutch-Belgian border area (Vandendriessche & Verkem 2004).

Although it seems most likely that wildcats from the Ardennes move north and enter the Netherlands through the Voerstreek, it is also possible that they come directly from the Eifel hills. Groenlanden, the location of one record, is far north of the Ardennes and the urban agglomeration of Sittard-Geleen lies between the two. It therefore seems more probable that this wildcat came from the German area in the east, for example from the Hürtgenwald (Nord-Eifel). This is only about 15 km from the Dutch-German border at Vaals, and wildcats are known to exist here (www.biostationeuskirchen. de; viewed 18 November 2005). This animal might possibly have been born in the Eifel hills, but

could not find a territory to occupy there and when moving north between the rivers Maas and Rhine may have found the river Waal in its way.

On 20 March 2002 the website www.biostationeuskirchen.de mentioned a big increase of the wildcat in the Eifel hills that had increased from 300 specimens in 1990 to 1000 in 2000. On 26 January 2005 the same website mentioned the occurrence of 200-250 wildcats in the Nord-Eifel, the part of the Eifel that lies within Nordrhein-Westfalen. According to Vogt (1985) and Vogt & Grünwald (1990) the population size in Rheinland-Pfalz (the German state that covers the most of the Eifel hills) did not change in the 1970s and 1980s. Consequently increases in the wildcat population may be a relatively recent phenomenon that could have started as late as the 1990s.

Although wildcats are sporadically observed in the less wooded area just north of the Eifel, it seems that even five kilometres of open agricultural land presents a large obstacle for the wildcat (M. Trinzen, personal communication). This makes the possibility of the wildcat originating in the Eifel hills seem less probable. However, in view of the number of woods between the German border of the provinces of Limburg and the Rhine this possibility cannot be excluded.

The occurrence of a wildcat at Vaalsbroek can be explained in a similar way. The woods in the neighbourhood of Vaalsbroek and Vaals, such as the Vijlenerbosch and the Malensbosch (together circa 800 ha), are more or less directly connected to the large complex of woods south of Aachen, consisting of the Aachener Wald and the Preusswald in Belgium (together circa 3000 ha). This complex of woods can be considered as an extension of the woods of the Eifel hills and the Ardennes. It would relatively easy for a wildcat to move from its habitat in the Eifel to the northwest through these inter-connecting woods. Raimer (1994) and Hemmer (1999) show that the wildcat does occur south of Aachen. This would lend credence to the reported observations by Leo Backbier in the surroundings of Vaals (see above).

Possible explanations for the recent records

The two recent records of the wildcat in the southeast of the Netherlands after a period of many centuries without confirmed records require explanations. Although we can not fully explain these phenomena, and cannot entirely exclude coincidence, we do believe that there are feasible explanations.

At the outset we should state that there are no indications that the two observations were the result of increased activity by observers. The current probability of observation probability does not seem to be any higher than in the 1970s and 1980s. Rather, we propose the following plausible explanations for these sightings.

1. *More and better habitat.* More natural succession in nature areas, especially woods, offers more cover and a more diverse structure. Since the first National Nature Policy Document (1990), the area of nature areas in the Netherlands has grown. Hundreds of hectares of natural habitat have been created over the last decade in the nature development area of Gelderse Poort east of Nijmegen. This may have played a role in the case of the wildcat of Groenlanden. This area was formerly open agricultural land, of no interest to the wildcat; Stahl & Leger (1992) emphasise the importance of extensive continuous wood complexes for the wildcat in the northeast of France.

2. *Changing management.* There has been a general hunting ban in many nature reserves in the Netherlands, a specific hunting ban for the wildcat in Germany (1934) and Belgium (1973) and a general decrease of illegal hunting, trapping and killing in all three countries. In 1996 the wildcat had been added to the list of protected animal species of the Decree on Protected Animal Species under the Nature Conservation Act of 1967, superseded in 2002 by the new Flora and Fauna Act.

3. *Increasing mutual tolerance between man and wild animals*. There has been a change of human attitudes to wild animals, which are not considered to be as dangerous or threatening as before, and often even arouse positive interest

(e.g. the beech marten (*Martes foina*), that changed its 'hostile' niche of farms in the 1980s into more 'hospitable' 'green city quarters'). This change might have been noticed by the animals themselves, leading to the animals feeling the need to maintain less distance from humans, and other behavioural changes such as a greater acceptance of the presence of domestic animals, noise, and human disturbance.

4. *Overflow from adjacent areas.* Hemmer (1999) mentions that existence of healthy populations of wildcat in Europe for example, in Germany where there has been a growth in the wildcat population of the Eifel population (see preceding paragraph).

5. *Endogenous causes.* Parent (1975) describes the colonisation of the Ardennes and the Belgian Lorraine by wildcats from France and Germany after World War II. There seem to be phases, in cycles of about ten years, when the population expands. Although such an interpretation is highly speculative, there may also be internal, autonomous causes.

Consequences for management

Assuming that the records published in this article are not mere coincidence – and even if they were, a coincidental occurrence of the wildcat should have consequences for management practices – and taking into account that the wildcat is protected in the Netherlands, nature management organisations have a new, strictly protected, species to deal with. The hunting community also has a problem, since the wildcat is covered by section a, which protects "all mammals naturally occurring in the Netherlands" (Paragraph 1, article 4 of the Flora and Fauna Act (Anonymous 2001)). Paragraph 1 deals with all protected indigenous animal species. Furthermore the wildcat has a (strictly) protected status under the following international conventions and treaties:

1. The Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats) – Annex II, which deals with strictly protected fauna species, specifically includes the wildcat.
2. The Habitats Directive (Council Directive 92/43/EEG on the conservation of natural habitats and of wild fauna and flora) – Annex IV, that includes the wildcat, deals with 'Animal and plant species of community interest in need of strict protection'.
3. The CITES Convention (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) – Appendix II, that includes the wildcat, deals with very vulnerable species, which are subject to generally strict rules on trade.

The Dutch Minister of Agriculture, Nature, and Food Quality wrote a letter to the Royal Netherlands Shooting Association (KNJV) on 3 December 2003 (Reg.no.: DN.2003/3730) stating that it is not forbidden to trap and kill feral domestic cats, provided that it is done with a reasonable purpose (see also: Anonymous 2002). The Minister stated that in the context of the Flora and Fauna Act, he considers control and damage prevention to be reasonable goals. However, as has been demonstrated above, it is rather difficult to distinguish wildcats from tabby-coloured domestic cats in the field (e.g: Klinkhamer 1974; see also: de Nie 1988, Artois et al. 2002). To prevent the shooting of wildcats, whether by mistake or not all relevant parties should be informed about the possible occurrence of wildcats. These relevant parties, whom should be made aware of and take into account the possible presence of wildcats, are primarily site managers, including Game Management Units and individual hunters. Others who should be included on this list include the authorities involved in the inspection of hunting: the Provinces, the Fauna Fund and the General Inspection Service of the Ministry of Agriculture, Nature, and Food Quality. The explanatory annex of the 'Decree of Designated Animal Species under Article 67 of the Flora and Fauna Act' dealing with pest animal species, as published by the Province of Limburg (see: www.limburg.nl/upload/pdf/Faunabeheerplan_besluit_aanwijzing_exart67_florafaunawet.pdf; viewed 20 December 2005), highlights the sporadic occurrence of wildcats in the Netherlands

and mentions that it is difficult to distinguish wildcats and feral domestic cats in the field. The Executive Council of the Province of Limburg urges people, who want to control feral cats, to verify that the animal is not a wildcat when a supposed feral cat has been caught or is about to be shot.

We cannot exclude the possibility that in order to prevent the unintentional killing of wildcats it may become necessary, in the near future, to only issue shooting permits under strict conditions. The need for correct identification may make the use of live traps a necessity. A further complication is the difficulty in establishing whether or not a domestic cat in the field is running wild. Ways of addressing this problem have been addressed elsewhere (see: Bos 1986, De Nie 1988 and Artois et al. 2002).

Conclusions

Remains of wildcats found at excavations in the low-lying parts of the Netherlands show that this species occurred in our country until the Roman Period. Deforestation is a possible cause of its disappearance. We do not know of any records of the wildcat in the Netherlands in post-Roman times. There are a number of records from the 1950s and 1960s of animals showing some characteristics of wildcats, but none of these were completely verified cases.

Based on two confirmed observations, at Groenlanden (1999) and at Vaalsbroek (2002), the wildcat should be listed as a member of our indigenous fauna. Both internal and external characteristics were used for these identifications. The wildcat of Heeze, trapped and released in 2004, was positively identified by means of DNA analysis. However this record appeared to be a case of unintentional introduction.

We conclude that the two records are not just coincidental, but indicate an expansion in the range of the wildcat, into the Netherlands. As reproduction has not been recorded, we cannot yet speak of a permanent settlement of a population of wildcats.

The two confirmed observations may very well be forerunners of a more general trend that is the dispersion of young animals, especially males, trying to find vacant territories as a result of increasing wildcat numbers, especially in its range directly southeast of the Netherlands, i.e. in the Eifel hills.

For the moment, we can only speculate on the possible causes of the recent records and an expansion in the wildcat's range. Plausible explanations are: 1. The availability of more or better habitat. 2. Changes in population management. 3. Changes in the relations between the public and wildcat. 4. The thriving state of the (assumed) source population in the Eifel.

In view of the protected status of the wildcat in the Netherlands it is imperative to adequately inform site managers and hunters about the current status of wildcats in the Netherlands, in order to prevent shooting or killing by other means. The same holds for authorities that issue or inspect permits to control feral and stray cats. Strict protection of the wildcat is hampered by the existence of hybrids of wildcat and domestic cat, and legislation that seeks to control feral domestic cats from running wild. This raises an interesting dilemma for site managers, who on the one hand should prevent the presence of feral domestic cats in order to prevent hybridisation (see e.g. Hubbard et al. 1992, Biró et al. 2005, Lecis et al. 2006), but on the other hand should protect wildcats.

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Samenvatting

De wilde kat (*Felis silvestris*) eindelijk waargenomen in Nederland

In de afgelopen jaren zijn er in Nederland in het wild enkele vondsten en zichtwaarnemingen gedaan van katten die kenmerken vertoonden van de wilde kat (*Felis silvestris*). Deze waarnemingen worden onder de loep genomen.

Eerst wordt kort ingegaan op de in- en uitwendige verschillen tussen wilde kat en huiskat (*Felis catus*) en op de taxonomie en verspreiding. Belangrijke inwendige verschillen zijn de lengte van de darm (wilde kat: <170 cm; huiskat: >155 cm) en de schedelinhoud (wilde kat: >31 cm^3; huiskat: <38 cm^3). Er wordt een overzicht gegeven van de uitwendige verschillen. Binnen *Felis silvestris* kunnen vier groepen worden onderscheiden: 1. De stevige, dichtbehaarde kat uit Europa: de *silvestris*-groep, ook wel genoemd: de Europese (bos)kat. 2. De lichtgebouwde kat uit Azië: de *ornata*-groep, de steppenkat. 3. De tengere, langbenige kat uit Afrika: de *lybica*-groep, de woestijnkat of de Afrikaanse, Lybische of Nubische kat genoemd. 4. De huiskat: de *catus*-groep. De wilde kat komt in de buurt van Nederland het meest nabij voor, in zuid-zuidoostelijke richting, in het gebied van Eifel en Ardennen (Duitsland respectievelijk België) en, in oostelijke richting, in het gebied tussen de Weser en het Harz-gebergte, Duitsland.

Het voorkomen van de wilde kat in Nederland in (pre)historische tijden wordt geschetst. Uitkomsten van opgravingen geven aan dat de soort in ieder geval tot in de Romeinse Tijd in Nederland voorkwam. Mogelijk is de wilde kat als gevolg van ontbossing, klimaatsverandering en vervolging kort nadien uit Nederland verdwenen. Het is echter niet uit te sluiten dat de wilde kat ook daarna nog voorkwam in Nederland; maar ons zijn geen recentere waarnemingen bekend. Het is opvallend dat over het voorkomen in en verdwijnen uit Nederland van andere opvallende zoogdiersoorten, zoals bever (*Castor fiber*), otter (*Lutra lutra*), lynx (*Lynx lynx*) en wolf (*Canis lupus*), zo veel meer bekend is.

Uit de jaren '50 en '60 van de vorige eeuw zijn vondsten bekend van katten die een of meerdere kenmerken bezaten die wezen in de richting van wilde kat. Dit heeft echter niet geleid tot een zekere waarneming. Ondanks aanhoudende geruchten zijn ons geen zekere waarnemingen van de wilde kat uit de jaren '70 en '80 en de vroege jaren '90 bekend.

Op 13 juni 1999 wordt er een jong mannetje van de wilde kat gevonden bij Groenlanden bij Nijmegen; schedelinhoud: 40 cm^3; processus condylaris steekt duidelijk tot voorbij de processus angularis naar achteren; determinatie wordt ondersteund door het kleurenpatroon). Op 1 november 2002 wordt bij kasteel Vaalsbroek dichtbij Vaals, Zuid-Limburg, een doodgereden vrouwtjeskat gevonden, waarvan alle waarneembare, uitwendige kenmerken wijzen in de richting wilde kat. Op 1 maart 2004 wordt bij Heeze een wilde kat gevangen; determinatie op basis van DNA-analyse, ondersteund door uitwendige kenmerken. Later bleek dat dit een als jonge huiskat vanuit de Vogezen (Frankrijk) in 2003 naar Heeze meegenomen dier was, dat uiteindelijk van huis is weggelopen. Naspeuringen leverden naast deze drie zekere waarnemingen, ook nog drie onzekere waarnemingen op, te weten twee vondsten, in 1995 respectievelijk 2001, en een zichtwaarnem-

ing in 2004: wilde katten, bastaarden of verwilderde huiskatten?

Het voorkomen van de wilde kat in Nederland is nu dus bewezen. Toch kan vooralsnog niet gesproken worden van duurzame vestiging, er is immers (nog) geen sprake van voortplanting, laat staan van een zich voortplantende populatie.

Hoewel niet uit te sluiten is dat de dieren afkomstig zijn uit de Ardennen, ligt de Eifel als gebied van herkomst meer voor de hand. De populatie van de wilde kat heeft zich in de Eifel gedurende de afgelopen 15 jaar verveelvoudigd met alleen al in de Nord-Eifel een geschat aantal dieren van circa 250.

Er zijn verschillende verklaringen te geven voor het voorkomen van wilde katten in Nederland, zoals meer en geschikter biotoop, veranderingen in het beheer, toenemende tolerantie tussen mens en wilde kat en overlopen van aangrenzende gebieden (Eifel). Nader onderzoek zal moeten uitwijzen welke van deze en/of andere factoren werkelijk een rol spelen.

Gezien de wettelijk beschermde status van de wilde kat, ook internationaal in verschillende verdragen, zal de vooralsnog geringe maar toch reële kans op het voorkomen van wilde kat in Nederland ons inziens grote gevolgen hebben voor het terreinbeheer. Met name het afschieten van verwilderde huiskatten, hetgeen op zich al risicovol is door de onzekerheid hoe dat verwilderd-zijn in het vrije veld vast te stellen is, zal met nog meer omzichtigheid en waarborgen dienen te geschieden. Wij dringen er daarom op aan dat de betrokken organisaties een voorlichtingscampagne beginnen om de terreinbeherende en toezichthoudende instanties over deze nieuwe ontwikkeling te informeren. De individuele terreinbeheerder en jager adviseren wij reeds nu dringend om verondersteld verwilderde huiskatten niet meer af te schieten, maar te vangen om zodoende een juiste determinatie te kunnen uitvoeren en wetsovertreding te voorkomen.

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