GUIDELINES EMAS AND BIODIVERSITY – POSITIVE EXAMPLE OF BIODIVERSITY MANAGEMENT

Company: Companhia das Lezírias SA, Portugal

Medium size company for silviculture and nature tourism. Founded in 1836. 94 employees

Aspects of biodiversity of special importance for the company

Companhia das Lezírias business is directly depending on biodiversity and the ecosystem services related to forest ecosystems. Our activities have a direct impact on biodiversity.

Since 2006, CL has been investing in a Forest Management System (FMS) that aims to increase the effectiveness of ecosystem services and consequently, the amount and quality of goods produced in a 110 km² area mostly included in Red Natura 2000. Despite this fact, knowledge about the habitats and resident species was scarce. The system includes three vectors: reinforcing productivity using modern Silviculture methods; deepening the knowledge we have about natural capital, and how it is impacted by agroforestry, and campaigns for protecting ecosystems; and the social well-being that job creation and knowledge brings to nature tourism, and how it makes visitors aware of the importance of nature conservation. The work guidelines established a reference for the principal taxa and set into motion alternative forms of management, thereby lessening how it is impacted. Actions include areas where cow pasturing was excluded, ecological corridors, setting up nesting-boxes, increasing the wild rabbit population, altering forest management for a couple of Bonelli 's eagles, and setting up an interpretation center, as well as publishing an atlas of local mammals. Near the Tagus River estuary, the most important portuguese wetland area and one of the ten most important in Europe, mainly thanks to migratory waterbirds, we install a 70 ha birdwatching area, with an interpretation center for wildfowl, historic and economic information on the Tagus estuary and The Great Lezíria of Vila Franca de Xira. We developed strategies for associating these conservation values with our traditional products as wine.

Concrete (measurable) aims regarding biodiversity

Main measures taken on behalf of the three vectors of the FMS are the following:

- Reduce the average annual mortality of Cork oak and Maritime pines (% of death trees);
- Increase the average density of cork oak forests and Maritime pines (% of death trees /ha);
- Increase specific abundance and richness of mammals and birds (Abundance / richness indexes);
- Increase the non-grazed area (ha and % of total hectare);

- Increase the extension of ecological corridors (km) and on complexity of vegetation structure;
- Increase the insectivorous birds' density as natural ally (number of nesting boxes occupied);
- Maintenance or increase of reproductive barn owls couples (number of nesting boxes occupied);
- Conservation of Mediterranean temporary pounds (present species);
- Increase the wild rabbit density population (Kilometric Index of Abundance);
- Maintenance of Bonelli eagle reproductive couple (couples number);
- Conservation of Thymus capitulatus (disturbed area);
- Variation on number of research projects studying CL's areas (projects number);
- Increase the number of visitors (percent variation).

Realized and planned measures

Some realized measures that will be repeated partially next years:

- 25.039 young Cork oaks metallic protections (2007-2016);
- Annually monitor Mammal and birds richness and abundance (2007-2016);
- Monitor specifically polecat and wildcat (2015);
- 21 km of streams and living hedges were fenced (2009-2016);
- 23.926 plants were planted inside ecological corridors (2009-2016);
- 300 nesting boxes to insectivorous birds were put in Cork oak (80% of success) and Maritime pine stands (20-60% of success);
- 7 nesting boxes to Barn owl were put in place;
- 14 Mediterranean temporary pounds were evaluated (2011);
- 60 cereal and water suppliers were built;
- Monitor wild rabbit twice a year;
- Disturbance plan to improve Thymus capitellatus habitat (33 ha/year);
- 14.495 visitors in 2015 (annual growth of 18% since 2006);

Results and experiences

The main problem reflected in different habitats and taxa was how to mitigate the effect of landscape homogenization and degradation of water courses while simultaneously allowing for a gradual increase in the distribution of species in different areas, and greater genetic contact between populations? The creation and preservation of ecological corridors, in other words, narrow strips of habitat that differ from the surrounding matrix allowing for the movement of animals between isolated bits of habitat. These corridors provide basic conditions for feeding, reproducing and seeking shelter, particularly important for carnivorous mammals which travel long distances and occupy vital areas that vary between 1 – 2 sq km for the forest polecat (Mustela putorius) to 10 sq km for the wildcat (Felis sylvestris). These 11 km stretch of watercourses resulting from torrential rainfall, and a 3 km stretch of watercourses from permanent rainfall by implementing fencing to keep cattle away from the watercourse bed and living hedges where there were no watercourses resulted in an overall improvement in mammal populations in the entire area when compared to the abundance obtained in 2009 and 2015, with a distinct evolution in the abundance of predators, indicating excellent ecosystem quality.

Some forest infestations and diseases that affect Atlantic pine and Cork oak stands area an important problem that we opted to combat promoting biological combat with insectivorous birds. Given the scarcity of natural cavities we introduced nesting boxes. The eight target species were (the Cream-colored Woodpecker, the Great Spotted Woodpecker, the Green Woodpecker, the Short-toed Tree creeper, the Eurasian Blue Tit, the Great Tit and the European Crested Tit). The nests can also be used by other species (e.g. the Eurasian Wren, the Black Redstart and the Spotless Starling). Between 2009 and 2016 a total of 300 nesting boxes made from cork or wood were implemented. Every year the nesting boxes and their bird populations are closely monitored throughout the

area with the aim of determining the populational tendency for each species. The percentage of nesting boxes occupation is bigger in those at cork oak stands (80%) and presents wide variation at Atlantic pine stands between 20 and 60%. This measure proved to be effective promoting a decrease in processionary moth nests in pine trees, as well as in defoliation on cork oaks.

To reverse the populational standing of Wild Rabbit (Oryctolagus cuniculus), one of the ecosystem's key species and an essential prey that is susceptible to several epizootic diseases, and is scarcely abundant in the general area we sought to maximize the Wild Rabbit population and its spatial distribution by internal translocation of animals from areas of high abundance to areas of low abundance, without resorting to bringing in genetic material foreign to the property. Feeding and watering points (60) were also erected, and hunting was suspended. The combined effects of translocating the Wild Rabbits to areas of low abundance, creating enclosed spaces for acclimatization and feeding throughout the area, backed by a no-hunting policy proved to be effective in increasing the Wild Rabbit population (Kilometric abundance index-KAI).

The Barn Owl (Tyto alba) is an excellent aid for biological agriculture and a sentinel that guards and evaluates exposure to, as well as the secondary effects of environmental contamination. The challenge lay in fostering conditions so that fledgling Barn Owls scattered throughout the Tagus Estuary could take shelter and reproduce. Seven nesting boxes were placed throughout the property. The average of fledgling flyers between 2008 and 2014 is increasing, reaching 4,6 in 2014. Implementing nesting boxes for the Tyto Alba offered excellent conditions for nesting fledglings scattered throughout the Tagus Estuary, helping to increase and consolidate the populational effects on this species.

The discovery of a nest of a Bonelli's Eagle (Hieraaetus fasciatus) in a clearcutting pine forest belonging to CL halted clearcutting in the area. Because Bonelli had built a second nest, we opted to clear only the pines that had wilted and dried up, setting aside the idea to clear cut any trees. During the nesting months (December through June) no forest operations take place in the pine forest. Furthermore, an agreement with the local hunting association was struck so that hunting game does not occur during this time. In consequence, between 2009 and 2016, we were able to confirm that nesting did not take place during only two of these years. During 2016, we found another couple in a different Atlantic pine stands also with two nests and that wasn't there in 2008.

The scarcity of information about the occurring habitats justify that in 2011 we proceeded to evaluate the diversity of vascular plants. In regard to priority habitats, we have now a better description of the situation. The stretch of Atlantic decalcified fixed dunes (2150pt1) and temporary Mediterranean ponds (3170) sampled were the ones that best complied with the floristic list in RN2000. It deserves to be mentioned the presence of Elatine brochonii, Eryngium galioides and Ruscus aculeatus.

Further information

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