

The Osprey *Pandion haliaetus* in the Cape Verde Islands: Distribution, Population Trends and Conservation problems

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SUMMARY

The Osprey population of the Cape Verde Islands has been estimated since the 1960's at about 50 pairs, hence the most important in Macronesia. However, this was only based on incidental observation. In 1998, we started a systematic survey of Ospreys in the archipelago in order to investigate the present situation, recent demographic trends and conservation status. A comprehensive survey of breeding pairs and nests as well as of abandoned historic nesting sites is currently ongoing. Population trends have been checked on the basis of observed abandoned nest sites and information on former breeding sites obtained from published data, personal communications and enquiries among local residents. Incidental data on breeding biology, success and failure are being collected, along with basic ecological information on breeding habitats, diet and preferred foraging areas. Human impacts were identified and evaluated in terms of their potential direct or indirect effect upon breeding. An important loss of eggs and nestlings linked with widespread human depredation is supposed to take place in the more accessible breeding sites. Increasing touristic activities may also be a disturbing factor in some areas. The number of abandoned territories and nests in the southern margins of the distribution range and in the more accessible locations of the northeastern islands seems to be an indication of a general decline of the population.

INTRODUCTION

The historical presence of resident populations of Ospreys *Pandion haliaetus* is known from all the island groups of Macronesia with the exception of the Azores (Naurois, 1987; González *et al.* 1992; Palma, in press). As in the Mediterranean and along the Portuguese coast, in Macaronesia breeding Ospreys are exclusively marine dwelling birds. The species is long absent from the Madeira archipelago, where toponymics recalling traditional breeding sites in the coasts of Madeira and Porto Santo are now the only trace of its former existence. Ospreys also heavily declined in the Canaries and only a small remnant of their former numbers survive.

In the Cape Verde islands Ospreys were reputedly common and even abundant at least during the last century and that was probably still the case during the first half of the present century,

although references are scarce and diffuse (cf. Naurois, 1987). The latter provided a detailed report on the species' occurrence in the islands but, as he admitted himself, his observations were incomplete and mainly resulted from general ornithological work in the archipelago rather than from a specific study. In particular, his assessment of the species situation in the islands with a more rugged topography is only approximate due to the obvious logistic difficulties encountered. Therefore, the estimate of 45-60 pairs for the 1960's has to be cautiously accepted. Nevertheless, his work is of value in terms of the general information about the Osprey population in the Cape Verdes and an important reference to evaluate population trends since the 1960's.

Naurois' estimate of c. 50 pairs is maintained by Hazevoet (1995) for the 1988-1993 period and a slightly larger figure of 55-65 pairs has recently been advanced by Dennis and Hille (in press) for the years 1996-97. However, in both cases, no systematic survey was undertaken and hence these numbers are also to be taken with precaution. Poole (1989) and Dennis & Hille (in press) stressed the importance of further investigations on the population.

The aims of the current research were: 1) to characterise the present situation and the conservation status of the species in the Cape Verde islands and 2) to provide basic management measures for the conservation of the population. To achieve these aims we intended:

- a) to make a complete census of the population and map nests or breeding locations, and to characterise the breeding habitat;
- b) to check breeding success, nestling mortality and productivity;
- c) to evaluate population trends during the last three decades, interactions between Osprey and man and associated conservation problems;
- d) to study the genetic distance between this and other populations of the Western Palearctic;
- e) to provide conservation and land management indications.

Information supplied here is preliminary and reports only on the results of the partial survey carried out in 1998 and on the discussion of population trends and general conservation issues. References and stretches of coast that remained unchecked during 1998 will be visited the following breeding season. Known breeding sites will be monitored to check for breeding success.

METHODS

For the assessment of the size, distribution and trends of the breeding population, an extensive survey of territorial pairs and nest sites was carried out. As a starting point we used all previous information available (Naurois, 1964, 1969 and 1987; Hazevoet & Haafkens, 1989; Hazevoet, 1995) as well as unpublished data provided by several observers (C. J. Hazevoet, S. Hille, N. Onofre, pers. comm.). Additionally, we checked all 1:25 000 maps of the archipelago for toponymic references. The Osprey has a distinctive popular name in Portuguese - *guincho* - which remains widespread in toponymics, not only along the coasts of Portugal but also along the coastal areas of Madeira, the Canaries and the Cape Verdes, probably spread by the Portuguese along their navigation routes during the 15th century. Fishermen and peasants were questioned about the current and the past occurrence of breeding "guinchos" and the existence of occupied or deserted nests.

All previous information on breeding sites, both along the coast as well as inland, were investigated for their occupancy status. The search was, however, not restricted to these locations, being carried out wherever possible all along the coastline and neighbouring areas up to several kilometres inland on the basis of suitable geographic and topographic features and/or tranquillity, according to a search image based on literature and direct observation. The mountainous centres of some islands were searched only if the presence of the species was suspected.

From December 1997 to August 1998 fieldwork was carried out by motorcycle and on foot, with the aid of 10x50 binoculars and a 32x80 telescope. Parts of the coast unsuited for observation from inland will be surveyed by boat in 1999.

The survey coverage level (SCL) of each island was assessed by first dividing its coastline into 5 categories: 0 - not searched; 1 - searched but unsuited for observation from inland; 2 - not fully searched (i.e. pairs and nests possibly overlooked); 3 - satisfactorily searched (possibly undetected

nests but not undetected pairs) and 4 - fully searched (every pair or nest detected). Each category was then weighed by multiplying it by the corresponding number of UTM 1x1 km units of the coastline. Finally SCL was calculated by dividing the weighed total by the total number of UTM units. Values range between 0 and 4.

Actual or potential anthropic threats were evaluated on the basis of observed or implied human presence and activity near occupied and unoccupied nests, and residents were asked about interactions between man and Osprey. The degree of public awareness about the presence of each pair or nest was subjectively assessed. Whenever possible, escape distance to the observer was recorded as a measure of response to human presence.

To evaluate the degree of exposure to human impact, nests were categorised by their relative vulnerability in terms of ease of access without climbing equipment. Categories of relative accessibility are: high – very easily accessed by motorcycle or normal walk (e.g. ground nests); moderate – accessible on foot or by boat and easily climbed without equipment; low – accessible on foot or by boat involving difficult/dangerous approach and access; and inaccessible - with no access without sophisticated climbing equipment.

RESULTS AND DISCUSSION

Area surveyed

In 1998, during 98 days of fieldwork, 9 of the 10 islands of the archipelago were surveyed. Among these, 5 belong to the northern Barlavento (windward) group – Santo Antão, São Nicolau, São Vicente, Sal and Boavista – and the remaining 4 to the southern Sotavento (leeward) group – Maio, Santiago, Fogo e Brava. Furthermore, the islet of Raso was visited by other ornithologists (N. Ratcliffe, C. J. Hazevoet and L. Monteiro) in February 1998 (C. J. Hazevoet, pers. comm.).

The island of Santa Luzia and the islet of Branco (Barlavento), and the islets of Rombos (Sotavento) have not been surveyed so far. Santo Antão and São Nicolau were also only partially surveyed.

Table 1 shows the survey effort and coverage (SCL) undertaken in 1998, and the ratio between checked and unchecked references during that phase. About c. 70% of the area was surveyed corresponding to an average SCL of the islands of 57.5%.

Table 1. Osprey population survey effort in 1998 (* visited by Hazevoet and others).

<i>ISLANDS ISLETS</i>	<i>No. of field days</i>	<i>SCL (%)</i>	<i>Toponymics checked</i>	<i>Toponymics unchecked</i>	<i>Other ref's checked</i>	<i>Other ref's unchecked</i>
Sto. Antão	8	40	1	1	2	2
S. Vicente	16	77.5	3	0	8	0
Sta. Luzia	0	0	0	0	0	2
Branco	0	0	0	0	0	2
Raso	*	100	0	0	0	4
S. Nicolau	6	25	1	2	2	2
Sal	9	100	2	0	7	0
Boavista	11	95	3	0	11	4
Maio	4	97.5	0	0	4	0
Santiago	24	77.5	0	2	6	2
Fogo	11	72.5	6	0	4	0
Brava	9	70	0	0	1	0
Rombos	0	0	0	0	0	2
Total/Mean	98	57.5	16	5	45	20

Reference checking

In the next table we present the results of checking for the Osprey's current presence in locations with references to its former occurrence (last 3 decades), either nests or pairs observed, obtained from publications, toponymics and personal communications.

Table 2. Results of checking Osprey reference sites in surveyed islands (+ = positive results, - = negative results).

ISLANDS	Nests		Observ.		Total	
	+	-	+	-	+	-
Sto. Antão		1	2		2	1
S. Vicente	4		3		7	0
S. Nicolau		1	1		1	1
Sal	2	5		1	2	6
Boavista	1	6	1		2	6
Maio	1			2	1	2
Santiago		1	2	3	2	4
Fogo		4		1		5
Brava				1		1
Total	8	18	9	8	17	26

The number of reference sites where the present occurrence of Ospreys was confirmed (17) are clearly less than those with negative result (26). This can be viewed as a first indication that important changes in the location or the number of pairs have occurred recently.

Nest census and occupancy

During the 1998 field work, 38 nests were found of which 19 were occupied, 12 unoccupied (unattended) and 8 abandoned (decaying), plus one occupied nest found in Raso by Ratcliffe, Hazevoet and Monteiro. Unoccupied nests were probably alternative nests in most cases.

Taking into consideration only the islands and islets thoroughly surveyed, the percentage of abandoned nests is quite high (20.5%). These are located in the eastern and Sotavento islands and indicate at least serious disturbance or, as in the cases of Fogo and Sal, a clear decline. In the case of unoccupied nests, however, they may be alternative nests of extant pairs in many cases. It must be stressed that the rates of unoccupancy are particularly high in the eastern islands – Sal and Boavista - where nests are often quite accessible, hence vulnerable, to disturbance and human depredation. Moreover, these islands also yielded several deserted territories with abandoned nests.

Table 3. Nest census and occupancy (* At least 1 nest must exist but could not be located)

ISLANDS ISLETS	No. nests observed	Occupied	Unoccupied	Abandoned	Territories w/ aband. nests
São Vicente	7	7	0	0	0
Raso	1	1	0	0	0
Sal	7	2	3	2	2
Boavista	17	7	7	3	0-2
Maio	0	0*	0	0	?
Santiago	4	2	2	0	?
Fogo	3	0	0	3	3
Brava	0	0	0	0	?
Total	39	19	12	8	

Based on the number of pairs observed (with or without nest), we estimate 32-39 pairs of Osprey in the part of the country already surveyed (c. 70%). We compared this estimate with the one made by Naurois (1987) in the 1960's to assess the population trend of the species during the last 3 decades in those islands and islets sufficiently studied (Table 4).

We believe that numbers in São Vicente and Boavista must have remained stable though present estimates are higher than Naurois'. In Boavista the difference is slight whereas in São Vicente the lower numbers for the 1960's may be due to underestimating by Naurois because of the rugged nature of the island. Conversely, it is not impossible that some increase may have occurred. This is the only island where local people do not refer to the traditional human consumption of eggs and nestlings. An increase may also have occurred in Raso.

In all other already well surveyed islands there was a clear decrease in the number of pairs, both in Sal and all islands of the Sotavento, especially in Fogo and Brava where the species vanished.

Table 4. Population sizes and trends of the Osprey in the Cape Verde islands (*Rough estimates according to Naurois because of logistic difficulties due to the rugged topography of the islands)

<i>ISLANDS ISLETS</i>	<i>Naurois' estimate</i>	<i>Current estimate</i>	<i>Trend</i>	<i>Approximate % change</i>
Santo Antão	8-11 *	> 6		
São Vicente	3-6	7-9	↑↑ (?)	+ 44
Santa Luzia	3-4			
Branco	3-4			
Raso	1-2	3	↑↑	+ 62
São Nicolau	5-8 *	> 3		
Sal	6-8	2-3	↓↓	- 64
Boavista	5-8	7-9	↔ (?)	
Maio	2-3	1	↓↓	- 60
Santiago	4-6 *	2-4?	↓↓	- 40
Fogo	2-5 *	0?	↓↓	- 100?
Brava	3-5	0?	↓↓	- 100?
Rombos	1?			
Total	45-60	31-38		

As we can see in the table above, with the exception of Sal, population decrease becomes stronger as one approaches the southwest end of the archipelago. For reasons not yet established though probably linked with ecological factors such as food or suitable nest-site availability, the abundance of Ospreys has always been much lower in the Sotavento than in the Barlavento islands (Naurois, 1987). Therefore, we can speculate that the Sotavento constitutes a demographic periphery of the population. If that is the case, the species can hold itself in the less favourable areas of the Sotavento only by dispersal from the Barlavento.

Thus, if a significant decrease of productivity occurs in the Barlavento population, an insufficient number of emigrants reach the Sotavento to compensate for mortality and low productivity. This can eventually cause the decline and extinction of the species in the sub-region. Hence, the negative trend verified in the southern islands may be rather a reflection of a general decline of the species in the archipelago than a local or regional phenomenon. This may be due to the overharvesting of eggs and nestlings by humans (cf. Naurois, 1964).

The Osprey decline in Sal may also reflect the general trend of the population, but this island is located among others with stable Osprey nuclei so local human impacts are more likely to be an explanation. In fact, this is the island where the intensification of human activities seems to have had a stronger detrimental effect upon the species. This can both be due to human depredation and

disturbance by tourist activities. The small size and sloping topography of the island can explain its vulnerability.

We anticipate that the spreading of tourism in the other eastern “flat” islands – Boavista and Maio – will with time cause a similar situation, of which the recent retreat of several nesting sites to the hinterland of Boavista seems to be a first indication. Considering its numeric importance and geographic position, the decline and possible loss of the Boavista population would be especially serious to the whole population of the archipelago and to the southern islands’ sub-populations in particular.

The response of Ospreys to the probable increase of stress from human impacts is clearly shown in the relationship between the vulnerability of nests and their present occupancy. All but one of the highly accessible nests (namely ground nests) were inactive; this happens in Boavista and the only exception is on the island of São Vicente, so far a stronghold of the species. Most ground nests in flat areas referred to in the literature have also disappeared. Of the moderately accessible nests (Sal and Boavista, $n=16$), 63% were inactive or abandoned. Thus, retreat has begun first in the most vulnerable sites and is gradually affecting safer locations. In the end, even inaccessible locations are deserted as has happened in Fogo, where all the (decaying) nests found are of this type.

CONCLUSIONS

Considering the present estimate of 31-38 pairs of Ospreys in the 70% of the islands already surveyed it seems reasonable to accept that at least a total of 44 pairs may exist. From another perspective, if the part of Santo Antão already studied (40%) is representative for the rest, then the island can hold up to *c.* 15 pairs. The same exercise for São Nicolau (25% surveyed) would give *c.* 12 pairs in the island. For comparison, the figures given by Naurois (1987) for these islands are 8-11 and 5-8 respectively but this author stressed the uncertainty of his estimate. The anticipation of 18 pairs more than the number censused so far in both islands (9 pairs) seems reasonable for there are no reasons to suspect a decline in these islands. Thus, the total population in the archipelago may roughly rise up to *c.* 60 pairs.

Because Naurois’ observations were made before the strong decrease that occurred in the islands of the Sotavento and Sal, the actual Osprey population in the 1960’s must have been significantly larger than his upper estimate (60 pairs). The decrease verified probably reflects the long-term effect of the traditional use of eggs and nestlings for food by man. Also the increase of disturbance caused by a growing number of urban people and four-wheel-drive cars near the nests is liable to cause desertion, especially in vulnerable sites near the coastline in the eastern islands where tourism is gradually encroaching. Both factors lower productivity and force the birds to retreat from the most vulnerable yet probably favoured breeding locations, this in turn further lowering productivity, and hence being susceptible of implicating a wider retraction of the range and loss of pairs. The situation in the islands of Santiago, Maio and Sal, and also Boavista to some extent, seems precarious. In particular, Boavista still is a stronghold of the species and losses due to unplanned tourism would be disastrous to the whole population.

Notwithstanding, the Osprey population of the Cape Verdes is still by far the most important in Macaronesia and its fate may determine the future of the species in the whole region. The Osprey is quite tolerant of moderate human presence and indeed very tolerant in the Cape Verdes due to the fact that the adults are not persecuted. Technically its recovery and survival in the islands should not be a difficult task provided education of rural populations and coastal tourist management is carried out within time. For tourism, the Osprey is of undoubtful value because of its attractiveness and liveliness and for the environmental quality of the islands it is one of the most faithful wardens.

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