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First results of the conservation plan for the Common Hamster (*Cricetus cricetus*) in the Alsace

Erste Ergebnisse des Feldhamster-Schutzprogramms im Elsaß (Frankreich)

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Kurzfassung: Der Feldhamster ist in Frankreich nur in einzelnen Gemeinden des Elsaß verbreitet und seit 1993 geschützt. Während der letzten 20 Jahre erlitten alle Feldhamsterpopulationen auf Grund gezielter Bekämpfungsmaßnahmen und der Intensivierung der Landwirtschaft, insbesondere durch Maismonokulturen, bedeutende Verluste. Noch Anfang des 20sten Jahrhunderts war der Feldhamster in mehr als 380 elsässischen Gemeinden verbreitet. Zwischen 1997 und 2001 konnte er nur noch in 85 Gemeinden nachgewiesen werden.

Um diese letzten Populationen zu erhalten, wurde ein Nationales Schutzkonzept für 2000–2004 konzipiert, basierend auf den historischen Daten, der Biologie, der Ökologie und seinem Einfluss auf die Landwirtschaft. Das Schutzprogramm wird unter der Federführung der Office National de la Chasse et de la Faune Sauvage (ONCFS) durchgeführt und ist durch die folgenden sechs Hauptthemen strukturiert, die an Hand ihrer Priorität verfolgt werden:

- Akzeptanz der Landwirte für die Tiere
- Erhaltung der Lebensräume des Feldhamsters
- Populationsmonitoring
- Öffentlichkeitsarbeit
- Schutz der Tiere und Erhöhung der Populationsstärke und
- Zusammenarbeit mit ausländischen Forschungsgruppen.

Die Ergebnisse der Maßnahmen zum Schutz der Lebensräume des Feldhamsters im Elsaß sind ermutigend. Die Anzahl der Baue auf den Vertragsparzellen steigerte sich um 320 %. Der Anbau von festgelegten Kulturen (Luzerne, Winterweizen), nach einer der Biologie des Feldhamsters angepassten Fruchtfolge, hatte die erfolgreiche und schnelle Besiedlung der durch das Schutzprogramm subventionierten Flächen zur Folge. Die Ergebnisse der Umsiedlungsmaßnahmen zeigten, dass einige Tiere sich sehr gut in ihre neuen Lebensräume integrierten, sich dort fortpflanzten und dank dem Anbau von Weizen und Luzerne, weitere Biotope in der Nähe besiedelten.

Basierend auf den vorliegenden Ergebnissen konnte zweifelfrei erwiesen werden, dass der erfolgreiche Erhalt der letzten Feldhamsterpopulationen abhängig von der Realisierung landwirtschaftlicher Bewirtschaftungsrichtlinien ist.

Introduction

Present only in France in just a few Alsatian villages, the Common Hamster is protected since 1993. Over the last twenty years, all Common Hamster populations have suffered an important decline because of collective actions to eradicate the species and the intensification of agricultural practices, in particular the monoculture of maize. Present in more than 380 Alsatian villages in the beginning of the century (Figure 1), the species could just be censused between 1997 and 2001 in merely 85 of them where it still occurred. To preserve these last populations, a national conservation plan was ratified for the 2000-2004 period. This plan which should be carried out under the steering of Office National de la Chasse et de la Faune Sauvage (ONCFS), is structured on the following six complementary objectives:

- the farmers' acceptance of the species

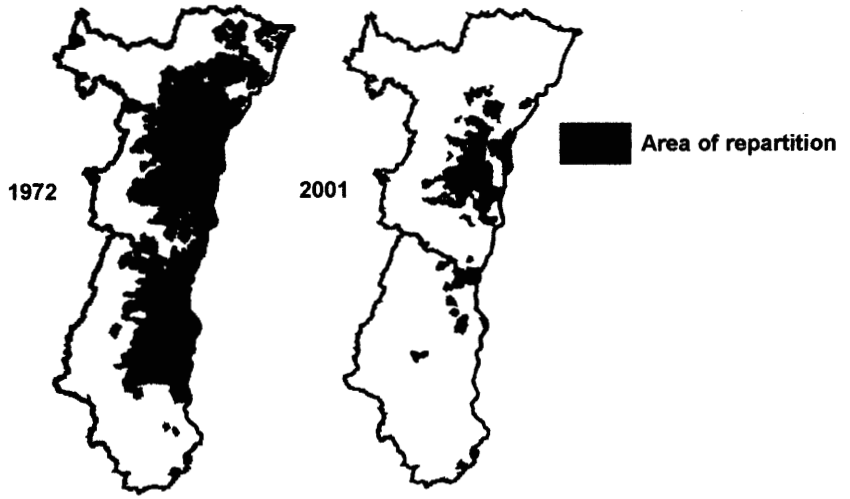

Figure 1: Changes in the distribution range of the Common Hamster
Abbildung 1: Veränderung des Verbreitungsgebietes des Feldhamsters im Elsaß

- the preservation of the living habitats of the Common Hamster
- population monitoring
- a public awareness campaign
- the ex-situ conservation of the species and an increase in their population numbers
- partnerships with foreign research teams.

Objective 1 - Acceptance of the species by the farmers

Eradicated for a long time by the farmers because of the havoc large concentrations of hamster populations could play in agricultural fields, the Common Hamster now is a protected species. For this reason its destruction is prohibited. However, in case of important damages to certain crops of a high added value (cabbage, vegetables, tobacco, sugar beets), the farmers may request the intervention of an ONCFS agent, who may propose the capture of the incriminated animals or a compensation payment corresponding to their loss of earnings at harvest. In 2001, ONCFS has been approached over this matter for 38 burrows (Figure 2) : 10 animals were translocated and for 24 burrows a compensation payment of FF 4,248 (Euro 647), was made by the non gouvertemental agency "Sauvegarde Faune Sauvage / Wildlife Preservation".

As of 1998, every year about ten Common Hamsters are captured by ONCFS agents and translocated to an area a few (between 1 and 3) kilometers further away. This year, the amount of compensation payments increased because of bad

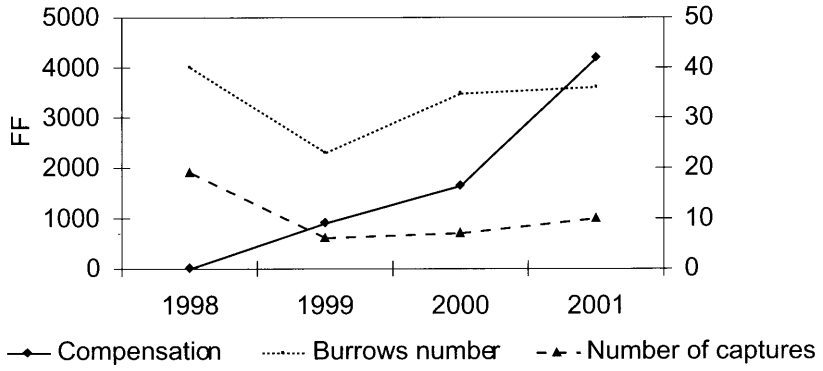

Figure 2: Trends in compensation payments and captures since 1998
Abbildung 2: Trends der Ausgleichszahlungen und Fänge seit 1998

weather conditions in spring which prevented the farmers to check the state of their cabbage seedlings. In addition to these actions, every year an awareness campaign is conducted to inform the farmers about the possible solutions for their problems (hamster info, articles in the press). Moreover, this year, to observe the behaviour of the animals that had been displaced and get an estimate of their survival rate, four hamsters were equipped with radio-collars (Biotrack, UK, Figure 3) and monitored by telemetry. Two of them survived for more than three months and bred, two died from predation (raptors, *Buteo buteo*) after 15 days (Figure 3). To date, only one male (n° 2) is still alive.

Objective 2 - Preservation of the Common Hamster habitats

The changes in certain agricultural practices like intensive maize growing, irrigation are responsible for the decrease in areas planted to winter cereals and alfalfa. To preserve these Common Hamster habitats, the conservation plan recommends that 2 % of the total farming area be planted to alfalfa and 10 % to winter cereals. To this end, and to preserve the Common Hamster populations, as of 1998 several actions have been undertaken :

- Management agreements for farmed plots, which are financed by the Ministry of the Environment and the "Sauvegarde Faune Sauvage" Association (Table 1). Five types of contracts are proposed to the farmers in return for an annual compensation which, according to the type of contract, represents a payment of 500 to 5,000 FF/ha (Euro 76-760), so that they will maintain a cover planted to cereals and alfalfa adapted to the species' biology.
- "Jacheres Environnement Faune Sauvage (JEFS) / Environment and Wildlife Setaside" contracts, financed by the "Sauvegarde Faune Sauva-

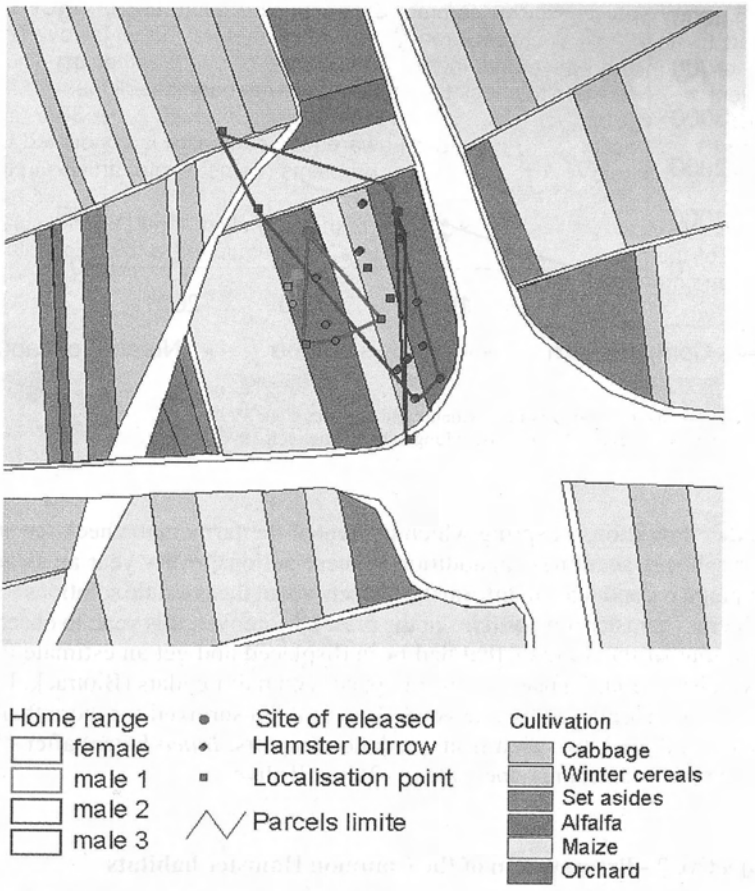

Figure 3: Home ranges of the radio-tracked individuals
Abbildung 3: Aktionsradien der telemetrierten Tiere

ge" association in completion of other contracts proposed by the Hunter Federation of the department concerned (Table 2). A compensation payment of FF 900 (Euro 137) per hectare is granted for the plantation of cereal and legume (alfalfa, clover) crops. To date, under JEFS 23 ha have been set-aside for the Common Hamster.

- Contrats Territoriaux d'Exploitation (CTE) / Territory-oriented exploitation contracts. These are contracts established between the Alsace region and the farmers. The latter, against an effective financial aid, have agreed to adopt environmentally-friendly practices which, in our case, include agricultural practices favourable to the hamster (Table 3).

Because of the great economic pressure in the Alsatian plain, no CTE contract has been signed until now.

Table 1: Characteristics of the ONCFS conventions
Tabelle 1: Inhalte der ONCFS-Verträge

Type of convention	**ONCFS Convention**				
Contracts	1	2	3	4	5
Cropping plan	Alfalfa	Alfalfa harvested in a livestock farming system	Straw-producing cereals or red clover for a period of 3 years	Straw-producing cereals or red clover	
				3 years out of 4	3 years out of 5
Duration	3 to 5 years				
Compensation FF/ha/year	5,000 (Euro 760)	1,000 (Euro 150)		1,000 the first 3 years(Euro 150) 1,300 the following years (Euro 200) 500 for sugar beets(Euro 76)	
Technical constraints	♦ No irrigation, insecticide or rodenticide treatments, manure or slurry spreading ♦ No tillage before Sep.15 ♦ Ploughing depth limited at 30 cm				

Table 2: Characteristics of the JEFS (Environment and Wildlife Set-aside) Contracts
Tabelle 2: Inhalte der JEFS-Verträge (Umwelt und Naturschutz-Planung)

Type of convention	**Environment and Wildlife Set-Asides for the Common Hamster (JEFS)**	
Contracts	Cereals	Alfalfa
Cropping plan	Mixture of 2 cereals	Mixture of cereals and legumes
Duration	1 year	
Compensation FF/ha/year	900 (Euro 137)	
Technical constraints	♦ No intervention between Apr.1 and Sep.15 and between Oct. 1 and March 1 ♦ Compulsory weed control ♦ Cover should be conserved until March 15 ♦ 30 are (3,000 m^2) minimum surface area and a 20 m minimum width	

Table 3: Characteristics of the CTE Common Hamster contracts
Tabelle 3: Inhalte der CTE Feldhamster-Verträge

Type of convention	**Territory-oriented exploitation contract (CTE)**		
Contracts	1.1	2.1	4.2
Cropping plan	Set-aside of farmland	Supplementary crop in	Designation of the set-aside
Duration	5 years		
Compensation F/ha/year	2,951 (Euro 450)		800 (Euro 122)
Technical constraints	*To comply with objective 2.1* : ♦ Replacement of maize by alfalfa ♦ Interdiction of rodenticides and anticoagulants, irrigation, slurry ♦ Spraying and nitrogen fertilizer applications ploughing after Sep.15 ♦ Manure authorized as of Sep. 15		

Between 1998 and 2001, 42 conventions were signed. 22 conventions expired between 1999 and 2001 because the burrows had disappeared and around them no indices of presence had been observed anymore, or because the contract arrived at its expiration date and was not renewed by the farmer. In autumn 2001, the conventions covered an agricultural area of nearly 59.14 ha, with 6.26 ha (10 %) in the Upper-Rhine and 52.88 ha in the Lower Rhine regions, 28.58 ha of which (48 %) were situated in the Geispolsheim canton (Common Hamster population core). Among these 59.14 ha (Figure 4), 27.55 ha were planted to alfalfa (Contracts 1 and 2) and 31.59 ha to cereal straw (3, 4 or 5). Regarding the actions which have been carried out to protect the Common Hamsters' habitat in the Alsace, the results are encouraging.

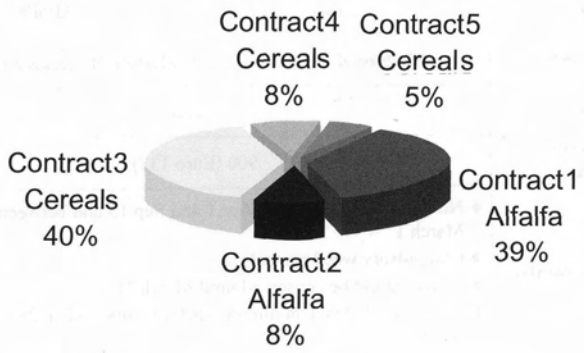

Figure 4: Allotment of the different ONCFS contracts
Abbildung 4: Prozentuale Verteilung der unterschiedlichen ONFCS-Verträge

The number of burrows in the parcels of land included in the convention went up from 134 in 1998 to 563 in 2001, i.e. a 320 % increase (Figure 5). The plantation of certain crops (alfalfa, winter cereals) according to a crop management sequence adapted to the Common Hamsters' biology has resulted in the rapid colonization of the agricultural plots subsidized by the convention. Thanks to the plantation of a cover made up of 2 % of alfalfa and 10 % of straw-producing cereals, at the level of a commune like Geispolsheim burrow density was more than 2 burrows/ha, a threshold that represents the limit of viability for Common Hamster populations.

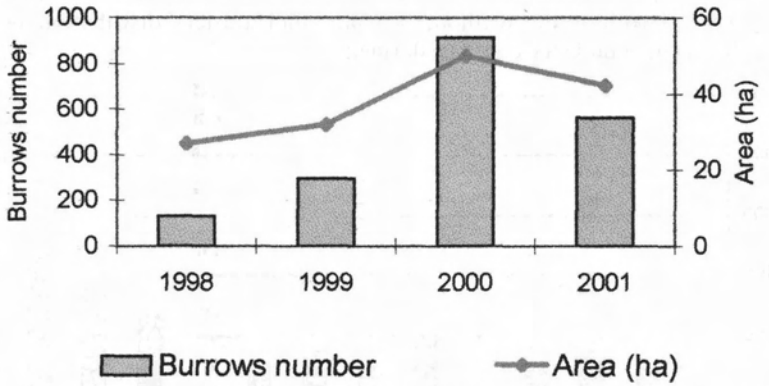

Figure 5: Increasing trend in the number of burrows situated in the plots covered by the Convention
Abbildung 5: Positive Bestandsentwicklung auf den Vertragsgrundstücken

The efficiency of the measures taken to protect the habitat of the Common Hamster has been perceived much more rapidly in the Lower-Rhine regions, and notably in the canton of Geispolsheim, than in the Upper-Rhine. In fact, in the sectors where nonrelict populations are persisting, plantations of crops which are favourable to the species are generally followed by a rapid colonization of these sites while it seems that certain isolated and far too relict populations are just capable to restore themselves with the greatest difficulty. In the Upper-Rhine regions, in the agricultural plots under contract the densities of their burrows increased from 1.6 to 2.4 burrows/ha. On the basis of these results, no doubt subsists about the fact that the preservation of the last Common Hamster populations can only be achieved through the conclusion of management agreements for agricultural plots. This approach by which excellent results have been obtained, should be pursued and developed in other adjacent villages, and completed by more sustainable measures like land acquisitions.

Objective 3 – Population study monitoring

To monitor the changes in the Common Hamster populations in the Alsace, a method to estimate their levels of abundance was validated in 2000. Its underlying principle is the exact counts of burrows in late April along transects which are 10 m apart from one another, carried out in winter wheat, winter barley and alfalfa fields. A spring density of 6,200 burrows (i.e. 0.6 burrows/ha) has thus been estimated in the 40 villages under study. On the other hand, by this method a 300 % increase in the indices of presence was observed in the 3 villages where the highest population numbers had been recorded between 1998 and 2001 (Figure 6). Thanks to this method, the Common Hamsters' distribution area and their levels of abundance could be defined.

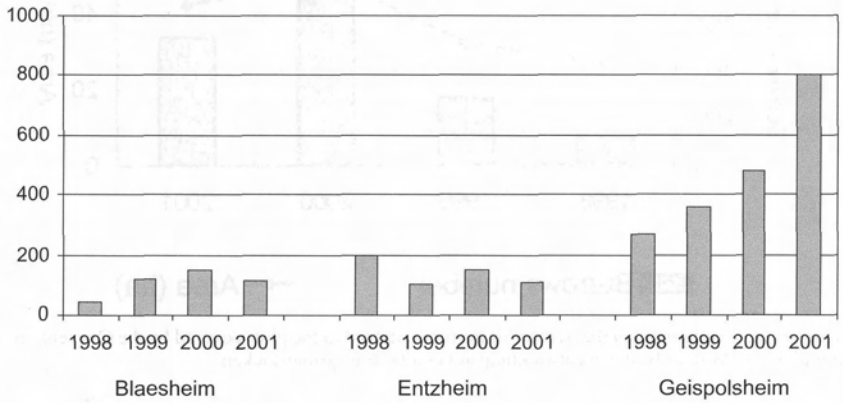

Figure 6: Changes in the number of burrows recorded since 1998 along transects which were spaced apart by 10 m
Abbildung 6: Entwicklung der Anzahl der Feldhamsterbaue seit 1998 entlang von Kontrollstreifen im Abstand von 10m

Moreover, 19 Common Hamsters were monitored. The latter had been translocated in 2000 because of an urbanization project for the region. In 2001, the spring counts of Common Hamsters on this site, which in the beginning did not harbour any hamster at all, revealed the presence of 9 burrows which might be inhabited. A new hamster census was made in the beginning of August after the cereal harvest. Without any possible doubt, there were 27 burrows very close to the release site (Figure 7). These censuses show that some of the translocated animals perfectly integrated into their new environment, that they had bred there and colonized other biotopes thanks to the proximity of wheat and alfalfa fields.

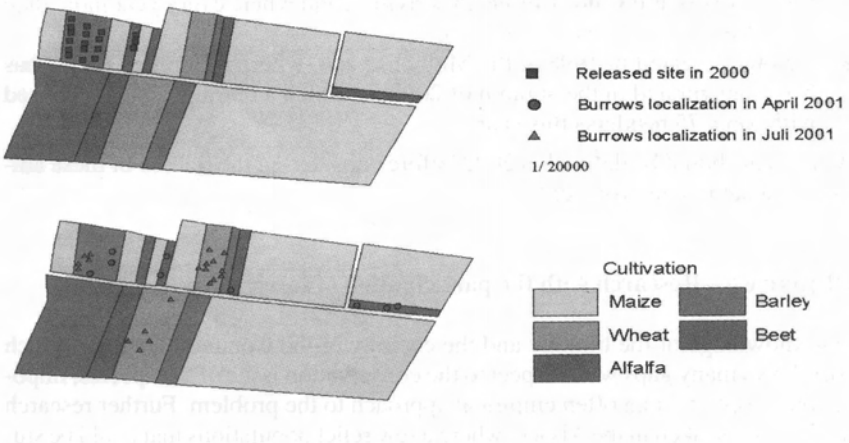

Figure 7: Distribution of the translocated Common Hamsters
Abbildung 7: Verbreitung der umgesiedelten Feldhamster

Objective 4 – Public awareness

An informative programme for the general public is scheduled for 2000–2004. The regular part of this programme includes :

- a film on the animal world, which was made in late 2000,
- many articles for the general public have been published in 2001,
- Common Hamsters raised in captivity to be presented at the Mulhouse zoo late 2001,
- exhibitions to be organized at the zoological museum of Strasbourg and in other public places,
- a Website is in preparation,
- several written documents (books, brochures ...) and notably a monography are scheduled for publication between now and the end of the year,
- an educational programme designed for scholars and professionals is under consideration.

Objective 5 – Experimental reinforcement of the species

It seems that the measures presently applied to preserve the habitats of the Common Hamster are insufficient to maintain population numbers in the Upper-Rhine or certain sectors of the Lower-Rhine regions. In these sectors a reintroduction programme for the species should rapidly be applied to reinforce the last isolates and avoid the extinction of the species.

This is why two rearing centres are maintained :

- one at the laboratory of the University of Strasbourg which operates within the

framework of physiology research activities, and where every year more than a hundred young hamsters are born,
- the other created in 1998 at the Mulhouse zoo, where a Hamster House has been inaugurated in the autumn of 2000, in which a rearing centre is housed with some 75 residents this year.

A protocol should be defined in 2002 before considering the release of these animals in a natural environment.

Objective 6 – Research with the participation of foreign groups

Our knowledge of the biology and the ecology of the Common Hamster which still shows many gaps with respect to the conservation issue of the species, imposes the adoption of an often empirical approach to the problem. Further research may be undertaken in the Alsace, where a few relict populations that could be studied are still subsisting.

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