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**Report of the visit of the International Committee
for the Follow-up of Iberian Lynx Conservation
Actions to Spain**

(17 – 19 March 2003)

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Visit of the International Committee for the Follow-up of Iberian Lynx Conservation Actions to Spain, 17 – 19 March 2003

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Abstract. As a conclusion of the seminar on the conservation of the Iberian lynx (*Lynx pardinus*) held in Andújar (Spain), 29 – 31 October 2002, and the adoption of recommendation No. 94 (2002) on urgent measures for the conservation of the Iberian lynx by the Standing Committee of the Bern Convention from 5 December 2002, an international committee was formed to follow-up conservation actions on the Iberian lynx and encourage the co-operation of the Spanish and Portuguese national and regional institutions with the relevant international organisations. This committee, presently formed by the Council of Europe (Bern Convention Secretariat), the IUCN/SSC Cat Specialist Group, and the Large Carnivore Initiative for Europe (LCIE), visited institutions involved in the conservation of the Iberian lynx in Spain from 17 – 19 March 2003. The aim of the visit was to review the situation of the *in situ* and *ex situ* conservation activities in Andalucía. Lynx conservation areas in other regions were not considered at this occasion. The good news from Andalucía is that the project of improvement of rabbit habitat and the artificial feeding projects for the lynx have advanced well over the winter and that lynx are readily accepting the additional food and prey. To provide additional food for lynx to compensate for the very low rabbit abundance is an emergency action key for the survival of the lynx both in the Sierra Morena and in the Doñana population. Bad news however is that the *ex situ* conservation has not progressed. In January 2003, all five Iberian lynx in captivity were grouped in the El Acebuche experimental captive breeding station in Doñana NP, but the only male died from tuberculosis, leaving the four females without mate. Another young male lynx was caught near Andújar on 17 March 2003. The animal may join the captive population after a quarantine of one month, probably too late for this year's mating season.

1. Introduction

In 2002, the IUCN Red List authorities declared the Iberian lynx (*Lynx pardinus*) Critically Endangered (1). From 29-31 October 2002, the Spanish Ministerio de Medio Ambiente, the Junta de Andalucía, the Council of Europe, Adena/WWF, the Doñana Biological Station (National Research Council), the Large Carnivore Initiative for Europe (LCIE), and the IUCN/SSC Cat Specialist Group co-organised an international seminar on the conservation of the Iberian lynx in Andújar (Spain). On 5 December 2002, the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) recommended a series of urgent measures for the conservation of this most endangered cat species of the world (2). One conclusion from the seminar and from the recommendations was to strengthen the involvement of relevant international institutions. Regional, national and international partners should review the conservation processes on a regular basis.

From 17-19 March 2003, a group of three international experts, representing the Council of Europe, the LCIE, and the IUCN/SSC Cat Specialist Group visited institutions in Madrid and Sevilla and localities in the Sierra Morena and in the Doñana NP. These two sites in Southern Spain are the only remaining areas where the Iberian lynx recently reproduced. Although conservation efforts are continued in other regions of Spain and in Portugal, the key for the survival of the species is in Andalucía, and the maintenance of the two remnant populations are of highest priority.

Programme of the visit, institutions and experts met are to be found in appendices 1 and 2.

2. Conservation actions in the Andújar Nature Park and in the Doñana National Park

The immediate goal of the *in situ* measures is to increase the food base for the lynx in the Andújar Natural Park and in the Doñana National Park, in order to secure the survival of the remaining individuals and to allow the increase of the local lynx density. There are three ways to provide additional food: (i) offering carcasses of game (e.g. mouflon) or life chicken; (ii) re-introduction and

semi-artificial breeding of rabbits; and (iii) management of habitats and potential competitors (large herbivores) to provide better feeding for the rabbits.

Since the year 2000, WWF/Adena establishes management agreements or collaboration agreements with the owners and managers of the private hunting estates in the Sierra Morena and the Montes de Toledo. Currently Adena/WWF has agreements with ten private estates, covering 14 500 ha (six in Montes de Toledo, 5 700 ha, and four in Sierra Morena, 8 800 ha). The owners of the estates are encouraged to establish “lynx favourable” management (reducing the hunting pressure or prohibit rabbit hunting; reducing human caused mortality; minimizing the loss and transformation of the habitat). Direct measures for the reinforcement of the rabbit populations and pilot projects for rabbit reintroductions are carried out both in the Sierra Morena and in the Montes de Toledo. WWF/Adena as a NGO is well suited to make arrangements with private landowners. These activities are presently funded through a LIFE project (3). In the long term, governmental organisations should take over the agreements. 90 % of the Andújar Natural Park, for instance, is in private hands. The three institutions working in this area (the Junta de Andalucía, the Fundación CBD-Hábitat¹, and Adena) all need to make contracts with the private landowners for most of their activities.



Fig. 1. Rabbit breeding station of the Junta de Andalucía in the Andújar Nature Park. The breeding area is safe from predators, but rabbits can leave the enclosure.



Fig. 2. Large habitat improvement and breeding enclosure for rabbits run by the Junta de Andalucía in the Andújar NP in the eastern Sierra Morena.



Fig. 3. The fences restrict terrestrial carnivores such as foxes and large herbivores, but rabbits and lynx can go in and out.



Fig. 4. Artificial breeding den with an experimental automatic vaccination device inside the large enclosure.

The Junta de Andalucía owns one big estate in the Andújar NP, where a rabbit recovery program is conducted (4). The Junta has also a number of management agreements with private estates owners (covering ca. 100 000 ha), similar to those described above and participates in the LIFE project. We visited two sites, where enclosures for the in site breeding of rabbits were installed (Fig. 1-4). There are different designs of the rabbit breeding places, small breeding places (Fig. 1) and large sites including grass feeding grounds (Fig. 2 – 4), but the main elements are always the same: A central enclosure offers breeding facilities (piles of rocks or wooden palettes covered with branches and

¹ The Fundación CBD-Hábitat is closely co-operating with the DGCONA (Ministerio de Medio Ambiente).

earth). The central enclosure has pass ways for the rabbits (sometimes with a door that may be locked) to a larger enclosure with managed grass vegetation to provide food. At one of these facilities, an experimental vaccination device for rabbits is installed (Fig. 4), monitored by means of photo-traps. The larger fence (Fig. 3) hinders the access of ungulates and terrestrial predators such as foxes, but not of lynx or birds of prey. Rabbits can go in and out. Lynx have started to visit both sites we inspected soon after rabbits were introduced.

A programme to increase the rabbit population by means of reintroductions, in site breeding and habitat improvement has been carried out for many years in the Doñana area, too, by the Doñana National Park and by the Doñana research reserve of the C.S.I.C (Fig. 5-8). Recently, both, small and medium scale habitat maintenance projects for the rabbits were launched, and a large-scale habitat recovery programme started. The habitat management in order to increase rabbit and lynx populations and allow the species' recovery is one of the park's priorities. Many thousands of eucalyptus trees are removed every year from the park and its peripheral buffer zone. This allows the water level to increase. Dried-up rivulets and streamlets have started to flow again. Instead, cork oak and wild olive trees are planted (5). Different methods of habitat improvement and restoration projects are applied (removal of eucalyptus forests, different techniques of managing the Mediterranean thicket, planting indigenous trees).



Fig. 5. Artificial rabbit breeding den in the Doñana National Park area where eucalyptus trees are removed for habitat improvement.



Fig. 6. Grass plantation as rabbit food in a site cleared from bushes, with an artificial breeding den just outside the fenced area.



Fig. 7. Lynx feeding station in the Doñana research reserve. Lynx can climb over the fence or jump the trench to get the chicken in the enclosure.



Fig. 8. Large rabbit restoration fence in the Doñana research reserve. Only lynx, but no other terrestrial predators cross the fence over this special ladder.

A total of 300 ha, mostly in small plots of 1 ha each (Fig. 5 and 6) were fenced, cleared from bushes and restocked with grass vegetation to provide better food for the rabbits. Rabbits easily accept these breeding places, and lynx also easily accept the additional food. But the programme is still in its early stage, and these areas will mainly be restocked with rabbits from the breeding programme. Blanca Ramos assumed that the restocking and the maintenance of these safe breeding places will need to be continued over a very long time, as the rabbits still are exposed to diseases.

The C.S.I.C. Estación Biológica de Doñana maintains additional lynx feeding stations in the research reserve. In five small fences, chickens are offered daily (Fig. 7). All stations are visited with regularity by lynx (camera traps installed at the stations have revealed at least five different individuals). In a larger fenced area (Fig. 8), a rabbit breeding programme with a slightly different design will start as soon as rabbits from the captive breeding programme are available.

The Doñana lynx population has seriously declined during the 1990s. The Doñana NP maintains an intensive monitoring programme by means of camera traps and compiles data on mortality and natality. 500 camera traps are distributed for two months every year over an area of 2500 km² (Doñana NP and buffer zone). Pablo Pereira explained the distribution of the lynx identified individually and the maintenance of their picture gallery. They distinguish (i) lynx pictured in the recent session, (ii) lynx found dead, and (iii) “missing” lynx (individuals pictured in earlier, but not in the recent session). No sight/re-sight method seems to be applied. Presently, they have identified 27 individuals (of which 5 breeding females in the whole Doñana area). The stronghold of the lynx population in the Doñana area was always the southern part of the park, the research reserve. Now this area has a very low lynx presence, and the “best” area for lynx is NE of El Rocío, formerly a marginal area.

The average road kills per year is 2.3 individuals; the total known mortality is about 4 lynx/year. Given the fact that in the Mediterranean bush vegetation, natural mortalities are hard to find, the known mortality is high compared to the estimated yearly reproduction of 10-11 lynx. Road kills are increasingly found at peripheral areas, whereas in the past, they were mainly found on the road from El Rocío to Matalascañas. The fast growing tourist resort of Matalascañas strongly increases road traffic. To reduce road-mortality, few tunnels had been built, but they are not efficient for the dispersing young animals. Recently, a new system of a series of speeding bumps was built on the road near El Rocío, where a year ago the breeding female was detected.

However, there is no doubt that the extreme shortage of prey was the reason for the decrease of the lynx population and that the recovery of the rabbit population is the key to the lynx recovery in Doñana (and probably in most other lynx areas). Since the late 1980s, the rabbit density in the park has dropped due to diseases and has remained low. The Rabbit Haemorrhagic Disease (RHD) was first discovered in the Doñana research reserve in 1989, and since then, the rabbit/km-index then dropped from 12 to 2, and has remained at this low level since. The emergency artificial feeding of lynx and the rabbit recovery programme now is applied to maintain the lynx population. This will hopefully allow the population to survive until the habitat recovery programme and the rabbit disease control programme become effective.

3. Conservation breeding programme

The Ministry of Environment (DGCONA) is responsible for the implementation of the Captive Breeding Plan. All the remaining lynx are in Andalucía and under Spanish law and the existing division of competences the Junta de Andalucía has to give permission for capturing the animals. The “Captive Breeding Plan” (6), which is a general document defining goals, responsible bodies, and actions recommended, clearly request the preparation of more detailed captive breeding programme, with both, short- and long-term actions, all the necessary procedures, protocols and schedule (capture techniques, genetic and demographic aspects, reproductive physiology, sanitary requirements, ethological aspects – imprinting, tradition, learning, etc. – reintroductions, monitoring and finally guarantees for funds). Such a programme is being drafted. The lack of such a programme is one of the main concerns of the regional administration, which requests it to start capture of wild animals.

The Iberian lynx in captivity are now all concentrated at the El Acebuche breeding station in the Doñana NP (Fig. 9-12), which is not open to the public. Three lynx were brought here at 21 January 2003 from Jerez zoo (SALIEGA and AURA, two juvenile females; Fig. 9) and from the Los Villares centre in Córdoba (FERMIN, an adult male, found in June 2002 in the Sierra Morena in very bad condition). However, the only male lynx died on 10 February 2003 from tuberculosis, so that the whole captive group now consists of only four females (13 year old MORENA, young adult ESPERANZA (Fig. 10), and the two now subadult AURA and SALIEGA). An additional male lynx was caught on 17 March 2003 near Andújar. The young-adult animal may be incorporated in the captive breeding programme after a quarantine of one month in the *Centro de Recuperación de Fauna*

Silvestre Los Villares, Córdoba. No captive reproduction will take place this year; the mating season of the Iberian lynx being January and February.



Fig. 9. Young / subadult female lynx brought from Jerez zoo to the El Acebuche centre in January 2003.



Fig. 10. Eladio Fernández-Galiano (Council of Europe, left), Iñigo Sánchez García, Celia Sánchez Sánchez, Pablo Pereira (all Doñana NP) with ESPERANZA.



Fig. 11. El Acebuche experimental captive breeding centre in the Doñana national park. The centre with its two rows of interlinked cages is dedicated to the breeding of the Iberian lynx.



Fig. 12. Rabbit breeding centre at the El Acebuche station. The whole area is surrounded by a tight fence. A double row of five cages with artificial dens allows the controlled breeding of rabbits. The feeding ground in the foreground is open to all rabbits from one row.

The El Acebuche station hosts a quarantine complex with four boxes, and the breeding centre for lynx with eight enclosures and smaller boxes interlinked among them. The area is properly isolated from the outside. The four female lynx are kept at the station in four different cages. The lynx are not live fed; they receive daily rations keeping them on the lean side. The younger three animals were taken from lynx dens in the wild² and have been kept in captivity since they have been few weeks old. These hand-reared lynx are imprinted on humans (Fig. 10) and not socialised with conspecifics.

The centre has also a large and brand new facility to breed rabbits (Fig. 12). In ten (five cages in two rows) central enclosures with artificial dens, rabbits are bred. The feeding ground is a large area with grass vegetation. The sluice between the breeding cages and the feeding ground is designed as a trap, where the rabbits can easily be caught. The breeding programme is starting now. The rabbits from the breeding programme will be used to supplement the wild population in the NP or to make reintroductions in areas where rabbits were extinct.

4. Conclusions and recommendations

² It is known by experience that of a litter of three, only two cubs will survive in average. Consequently, it was decided to remove the weakest cub from a litter of three and to incorporate it into the captive breeding programme.

The *in situ* conservation projects have made significant progress since the Andújar seminar in October 2002. The additional feeding places and the in site rabbit breeding sites work well. Lynx have easily accepted the carrion and the live prey such as chickens and rabbits additionally offered. This support will hopefully help the two remaining reproducing population to survive until the habitat and rabbit recovery programmes become effective and will allow to expand the populations. However, the Doñana population will remain isolated and there is basically no chance that any lynx from this area will be able to migrate to other suitable lynx habitat. It is nevertheless crucial to re-increase the density of the Doñana population in order to keep it demographically and genetically viable. The Doñana population will be very important as a source for first the captive population and then translocation programmes.

The Andújar population, on the other hand, has the potential to expand over adjacent areas of the Sierra Morena when properly stocked with rabbits. Here, it will be possible to apply a strategy of reintroduction and translocation and to create a network of sub-populations connected through habitat corridors. This is, however, all still up in the air. At the moment, lynx of both populations depend on artificial feeding in order to allow them to increase the density and to support the captive breeding programme.

The captive breeding programme is a serious matter of concern. Besides the technical and veterinary problems, there are still political and administrative obstacles to overcome. The discussions to the International Committee with the DCGONA in Madrid and the Consejería del Medio Ambiente of the Junta de Andalucía in Sevilla have revealed some differences in regard to the priorities set. The Junta de Andalucía has asked the ministry in Madrid for a formal agreement in regard to the captive breeding programme. They want to be reassured that the captive breeding programme is an integral part of the general conservation strategy and that the future needs of Andalucía in regard to reintroductions are respected. It is hoped that conversation between the Ministry of Environment and Junta de Andalucía progress enough to reach an agreement that may resolve the present deadlock.

We consider the captive breeding programme to be of very high importance and we regret that another year without reproduction in captivity will pass by. It is very unlikely that the Iberian lynx will survive in the wild in the long term without reintroduction projects allowing the species to regain lost territory. The now started *in situ* conservation activities are crucial not only for the survival of the remnant populations, but also to secure the sources for the conservation breeding and future translocations. In this respect, the captive breeding programme must be focussed on these reintroductions to come. The management of the captive population should not only consider its genetic fitness, but also the aptitude of the animals to survive in the wild, this is to maintain (social) behavioural traditions in the captive population. The lack of species-specific socialisation of the kittens taken from the breeding dens could likely be a burden for further reintroductions, yet the animals now in the breeding station are not suited for a release (and they were not meant for it). To avoid possible problems in future, the specific protocols for both the capture and the captive management procedures should be reviewed in collaboration with captive breeding and reintroduction experts.

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- (3) The WWF/Adena's Iberian lynx project – summary report (Jesús Cobo, Luis Suárez).
- (4) Junta de Andalucía (Miguel Angel Simón). January 2003. Report about the development of the conservation programmes of the Iberian lynx in Andalucía.
- (5) Doñana National Park and Doñana Biological Station, CSIC. 11 March 2003. Briefing on Iberian lynx (*Lynx pardinus*) management plan at Doñana National Park.
- (6) Plan de cría en cautividad del lince ibérico (*Lynx pardinus*). Versión aprobada por la Comisión Nacional de Protección de la Naturaleza el 8 de febrero de 2001, Dirección General de Conservación de la Naturaleza, Secretaría General de Medio Ambiente, Ministerio de Medio Ambiente.

Appendix 1. Programme of the visit

MONDAY, 17 MARCH

Morning – Meeting with Adena / WWF.

Morning – Meeting with Dirección General de Conservación de la Naturaleza y Organismo Autónomo de Parques Nacionales, Ministerio de Medio Ambiente.

Noon – departure for Sierra Morena.

Afternoon – Field excursion to the Andújar Nature Park and visit to the lynx habitat conservation areas (habitat improvement activities and artificial feeding places) – with Junta de Andalucía representatives.

TUESDAY, 18 MARCH

Morning – Meeting in Sevilla with Miguel Delibes, C.S.I.C. Estación Biológica de Doñana

Noon – Meeting in Sevilla with Junta de Andalucía

Afternoon – Visit of the El Acebuche experimental captive breeding station in the Doñana National Park

WEDNESDAY, 19 MARCH

Morning – Visit of in situ conservation facilities within the Doñana NP and the research reserve.

Early afternoon – Press conference organized by the Doñana NP.

Afternoon – departure

Appendix 2. Participants of the meetings

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