



Pianura Parmense Project

Actions for the bird species of EU interest in the Natura 2000 sites in the lowlands of Parma (Italy)



birdlife

forests

Habitat Directive

water habitats

improving biodiversity

renaturalisation

preservation tools
techniques

PROJECT DESCRIPTION

The lowlands of Parma have an important naturalistic value in the Po Valley thanks to the presence of important nesting sites for birdlife, intersections between the migratory routes represented by the main waterways such as the Po and Taro rivers, fountains and the persistence of valuable agricultural crops such as permanent pastures and alfalfa fields. However, the territory, while retaining good natural potential, presents several problems related to anthropization, such as the predominance of intensive agriculture, the running of the artificial water management network not consistent with conservation objectives, the spread of invasive species, as well as the urban expansion with related linear and non-linear infrastructures, that causes the reduction/ fragmentation of natural surfaces.

These characteristics can give rise to a series of naturalistic emergencies related to the presence of: the Italian spring goby in fountain waters; residual stations of very rare plants such as the four leaf clover (*Marsilea quadrifolia*); the red-footed falcon (*Falco tinnunculus*), nesting quiet exclusively here in the whole Italian territory; colonies of lesser kestrel (*Falco tinnunculus*), which finds here the northeast point of its nesting area in Italy; four heronries, where all the colonial *ardeidae* species present in Europe reproduce; and colonies of sand martin (*Riparia riparia*) which form one of the most numerous populations at national level.



The project carried out actions aimed at improving the conservation status of **13 target bird species** and increasing the habitats necessary for their survival, located within the belt of the province of Parma between the A1 motorway and the Po river, including **six sites of the Natura 2000 network**: SCI/ SPA IT 4020022 Basso Taro; SCI/ SPA IT 4020025 Parma Morta; SCI/ SPA IT 4020017 Aree delle risorgive di Viarolo, Bacini di Torrile, fascia golenale del Po; SPA IT 4020024 San Genesio; SPA IT4020019 Golena del Po presso Zibello; SPA IT 4020018 Prati e ripristini ambientali di Frescarolo e Samboseta, which occupy a total area of 580 km² and involve 13 municipalities.

OBJECTIVES

The objectives of the project were to:

1. improve the conservation status of the red-footed falcon, lesser kestrel, red-backed shrike and lesser grey shrike populations, by improving the ecological network and adopting specific management measures.
2. improve the conservation status of the present *ardeidae* populations and in particular that of the red heron, night heron, squacco heron, great egret, little egret, great bittern and little bittern through the improvement of the ecological network and



the adoption of specific management measures.

3. improve the conservation status of bird populations nesting in tunnels in sandy slopes, such as the common kingfisher, sand martin and the European bee-eater.
4. elaborate measures for the construction of an ecological network serving the species of community interest present on the entire territory of the lowlands of Parma.
5. implement specific interventions in favor of plant species of high conservation value: four leaf clover (of community interest) and summer snowflake present or recently extinct on the sites of the lowlands.
6. increase habitats useful for target species and other species of conservation interest (including the following ones of community interest: natural eutrophic lakes, hay meadows and riparian forests of willow and poplar).
7. raise awareness about the naturalistic value of the Natura 2000 Network sites and disseminate the results - also through the promotion of online courses and forums - to the stakeholders so that they become active part in the conservation of species and habitats.

PROJECT PHASES

The objectives of the project concerned the improvement of the conservation status both of the target species populations and of the *ardeidae* populations, through numerous actions:

- **Planning of the ecological network**

The project aimed to create an **ecological network** providing a support for the conservation of biodiversity present both within and between the protected areas, ensuring also the preservation of gene flows. Furthermore, this planning was considered as a support for decision making in administrative and land use issues, and it was also **incorporated into the large area planning tool (Territorial landscape coordination plan)**. Thus the planning of the network served, beyond the regulatory aspects (prohibitions, constraints, etc.), also to the realization of future interventions for biodiversity improvement and conservation in the lowlands of Parma.

- **Study of the optimal zoning of Natura 2000 sites**

Since the six involved Natura 2000 sites had a non-homogeneous distribution of the most valuable elements, their zoning was developed in order to optimize conservation and management actions such as: maintenance and improvement of the biodiversity level of the habitats and priority species of community interest; maintenance and/ or restoration of the biological balance underlying natural processes; reduction of the factors that can cause the loss or fragmentation of habitats within the site or in adjacent areas as well as the decline of rare or threatened species.

- **Acquisition of lands**

Almost all surfaces of the involved Natura 2000 sites were of private property or under concession to private individuals, causing complications in the implementation of environmental improvement interventions by the managing bodies. For this reason, the project made use of the possibility of acquiring around 12 hectares of land to carry out interventions aimed at maintaining the present habitats or creating new ones.

- **Production and use of seeds from species and ecotypes of herbaceous plants of traditional permanent pastures**

Permanent pastures are a habitat of community importance and, in particular in the Parma plain, they play an important role for the maintenance of animal species such as the red-footed falcon and the lesser kestrel and for the conservation of a high floristic diversity. The action allowed to experiment the use of permanent pasture grass seeds for the grassing of new surfaces, verifying its technical feasibility and economic costs. The activity was articulated in: a) identification of land plots intended for seed collection; analysis of the floristic composition and of the phytosociological characterization; b) collection of seeds and verification of the seed species as well as the quantities to be used for the restoration; c) restoration of the lawn areas of five plots, for a total area of over 5 ha.

- **Reintroduction of the four leaf clover and the summer snowflake**

The reintroduction of the two species has become necessary due to their poor conservation status and their strict isolation. To identify the best area for the intervention, a specific study was carried out - *Study for the optimized reintroduction or consolidation*



of rare or disappeared plant species in the six sites of community importance in the Parma plain -, which took into account ecological and anthropic variables.

- **Interventions to regulate access to the nesting sites of the common kingfisher, the European bee-eater and the sand martin**

The three species nest along river banks, in tunnels dugged in sandy slopes. In the SCI/ SPA IT 4020022 Basso Taro, in particular, these species have long been exposed to disturbance by visitors who entered the floodplain area with motor vehicles. The action therefore aimed to define the paths of the Natura 2000 site, prohibiting unauthorized access to the Lower Taro. It also aimed to agree with the concerned municipalities, owners, farmers and fishing associations, on the use and positioning of **three barriers** in order to limit access to only authorized motor vehicles, thus protecting the nesting places of the common kingfisher, the European bee-eater and the sand martin.

- **Interventions of wetland expansion and redevelopment**

The interventions concerned the SCI/ SPA IT 4020025 Parma Morta, where the main problem for several decades has been the lack of a perimeter buffer strip. This deficiency prevented the establishment of habitats typical of this type of environment (reed-beds, riparian woods, lowland woods or meadows) and exposed the water body to direct disturbance by agricultural activities and to progressive burial. The project made it possible to significantly increase the consistency of the riparian belt and carry out the following interventions to increase its naturalness:

- expansion of the wetland flooded in three areas;
 - creation of arboreal-shrub riparian belts;
 - grassing with seed mixtures from traditional permanent pastures and creation of tree and shrub spots;
 - creation of reed-beds and planting of elophytes (*Carex riparia*, *Iris pseudocorus*, *Typha angustifolia*, *Typha latifolia*);
 - reintroduction of the four leaf clover;
 - creation of a small oxbow with planted reed-bed;
 - erection of fences in defence against nutria.
- **Placing of artificial nests for red-footed falcon and lesser kestrel.**

Notably 60 artificial nests for red-footed falcon and 15 for lesser kestrel have been placed with the aim of increasing the number of suitable reproductive sites in areas already occupied by the two species and considered particularly suitable from an environmental point of view.

- **Naturalistic requalification of the Lorno canal**

Canals constitute one of the elements of the landscape with greater potential for the creation of an ecological network; therefore it was intended to demonstrate that hydraulic efficiency objectives can be achieved in the context of conservation objectives. The interventions, carried out thanks to the acquisition of a lateral band, an adjacent fountain and an agricultural land, were notably:

- enlargement of the canal section with the creation of an extended bank (upstream) and a side bank (downstream) for a total stretch of 800 m, to allow the planting of a reed bed;
- creation, downstream of the enlarged canal stretch, of a shading hedgerow of over 700 m length to reduce the growing of vegetation in the riverbed and therefore the frequency of maintenance interventions in the future;
- creation of five slower-flowing lateral expansions, to facilitate the settlement of habitats related to weak flowing water;
- reintroduction of the four leaf clover and the summer snowflake;
- fencing of the fountain and of part of the outflow with the aim of avoiding the impact of the nutria;
- creation, between the fountain and the Lorno, of a lawn with seeds of local ecotypes, a hedge and two spots of trees and shrubs.

- **Monitoring of the target species**

The monitoring of falcons and shrikes was done in the species' nesting periods in the whole study area. The colonies of sand martin and common kingfisher were searched along the rivers, oxbows, at the basins of restored quarries and inside quarries and oil mills. Hygrophilous forests and wetlands were controlled for the monitoring of the *ardeidae*. Detailed data on the status of the populations in the Parma area had been acquired for four years and in the meanwhile the methodologies used were improved, making them applicable and replicable in similar contexts. Together with the monitoring, also a marking and ringing program of the red-footed falcon, sand martin and lesser kestrel was carried out.



PROJECT RESULTS

Main project results compared to the foreseen objectives:

- Improvement of the conservation status of the populations of red-footed falcon, lesser kerstel, red-backed shrike and lesser grey shrike. The red-footed falcon has shown to appreciate the artificial nests, **occupying 60% of the nest boxes and increasing the Parma population of about 36%** in 2012. On the other hand the **lesser kerstel** population has been **more diffident about the use of the nest boxes** - occupying only one of them, giving birth to two pullets -, probably due to the abundance of suitable sites in the attics of the farmhouses. The **red-backed shrike** had been observed in reproduction during 2012, bringing 2 pullets to take their first flight, while the **lesser grey shrike** suffered a numerical collapse in 2010, due to unfavorable weather conditions, but has experienced a slight increase in the subsequent years.
- Improvement of the conservation status of the present *ardeidae* populations and notably of the purple heron, night heron, squacco heron, great egret, little egret, great bittern and little bittern through the improvement of the ecological network and the adoption of specific management measures. 986 breeding pairs of *ardeide* have been registered; in particular 147 couples for the night heron and 114 couples for the little egret. The health status of the latter two species has remained good, despite a slight drop due to the winter conditions in 2012. In order to allow an important increase in the little bittern population in the subsequent years, the species's habitat – a dense reed-bed (phragmites) - has been recreated and enlarged, mainly along the Lorno canal and in the *Parma Morta Regional Reserve*.
- Improvement of the conservation status of bird populations that nest in tunnels in sandy slopes: kingfisher, sand martin, and the European bee-eater. Thanks to the installation of 3 barriers in the *SCI/ SPA IT 4020022 Basso Taro*, aimed to regulate motor vehicle passages, the nesting places of the kingfisher and sand martin have been successfully protected, with direct positive effects also for the bee-eater. Monitoring showed that the **kingfisher population has remained almost constant**, founding a contraction in 2012 due to adverse winter weather conditions, and a numerical recovery in the summer-autumn period of the same year. The monitoring of sand martin showed the absence of colonies along the Taro and Po rivers, with almost all the couples (over 90%) nesting in extractive areas. Therefore, steps were taken to activate a **protocol between the Province of Parma and excavation firms** to ensure the respect of the species's nesting and, where possible, favor it with the creation of suitable slopes.
- Elaboration of **measures for the construction of an ecological network** to favor the species of community interest present on the entire territory of the Parma lowlands. The study about the ecological network, carried out within the project, initially involved an area of about 80.000 hectares between the Emilian Way and the Po River, and was subsequently expanded from the Po to the foot-hill area (132 thousands hectares), increasing by 40% the involved area. This made it possible to design the ecological network for the entire lowland area of the province of Parma without additional costs. The ecological network's planning methodology was based on the analysis of matrices referring to the entire territory, overcoming the perimeters of the protected areas, as well as on models of ecological nodes-corridors-matrices involving **75 animal species** (species that concern all taxonomic groups including invertebrates). Through this method, 504 interventions were proposed, sorted by priority, for the improvement of the ecological connectivity, and **actions** were defined that each administration should carry out to bring the ecological connectivity conditions back to those of the year of designation of most of the Natura 2000 sites in the Parma lowlands. In order to make binding and implement the indications provided by the the ecological network's study performed within the project, in the post-LIFE phase these indications were incorporated by the Provincial Council in the Provincial Territorial Coordination Plan (see the integrated version: "[The Ecological network of the Parma lowland](#)"), aimed at ensuring the maintenance of a good conservation status of the species and habitats of conservation interest present in the Parma lowlands and ensuring as well the maintenance and improvement of the general connectivity conditions between the ecological network's elements. Within the project, **Local Action Plans were also drawn up for each of the 13 target species**. These plans provide the necessary knowledge and envisage the actions required for the protection and conservation of the aforementioned species in the Parma lowlands. The **contents of the Action Plans**, instruments that are not mandatory and not provided for by the legislation, were **incorporated into Specific Conservation Measures of the involved Natura 2000 sites**, which is instead a mandatory instrument that managing bodies must have. Finally, as part of the project's after-LIFE activities, two models were created: an ecological **compensation model** of the impact on bird species of the new infrastructures, with particular reference to the LIFE target species, and an **environmental accounting model** capable of estimating the economic value of the ecosystemic services offered by the elements of the ecological network.
- Implementation of specific interventions in favor of plant species of high conservation value: four leaf clover (of community interest) and summer snowflake present or recently extinct in the lowland's sites. Using the Maxent method, 61 sites suitable for the reintroduction of the four leaf clover and 30 sites suitable for the reintroduction of the summer snowflake were identified. 4 populations of summer snowflake, each of 200 specimens, and 6 populations of four leaf clover, of not counted specimens, have been reintroduced. The **percentage of establishment of the summer snowflake was between 96% and 98%**, while the **four leaf clover proved to be more vulnerable** to persistent drought or prolonged submersion. Overall, some 1.500 specimens of summer snowflake and four leaf clover have been planted in the Natura



2000 sites.

- Increase of the habitats useful for target species and other species of conservation interest (including the following ones of community interest: natural eutrophic lakes, hay meadows and riparian forests of willow and poplar). Overall, the expansion works in the *Parma Morta wetland reserve* involved an area of 225 ha, with a doubling of publicly owned areas and the planting of 1.914 specimens of tree and shrub species. The expansion and improvement of the ecological quality of the **Lorno Canal** involved a total area of **1,5 hectares** and led to the planting of **1.361 specimens of tree and shrub species**, which allowed to observe the start of the **ecological succession that will lead to the formation of the expected habitats**. The creation of **5,6 ha of grassland** has contributed to the development of a trophic habitat (* 6510 lowland hay meadow) that serves the maintenance of the target species.
- Awareness raising about the naturalistic values of the Natura 2000 Network sites and dissemination of the project results - also through online courses and forums - to the stakeholders so that they become an active part in the conservation of species and habitats. The multiple dissemination activities carried out involved about **500 people** including citizens, experts and other local stakeholders. Particularly relevant was the discussion with public bodies and trade associations that took place in the occasion of 4 implemented participatory consultation forums (local Agenda21). These forums promoted a dialogue on the draft plan of the ecological network and allowed to elaborate a series of useful proposals for the development of an adequate habitat and species conservation strategy in the six Natura 2000 sites involved in the project.

At the end of the project "[The Parma lowland: flights in progress!](#)" document was realised, containing the project's results and its post-Life plan.



Acronym

Pianura Parmense

Number of reference

LIFE07 NAT/IT/000499

Reference Programme

[LIFE](#)

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EU contribution

572,450.00

Call Year

2007

Start Year

2009

End Year



2012

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Description

Parma