

Falco Eleonoraea in Morocco

Mogador

Falco...

Eleonora's Falcon *Falco eleonora* a colonial, diurnal raptor whose distribution ranges from the Mediterranean region to the eastern coast of Morocco and the Canary Islands, where it has the westernmost and southernmost breeding colonies. The specie its breeding period adapted to coincide with the postnuptial migration of small passerines.

Statut

Class B - African Convention on Conservation and Natural Resources (1968).

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973).

Annex I European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).

Falco...Morocco

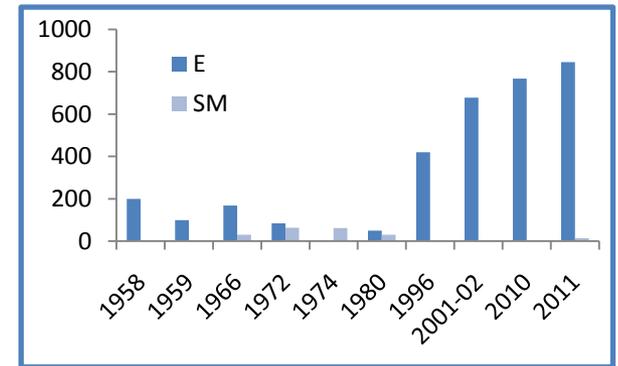


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Effectifs and distribution

The 1996 population was approximately 100 breeding pairs larger than the 1970-1980 population. At SM the populations had increased by 30 breeding pairs (35%). No change was found for all sites in Essaouira Archipel, but with limiting availability of space, a considerable increase would hardly be expected. The population trend was positive over the last 40 years, but more substantial from late 1996s onwards.



Programs FaEleo in Morocco

Meeting of working group FaEleo : By the definition of a national action plan for conservation

- estimate the number of breeding birds in Morocco
- define the migration pattern of the Falcon
- determine the relative importance of each site
- determine the food resources of both site



thème FaEleo



Reproductive success

The clutch began during the first week of July for two years. The peak hatching occurred during the last week of July in 2010 and 2011.

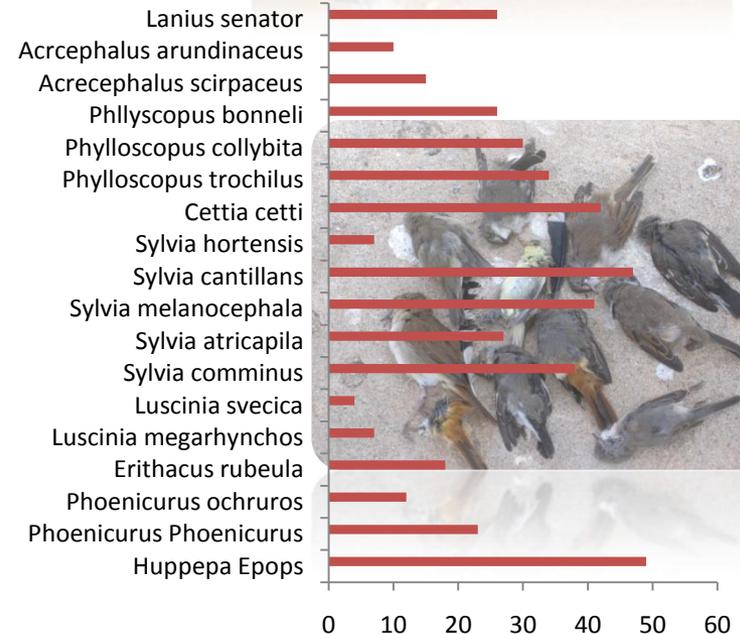
The clutch size varies from 1 to 5 eggs, the modal size is 3 eggs. A comparison of the distribution of clutch size between the two years showed no significant difference ($\chi^2 = 7.24$, $P = 0.29$).

The maximum reproductive success chicks per pair is 1.25 in 2010, 2 in 2011. There were no significant differences between the reproductive success for two years ($H_{1,723}=0.65$, $P = 0.72$).



Falco Elonoreae vs Passerines migrants

The first analysis provided a better understanding of the influence of environmental factors on the population dynamics of Eleonora's Falcon particularly in relation to their migratory behavior. Indeed, the results showed a correlation between the intensity of migration of passerines much fat and survival of juveniles. It has been estimated at about one and a half million migrating passerines were consumed by the colony of Falcon in time of passerines and feeding of young. This aspect is potentially important to better integrate this dimension in the design and support programs to monitor the population on the island of Mogador.



Factors determinant the reproductive success

The effect of factors specific to the colony and environmental variables on reproductive success was tested by generalized linear models (GLM).

The general model of our initial analysis is the following formula:
$$SR = \beta_0 + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 + \dots + \beta_n V_n$$
Where SR is the reproductive success, β_0 is the intercept, and β_1 to β_n are the estimators of the different variables V_i .

Selecting the best model is made from the rank of the "Akaike Information Criterion" (AIC) of each model and the models used are those whose difference with the AIC the best model is less than 2 (Burnham & Anderson, 2002).

Models	N	AICc	WAICc
Effectif	1	-5,27	0,41
specific composition+effectif	2	-4,83	0,328
phenology+effectif	2	-3,21	0,146
specific composition+phenology+effectif	2	-2,72	0,114
phenology	1	19,67	0,000001
specific composition	1	13,43	0,00003
phenology+specific composition	2	15,47	0,00001

There is a likeness of reproductive success for the colonies of the two years of study ($H_{1, 723} = 0.65$, $P = 0.72$). The ratio between the number of colonies and the number of variable is 27.75. The average model is used and only the variable « Effectif" is used.

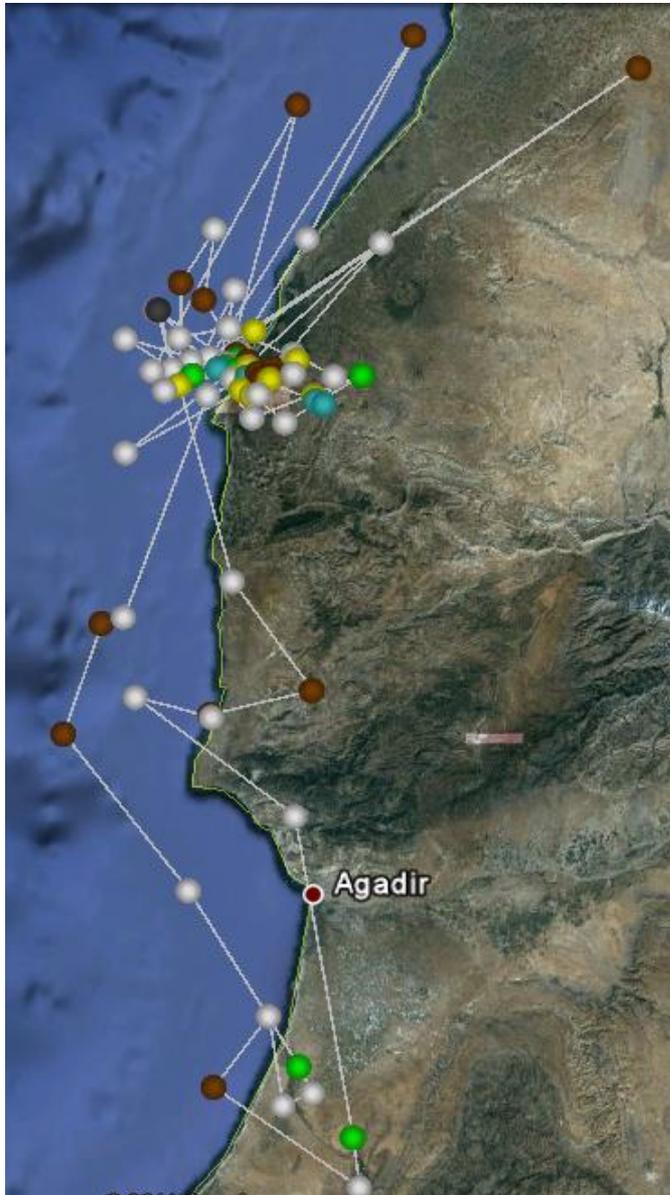


Migration ROUTES



Two Falcons adults (JACKIE and HAMID) were caught by nets and equipped by two satellite transmitters 21 september 2011

AFTER 17 days



Reliable locations (max error 1 km) are only those in green or blue. Both individuals visit often the inland (also 20 km from Essaouira, to the East), and JACKIE made a long trip (200 km) until a wetland South of Agadir (30.024006 / -9.646376)!

Maximum distance in the open sea is around 10 km.

CONSERVATION ACTIONS FOR SMALL ISLANDS OF THE MEDITERRANEAN (more details, see monography Falco Eleonora)

Management actions

- Problem the invasion of domestic carnivores islands with colonies of Falco
- To promote pilot projects for developing sustainable tourism in coastal habitats most sensitive;
- Ensure, if necessary, a guard breeding colonies to avoid all the problems and / or vandalism
- Define the access areas to prohibit July 1st on the 1st November at nesting sites
- Ensure protection of habitat in wintering areas and along migration routes of Falco
- Promote the exchange of information and experiences on monitoring and management of nesting sites between experts and conservation organizations
- Sensibilisation the public to need to protect the Falco and its habitats.



Search

- Estimate the total breeding population of Eleonora's Falcon through the establishment of a protocol standard census
- Annual monitoring of breeding success
- Monitor human activities and uses on islands with colonies of Falco
- Monitor the socio-economic development in the vicinity of colonies of Falco
- Research on the impact of predators;
- Identify routes and migration patterns;
- Locate the wintering areas, define the ecological requirements and identify threats in these areas.
- Creation of a management guide requires the prior knowledge about diet, habitat use by the species and current management practices. A guide to the Falco intended to recommend management measures favorable to the species on two sites in Morocco



Falco 2012-2013

Fisrt workshop Essaouira : 7-8 june 2012 : Fête des Faucons

Study by Camera (5) : Behaviour Falco : Photography Falco, Time,: Cooperation Alicante, Iles Canary, MWA, PIM

Ringng juveniles (color Ring)

Falco 2013-2014

Data Loger : New study (Data Position, Altitude ...), more frequency than satellite tracking...
30.000 Euros!

Falco Tunisia.....

Other Programm Mogador

Grand Cormoran marocain *Phalacrocorax carbo maroccanus*



Merci



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