Montecristo 2010 Project

eradication of invasive plant and animal aliens and conservation of species/habitats in the Tuscan Archipelago, Italy

eradication of invasive alien species | management tools | preservation techniques

PROJECT DESCRIPTION

The ecosystems of the islands of Montecristo and Pianosa, protected natural sanctuaries located in the Tuscan Archipelago National Park, have been deeply modified by the presence of some invasive alien species introduced, voluntarily or accidentally, over the centuries by inhabitants and visitors.

The **MONTECRISTO** project aimed to eradicate the black rat and *ailanthus* from the island, two of the three invasive alien species that threatened the area's biodiversity. For the third alien species, a strain very close to the wild goat, the project did not foresee eradication, but its containment. This because of the historical and cultural value of this ancient animal population whose conservation constitutes one of the requirements for the award of the "European Diploma for protected areas" attributed to the Montecristo reserve in 1988. The wild goat, introduced in ancient times, is crucial for the renewal of any plant species that enters its diet.

On the island of Pianosa, however, the project envisaged the eradication of 4 invasive plant species spread on the island, the Hottentot-fig (*Carpobrotus edulis*), the Acacias, the Senecio and the Ailanthus (*Ailanthus altissima*), and the protection of the precious coastal junipers, invaded by the spreading of Aleppo pine *(Pinus halepensis)* a forest species introduced intentionally because its capacity of producing stable and resistant formations.

The island of Montecristo is a state natural reserve, included in the Tuscan Archipelago National Park, a site of Community Importance (SIC IT5160014) which has been designated a Special Area of Conservation and a Special Protection Area (SPA IT5160017).

The Island of Pianosa is characterized by low anthropogenic pressure, and a past as agricultural colony that has deeply changed its environment. It is also a SAC (IT5160013) and a SPA (IT5160016).

OBJECTIVES

The project had the aim to protect the original fauna and habitats from invasive alien species, i.e. plants and animals, which “exported” by man outside their natural range, have conquered the spaces of these islands at the expense of the native organisms. Alien species are considered by the international scientific community to be the second leading cause of biodiversity loss worldwide. Their negative effect on ecosystems is amplified in island contexts due to their isolation.

PROJECT PHASES

The MONTECRISTO project achieved its objectives through an articulated series of actions, starting from the preliminary ones aimed at eradicating the black rat by traps to assess its numerousness. In the initial stages, some **investigations to map the territory affected by the presence of *ailanthus*** were also carried out. Distribution maps were drawn up which highlighted the extension of the plant on an area of 183 hectares in Montecristo and 25 ha in Pianosa. The main actions were as follows:

- **eradication** of the black rat (*Rattus rattus*) on the island of Montecristo through the distribution, also by air, of rodenticide baits;
- **eradication** of Ailanthus on the island of Montecristo by means of different treatments, including some experimental one, such as the technique called "cut and brush" which consists in cutting the base of the stem and brushing the surface with a low persistence herbicide mixture; nebulization of a mixture based on diluted *Glyphosate* on the leaves of the smaller plants; "pierce and inject" with the deep injection of herbicides into the stem of the largest and most reproductive plants;
- **elimination** of exotic flora with recovery and spread of juniper bushes on the island of Pianosa. The activity involved various species including acacias, senecio, Hottentot-fig, and ailanthus;
- **protection** of the goat population of the island of Montecristo from potential risks deriving from the eradication of black rat. The interventions concerned the safety of a group of goats, transfer of some animals to the Biopark of Rome, monitoring of the consistency of the population and the implementation of an analysis aimed at verifying the genetic compatibility of *ex situ nuclei*;
- **spread and recovery of habitats** on the island of Montecristo through the collection of germplasm of native species (seeds, spores or parts of plants), and production and planting of seedlings in areas previously identified and protected with fences.

PROJECT RESULTS

The actions put in place had an immediate positive effect on the target species and habitats. Noteworthy are the methods for eliminating rats, unprecedented in the Italian, European and Mediterranean contexts both as regards the aerial distribution technique of the rodenticide and for the extension of the area subject to intervention, including the entire island. The operation was also demonstrative because, in particular on the island of Montecristo, it concerned the simultaneous eradication of two different species, the black rat and the ailanthus.

The main results achieved were:

- **complete eradication of the black rat**. Two years after the intervention, no traces of the animal have been found and Montecristo seemed to become the largest island in the Mediterranean without this rodent. The use of sophisticated equipment for real time monitoring of the baits distribution capillarity in the area has made it possible to optimize the time and quantity of substance used;
- **eradication of 5 alien species**: ailanthus, Hottentot-fig, acacias (*Acacia saligna, Acacia pycnantha*) and the climbing senecio;
- **recovery and protection of the coastal scrublands of junipers** of Pianosa through the cutting of *Pinus halepensis*, as well as some relicts of holm oaks;
- **10% increase in breeding pairs of yelkouan shearwater** in Montecristo as a consequence of the elimination of rats. Starting from the first year, **95%** of the chicks left the nest unharmed. Other bird species, including many migratory birds, have also benefited from the elimination of rats. This was the case of Scopoli's shearwater (*Calonectris diomedea*), whose presence on the island was ascertained during the project, and of the European nightjar (*Caprimulgus europaeus*). But also of a gecko species, the European leaf-toed gecko (*Euleptes europaea*);
- **protection of the goat population** from the risks deriving from the distribution of rodenticide. This action allowed a further and more rapid recovery of the goat population and at the same time, the marking of captured individuals, allowed also to evaluate more accurately their mortality and productivity;
- **about 250 hectares of protected habitats** of the island of Montecristo benefited from the elimination of the previously colonizing ailanthus. Among these, especially the mosaics formed by the small Mediterranean temporary ponds and sub-steppic grasslands. Positive effects were determined by the eradication of rats that preyed on seeds, and by the limitation of goats graizing, thanks to the erection of fences;
- on the island of Pianosa **about 10 hectares of Phoenician juniper** (*Juniperus phoenicea*) scrubland have been favored by the elimination of alien plants and numerous Aleppo pines. Finally, some dune formations have benefited from the eradication of the Hottentot-fig;
- development of the **eradication plan for the black rat**, **ailanthus** and the **invasive species of the island of Pianosa**;
- drafting of a **manual** on the methods used and results obtained in the experimental tests aimed at eradicating Ailanthus;
- some **27 hectares of land fenced** on the island of Montecristo to preserve the heather, the Mediterranean scrubland and some centuries-old holm oaks from the goat's grazing. **1.730 holm oaks and common myrtle** planted inside, to facilitate the reconstitution of the original plant formations.

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Acronym
Montecristo 2010

Number of reference
LIFE08 NAT/IT/000353

Reference Programme
LIFE

Beneficiary Coordinator
Corpo Forestale dello Stato

Contacts
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EU contribution
792.428,00

Call Year
2008

Start Year
2010

End Year
2014

Beneficiary headquarters

Via E. Bicocchi, 2
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Italy

Region
Toscana

Description

Isola di Montecristo e Pianosa, Arcipelago toscano