Health surveillance for an Osprey (Pandion haliaetus) reintroduction project in south of Portugal

MELD P -12, MARAÇAO R -8, MARTINS L -7, PALMA L -7

Yvisualization - Lisboa, Portugal, Portugal - Department of Environmental Medicine, School of Science and Technology, IST/FE, University of Aveiro, Portugal - CIBIO, Research Center in Biodiversity and Genetic Resources, University of Porto, Portugal - E-mail: svetunatur@global.com

INTRODUCTION

Banding Ospreys (Pandion haliaetus) (Fig. 1) were common along the Portuguese coast until the beginning of the 20th century. In 1978 only two pairs nested on the coast of southwest Portugal and in 2003 the last remaining individual disappeared [1]. A five year reintroduction project was set up in 2013 at the Alqueva dam in the Algarve region (Fig. 2 & 3). It was implemented by the CIBIO, in partnership with ERSE, the Portuguese Electric Utility Company and with organisations in the donor countries of Finland and Sweden. This project aims to contribute to the improvement of the survival, feeding and breeding conditions of the Osprey, and to establish a breeding population in the Alqueva reservoir, and its ultimate goal to recover the historic coast breeding territories [2].

It is well known that wildlife diseases can represent a serious conservation threat for free-living wild and domesticated species, selective diseases are one of the main causes of global species extinctions [3]. Trade globalization of animal products and domestic and wild animals is recognized by the Office International des Epizootiques (OIE) to pose risks on spreading infectious diseases and veterinary importance, which led to consequent regulation regarding international trade. Health surveillance to evaluate the sanitary status of animal populations reveal to be very important to the success of both in situ and ex situ conservation programs. Of endangered species with a potential risk for disease transmission has become a major topic of wildlife reintroductions and conservation translocations [4,5,6].

For this purpose, different stakeholders contribute to the translocation plan, a health assessment was in advance assessed with a Conservation Medicine approach [4,5,6,7]. The health survey protocol consisting on a sample collection and pathological testing of biological material from Osprey to detect the presence of pathogenic agents that might affect the sympatric populations at the area of the reintroduction project in the Southeast of Portugal.

METHODS

Evaluate the sanitary status of translocated ospreys, to assure success to the reintegration project by ensuring the presence of a significant number of healthy individuals during the hatching until the dispersion. On the other hand, minimize the risks of potentially infected agent to be also translocated, avoiding diseases outbreaks.

TRANSLATION PLAN PROCEDURES

Legal and Health certification requirements

The main requests from Conservation (ICN) and Veterinarian (DGAV) Portuguese authorities were:

- Official agreements of the donor countries’ authorities on the export of nestlings;
- CITES certificate;
- Official veterinarian certificates (reports on the occurrence of diseases in the Origin region/countries and clinical health certification before travel, Clinical health examination upon arrival and before release).

Nestling collecting and transportation

Osprey nestlings are taken and marked with metal and colored rings at about 4-6 weeks of age from nests or nest sites (one per active nest with siblings), at the first half of July, from the Finnish and Swedish populations (Fig. 4) with the collaboration of national expert scientists and local volunteers. They are temporarily kept in appropriate accommodation until shipment, while the nest site is carefully monitored by local expert veterinarians to assure they do not show signs or symptoms of infectious diseases. Up to 6 nestlings from each country are transported in a total of 10-12 are translocated each year, sparing energy costs and the stress of individuals. From the first four years of the project (2011-2014), a total number of 44 nestlings were translocated. Our main concern at the transportation was the welfare of the nestlings. To minimize stress, they are put individually or in two in appropriate plastic boxes used for transportation, for a total of ten bottles. Shorter, after they are taken by direct flights from Helsinki and Stockholm to Lisbon. Flights are scheduled to arrive at Lisbon’s airport in the late afternoon in order that the nestlings are taken by car to the referring facility after sunset to prevent heat stress from the high summer daytime temperatures. Prior to air transportation, prophylactic antibiotic (5e. Vt c) therapy was administrated to avoid infection.

Upon arrival at the Lisbon airport (Fig. 5), a second clinical examination (Fig. 6) and blood sampling (Fig. 7) is carried out by the project veterinarians to characterize health status and establish physiological parameters, age and body condition. After the birds are monitored for 3-4 days (Fig. 8), they are distributed to new colonies and reservoirs (Fig. 9). In this case, the bird (Fig. 14) is taken to the Veterinary Hospital of Evora’s University (UVH) for supplementary diagnostic test (blood, endoscopic, laboratory tests, etc.) (Fig. 15) and emergency treatment. If prolonged treatment and care are needed the bird is transferred to a rehabilitation center. Blood samples taken during clinical examination are used for molecular sex determination; hematology screening, complete hemogram and blood biochemistry with emphasis as well as calcium and phosphorus testing (Ca-P imbalance) (Table 1 & 2). Feaces or cloacal swabs are analyzed for pathological bacteria (e.g. Salmonella) and NAQ, and endocontamination. So far, all samples were negative for NAQ and PD or other pathogenic agents. However, a trematode was found in one individual (low parasitic burden) and in another one a yeast was isolated from a oral mucosa lesion.

Clinical care

One bird showed a behavioural disorder (feather-plucking). Two birds suffered accidental rupture of the long digital extensor tendon and consequently their intestinal joint luxation (Fig. 16). In the latter case, three other birds showed secondary osteophytosis with fragil leaves (tissue-like deformations) (congenital or acquired) with erosion (n=1), bursa (n=1) and fibrotic fructose (n=1) (Fig. 15). The five birds were treated with antibiotics and the bird in question died due to clinical complications; other three birds were treated with anti-inflammatory, Ca-P imbalance with arsenic high phosphorus values. Calcium and Sodium supplement was administered to the birds at the same time reservoir fish nutritional composition was being increased. In total, 10 ospreys were released, all the others were not released. Meanwhile fish liver has been provided during the indoor period. Anticoagulation laboratory tests for avian parathormone and serum Vit D3 were performed, and the results were normal. Three other birds were post-release, two by bones (Rhipicura) in 2011 and a third by an Eagle Owl (Bubo bubo) in 2012. Post release monitoring confirmed that 36 Ospreys made the dispersion successfully at the present time (Fig. 16, 17 & 18).

CONCLUSIONS

The translocation plan has contributed to minimize the risks of spreading pathogenic agents. However, we had to make some readjustments during the project, since we have faced some challenges, with 10 clinical cases (involving 9 out of 44 nestlings) including birds diagnosed with nutritional deficiencies (secondary osteoarthritis and weight loss), traumatic lesions (fractures, luxations, tendon ruptures) and behavioral disorder (feather-plucking). Despite these issues 40 Ospreys have been successfully released into the wild through hatching, and 36 have migrated. The first birds returned to the hatching area in April 2015 and the confirmation of a breeding cycle at the southwest coast (Fig. 18), offering encouragement that the project will succeed in its aims.

<table>
<thead>
<tr>
<th>Table 1 – Clinical diagnosis of Ospreys in 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Calcium and Phosphorus</td>
</tr>
<tr>
<td>Calcium and Sodium</td>
</tr>
<tr>
<td>Anticoagulation laboratory tests</td>
</tr>
<tr>
<td>Birds</td>
</tr>
</tbody>
</table>