



Global Re-introduction Perspectives: 2010

Additional case-studies from around the globe
Edited by Pritpal S. Soorae



IUCN/SSC Re-introduction Specialist Group (RSG)





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Re-introduction of Apennine chamois to the Gran Sasso-Laga National Park, Abruzzo, Italy

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Introduction

In the Holocene, the Apennine chamois (*Rupicapra pyrenaica ornata* Neumann, 1899), occurred through the Central-southern Apennines. In historical times, its range was limited to the Abruzzo Region, on the mountains of present day Abruzzo, Latium and Molise National Park (ALMNP) and on those of Gran Sasso-Laga National Park (GSLNP): here, the last chamois was shot in 1892, 100 years before the park was established. A population of <40 chamois survived in ALMNP, established in 1922. The World Wars marked two population bottlenecks (poaching), but numbers of chamois started growing since the 1970s. Because of its small population size (<1,500 presently), low genetic variability and small range, this subspecies is listed as Vulnerable (D1+2) in IUCN Red List; is present in App. II of the Bern Convention; is listed in Annex II and IV of the E.U. Habitat Directive, App. I of CITES, and considered “especially protected” by the Italian law 157/1992. Five sub-populations are being created in as many parks. The first release occurred in Majella National Park (MNP) in 1991, followed by GSLNP in 1992 and Sibillini Mountains National Park (SMNP) in 2008. Only the Gran Sasso release is a “re-introduction”; the others are “conservation introductions”.

Goals

- Goal 1: Creating a new, viable and geographically isolated population of Apennine chamois, in case of an epidemics or other catastrophic event affecting the source population in ALMNP.
- Goal 2: Returning a medium-size ruminant to



Apennine chamois male in winter coat

© Sandro Lovari

the appropriate Apennine ecosystems, through an operation of biodiversity restoration.

- Goal 3: Promoting the establishment of a new National Park from former Nature Preserves.
- Goal 4: Providing an attraction for visitors and, in turn, for the local economy.

Success Indicators

- Indicator 1: Establishment of a local herd within the three years release program.
- Indicator 2: Occurrence of a fair (over 20%) yearly growth rate.
- Indicator 3: Occupancy of the area predicted suitable for the chamois and development of new herds.

Project Summary

A feasibility study, based on RSG/IUCN Guidelines, was carried out in 1990 by experts from the University of Siena and the University of Bologna, to estimate the local ecological suitability, and the ALMNP (Tassi *et al.*, 1992), for all other aspects, concentrating on: a) Evaluation of re-introduction sites: During the cold season, the Apennine chamois prefer forested slopes, moving to open areas and cliff ledges during the warm months. Adult males tend to live in woodland all year long, moving to Alpine meadows on September/October for pre-rut activities (Lovari & Cosentino, 1986). A suitable area of about 8,000 ha was found in Gran Sasso, with mixed beech (*Fagus sylvaticus*) forest, at about 1,800 m a.s.l., next to Alpine meadows (*Seslerietum* and *Festuco-trifolietum thalii*). Roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), wolf (*Canis lupus*) and golden eagle (*Aquila chrysaetos*) also occur in the area. An assessment of presence and impact of limiting factors (e.g. land use, tourist activities, poaching, stray dogs, competition/sanitary interference with livestock) was conducted. b) Reproducers and release protocol: About 30 chamois (sex ratio, 1:2) were darted, mostly in the wild (ALMNP, Val di Rose herds) and released in GSLNP. A darting device was used to administer xylazine and ketamine. Chamois from Park enclosures were also used, to minimize the impact on the source population. All darted chamois were checked for diseases, with no positive result (Gentile *et al.*, 2000).

Support of local communities: Two large enclosures (several hectares) for Apennine chamois were built in 1992 in Farindola and in 1993 in Pietracamela (municipalities near the release sites) with the help of local volunteers. The operations included two phases: the first one (1992-1994) was realized under the aegis of the ALMNP, the Italian Alpine Club and the WWF-Italy. From July to October, 26 chamois (15:11) were darted in ALMNP and transferred under narcosis by helicopter. Thirteen animals (5:8) were captive-bred. The chamois were marked at both ears with coloured plastic tags; four males and eight females were also fitted with a radio-collar. At the release site, the animals were recovered from narcosis by injecting an antagonist (Locati *et al.*, 1991) and released directly into the wild (Toso & Tosi, 1992). The second phase (1999-2001) was carried out by the GSLNP Agency, Siena University and Legambiente, through a E.U. Life project and nine more chamois (8:1) were darted in park enclosures, fitted with ear-tags and radio-collars, loaded on a 4WD vehicle in individual carrying crates

and released near wild herds. The GSLNP was established in 1992, but it could start the re-introduction and monitoring programs only from 1995. From 1992 to 1996, monitoring was carried out by volunteers. In 1995-1997, all relevant field information was collected by two of us (C.A. and G. D.) on behalf of the park agency. Since 1998, counting and monitoring programs have been established, also through the support of two E.U. Life projects on these chamois (1999-2001 and 2002-2005); 2 counts/year (July and October) were organised (block-count, Maruyama & Nakama, 1983).



Chamois on Gran Sasso with town of Isola Del Gran Sasso in background © Gino Damiani

Information on population dynamics and space use patterns of the herds was collected. Radio-tracking was used to locate tagged individuals, as well as other members of the same herd. Success was poor in the first year probably because the first group of released animals (2:5) were all coming from captivity, except one female, and two females and one male were very young (< than two years old). Only the wild born female survived until the next release, in 1993. The second group was released in 1993 (5:4), and that released in 1994 (4:6, with six wild animals) joined the others, forming three stable and viable herds (Artese, 1998). Since then, chamois have shown a steady growth rate of 23% per year (Mari & Lovari, 2006), occupying most of the suitable area, with a total of 10 herds (340 individuals), by 2008.

Major difficulties faced

- To obtain funding for a long-term monitoring plan.
- Difficulty of getting reproducers in fair numbers.

Major lessons learned

- We suggest to release no less than 30 individuals with a 1:1 or 1:2 sex ratio, in a chamois re-introduction. Releases should be concentrated as much as possible in time to minimize dispersal, over a period as short as possible (one or two years).
- Sub-adult individuals, especially males, will tend to disperse. Preference should be given to adult (>5 years old) males as reproducers, especially in the first releases.
- The presence of several mature (7-9 years old) females will tend to reduce the dispersion of younger chamois. A conservative measure for the “source” population would be to capture a majority of wild two or three years old

females, *i.e.* with no kid at heel, especially if the re-introduction is carried out in summer/autumn. If so, leaving orphans will be avoided and young females should have a long reproducing life in the new colony.

- A well organised captive-breeding program, based on an inter-agency studbook, is fundamental to support re-introductions, when wild reproducers are not easily available.
- After the removal from the “source” population, the immediate release of reproducers to the new area is advisable (acclimatizing enclosures are unnecessary or even to be avoided).
- A monitoring radio-tagging program, if properly carried out, will allow the collection of important data on movements, habitat selection and adaptation to the area of re-introduction.

Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

Reason(s) for success/failure:

- In 2008, the GSLNP population reached an estimated number of 340 head, with a growth rate of 23% per year.
- Colonization of the expected suitable area for chamois, with 10 viable herds.
- Restoration of the trophic chain in the Apennine ecosystems; restoration of an additional prey for predators, *i.e.* wolf, golden eagle and brown bear.

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