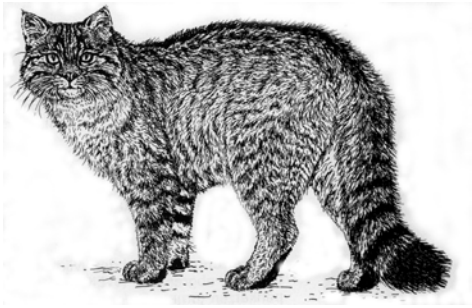
NABU

Symposium

Biology and Conservation of the European Wildcat (*Felis silvestris silvestris*)



Germany
January 21st –23rd 2005

Abstracts

ÖKO-LOG Freilandforschung

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Introduction

More than four years after the last meeting of wildcat experts in Nienover, Germany, the NABU (Naturschutzbund Deutschland e.V.) invited for a three day symposium on the conservation of the European wildcat. Since the last meeting the knowledge on wildcat ecology increased a lot due to the field work of several research teams. The aim of the symposium was to bring these teams together to discuss especially questions which could not be solved by one single team due to limited number of observed individuals or special landscape features. The focus was set on the following questions:

1) Hybridization and risk of infection by domestic cat - a threat to wild living populations?
2) Reproductive success, mating behaviour, and life span - what strategy do wildcats have?
3) ffh - reports/ monitoring - which methods should be used?
4) Habitat utilization in different landscapes - species of forest or semi-open landscape?
5) Conservation of the wildcat - which measures are practicable?
6) Migrations - do wildcats have juvenile dispersal?

75 Experts from 9 European countries came to Fischbach within the transboundary Biosphere Reserve "Vosges du Nord - Pfälzerwald" to discuss distribution, ecology and behaviour of this rare species.
The symposium was organized by one single person - Dr. Mathias Herrmann - and consisted of oral presentations, posters and different workshops.

Scientific program

Friday Jan 21st

8:00 – 10:30 registration /optional: Morning excursion to the core area of the biosphere reserve

10:30 Genot, J-C., Stein, R., Simon, L. : The transboundary biosphere reserve and the wildcat in Rheinland-Pfalz – opening remarks

11:00 – 12:30 oral presentations

Denk, M.: How to evaluate wildcat populations and habitats – a suggestion in the context of the European Habitat Directive

Hupe, C.: Situation of the European wildcat in the solling

Hartmann, M.: Reproduction and behaviour of European wildcats in species specific enclosures.

12:30 lunch

13:30 – 14:15 oral presentations

López-Martín, J.M.; Ruiz-Olmo, J.; Pinyol, C. Martínez, D. & A. Such: Analysis of viability to reintroduction of wildcats breeding in captivity.

Such, A.; López-Martín, J.M.; Martínez, D. & C. Pinyol: Effects of captive environment and release techniques on dispersion movements of reintroduced captive reared wildcats.

14:15 – 16:45 poster session & exchange of literature

Klar, N., Herrmann, M. & Jungelen, H.: How do roads affect the spatial behaviour of European wildcats?Goetz, M.: Research on the wildcat in the biosphere reserve “Karstlandschaft Südharz” – first results

All participants: actualisation of the map of distribution of the wildcat

López-Martín , J. M.: Home range and habitat use by European wildcats in a Mediterranean landscape

Weber, D.: The actual map of the wildcat in Switzerland

Pinyol, C., Ruiz-Olmo, J, Sánchez, D.: The Vallcalent wildcat captive breeding center: results after 20 years

Such, A. & Lopez-Martin, J.M.: Effects of rabbit on the diet of european wildcats in the Mediterranean environments.

Monterroso, P.: Spatial distribution of the European wildcat in the Guadiana Valley Natural Park, South Portugal

Ferreira, J.: Modelling wildcat distribution in a Portuguese Natura 2000 site (SPA Moura-Barrancos, SE Portugal)

Oliveira, R.: Genetic diversity of portuguese wildcat (Felis silvestris) populations and detection of hybridization with domestic cats.

Eckert, I.: Conservation genetics of the European wildcat in Germany

Surkus, B. & Herrmann, M.: Standorte für Grünbrücken in Deutschland

Ballesteros, E.; Lozano, J. & Virgós, E: Wildcat conservation in Spain, current concerns, ongoing research projects in Madrid, Granada and Guadalajara.

16:45 – 18:15 oral presentations

Trinzen, M.: Research on the conservation of the wildcat at the German-Belgium frontier

Büttner, I.: Excursions of radio-tracked wildcat during mating season

Thiel, C.: Spacing patterns and habitat use of wildcats in the Eifel.

18:30 dinner

19:30 Exchange about methods and techniques

Saturday Jan 22nd

8:45 – 10:30 oral presentations

Herrmann, M.: Ecological strategies of wildcat populations

Klar, N.: Wildcats in the Eifel – Why are they bound to forest

Skrbinsek, T.: Trapping, handling and anasthesia of free living wildcats in the Dinaric part of Slovenia

Potocnik, H.: Wildcat habitat utilization in the region of Dinaric mountains (Slovenia)

10:45 – 12:30 discussion forum (parallel sessions)

Trinzen, M.: adaptations – how flexible is the wildcat?

Herrmann, M.: Summarizing data on life span, reproduction and mortality of free living wildcat – the need of cooperation

Peppers, C.: Wildkatzentourismus? Eine reale Gefahr?

12:30 - 13:30 lunch

13:30 – 14:30 oral presentations

Moelich, Th.: "The project >>A Habitat Network for the Wildcat<<"

Djabalameli, J.: Hair Catching with the aid of the “Lure stick”. Proof of wildcat existance by genetic analysis

Boehle, U.-R.: 20 years of wildcat conservation in bavaria – a validation by molecular methods

15:00 – 16:00 oral presentations

Lienard, E.: Genetic variability of
Toxocara cati infected european wildcat and domestic cat. First results

Germain, E.: Ecological and Ethological Factors Conducive to the Hybridization of the Wildcat and the Domestic Cat

Herrmann, M.: Measurements for wildcat protection in regular forestry

16:15 – 18:30 forum of discussion, parallel

Huck, M.: Hybridisierung von Wildkatze und Hauskatze

Simon, O.; Hupe, C.; Trinzen, M.: Mögliche Methoden zur Erfassung und Bewertung von Wildkatzenvorkommen im Rahmen der FFH-Richtlinie

Weber, D. & N. Klar: Spatial and social organization of a wildcat population

18:30 dinner

19:30 video-projection

Trinzen, M. & Büttner, I.: Hunters of microtids

Sunday Jan 23rd

8:45 – 10:00 results of the forum of discussion

10:15 – 12:00 oral presentations in German (engl. abstract)

Jungelen, H.: Erfahrungen mit Wildkatzenschutzmaßnahmen beim Neubau einer Bundesautobahn.

Hötzel, M.: Drei Jahre intensiver Beobachtung einer weiblichen Wildkatze in der Eifel

Raimer, F.: Wildkatze und Luchs – Koexistenz zweier Katzenarten

final remarks – the organizer

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The Wildcat in the Transboundary Biosphere Reserve (TBR) "Pfälzerwald – Vosges du Nord"

- Opening Remarks -

Roland Stein, Transboundary Coordinator & International Exchange
Pfälzerwald Nature Park, German Part of "Pfälzerwald – Vosges du Nord" TBR

Ladies and Gentlemen, Dear Colleagues,

On behalf of the managing body of the German part of the Transboundary Biosphere Reserve "Pfälzerwald – Vosges du Nord", I would like to welcome you to this scientific symposium on the biology and conservation of the European wildcat.

We feel very honoured by the participation of all those experts coming from various European countries.

First of all let me introduce to you the main characteristics of UNESCO's Biosphere Reserves, a World Network of at present 459 internationally recognized sites, established by countries working with the 'Man and the Biosphere' programme.
They promote biodiversity conservation and sustainable development, based on local community efforts and sound science.
As places which seek to reconcile economic development, social development and environmental protection, they are ideal to test and demonstrate approaches to sustainable development at e regional scale.

In our case here in 'Pfälzerwald - Vosges du Nord', the regional scale is even an international one. We are one out of six officially recognized Transboundary Biosphere Reserves worlwide. A partnership between the German Nature Park „Pfälzerwald" and the French Regional Nature Park „Vosges du Nord".

We have to fulfil three basic functions:

- A conservation function, aiming at the conservation of the full hierarchy of biodiversity
- A development function, in terms of the triple bottom line of sustainability
- A logistic function, supporting interdisciplinary research, monitoring, education, training and information exchange

Our main challenges are:

- To implement the ecosystem and bioregional approach
- To have a zonation pattern for conservation and development, consisting of three inter-related zones: core area, buffer zone and transition area
- To integrate cultural and biological diversity
- To focus on a multi-stakeholder approach
- To form a tool for conflict-resolution of natural resource use
- To participate in a World Network

UNESCO's General Conference encourages the establishment of transboundary biosphere reserves as a means of dealing with the conservation of organisms, ecosystems and genetic resources that cross national boundaries. They provide a tool for common management of a shared ecosystem.

In our case here the German-French transboundary cooperation led to the creation of a joint initiative on the conservation of the lynx, strongly supported by two European Union-funded INTERREG projects. The second project started last year and is being carried out in close cooperation with 'ÖKO-LOG Field Research'.
At present we are planning for a symposium on the transboundary conservation of the lynx.

Hopefully we shall succeed in establishing a similar initiative and coordinated action on the conservation of the wildcat. Still we are quite lucky as far as the presence of the wildcat in our transboundary forest ecosystem is concerned, in fact the largest coherent tract of forest in Western Europe.
It is inhabited by a comparitively strong population of wildcat, but, of course, there are threatening impacts on the habitat and they are increasing.

Due to the efforts of our Federal State Agency for Nature Conservation and Water Management of Rhineland-Palatinate, attention was drawn to the issue and a species conservation project was started.
ÖkoLog Field Research assessed the distribution and range of the wildcat on the German side of the Biosphere Reserve. Furthermore they elaborated recommendations on the conservation measures to be taken.

In the field of public relations, the Federal State Agency published a very interesting brochure on the wildcat and its present situation in Rhineland-Palatinate.

For the future, the Agency builds on more public relations and on close cooperation with the forestry adminstration. Also they intend to analyse the habitat-potential of the still existing bunkers and air-raid shelters of the Second World War. Furthermore they are planning to work on the definition of model areas of wildcat-territory.
Tomorrow, Ludwig Simon from the Federal State Agency will join you and be ready to answer your questions in detail.

As far as the issues of fragmentation by road construction, fencing, corridors and passage-ways are concerned, Mathias Herrmann will update you on current developments.

We wish to thank NABU, GNOR, the Biosphärenhaus and last but not least ÖkoLog Field Research for organising this important venue. A big „thank you“ especially to Mathias Herrmann who took the lead and initiated this event.

Hoping that this symposium will become an important stepping-stone towards improved international cooperation and coordinated scientific research in the field of the biology of the European wildcat and its sustained and efficient conservation, we would like to encourage you to widely disseminate your findings and conclusions.
Then it is up to us, the protected areas managers, to implement appropriate conservation measures on ground, involving all relevant stakeholders and communicating the future needs to policy-makers and government agencies.

Nevertheless the conservation of species and their habitats should not be restricted to protected areas only, but has to be extended far beyond boundaries.

Thanking you for all your impressive efforts and valuable contributions, I wish you a fruitful, interactive and successful symposium.
Thank you very much for coming here to our Transboundary Biosphere Reserve “Pfälzerwald – Vosges du Nord“.

I now would like to hand over to my french colleague, Jean-Claude Génot, from the Regional Nature Park “Vosges du Nord“, which is our French partner.

Thank you very much for attention.

Fischbach, on 21st of January 2005

How to assess wildcat populations and habitats – a suggestion in the context of the European Habitats Directive

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The so-called European Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) commits the member states to preserve certain habitat types and species within their territory. Therefore, monitoring of the status of these habitat types and species has to be conducted at regular intervals (cp. Art. 11 and 17). The wildcat (*Felis silvestris silvestris*) is one of the species protected by the directive.
In Germany the federal states are responsible for nature conservation. So in Hesse in 2003 for the first time a monitoring concept and an assessment scheme have been developed, based on literature analysis of the current knowledge about wildcat biology and ecology and by consulting different wildcat researchers.
Results: First it has to be verified if there are really wildcats in the region. If there is no evidence (e.g. determinate dead individuals), life traps or hair traps shall be installed. Then for every wildcat population the following criteria shall be checked:
For assessing population size and structure: a) the average number of credible observations in the last 5 years per year and km², b) the location of credible observations AND c) the average number of credible observations or findings of juveniles in the last 5 years per year and km².
In the future additionally hair traps and DNA analysis shall be used for the monitoring.
For assessing habitat quality within the region where the population occurs: a) the size of contiguous forest(s) within the region, b) the degree of connection between the forest within the region and with adjacent forests, c) the portion of area within the forests not disturbed by human use, d) the portion of forest area with understorey, e) the portion of open land (e.g. glades) within the forest, f) the amount of dead and matured timber.
For assessing the threats within the region: a) the density of public traffic roads within the region and up to 20 km apart, b) the extent of dangerous hunting practices (e.g. shooting of wild-coloured domestic cats, traps, hunting in fox/badger dens), c) the extent of using the forest area for recreation and tourism.
These criteria are first suggestions that have to be discussed and tested! Furthermore, at different regions different parameters might be adaptable.

Genetic variability of *Toxocara cati* infecting European wildcats and domestic cats

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Price (1980) suggested that many parasite species have locally-inbred populations, with large genetic differentiation among populations from different geographic regions or hosts. Also, parasites could be a tool to distinguish species or populations, especially in the case of the European wildcat. The taxonomic status of this cat is controversial. Historical, morphological and genetic criteria are not conclusive because of long-term interbreeding with domestic cats. To provide a new tool in a cat conservation purpose, we have tested *Toxocara cati* mitochondrial (mt) DNA as a marker of cat populations. *Toxocara cati* is a parasite nematode felid specific. With 7 *Toxocara cati* mtDNA sequences corresponding to 7 different haplotypes, *Toxocara cati* mtDNA shows a high level of diversity within and between hosts and populations. So *Toxocara cati* mtDNA sequences do not permit to discriminate domestic cats from wildcats and to identify cat populations from different geographical regions according to our first results. However, mtDNA diversity may provide a new argument for contact frequencies between wildcats and domestic cats. Further studies are required to explore the population genetic structure of *Toxocara cati*.

Situation of the european wildcat (*Felis silvestris silvestris*) in the Solling

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Lying on the north western fringe of the central european highlands, the Solling mountains are situated in southern Lower Saxony about 70 km south of Hannover and 30 km north west of Göttingen. Elevation is between 300 and 450 m above sea level with peaks reaching 509 and 528 m above NN.
In the past ten years extensive work on the wildcat has been done in the Solling and knowledge available has considerably improved. With the 1990‘s, wild cats in the Solling drew increasing attention. In 1994, 1995, 2004 surveys on wildcat sightings and from 1998 – 2001 a telemetry research have been taken place in this area.
From he results of the 1994/1995 and 2004 surveys in the Solling forestry disricts it may be concluded that the wildcat population in the Solling has stabilized over the last 10-15 years. To monitor and assess further development, surveys should be repeated in intervals of 5-10 years. Additionally, radio telemetry should be conducted on wildcats of the Solling population in order to examine social and reproductive behaviour.
A survey aimed at collecting samples of wildcat hair is currently conducted in the margin-/transit zones between Solling and Harz mountains. Bridging the gap between populations, however, can only be achieved by continuing efforts to interconnect margin-/transit zones and the forest areas of the Solling and Harz mountains.

Reproduction and behaviour of European wildcats in species-specific enclosures

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In the course of a long-term experimental study, a species-specific enclosure for European wildcats was developed in which animals encounter all those structures and stimuli that are relevant for their behaviours as regards all functional cycles. In this enclosure, the wildcats do not develop any behavioural disturbances and are able to perform their natural behaviour. They show a rhythm of activity which is similar to that of their conspecifics in the wild, and an electronic feeding device, specifically tailored to wildcats, enables them to express very nearly the whole range of their natural hunting behaviour. The cats' well-being is linked to the species-specific structures which must be available in the right arrangement within the enclosure, with the keeper's appropriate behaviour as the second and equally important factor.
In the study enclosures, all wildcats are sexually mature and reproduce successfully in the first spring after their birth. In a total of 27 gestations, a mean gestation period of 68 days was determined. The average litter size in 38 litters was 4.0. Attaining ages of from 12 to 16 years seems to be the norm for wildcats in enclosures.
In our enclosures, wildcats show highly developed social behaviours within families as well as within groups of related animals of the same sex. However, whether two or more wildcats can be kept together in the same enclosure is absolutely dependent on their personal preferences, independent of sex. When visual contact is given, vocal communication between individuals is very rare. Almost the entire range of communication between wildcats in the same enclosure takes place by eye contact, sometimes accompanied by gestures.

Genetic diversity of portuguese wildcat (*Felis silvestris*) populations and detection of hybridization with domestic cats

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The genetic identity, integrity and diversity of European wildcat (*Felis silvestris*) populations are considered to be compromised by crossbreeding with domestic cats. Extensive hybridization has been described in Hungary and Scotland, contrasting with a limited introgression of domestic alleles in italian wildcats. In Portugal, the genetic diversity of wildcats populations and possible hybridization with domestic cats are not well known. In this study, genetic variation at 12 microsatellite loci was surveyed for 64 domestic and 34 morphologically identified wildcats collected across Portugal. The first results show no significant genetic differentiation among portuguese wildcat populations. Between wild and domestic cats was observed a significant differentiation with *Fst* and *Rst* values of 0.11 and 0.18, respectively ($P<0.001$). These results reflect distinct gene pools for both groups, differing simultaneously in allele frequencies and sizes. Population assignment of individuals and admixture analysis performed by multivariate clustering and Bayesian approaches also showed evidence of two distinct groups. Six morphologically identified wildcats were assigned to the domestic population. A consensus analysis of different Bayesian model-based software identified three individuals with hybrid ancestry among Portuguese wildcat populations. Approximately 11% of the wildcats were identified as hybrids suggesting that hybridization is a subject of major concern for future implementation of conservation plans and highlighting the necessity of enforcement of wildcat protection in Portugal.

Keywords: wild and domestic cat, hybridization, microsatellites, Bayesian analysis, conservation genetics

Modelling wild cat (*Felis silvestris*) distribution in a Portuguese Natura 2000 Site (SPA Moura-Barrancos, SE Portugal)

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The European wild cat (*Felis silvestris*) is one of the species still poorly know in Portugal where it has a threatened status. In order to propose management plans of protected areas with high ecological value is required especially when dealing with a strong database on the species occurrence threatened ones. The study area is located in the SE Portuguese-Spanish border and it was proposed to integrate the Natura 2000 network as a Site of Conservation Interest and as a Special Protection Area Moura-Barrancos. The overall area (43,309 ha) can be characterised by rocky areas along the main rivers and streams. The vegetation is dominated by olm oak (*Quercus ilex*) woodland and Mediterranean scrubland. The area was divided in 158 2*2 km quadrates, of which, 73 were visited (46% of the total area). We found signs and/or tracks of wildcat in 26 squares. To evaluate the fitness of the suitability for the wildcat a predictive model of the distribution of the species was built. The model was constructed using a vegetation map, a map of rabbit abundance, road density, human disturbance and other information. To relate the presence of the wildcat to the selected biotic and abiotic variables a logistic regression analysis was used. Wildcat presence estimated probabilities increased with rabbit abundance, riparian vegetation and decreased with road density. The recovery of the wild rabbit populations, through the of captive breeding rabbits in areas where it is absent or in low densities, together with habitat recovery measures, would ensure the survival of the species in the area. These measures will enhance the suitability of the area, not only to the wildcat but also to the Iberian Lynx, the most endangered felid in the World that also inhabits the area.

Critical areas for wildcat conservation, the ones that require an urgent action plan, are the hills of Malpique-Ficalho-Preguiça-Adiça and the small rivers Murtigão and Ardila.

Conservation genetics of the European wildcat (*Felis silvestris silvestris*) in Germany

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West European wildcat populations are considered to be endangered by both hybridisation with domestic cats (*Felis silvestris* f. catus) and loss of genetic variability. In order to investigate the genetic integrity of wildcats in Germany, we analysed mitochondrial and nuclear DNA of wild and domestic cats from various populations. A total of 96 wildcats and 148 domestic cats were analysed. Wildcat samples came from the three largest populations in Germany (Harz, Eifel, Pfalz) as well as from smaller populations, which were expected to be more vulnerable to genetic depletion or hybridisation. We sequenced 322 base pairs of the mitochondrial control region (HV1) and analysed 8 microsatellite loci. The results exhibited a relatively high genetic variability in wild and domestic cats and suggested a low level of gene flow between both forms. The bigger populations Harz and Eifel both proved to be suitable as founder populations in the course of reintroduction programmes. Within the smaller wildcat populations, a reduction of genetic variability was detectable with regard to the nuclear DNA. Differentiation between wildcat populations was high, due largely to the lack of genetic exchange between the Eastern and Western populations.
This project was supported by the DFG (HA2615/2-1 and 2-2)

Spatial distribution of the European wildcat (*Felis silvestris*) in Vale do Guadiana Natural Park, South Portugal

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The European wildcat (*Felis silvestris*) is the only small wild feline in the Iberian Peninsula. Current knowledge about the European populations of this species is very scarce and is limited to a few research and monitoring projects. The main threats that this small feline faces are those of habitat destruction or deterioration; hybridization with domestic cats (*Felis catus*) and human related deaths. The Portuguese wildcat population suffers from the same menaces as other European populations. Apart from that, little information exists about the actual situation in Portugal.

A newly identified wildcat population in the Vale do Guadiana Natural Park (VGNP) has been constantly monitored since 2003 to determine the distribution and abundance of the wild feline. An exhaustive sign survey was carried out covering every patch of scrubland in the park and surrounding areas. Simultaneously camera-traps were used in different areas in the park to confirm wildcat presence and to determine abundance.

Standard methods of camera-trapping were applied by using feline urine as a lure for wildcats and two sorts of camera devices: 1) pedal triggered and 2) heat motion triggered cameras. Cameras were placed in a 2x2km trapping grid and each camera set was maintained on the field during, at least, a moon cycle.

Simultaneously, 6 individual wildcats were captured and radio tagged in order to better understand habitat use and activity rhythm patterns in this population.

The first results of the sign survey show that the European wildcat can be found in several areas of the VGNP. Higher scat abundance was found in the Central-Western part of the Park, coinciding with areas of high Wild-rabbit (*Oryctolagus cuniculus*) abundance and well conserved watercourses and hills with natural vegetation.

Camera trapping has confirmed the data collected by the sign survey. Several wildcats have been photographed in most of the areas where scats have been collected, and the highest photographic rates have been attained in the area identified as a high-density wildcat area.

Preliminary results obtained from radio-tracking the six adult wildcats captured (four females and two males) have shown an average home-range size of 2.23 km^2 for females and 10.47 km^2 for males (using MCP methods with all locations). All the animals appear to prefer natural scrubland patches, especially when associated with conserved watercourses, and they use a wider range of habitats during the night.

Wildcats in the southern Eifel: Why are they bound to forests?

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From January 2001 to September 2003, 12 feral wildcats (6 males, 6 females) were caught, equipped with radio transmitters and tracked for about one year each. This was done in the course of a monitoring project on a wildcat-proof fence along the motorway A 60 Bitburg-Wittlich. About 10,000 localisations were taken. Habitat preferences were assessed by comparing use and availability for the active periods at night and day as well as for the inactive periods at daytime. On the basis of a habitat mapping 13 habitat categories were built and brought into a hierarchical order of preference using the method of Johnson (1980). All twelve wildcats showed a preference for windfall and early successional stages (regeneration areas). In the study area windfall is abundant after the hurricane Wiebke 1990, while mature forest is almost absent. With their rich and dense composition windfalls provide good cover as well as a lot of food in terms of small mammals. There was a trend that windfalls with natural regeneration were preferred to afforested windfalls. Wildcats significantly preferred extensively used and bushy meadows to intensively used meadows and farmland. Furthermore the use of forest and open habitats was compared. All wildcats spent most of their active period within forest (66-98 % of localisations). Most localisations in open habitats were within 100 m distance of forest edge (53-100 % of open-habitat-localisations). The farthest a male wildcat moved away from the forest edge was 1.3 km. A maximum distance of 200 m to cover in terms of coppices or hedges was never exceeded. Female wildcats spent significantly more time within forest than male wildcats. This could be due to a stronger need of cover (females are smaller than males and have their kittens to care for), a different alimentary spectrum or intraspecific dominance. There could be several explanations of the forest bondage in this area: 1. Windfalls provide a hunting possibility within the closed forest. 2. The relatively clean cultural landscape doesn't provide cover outside the forest. 3. The non-forested areas are a lot more disturbed because they lay on plateaus, while forest is often within steep valleys, which are not as accessible for humans. In some other areas in Germany wildcats are not as bound to forests as they are here. So are wildcats forest cats, or are they flexible in terms of habitat?

Trapping, handling and anaesthesia of free living wildcats in the dinaric part of Slovenia

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As radiotelemetry gets more and more established as a standard wildlife research tool, the role of successful trapping, followed by simple and safe immobilization and handling of caught animals, becomes more and more prominent.

Wildcats were caught, immobilized and equipped with radio collars in a study of spatial distribution and social organization of the European wildcat in southern Slovenia. Cats were trapped using box traps. The traps were set at routes where tracks were found by snow tracking and were not baited to avoid trapping of bears as a problematic non-target species. In the first phase the traps were checked twice per day, first manually and later using radio transmitters fitted to the traps. Since 2003 the traps were monitored using GSM alarm systems that alarmed the researchers the moment the trap was sprung, allowing easier, better and more cost-effective monitoring and maintenance of the traps.

Cats were immobilized using a mixture of Ketamine and Medetomidine. The dose of the drugs was calculated following a weight estimation done by two persons. The target dose was the dose that is normally used for domestic cats, 5-7 mg of Ketamine per kilo of body weight combined with 0.08 mg/kg of Medetomidine. In the first three animals the drugs were administered using a blowpipe. In all subsequent animals the drugs were injected by hand with a syringe after the animal was pressed to a trap door using a restraining plate.

The cats' physiological status was monitored at regular intervals throughout the anaesthesia, and antidote (Atipamezole) was prepared in case any complications occurred. The actual dose of the anaesthetic in mg per kilo body weight was calculated after the animal was weighted to predict the course of anaesthesia (early waking, possible problems with breathing and circulation). Ophthalmic ointment was applied to its eyes, which normally remain open, to prevent corneal damage. Fluid therapy was administered subcutaneously to counter possible dehydration and facilitate renal perfusion. Broad-spectrum antibiotics and vitamins were administered to help the animal recover from the stress. The cat was measured for biometric data, systematically photographed and fitted with a radio collar. Inside of the left ear was tattooed to enable later identification. Pelt was checked for ectoparasites and any parasites found were collected. Blood and urine samples were taken for laboratory analyses and a small piece of tissue was taken from the tip of the right ear for genetics. Antidote (Atipamezole) was administered at the end of procedure and the animal was placed back into the trap to recover.

Altogether, 12 wildcats, 10 males and 2 females, were captured during the course of the study. One male was captured twice. Administration of drugs using blowpipe, used for the first three animals, has proven to be very problematic and stressful. In all subsequent animals the drugs were administered by hand. Weight estimation error was 14,6±7,4 %, with maximal error +26 %. This resulted in drug dosages that were either to high or too low. However, if the actual received dose was calculated, the course of anaesthesia was easy to predict and manage. During the course of the study an effective field protocol was developed, shortening the entire procedure to less then one hour from administration of the drugs and until the animal started waking up. All cats survived the procedure without any visible consequences.

Box traps, equipped with a good alarm system, are an effective and economical method for capture of wildcats, although there is an obvious sex bias towards males in captures. Combination of Medetomidine and Ketamine, used in a well thought-out handling and monitoring procedure, seems to be an effective and safe drug combination for field anaesthesia of wildcats.

Wildcats' habitat utilization in the region of the Dinaric Mountains (Slovenia)

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Unlike many other felids which live in open habitats, wildcats prefer forests. They are primarily and in highest numbers found in broad-leaved or mixed forests. The study was carried out in the north-western part of Dinaric Mountains, a mountain range forming the north-western border to the submediterranean costal area of the Balkan peninsula. The centre of the study area is situated at 45°40' N, 14°41' E in Kocevje forests of Southern Slovenia. Mixed forests with predominating *Omphalodo-Fagetum* forest community with dominant beech (*Fagus sylvatica*) and fir (*Abies alba*) tree species represent a part of the biggest forest region in Central Europe. The altitude ranges from 500 m a.s.l. to 1297 m a.s.l. Due to the limestone geological foundation, the area is subject to karst phenomena. Pot holes, karst caves, dolines, dry water tunnels, ledges, natural arches, and cracks between geological layers form a specific relief with mosaic-structured microclimate, offering shelter and a range of potential lairs to the wildcats.

Twelve wildcats were radio-tracked between 1999 and 2003, but the results refer to 7 males and 2 females studied between 1999 and 2001. The habitat use and the habitat selection were examined according to different relief and vegetation parameters. We compared habitat use between seasons and between sexes. To check wildcats relief preferences, we used compositional analysis. Fixed kernels were used as a utilization estimator and minimal convex polygons – MCP's – as a range estimator of wildcats' home ranges. Spatial shifts and associated habitat use were examined using Jenrich-Turner centroids and wildcats core areas (50% kernel). Social organization was analyzed through static and dynamic interaction analysis.

The wildcats were primarily associated with a forest habitat type and showed preference for steep, SW exposed slopes and altitudes between 680 and 920 m a.s.l. The preferences were stronger in the cooler seasons. The analysis of wildcats' habitat use in the cooler seasons respectively revealed more frequent use of the open habitat in the season 00/01. The reason for this and for selection of steeper slopes in the 99/00 is probably in deeper snow cover and break out of forest small mammals during that season. Such habitat types represent microclimatic islands without snow and with available prey, which is, besides prey abundance, a very important factor during the winter period. Wildcats were more frequently found in the open habitat during the night, while during the day they preferred forest cover and a steep, rocky habitat. This type of habitat was also more frequently used by the females.

Home range sizes of the two female wildcats were 264 ha and 1275 ha respectively, while males' ranged from 895 ha to 1876 ha. The smallest home range among males was that of a subadult male. The small sample of females' home ranges weakened our ability to confirm significant differences in home range sizes between the sexes. The formation of home ranges was changing seasonally with spatial shifts between seasons. These shifts were the most synchronized at the end of the summer 2000. The females typically returned to the same seasonal home ranges in subsequent years.

Spatial distribution of wildcats showed high overlapping of home ranges between the sexes. Overlapping within the sexes was not found. Despite inter-sexual home range overlapping, dynamic interactions indicates a tendency towards strong active avoidance between these pairs.

Spacing patterns and habitat use of wildcats in the Eifel

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The Diplom-study was made in coorperation with the Biologische Station im Kreis Euskirchen e.V. during their project ”Artenschutzprojekt Wildkatze in NRW“. From 2003 to April 2004 six wildcats [3 M:3 F] were radiotracked. I examined data of 5579 fixes, 396 to 1367 fixes per wildcat.
Data was analysed with the GIS-program ArcView™ combined with the Animal Movement™ Extension. Home ranges were calculated with the MCP- and the adaptive kernel-method. Data was filtered before calculating the home ranges to avoid autocorrelation. The time period in which data was filtered was calculated for each individual.
Examining seasonal changes in home range use, seasonal changes in core area use and habitat use within core areas let to following results and conclusions:
• There are little seasonal changes in home range use.
Wildcats change their home ranges due to seasons only a little. It seems that only special situations, like mating time, make a wildcat obviously change its home range in size and location. Female‘s home ranges even change less than male‘s.
• There is no obvious pattern within these changes.
Although there is a tendency for the smallest kernel home range to be in winter. But home ranges calculated with the MCP-method don’t show any obvious patterns.
• Homogenous use of female‘s home range versus male‘s affection to go on excursions.
The relation of kernel home ranges and MCP home ranges leads to the conclusion wether a wildcat uses its home range homogenous (MCP=Kernel) or goes on a lot of excursions (MCP>> Kernel). It seems like females use their home ranges more homogenous than males. This result correlates with former studies.
• Core areas are quite consistent in position and amount.
Core areas were defined as 50% kernel lines. Usually every wildcat had one core area used during all seasons.Some had additional core areas duing some seasons. Only one female spent her time in two equally used core areas.

To examine habitat use the habitat was divided in: WOODLAND with full cover (100% undergrowth), more than half cover (>50%),less than half cover (<50%), little cover (<5%) and no cover. BROOKS with bankvegetation. OPEN LAND with pasture, field, fallow land, moist meadows and meadows. Core areas were examined during activity and inactivity.
• Core areas used during inactivity consist mainly of areas with high cover and woodland. Females seem to prefer more covered habitats than males.
More than 60% are woodland areas. About 40% are highly covered areas.
• Core areas used during activity consist of pastures and areas of woodland.
25% pasture areas and about 50% woodland areas and only 25% are highly covered areas. Females also prefer more covered habitats but use pastures too.
• Brooks seem to be equally attractive to resting (5,2%) and active (5,5%) wildcats.

Ecological and Ethological Factors Conducive to the Hybridization of the Wildcat and the Domestic Cat

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Nowadays, the differentiation between the wildcat and the domestic cat is made on historic, morphological and genetic criteria. Genetic and morphological criteria are correlated when these two types of cats are geographically located and isolated, like in the North of Scotland. When the two types are found in the same area, it is much more difficult to establish a clear-cut correlation because of fertile hybrids. As a consequence, the conservation of the genetic diversity between the wildcat and the domestic cat in Europe is more or less compromised because the number of domestic cats is increasing dramatically.

In France, the wildcat is expanding from its historically designated area (in the Northern Eastern) to the central regions. In this context, the occurrence and the impact of the hybridization on the genetic structure of wild cats have to be determined. These aspects are being studied by the team of Dominique Pontier at the University of Lyon (UMR CNRS 5558, France). Furthermore, the ecological and ethological causes of hybridization in the areas where the wildcat and the domestic cat are sympatric need to be identified. This is the objective of our study.

This study will go through three different steps. First, the areas in which these two types of cats are sympatric will be circumscribed and studied thanks to post-mortem examinations of more than 400 carcasses collected since 1996. The type of cats will be identified through craniometrical and genetic analyses. Also, the Geographical Information System will be used. Secondly, the nature and the occurrence of contacts between the wildcat and the domestic cat will be identified thanks to radio-tracking and direct observations conducted in the *Ardennes* (Northeast of France). Thirdly, we will do observations in captivity to show the existing behavioral barriers that can facilitate or limit contacts between the wildcat and the domestic cat.

This study is starting and some preliminary results showed that the genetic discrimination between the wildcat and the domestic cat was not as obvious as it seemed. A lot of post-mortem examinations of carcasses were also made in addition to a data basis of 400 examined dead cats, which already existed. Moreover, 6 wildcats and 4 domestic cats were captured during 4 trapping sessions and followed by radio-tracking.

Three years of intensive observation on one female wildcat – habitat preferences and other topics

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During a research on the efficiency of a fence for the protection of game at the motorway A 60 (Eifel) on behalf of the authority for roads and traffic in Rheinland-Pfalz, a wildcat was radio-tracked for two years (2002 – 2003). The observation could be continued for a third year as it was sponsored by the Sielmann Foundation. So the cat was observed for one year before and for two years after the motorway had been opened for traffic. 2900 data were analysed. The analysis focused on the interpretation of the individual life-history and the typical, individual behaviour of this cat. Why did she show a high preference for some areas and visited others rarely? What influence had the availability of food on habitat selection? Did the motorway have any effects on the cat's behaviour? Which habitat-structures did she favour? In order to find answers to these questions, in addition to radio-tracking, the biotope-types, the density of trees, bushes and herbs as well as that of dead wood were mapped. The population densities of small mammals were determined as well.

An area, which was visited by the cat very often in summer 2004, is a field which was designed to compensate for the destruction caused by the motorway and on which grain and different species of clover had been sowed. The grain provided good cover and in early September 2004 the density of small mammals was extremely high.

Another highly preferred area was the southern slope of a stream valley, while the northern slope was not used as frequently. There is a coniferous forest on both sides and in contrast to the north side, the southern slope shows a high density of bushes and herbs, that offers good camouflage. Also the cat may have preferred this area because it gets more sunshine. The population size of wood- and field mice (*Apodemus spec*.) did not differ between the two slopes, but the density of red-backed voles (*Clethrionomys glareolus)* was higher on the more structured southern slope.

The motorway directly leads through the home range of the cat. She frequently changed between the areas in the north and the south of the motorway. During the first year after the motorway had been opened for traffic, the cat only changed half as many times as before. In the second year after that the frequency of changes increased up to the level before the opening of the motorway.

These examples show, that the behaviour of wildcats, especially the use of space and habitat selection is determined by a great number of factors. That is why very often the cause of a particular behaviour can be determined only for the individual case.

Preliminary results on habitat preferences of a wildcat (*Felis silvestris* Schreber, 1777) population in an area of south of Spain: influence of rabbit distribution and abundance

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Little information is available on the wildcat habitat selection patterns in the Mediterranean area. Previous data showed that both vegetation structure and the distribution and abundance of its main prey in this region, the rabbit, can strongly influence the wildcat habitat preferences. In order to recommend management measures for this species in the south of Spain 7 wildcats was radio tagged (two males and five females) in the province of Granada. The availability of habitats within each territory (based on MCP95): vegetation types, forest cover, stone cover and abundance and distribution of rabbits were compared to the habitat use for individual wildcats at the home-range scale. The preliminary results showed significant differences in the wildcat activity pattern depending on the day hour (day and night). They selected during the day protected habitats (dense pine forest and high forest and stone cover) with independence to the rabbit abundance. In contrast, during the night, wildcats were mainly located in places where rabbits are abundant, contributing in a secondary way the scrub and dry herbaceous cover variables, due to its correlation with the habitat preference detected for rabbits. Although during the diurnal activity period wildcats were located in places with similar composition than during the nocturnal activity period, the variables related to protection (stone and scrub cover) become more important. Two females and more clearly the males negatively selected the open pine forest formations (including reforestation habitats). The territory structure was similar to those detected in previous works, with male territories greater than female ones and comprising several territories of these. The male territories were around of 1050 ha and the female territories around of 500 ha. Finally, several management measures are proposed: 1) To maintain and promote a mosaic landscape, specially in areas with a intensive agriculture; 2) to control or forbidden the use of box traps in predator control activities due to the high capture rate of this species; 3) to control (if possible by non-lethal methods) the domestic cat population in areas of large interest for wildcats, due potential hybridizations and the subsequent loss of wildcat genetic integrity.

This work was produced within the project “Carnivore mammals in the Granada province: their distribution and management”. Supported by the Andalusian government (Consejería de Medio Ambiente).

20 years of wildcat reintroduction in Bavaria: A validation by molecular techniques

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In this talk, a preliminary summary is given on genetic investigations of Felis silvestris in Bavaria which started about a year ago.

After presumably having died out in Bavaria about a century ago, a breeding program was started in 1984 by the 'Bund Naturschutz in Bayern'. The objective of our investigation is to figure out whether wildcats nowadys present in Bavaria do arise from this breeding program.

Eleven microsatellite loci and mtDNA d-loop sequences have been investigated in >120 wild- and domestic cat samples from different European origins. First results show that both species exhibit distinct mtDNA haplotypes, and that hair samples collected from lures in the Bavarian Spessart mainly stem from domestic cats. The lure sampling method therefore is questioned. Statistical analysis of the microsatellites which by now show pronounced variability will elucidate whether hybridisation occurs between domestic and wildcats in the Spessart.

EFFECT OF DIFFERENT CAPTIVE ENVIRONMENTS AND RELEASE TECHNIQUES ON DISPERSION MOVEMENTS OF RELEASED CAPTIVE-REARED WILDCATS (*Felis silvestris*).

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The objective of the present work is to study the effect of the different captive environment and release techniques, and their interactions, on the dispersion of reintroduced captive reared wildcats.

We measure different variables related with the dispersion process (dispersion distance to the weekly activity centre, dispersion distance to the activity centre, daily dispersion to the activity centre, dispersion distance to the last location and the daily dispersion to the last location) and compare the effect of the conditions of captivity (hard (hc)/soft (sc)) and the releasing techniques (hard (hr)/soft (sr)).

The study took place in the Natural Parc of Tortosa i Beseit, South of Catalunya (Spain).

The result show an increment in the distance to the weekly activity centre between the first and the second week for groups hc/hr, hc/sr, sc/hr, but not for the group sc/sr.

We do not detect effect of the conditions of captivity, not the releasing techniques, not the interaction between them on the variables analyzed.

Considering the temporal evolution of the dispersion movement (dispersion to the weekly activity centre) and the dispersion distance to the last locations, the animals reared with enriched environment and released from acclimatization facilities show a more exploratory behaviour during the dispersion.

The only animals that show Site fidelity, and the animals which live longer, belong to this group of animals (soft captivity/soft release).

As a conclusion we recommended this methodology to release wildcats reared in captivity.

Hair catching with the aid of the „Lure Stick“. Proof of wildcat (*Felis silvestris*) existence by genetic analysis. A Project by BUND and Bayerisches Landesamt für Umweltschutz

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To prove wildcat identification we can employ the modern and certain method of genetic analysis. For this we have to obtain hair, blood or other genetic trace material from the wildcat we are looking for. A posibility to collect samples is to catch the cats in traps. The expense is high and the chance to get an animal can be small. Another method will be described:
Based on the findings of the bioligist Karsten Hupe, we know that wildcats will leave hair on certain objects that have a rough wooden surface. The use of a ordorous substance encouraged the cat to rub itself on the wood. Mr. Hupe took the opportunity to obtain hair samples using a specially treated stick as a lure. Based on this idea a lure stick was developed by me and the biologist Kerstin Birlenbach, which is protected from getting wet. A suitably rough wooden stick with a drilled hole and a perforated plastic tube holding the attractive smell is inserted in this.
The cats rub their bodies on the Lure Stick because of the ordorous substance and cat hair will stick to the rough wood and can be sampled.

In a pilot project we tested the modified Lure stick for its effectivness.
The Forestry Rothenbuch in bavaria, Germany, was chosen because there wildcats were repatriated to their wild existence, since 20 years. As a result, our testing was very useful in proving the success of the repatriation project.
As an ordorous substance we used valerian drops, valerian root and cat nip. This was done to make the lure stick more interesting for cats.
In the first test, the sticks were equally distributed across a certain area. During the more advanced phases of the tests, the sticks were distributed in clusters; about 80 sticks were installed in 13 clusters. Between 4 and 9 sticks were set in a cluster. A cluster spread out over 3000 m2 - the distance between sticks was between 50 and 100 meters. The clusters were placed in areas which were known to be places where wildcats hang out.
In a period of three months in the autumn of 2004, a collection was carried out every week. 8 clusters were successful; 61samples morphologically being cat-hair on first sight were collected

Summary of data collected: Area was approximately 11000 ha, timescale was 3 months and the collection intervalls were approximately weekly. There was a total of 61 collections.
The evaluation of the samples is not completed yet.
This method seems to be promising to collected hair for genetic analysis and to proof wildcats. Ideally, the use of the lure stick method should develop into a viable and monitoring method.
Of course, the question that remains unanswered is what percentage of the population can be confirmed by this method. Not all wildcats will rub themselves on a lure stick; therefore we still have no idea of the population numbers.

Wildcat (*Felis silvestris*) research in the biosphere reserve "Karstlandschaft Südharz" – FIRST RESULTS –

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In February 2004 a study investigating a population of European Wildcats (*Felis silvestris*) started in the biosphere reserve ‚Karstlandschaft Südharz' (Germany, Saxony-Anhalt) at the southeastern part of the Harz. Reproduction of female cats and dismigration of juveniles are the main topics. Five of seven wildcats marked with radio collars in spring 2004 are still under observation. We here show the first results of our investigations on home range sizes, utilization of habitate, reproduction and behavior of tree males and two femals.

Annual home range sizes of five individuals were estimated by using a total number of 1215 locations. For the males the annual areas determined by 95% Kernel estimate range from 812 ha (young cat) and 1128 ha (middle-aged one) to 2165 ha (very old one). From spring to autumn the two females used areas with sizes of 380 ha (old one) and 1102 ha (young one), respectively. A 100%-MCP-view of seasonal homeranges shows some overlap areas during the seasons.

First results of our habitat utilization analysis suggest, that the male wildcats utilize open habitats more often than the females. The cats mainly used heaps of old wood/branches but also hunting hides and stacks of harvested wood for daytime resting.

Late second and successful reproductions in September of the two femals were observed.

Intersexual meetings of two adult wildcats at night happened often out of the main mating season. They also spend the daytime resting together at the same sleeping place sometimes.

The seasonal weight of a male varied for more than 2300 g beween March (after mating season) and December (before mating season).

New analysis including locations of the following mating season will give more information about home rangs sizes and habitat utilization. Further radio marked wildcats in the main study site - also kittens - will show more about social behavior, dismigration of juvenils and reproduction of femals.

Experiences with measures for the protection of wildcats connected with the new building of a German motorway (autobahn)

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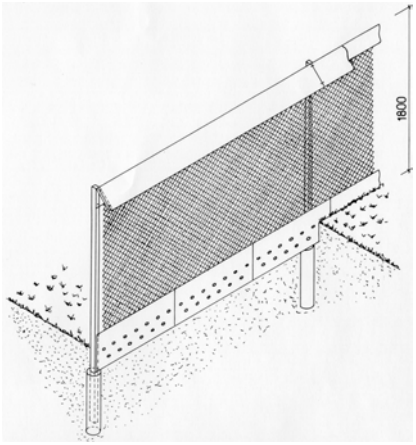
The autobahn A 60 is an important part of the German traffic network, connecting the oversee-harbours of Belgium and of the Netherlands to the industrial areas of the Rhine-Main-Area and to other eastern Parts of Germany. The Procedure for the official ratification was finished in 1991 – 1992 after more than 20 years of planning work.

New building of the German autobahn A 60							
building section	ratification (Planfest-stellung)	legal force	beginning of construction	under traffic	length	expanse of the street incl. peripheral areas	expanse of the landscape measures
Bitburg - Baden	24.03.1992	24.01.1994	05.09.1994	17.12.1999	7,5 km	80 ha	146 ha
Badem - Landscheid	24.03.1992	18.03.1996	06.08.1998	24.05.2002	13,0 km	75 ha	194 ha
Landscheid - AK A60/A48/B50	4.12.1992 / 24.03.1992	20.12.1996/ 06.10.1997	30.11.1998	04.12.2002	9,3 km	101 ha	124 ha
					29,8 km		
						expenses for the landscape measures and other measures for the compensation of the impact in nature, not including bridges	
						13,5 Mill €	

The planning of the landscape-measures for the compensation of the environmental impact of the street were done in the 1980es. In this time the techniques of such landscape-measures were just in a state of development, and measures for animals were not yet usual. But for this plan the singing birds were cartographed and the information integrated in the planning of the landscape measures. In 1991 it became evident, that this was not enough: The forest authorities gave the hint of the wildcat-population. As a result the authority for the protection of nature required, that we had to develop and to build a fence, which would protect the wildcat from dead an the road. Nobody did now in this time, how this could be, such a fence didn't exist. Zoos used cages for wildcats, not fences. They knew quite well the Wildcat as an excellent climber. But we took it as an requirement for to protect the Wildcat-population from a damage as an effect of the impact of street building.

In the years 1991 to 1994 we developed such a fence, testing very different types of fences in an enclosure of the wildcat-releasing-project in the Bavarian Spessart. Finally we found a special construction of a fence, which was not overcome by the wildcats. 1994 to 1996 we tested the technical aspects of the fence in free range practice.



When we build the autobahn – mainly in the years 1998 to 2002 – we build this fence, too. For the connection of the wildcat habitats we hoped to have enough bridges, as viaducts over valleys or as special landscape bridges over important habitats, so the wildcats would be able to cross the street safely.

For the impact of this street in the nature of 29 km we improved or developed an amount of 464 ha of habitats (landscape measures), and many of them seemed of a type from which the wildcat would benefit, others were modified according to this aim.

Latest in At the latest in 2002 the route should be used for traffic, so in the years 2001 to 2004 an efficiency assessment of the fence, the landscape bridges and the landscape measures was done. According to this researches we now know the state of the wildcat population without the street, the reaction of the wildcats of the construction work and finally of the street under traffic.

Now it is evident, that we were successful. The fence protects the animals from the death on the road, the cats uses the landscape bridges and viaducts for crossing the road, the landscape measures seam to be the right ones and the population of the wildcats suffered no damage.

Luchs und Wildkatze - Koexistenz zweier Katzenarten

Frank Raimer

Einleitung
Die Entwicklung der Katzenarten begann vor etwa 40 Millionen Jahren in Asien. Das Urhabitat waren Wälder mit unterholzreichen Fluren. Ihre Kommunikation erfolgte in erster Linie über Düfte. Erst viel später, als sie in die halboffenen Landschaften einwanderten, entwickelten sich Rufmuster (LEYHAUSEN, 1988, LUDWIG, 2004). Die Einteilung der Katzenarten (Felidae) erfolgt in der Systematik nach morphologischen, molekulargenetischen, verhaltensbiologischen sowie nach Ruf- und Habitatmustern. Wir unterscheiden kleinere Katzen und größere Katzen, wobei größere Katzen ein Gewicht von über 20 kg besitzen.

Problemstellung
Durch Wiederansiedlung sowie Einwanderung des Luchses in Deutschland stellen sich Naturschützer die Frage, ob die autochthonen Wildkatzen (Felis silvestris silvestris) in den waldreichen Mittelgebirgen möglicherweise in ihrem Bestand durch den Luchs bedroht werden. An verschiedenen Fallbeispielen wo Luchs und Wildkatze in Europa vorkommen sowie darüber hinaus, versucht der Autor die Koexistenz von Katzenarten in gleichen Habitaten zu belegen. Hingewiesen sei an dieser Stelle, daß alle frei lebenden Felidaearten durch fortschreitende Zerstörung ihrer Lebensräume in ihrem Bestand gefährdet sind.

Luchse und Wildkatzen
Die Gattung Lynx entwickelte sich in Asien aus der Urform Lynx issidorensis. Dies war vor etwa 4 bis 3 Millionen Jahren. Dabei wanderte diese Form erst nach Westen und dann weiter nach Osten bis Nordamerika. Aus dieser Linie entstand in Europa der Pardelluchs (Lynx pardinus) und in Nordamerika der Rotluchs (Lynx rufus). Später entwickelten sich in China aus Nachfahren des Lynx issidorensis die Vorfahren des sogenannten „Nordluchses“, der sich ebenfalls über die Nordhemisphäre verbreitete. Es wird vermutet, daß dabei der Pardelluchs weiter nach Westen bis auf die iberische Halbinsel verdrängt wurde (LUDWIG, 2004). Aus einem anderen Teil der asiatischen Nordluchsvorfahren entstand der Lynx canadensis. Seine Vorfahren erreichten vor etwa 200 tausend Jahren Nordamerika und verdrängten den bereits ansässigen Rotluchs nach Süden. Luchse nutzen vorwiegend waldreiche Habitate von der montanen bis subalpinen Zone sowie boreale Lebensräume.
Die Gattung Felis entwickelte sich ebenfalls in Asien vor etwa 8 bis 4 Millionen Jahre und drang von dort weit nach Westen vor, wobei eine Hauptlinie sich dann über Palestina bis ins südliche Afrika ausbreitete. Aus der Felis silvestris Linie entwickelte sich in Europa die Waldwildkatze (F. s. silvestris), in Afrika, Arabien und Palestina die Falbkatze (F. s. lybica) und in Asien die Steppenkatze (F. s. ornata) (LEYHAUSEN, 1988).
Der Nordluchs (L. lynx) und die Europäische Waldwildkatze (F. s. silvestris) bevorzugen Habitate mit wald- und strukturreichen Landschaftsräumen und kommen in Europa, Kleinasien und Asien verschiedentlich im selben Lebensraum gemeinsam vor.

Fallbeispiele von Lebensräumen mit verschiednen Katzenarten
1. Rumänien – am Beispiel von Siebenbürgen
Siebenbürgen, auch Transsilvanien genannt liegt im pannonischen Becken umgeben von den Gebirgszügen der Ost-, Süd- und Westkarpaten. Es umfasst ein Gebiet von ca. 70.000 km2 mit einer Einwohnerdichte von ca. 20 bis 40 Personen pro Quadratkilometer. Die Beobachtungen und Dokumentationen beziehen sich im Wesentlichen auf das Harbachtal (Forstamt Agnethen) (HENRICH, 1994). Das gesamte Einzugsgebiet umfasst 83.625 ha mit

unterschiedlichen Nutzungsbereichen von Ackerflächen über großräumige Wiesennutzungen bis hin zum Wald. Das Klima ist gemäßigt Kontinental, wobei die Höhenlagen im Harbachtal sich zwischen 200 m und 800 m ü. NN bewegen.
Im Naturraum sind unterschiedliche Räuber dokumentiert: Braunbär, Wolf, Wildkatze, Fuchs, Dachs, Baummarder. In benachbarten Räumen kommt zusätzlich der Luchs vor. Alle Räuber werden durch heimische Jäger und Förster bejagt. Insgesamt wurden in Rumänien in den 90-iger Jahren pro Jahr etwa 3.000 Wildkatzen erlegt (HENRICH, 1994).
Allerdings sind die Abschusszahlen bei den unterschiedlichen Räubern nicht generell erfasst, dokumentiert werden nur die freiwillig gemeldeten Abschüsse. Die Bestandes- und Abschusszahlen von Schalenwild werden aber genau festgehalten, da diese generell der Jagd- und Forstbehörde zu melden sind. Die Rotwilddichte im Gebiet liegt etwa bei 0,3 auf 100 ha.

Im Harbachtal kommt die Wildkatze vorwiegend in den Waldgebieten vor, nutzt aber auch im Sommer alle saumförmigen mit Gehölzen bewachsenen Uferbereiche der Gewässer und zieht so weit ins extensiv gepflegte Offenland. Diese offenen Lebensräume beinhalten aber ein einzigartiges Spektrum von unterschiedlichen Feldgehölze, Hecken und Gebüschzonen. Daher ist die Wildkatze saisonal in diesen großflächigen Wiesenbereichen anzutreffen. Sowohl im Wald als auch in diesen deckungsreichen, extensiv genutzten Wiesenlandschaften ziehen Wildkatzen ihre Jungen auf. Zu 41 % werden die Gehecke und Jungkatzen in Baumhöhlen gefunden. Im Winter finden sich in Bauen sowohl Wildkatzen, Füchse und Dachse ein.
Die Jagdstrecke eines Jägers im Harbachtal von 1992/93 lag bei 10 Wildkatzen. Das Körpergewicht der Wildkatzen im Harbachtal schwankt bei Männchen von 2.250 g bis maximal 7.800 g und bei Weibchen von 3.420 g bis 4.880 g.

NEGRUTIU (mdl.) beobachtete mehr als 30 Jahre Luchse und Wildkatzen im selben Lebensraum. In diesem Zeitraum konnte er keinen Riss durch den Luchs an einer Wildkatze feststellen. Im Forstamt Reghin wurde eine Wildkatze im Verbreitungsgebiet des Luchses in einer Luchsfalle gefangen. In den rumänischen Westkarpaten wurde von Jägern berichtet das der Luchs auch mal eine Wildkatze reißt, die Jäger benutzen dort den Wildkatzenkern auch gern als Köder zum Fang von Luchsen.
Beobachtet wird aber auch, dass die Wildkatze in Luchsgebiete zieht und die Wildkatzenpopulation sich ausbreitet. Ebenso konnte festgestellt werden das der Luchs in Wildkatzengebiete einwandert, in denen er vorher ausgerottet war (HENRICH, mdl.).

2. Schweiz – Kanton Jura
Durch die in den 70-iger Jahren aktive Wiederansiedlung des Luchses in der Schweiz (HALLER, 1993) entwickelte sich die Population schon nach wenigen Jahrzehnten über weite Teile der Schweiz. Auch im Schweizer Jura wurden Luchse ausgesetzt, es waren Tiere aus den slowakischen Karpaten. Der Gesamtbestand der Schweiz wird auf 50 bis 100 Tiere geschätzt. Bei Fangaktionen zur Besenderung von Luchsen im Waadtländer Jura von Januar bis April 1993 fingen Luchsforscher aber nicht Luchse in diesen Kastenfallen sondern insgesamt 14 Wildkatzen (LÜPS, 1993). So begann die Wildkatzenbesiedlung in Luchslebensräumen in den 90-iger Jahren im Kanton Jura, so dass große Teile des Schweizer Jura bis 2004 wieder durch die Wildkatze besiedelt wurden (WEBER, 2005). Luchse und Wildkatzen sind daher schon im selben Lebensraum telemetriert worden.

3. Slovenien
Auch das Institut für Wildbiologie und Jagdkunde in Göttingen (Deutschland) plante in den 70-iger Jahren eine Wiederansiedlung des Luchses im Harz. Dies wurde im letzten Moment aber verhindert, so dass die bereits vorhandenen Wildfänge an Luchsen in das slowenische

Gottscherland (Kocevsko) gebracht wurden. Die Wiederansiedlung verlief dort sehr erfolgreich (COP, 1980). Diese slowenischen Luchse stellen die Gründerpopulation dar in der heute in fast ganz Slovenien verbreiteten Population. Diese Luchspopulation breitete sich auch in Wildkatzengebiete aus, wie z. B. in die Dinarischen Alpen. So leben Luchs und Wildkatze in denselben Waldlebensräumen, eine Verdrängung der Wildkatze durch den Luchs wurde nicht beobachtet.

4. Südafrika – Gemsbock Nationalpark (Kalahari Wüste)
Im Gemsbock Nationalpark kommen in den Dornenbuschzonen sowie Akazienhainen und Grasbändern des Nossobvalley sechs Katzenarten nebeneinander vor: Schwarzfußkatze, Falbkatze, Karakal, Leopard und Löwe. In Abschnitten ist das Habitat reich strukturiert durch Dünenzonen mit Grasfluren, Felshängen und Block- sowie Geröllzonen. Für alle Katzenarten bis auf den Löwen sind diese Habitatmuster von wesentlicher Bedeutung um rechtzeitig sowie umgehend den größeren Beutegreifern auszuweichen und/oder auch Beutetiere in Bäumen vor anderen Räubern zu sichern. Diese ist insbesondere für den Leopard von Bedeutung, da dieser nach dem Beuteerwerb relativ schnell durch Schakale, Tüpfelhyänen oder auch Löwen bedrängt werden kann. Die einzige Chance in Ruhe den Riss aufzunehmen gelingt ihm dort nur auf Bäumen (eigene Beobachtung). Kleinkatzen verstecken sich in dichten Dornenbüschen, dort können ihnen größere Räuber nicht folgen.

<u>Die Wiederansiedlung des Luchses im autochthonen Gebiete der Harzer Wildkatze</u>
Der Harz ist ein Mittelgebirge von etwa 2.500 km2 Größe mit hohem Waldanteil. Die Randlagen sind um 200 m ü. NN und die montanen Bereiche liegen bei etwa 600 m ü. NN. Das Gebirge steigt bis auf 1.142 m ü. NN (Brocken). Etwa 30.000 ha dieser Landschaft sind infolge der lang anhaltenden Winter mit über 1 m Schneehöhe ungeeignete Lebensräume für die Wildkatze (RAIMER & SCHNEIDER, 1983).
Der südniedersächsische colline bis montane Naturraum einschließlich des Harzes ist von der Wildkatze besiedelt (RAIMER, 1991, POTT-DÖRFER & RAIMER, 2004). Diese entspricht in etwa 5 % der Landesfläche in Niedersachsen. Die Hauptnahrung der Wildkatze sind kleine Nager (Mäuse). Wo Wildkaninchen am Harzrand vorkommen werden auch diese gerne als Beute genutzt.

Die Wiederansiedlung des Luchses erfolgte ab dem Jahr 2000, so daß bis einschließlich des Jahres 2004 insgesamt 20 Luchse im Harz ausgesetzt wurden. Ab dem Jahr 2001 wurde auch erster Nachwuchs von Luchsen im Freiland beobachtet. Auch in den folgenden Jahren bis ins Jahr 2004 wurden regelmäßig Jungtiere festgestellt. Die Aufzucht von Jungluchsen durch ihre Mütter scheint sehr erfolgreich zu verlaufen. Die Hauptbeute der Luchse im Harz ist das Reh, aber auch Rotwildkälber wurden schon gerissen.

Durch wiederholte Umfragen bei Jägern, Förstern und Naturinteressierten aus den vergangenen Jahren, insbesondere bis 1998 liegen daher umfangreiche Beobachtungsdaten über die Wildkatze vor, ebenso ist nachfolgend bis ins Jahr 2004 bei der Meldungen über Wildkatzenbeobachtungen keine Raumbeeinträchtigung festzustellen (POTT-DÖRFER & RAIMER, 1998, POTT-DÖRFER & RAIMER, 2004). Dies bedeutet für die Harzregion, daß trotz der Wiederansiedlung des Luchses die Wildkatze in diesem Mittelgebirge vom Randbereich bis in die montanen Zonen gut verbreitet ist.

Erstmals Ende Mai 2004 wurde im Nationalpark Harz im Revier Marienbruch ein durch einen Luchs gerissener Wildkatzenkuder aufgebracht. Der vom Luchs ergriffene Wildkuder wurde durch einen Biss ins Genick getötet. Die Untersuchung belegte, dass der Wildkuder durch diesen einmaligen Biss auf der Stelle verendete, da das zentrale Nervensystem am

Genick durchtrennt wurde. Der Wildkatzenkuder wurde im montanen Bereich in einer Höhenlage von 600 m ü. NN an einer Forststraße gefunden und durch NP-Mitarbeiter zur Obduktion eingereicht. Dies ist der bisher einzige Fall im Harz wo nachweislich ein Luchs eine Wildkatze gerissen hat.
Aus einem eher seltenen Ereignis, wie dem Riss einer Wildkatze durch einen Luchs im Gebiet des montanen Harzes, lässt sich aber derzeit keine besondere Beeinflussung des Wildkatzenbestandes ableiten oder nachweisen. Der Naturraum Harz bietet beiden Arten, Luchs wie Wildkatze, eine lebensfähige Ausgangslage, wobei der Luchs auch die schneereichen Habitate der hochmontanen Fichtenwälder im Winter nutzt.

Grenzbereiche für Katzen in der Nordhemisphäre
Für die Europäische Wildkatze (Felis silvestris silvestris) sind wärmegetönte Gebiete optimale Lebensräume. Gebirgsregionen mit langanhaltenden Schneelagen (Schneehöhen über 30 cm) von Ende Oktober bis in den Mai schließen eine dauerhafte Besiedlung aus. Es sind pessimale Habitate in denen sie nicht an ihre Beute kann (RAIMER, 1991). Ebenso meidet sie strukturarme Offenlandschaften, Gebiete ohne Deckung und Möglichkeiten der Flucht vor ihren Feinden. Dies sind ebenfalls pessimale Lebensräume.
Luchse kommen auch in schneereichen Gebieten gut zu recht, wenn genügend Beute da ist und diese Gebiete Wald aufweisen (FESTETICS, 1980). Steppengebiete, Grasfluren, hochmontane und alpine grasreiche Offenlandschaften in denen Wölfe vorkommen meidet er. Ebenso der Puma in Nordamerika. Für den Luchs sind bindent immer auch Habitatelemte mit Wald, flächigen Strukturen, die eine gute Deckung bieten und schnelle Flucht erlauben, eben auch auf Bäume.

Summary – Coexistence between wildcat and lynx
For the past 40 millon years cats have developed their way of life. Their evolution began in the forest. Asia was the cradle of cat evolution. Now we want to look at diverse species – what are the differences.
Diverse species: first morphology, second genetics, third behaviour, forth call, fifth habitat.
What is the best habitat for cats: Forest and woodland; Rocky areas with rocky plains, gravel plains up to semi desert; Riverbanks and scrub; thornbush, Maccia, acacia plains
We wish to look at two species and these are the Felis line and the Lynx line. Within these lines we can look at Felis silvestris silvestris, F. s. lybica and F. s. ornate – and Lynx lynx.
Lynx have been studied as fallows:
1. Rumania – transilvania area more than 70.000 km2 range. In Rumania have hunters kill more than 3,000 wildcats per year. Lynx have moved in to the populationarea of wildcats and wildcats have moved in to the lynx area in the Carpatian Mauntains.
2. In the Swiss Jura Mauntains wildcats have moved into the Lynx homerange!
3. The Comeback of Lynx in Slovenia began in the 1970´s. Lynx migrated into wildcat habitats, but the wildcat has remained.
4. Southafrica – Kalahari Desert – six species of cats live with in the same range (blackfooted cat, African wildcat, caracal, cheetah, leopard and lion).

Our last example:
The Harz Mountains
1. In the Harz Mountains wildcats still abound.
2. Between 2000 and 2004, 20 Lynx were reintroduced.
3. In the years between 2001 and 2004 lynx cubs have been born in the wild Harz Mountains.
4. 2004 the population of wildcats is still in good shape.

I think this reintroduction lynxproject is a valuable countribution to biodiversity.
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How do roads affect the spatial behaviour of European wildcats?

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Project: Monitoring the effect of a wildcat-proof fence along the new built motorway A 60 in the Eifel (Germany) on behalf of the country administration for road construction in Rheinland-Pfalz (LSV).
Method: Close to the road 12 wildcats (*Felis silvestris*) were caught and radio-tracked during the phase of road construction from Feb 2001 to Nov 2002 and during the phase of traffic on the road from Dec 2002 to Dec 2004.
Questions:
Will the spatial organization of the population change due to the building of a fenced motorway? What kind of passages are used? Do wildcats use the habitats next to motorways and other roads as frequently as other habitats or do roads repel them?

Before and after start of traffic on the A 60
6 of the wildcats where monitored during a period including the phase of road building *and* the phase of traffic. Before start of traffic all 6 cats used both sides of the road alignment. With the start of traffic and the completion of the fence, two female cats shifted their home ranges to the north and never crossed the road again. The other 4 wildcats (3 f, 1 m) continued crossing the A 60 regularly.
Crossings during the road construction phase where mainly over the unfinished road pavement or through viaducts of several hundred meters width. Other underpasses where not used. After the completion of the fence no pavement crossing was possible and wildcats used underpasses as well. Two cats frequently used an underpass with county road and therefore have a high risk to become a road kill.

Distance from roads
Method: Distances of radio-locations of each individual to the A 60 and to a county road (K 7, only light traffic) where measured within a corridor of 400 m. The average percentages of locations in four distance classes were calculated.
Results: During the night habitats close to the motorway or the county road are not avoided. Two explanations can be given:
1. Wildcats stay longer time within close-to-road-habitats before finally crossing the road.
2. Wildcats are not influenced by roads in their regular spatial behaviour at night.
In the daytime the corridor of 100 m along the motorway was used less by wildcats. This was the same for the road construction phase and the phase with traffic (Friedman-test ($c^2_{(4,7)}$=10,7; p<0,05; $c^2_{(4,6)}$=7,25; p<0,1)). Yet, in individual cases wildcats stayed in only 50 m distance to the construction area. The reason for the avoidance might be that habitats close to the road are not as suitable for daytime hunting behaviour. Noise or other disturbances may affect the wildcats. Around the county road K 7 there was a corridor of 200 m which was used less by the wildcats at daytime (Friedman-test ($c^2_{(4,4)}$=6,6; p<0,1)). This wider avoidance-corridor compared to the motorway could be due to cars stopping and people getting of.
More research has to be done to find the explanation.

Summary of the discussion forum "Hybridization between wildcats and (feral)domestic cats"

participants: Iris Eckert, Joaquim Ferreira, Estelle Germain, Maren Huck, Marc Moes, Rita Olivera, Hubert Potočnik, Marie-Lazarine Poulle, (and one French guy whose name I forgot – I'm sorry) – have I forgotten someone?

Question: Why do wild- and domestic cats hybridize in some areas of Europe (e.g. Scotland, Hungary, and apparently partly in Portugal) while there is no indication for this in other regions (e.g. Germany, Italy)?

- What might be possible reasons and how could this be investigated?

Data have to be collected from as many regions as possible, and than have to be compared. (Not only the age of meta-population but also of meta-analysis.)

1. Is **genetics** really comparable?
   - The genetics itself yes, since mainly the same markers were used, and most data were analysed by RANDI *et al.*, 2001, or PIERPAOLI *et al.*, 2003. However, there might be differences in how samples (especially those of the domestics) were collected. [We do not seriously believe that this is the case, but perhaps it should be checked.]
   - Comment by Joaquim: In these question we have to be careful when we refer to hybridisations in the several areas, because probably this is a phenomenon that occurs in all these countries. What are really important is to evaluate the frequencies with which it happens, to what extend and if in contiguous areas "pure" wildcat populations exist.

1.b) (not during discussion, just occurred to me as theoretically possible): Could there be genetic barriers in some populations but not in others?

2. Are there fundamental **behavioural barriers** between the two (sub)species, i.e. is the "normal" situation that they avoid each other and are 'forced' to mate by some special circumstances, or do they happily interbreed whenever possible and are just prevented from mating under certain conditions?
   - This is going to be tackled by Estelle Germain in a captive study. She will present urine from a) wildcats to wildcats and domestics and b) vice versa and look how they react.
   - Several anecdotal observations suggest that wildcats are dominant over domestics and that domestics are afraid of wildcats (e.g. 3 adult domestics avoiding wildcat kitten of a few weeks)
   - Estelle: Hellen Mills told someone that there is an interbreeding programme in captivity somewhere in the UK. That should be interesting data for you. Ask Hellen!

3. Different **home range and habitat use**.
   Wildcats and perhaps also domestics use their environment differently in different regions. This might be the reason why they just do not meet in certain areas. Also related: the density of wildcats in relation to the density of domestics in different regions.
   - More data have to be collected on domestics, living close to wildcat populations. (Usually we have data on wildcats and occasionally reports on domestics, but we do not really know in many areas what the domestics do.)

4. **Climate** related differences in **prey abundance** and/or **attachment to humans**:

In some areas the winter may be so strong that prey are very scarce or difficult to catch, e.g. because of deep snow. Thus, domestic cats might no longer be able to survive (or much less so than wildcats) without human assistance. In other countries summers may be too dry with similar results. In these areas domestic cats may be more attached to humans, and less willing or able to be feral, thus not coming as easily in contact with wildcats. Conditions in Scotland (relatively mild oceanic climate) or Hungary (cold but dry, thus seldom deep snow) might be more favourable for feral domestics, leading to more common interbreeding.
Attachment to humans might also be created by shelter availability.

- climate data have to be collected
- prey availability in critical months (especially if during mating season)
- degree of attachment to humans, e.g. by measuring proportion of human-related food in diet (scat analyses)

4. Transfer of viral and other **diseases**.
The idea is that in areas where there is more contact between wild and domestic cats diseases that are fatal to wildcats spread more easily. The wildcat population therefore declines. It will be harder to find mates, so that individuals become less choosy and start to mate also with domestic cats.
   - It could be measured how antigenes/antibodies are present in populations of "pure" wildcats, of hybridized populations, and in domestics of the area in question.

5. **Fragmentization** of habitat.
If the habitat is more fragmented than 1. more emigrating individuals will have to pass dangerous areas, thus leading to a higher mortality, leading to lower population density, leading to less choosy individuals, etc. And 2. the contact zone to domestics might be greater, enhancing the probability of matings between the two.
   - settlement and habitat structures have to be analysed in detail

6. **Historical landscape use** (deforestation etc. leading to 5., see above)
   - historical sources on landscape use could be used

7. ANY OTHER IDEAS?

Here is the **literature** to this topic that I know of. Does anybody know of anything else?

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Thanks for participation and all your good ideas!

Workshop on social and spatial organisation of wildcat populations

brainstorm:

Are wildcats solitaire?
There is definitely a wide variability!
They tolerate sometimes other (related?) individuals. This depends on personality (experience from enclosures). Intersexual meetings can occur all over the year. Two adult females (mother and daughter?) meet and have friendly contact in the wild. Males are interested in the kittens (observed in captivity and in the wild), but rarely go into the den. In captivity litters of related females have been mixed up. Active avoidance has been observed in the wild. Helpers where observed in captivity and once in the wild. Compared to canids more solitaire. Compared to (most) mustelids more sociable.
.
WILDCATS ARE MOSTLY SOLITAIRE, BUT OCCASIONALLY THIS CAN BE DIFFERENT AND THEY HAVE THE POTENTIAL TO BE SOCIAL.

What kind of dispersal do young wildcats?
In the enclosure fathers do no longer tolerate their sons at an age of one year or so unless the son clearly subordinates. Philopatric or long distance dispersal?
WE HAVE ALMOST NO DATA ON THE TOPIC FROM THE WILD (this is a pity when thinking on corridors, recolonisation and so on)

Does the distribution of resources influence the social system?
Food abundance might lead to more social living.

Are homerange separated in time and/or space? Do hr drift?
Drift of hr has been documented in the wild. Core areas move around within the homerange during the year. Has presence of other cats an influence? Territories! Why and why not in other studies? Many patters of territoriality seem to be possible.

PUT ALL THE RAW DATA TOGETHER AND FIND A PHD STUDENT TO ANALIZE THEM IN A CLEVER AND CONCLUSIVE WAY.

Is homerange size influenced by main prey species?

Are there areas where you find only one sex?

Biology and Conservation of the European Wildcat (*Felis silvestris silvestris*) 21.-23.01.2005

Workshop

"Entwicklung von Kriterien zur Bewertung des Erhaltungszustandes der Wildkatze im Rahmen der FFH-Richtlinie"

Developing assessment schemes for the European Wildcat as a species of the European Union Habitats Directive

Olaf Simon, Carsten Hupe, Manfred Trinzen und Johannes Lang,

Every six years the European Union Habitats Directive demands a report about the situation of the species listed in the annexes II, IV and V. In Germany there are 49 mammal species on these annexes. After six years the habitat suitability and the status of population for these species have to be assesed. The aim of the Directive is a positive development of habitat and population.

In this workshop we discussed and developed a proposal for an assesment scheme and inventory methods for the wildcat for the demands of the Directive. We listed up the essential parameters for assesing population structure, habitat quality and threats.

For defining the population area, questionaires and sampling of road kills are suitable methods. For defining population size and population structure, these data are not sufficient. In this case we nedd more information about reproductive success, relative density, sex ratio and age structure of population. For measuring these parameters, life trapping and radio tracking in represantative areas (i.e. 50 km²) seem to be the best methods so far.

It is an important and necessary condition, that data are comparable between different populations and federal states; therefore the methods, which are used have to be identical.

<u>Proposals for an action plan</u>

(1) Existing methods have to be standardised and compared in their scientific validity.
(2) New methods (i.e. non invasive DNA-sampling, remote cameras) have to be developed.
(3) For every method experienced and qualified researchers are necessary.

Kriterien zur Bewertung des Erhaltungszustandes der Wildkatze

Felis silvestris (SCHREB., 1775)

- Allgemeine Bemerkungen -

FFH-Richtlinie: Anhang IV

Verbreitung: Das sich ursprünglich auf ganz Deutschland erstreckende Verbreitungsgebiet ist heute auf die Mittelgebirgsregionen von Eifel, Hunsrück, Pfälzer Wald, Taunus, Westerwald, Solling, Harz, Nordhessisches Bergland, Thüringer Wald und Hainich zusammen geschmolzen. Im Tiefland sind kleine Vorkommen im Bienwald und im Harzvorland bekannt. Neuansiedlungen erfolgten ab 1984 im Spessart, im Steigerwald und im Vorderen Bayerischen Wald (u.a. BÜTTNER & WOREL 1990, HUPE 2000, KNAPP et al. 2002, KOCK & ALTMANN 1999, MÖLICH & KLAUS 2003, RAIMER 1994).

Bezugsraum*:* Als Populationsareale gelten die Verbreitungsgebiete. Innerhalb der Populationsareale werden repräsentative Gebiete nach Erhaltungszustand A, B und C unterschieden.

Methodik:

- Erfassung von Verkehrsopfern und weiteren Todfunden
- Befragung von Jägern, Förstern und Forstarbeitern
- Spurensuche bei Schneelage
- Fotofallen an Köderstellen
- Haar- und Kotanalysen (Artbestimmung und Genetik)
- Scheinwerfertaxationen (SIMON 2000)
- Lebendfang in Holzkastenfallen
- Telemetrie (HUPE et al. 2004)

Die Daten sind – abgesehen vom Fallenfang – vor allem als Artnachweis brauchbar, bedürfen jedoch zumindest einer stichprobenartigen Überprüfung mittels morphologischer, anatomischer und genetischer Verfahren (HILLE et al. 2000). Eine Genanalyse gefangener Wildkatzen ist sinnvoll.

<u>Populationsgröße:</u>

Fang und Telemetrie:

Fragen zu Populationsgröße und -struktur, Aktionsraumgröße und Habitatqualität sind nur durch Fang und Telemetrie zu bearbeiten. Als Probeflächen sind zusammenhängende Waldgebiete von 50 km² geeignet. Günstigste Fangphase ist während der Ranzzeit, in der Regel von Januar–März, in Jahren optimalen Beuteangebotes (hoher Mäusedichten) bereits ab November. Über zwei Ranzperioden sollten mindestens 15 Fallen über zwei bis vier Monate fängisch gestellt sein. Eine Besenderung von Jungtieren ist etwa ab dem 10. Lebensmonat möglich.

<u>Populationsstruktur:</u>

Die Populationsstruktur wird durch die Erfassung von Geschlecht, Alter, Reproduktionszustand und Genom verunfallter und getöteter Individuen ermittelt. Die Daten werden landesweit in einer Koordinationsstelle, die eng mit Jägern, Förstern und Autobahnmeistereien zusammenarbeitet, zusammengeführt. Zu bedenken ist, dass Todfunde selektiv sind und nicht die tatsächliche Populationsstruktur widerspiegeln, aber es sind z.B. Hinweise auf Reproduktion möglich. Erfahrungsgemäß werden im Straßenverkehr vor allem juvenile und adulte Männchen getötet.

<u>Habitatqualität</u>

Habitatzustandserfassung und Ermittlung bestehender und potenzieller Migrationslinien mit Hilfe von GIS-Analysen und Luftbildinterpretation. Hierzu:

- Kartographische Darstellung der Waldverteilung
- Erfassung der unzerschnittenen Räume, vor allem der Waldgebiete in den Verbreitungsarealen, aber auch der umliegenden Offenlandgebiete
- Erfassung der Barrieren (Verkehrswegekarte) und potenziellen Querungsmöglichkeiten (Migrationskorridore)
- Darstellung der Mittelgebirgslagen mit geschlossenen Schneedecken >20cm über mindestens drei Wochen (suboptimale Winterlebensräume); mit vernetzenden Korridoren in tiefere, klimatisch günstigere Höhenlagen und Südhanglagen

- Habitattypenkartierung und Auswertung von Biotop- und Forsteinrichtungsdaten (Grenzertragsstandorte, Nichtholzbodenflächen, Windwurfflächen, Waldwiesen, Talwiesen, Felspartien, etc.).

<u>Beeinträchtigungen</u>

- Unfallopfer auf Verkehrswegen
- Barrieren durch Verkehrswege (Straße, Schiene, Wasserkanäle), Siedlungen und möglicherweise auch Windkraftanlagen
- Fehlabschüsse und Fallenjagd
- Intensive Landbewirtschaftung und Flurbereinigung
- Anwendung von Rodentiziden in der Land- und Forstwirtschaft
- Verlust von Nahrungshabitaten durch Aufforstung von Talwiesen und Waldlichtungen
- Zerstörung von Tagesruheplätzen
- Wildschutzzäune, Kulturzäune (Gefahr des Verhakens mit den Krallen)
- Seuchenzüge bei Hauskatzen (Leukose und andere Virusinfektionen)
- Hybridisierung mit Hauskatzen, v.a. in den Ausbreitungsgebieten der Wildkatze
- Mitnahme junger Wildkatzen durch Waldbesucher

Allg. Hinweise*:* Als Fallenstandorte sind gut geeignete Habitatrequisiten entscheidend, so dass z.B. 6-7 Fallen konzentriert auf 3-5km² strukturreicher Waldfläche besonders erfolgreich gestellt sein können. Der Fang mit wenigen Fallen auf großer Fläche ergibt große, exklusiv genutzte Streifgebiete; der Fang mit mehreren Fallen auf kleiner Fläche ergibt ebenfalls große Streifgebiete, die jedoch nicht mehr exklusiv genutzt werden. Der Fang auf kleiner Fläche ist geeignet, Sozialstrukturen besser erfassen zu können.

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Kriterien zur Bewertung des Erhaltungszustandes der Populationen der Wildkatze
***Felis silvestris* (SCHREB., 1775)**
- Bewertungsschema -

Zustand der Population	**A** (hervorragend)	**B** (gut)	**C** (mittel bis schlecht)
Populationsgröße			
Flächenverbreitung / Nachweis der Art durch Fang und Todfunde sowie Beobachtungen von Fachpersonen	Flächendeckend und regelmäßig	regelmäßig, jedoch nicht flächenhaft	Selten bzw. räumlich nur sehr begrenzte Nachweise von Einzelindividuen
Populationsstruktur			
Reproduktionsnachweis	regelmäßiger Nachweis von adulten Weibchen und Jungtieren	temporärer Nachweis von adulten Weibchen und Jungtieren	kein Nachweis von Reproduktion, Nachweis von Einzeltieren
Habitatqualität	**A** (hervorragend)	**B** (gut)	**C** (mittel bis schlecht)
Größe der zusammenhängenden Lebensräume / Landschaftsstruktur	unzerschnittenes Waldgebiet von 100km² und mehr; weitgehend unzerschnittene Wald- bzw. Wald-Feld-Landschaft mit einer strukturreichen Offenlandschaft; oder aber: der weitgehend unzerschnittene Lebensraum umfasst mehrere zusammenhängende Waldflächen von insgesamt 100km²	unzerschnittene Waldgebiete von 30-50km² bzw. Wald-Feld-Gebiete von 50-100km² mit einer strukturreichen Offenlandschaft; oder aber: der weitgehend unzerschnittene Lebensraum umfasst mehrere zusammenhängende Waldflächen von insgesamt 50km²	unzerschnittenes Waldgebiet von <30km²
Migrationskorridore	mehrere Migrationskorridore verbinden geeignete Lebensräume; die umgebende Offenlandschaft ist strukturreich	mehrere Migrationskorridore verbinden geeignete Lebensräume; die umgebende Offenlandschaft ist strukturreich	einzelne, eingeschränkt passierbare Migrationskorridore; die umgebende Offenlandschaft ist weitgehend strukturarm
Beeinträchtigungen	**A** (keine bis gering)	**B** (gering)	**C** (mittel bis stark)
Jagd (Abschüsse, Fallenfänge)	keine Beeinträchtigung	Beeinträchtigungen auf geringer Gebietsfläche	Beeinträchtigungen auf größerer Gebietsfläche
Verkehr	Geringer Zerschneidungsgrad, hohe Durchlässigkeit der Verkehrswege		hoher Zerschneidungsgrad, geringe Durchlässigkeit der Verkehrswege (Kfz-Aufkommen/ d >5000)
Forst- und landwirtschaftliche Maßnahmen (Aufforstung von Wiesentälern und Waldblößen, vollständiges Aufarbeiten von Windwürfen, Einsatz von Rodentiziden, Flurbereinigung im Offenland)	keine Beeinträchtigung	Beeinträchtigungen auf geringer Gebietsfläche	Beeinträchtigungen auf größerer Gebietsfläche
Viralen Erkrankungen und Bastardierung	geringe Gefahr der Übertragung	erhöhte Gefahr der viralen Erkrankungen und Bastardierung	erhöhte Gefahr der viralen Erkrankungen und Bastardierung

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