

THE USE OF STABLE ISOTOPES IN THE STUDY OF THE AVIFAUNA OF THE GALITE ARCHIPELAGO IN TUNISIA

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I-Introduction

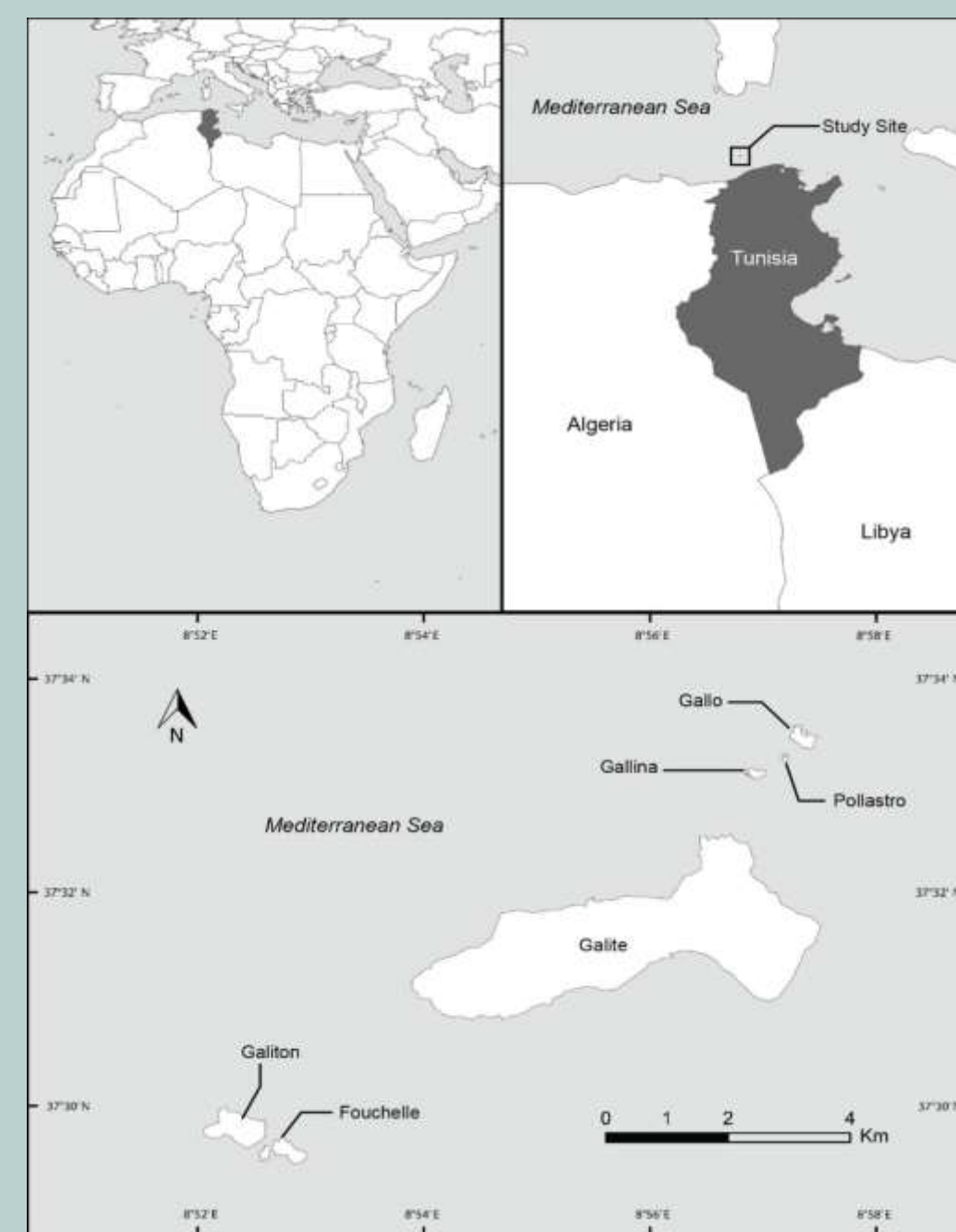
Galite archipelago is a privileged environment for many animal and plant species. It serves as one of the main migratory roads and nesting sites for many seabirds, most of which are endemic to the Mediterranean, such as the *Falco eleonora*.

The *Falco eleonora* is a late nester that locks its breeding period at the peak of passage of migratory passerines

Knowing the diets and migratory circuits are key elements in establishing a process for the conservation and sustainable development of this island ecosystem.

*Firstly we will study the diet of *Falco eleonora* in breeding season with the Galite archipelago.

*Secondly we will focus on the wintering sites of Eleanor's falcons, and the sites of origin of the preys consumed by the population .



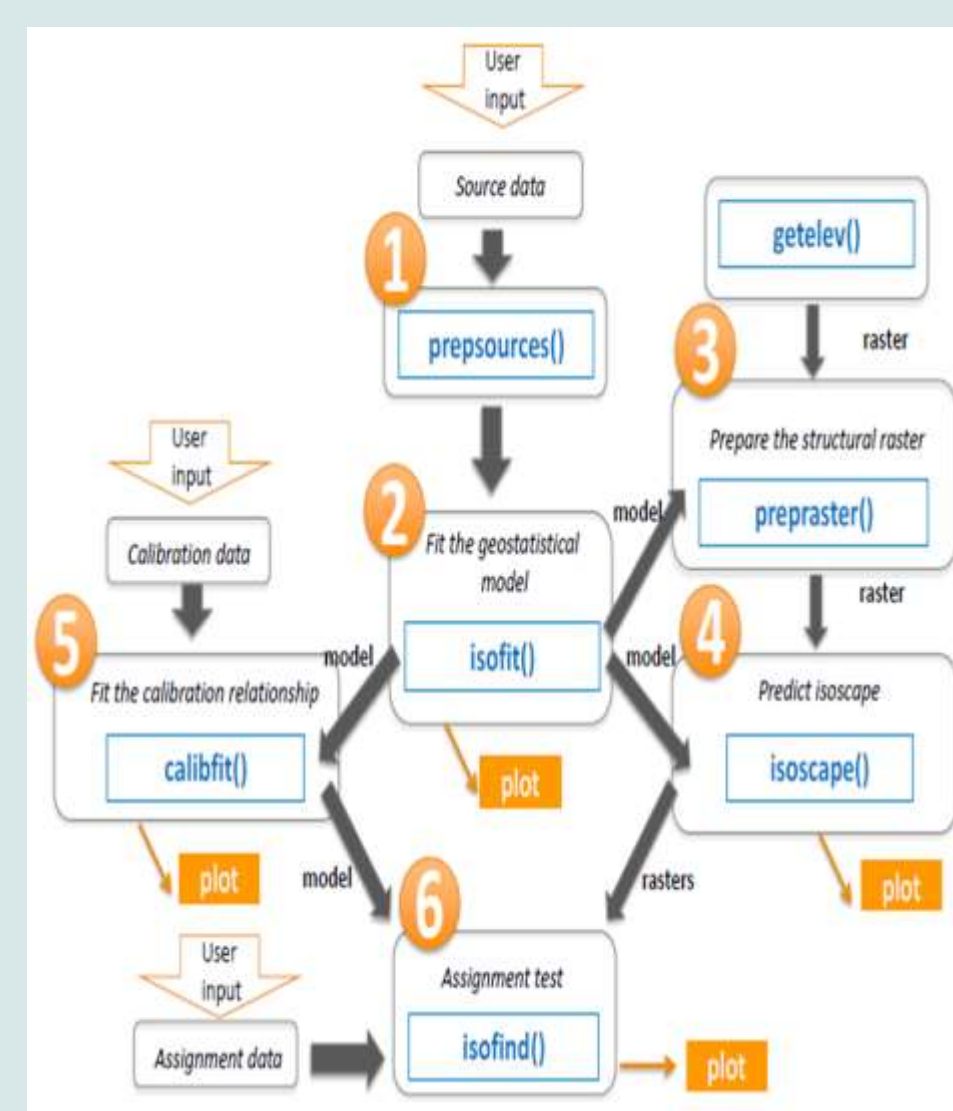
II-Methods

« We are what we eat » (DE NIRO & EPSTEIN, 1977)

$\delta^{13}\text{C}$ Allows tracing the origin of organic matter consumed by falcons.

$\delta^{15}\text{N}$ Protein rate indicator. Helps assess an animal's position in the food web.

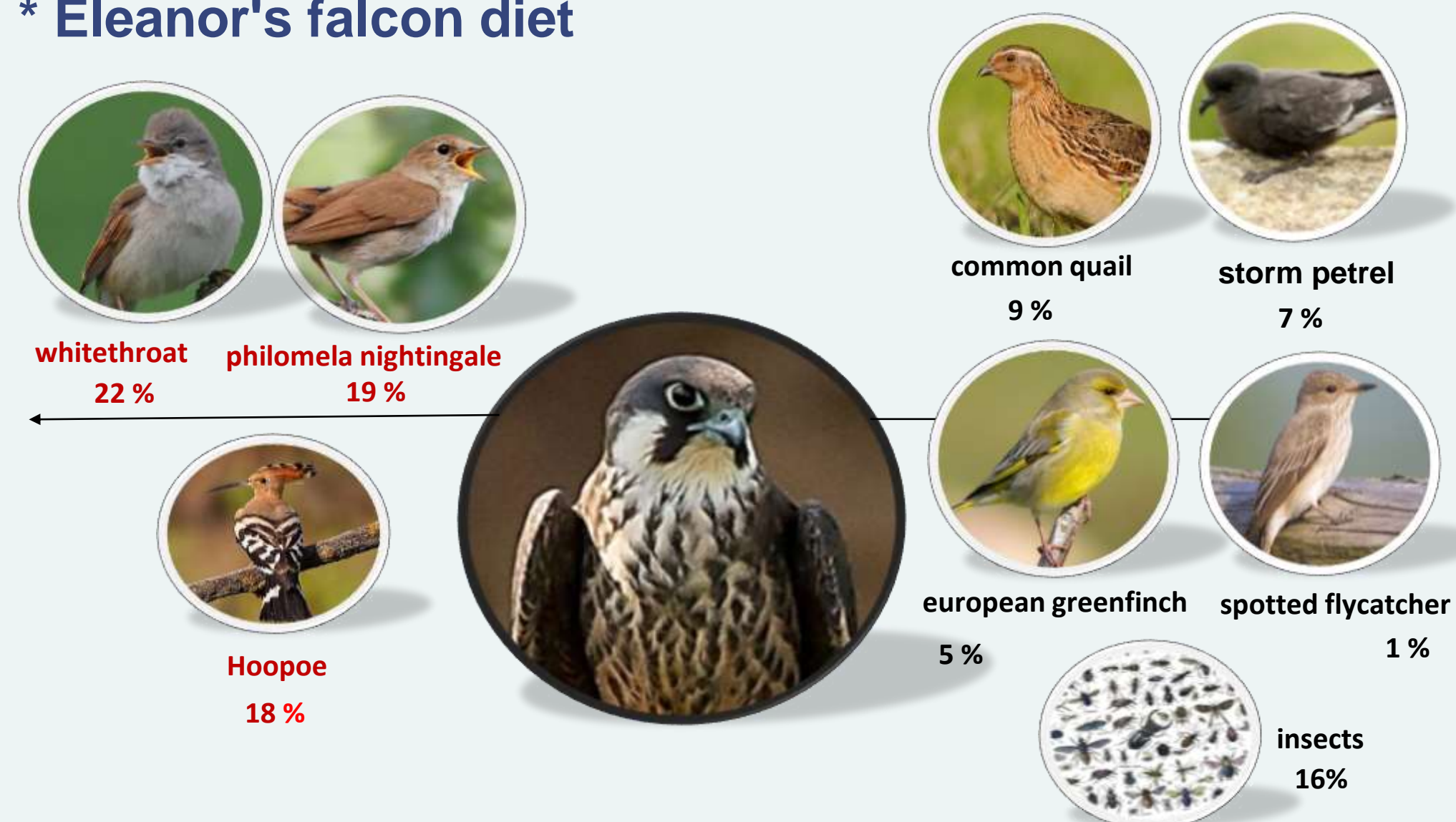
$\delta^2\text{H}$ Stable isotopes of hydrogen are naturally present in precipitation water molecules at varying rates across the globe.



The commands of the Isorix software.

III-Results and discussion

* Eleanor's falcon diet



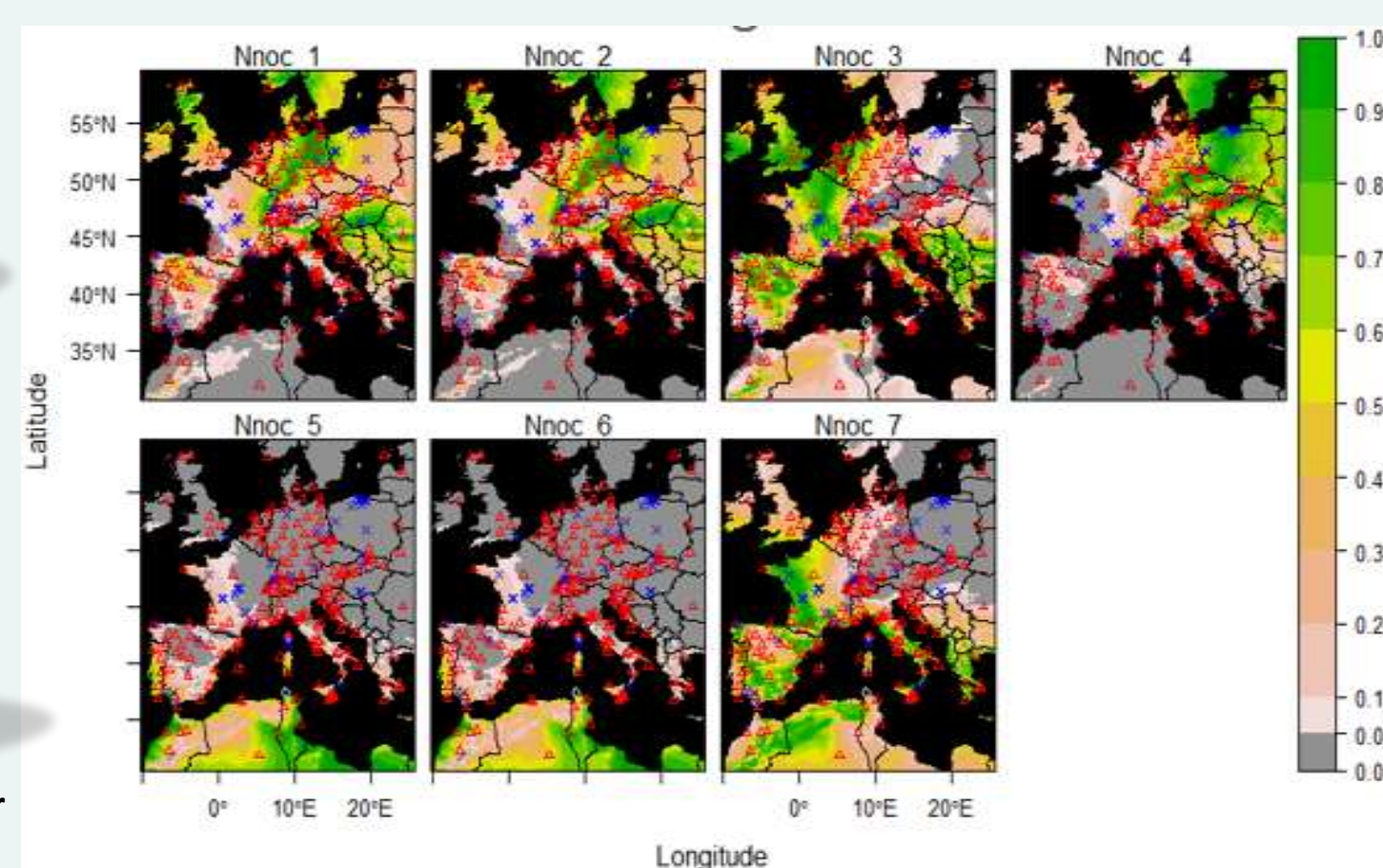
*The contribution of passerines to the diet of falcons was significantly higher than that of insects.

*The diet of all the falcons was dominated by the whitethroat, the nightingale philomele and the hoopoe.

*These preferences correspond to those observed in the Aegean Sea and that of Morocco.

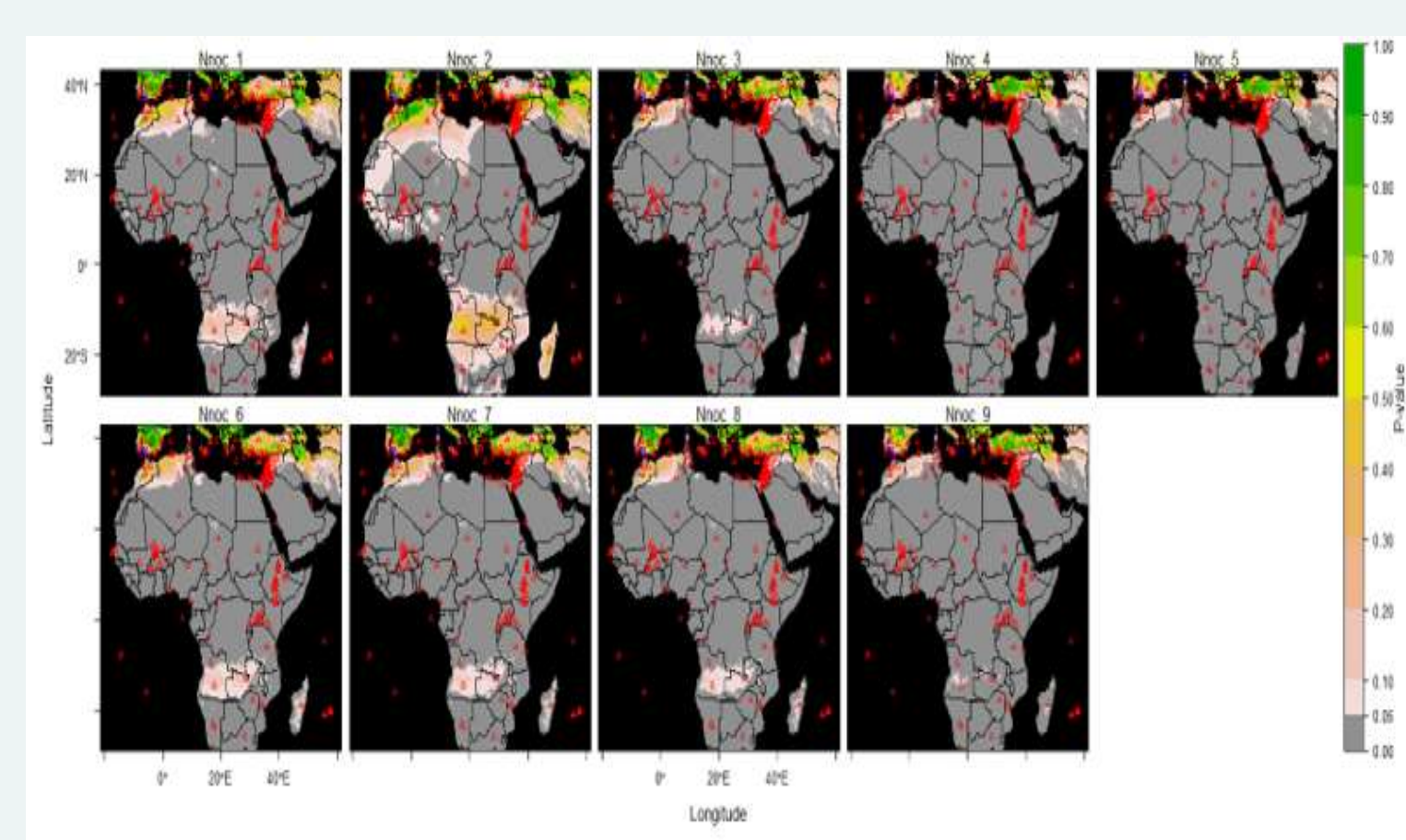
The European Storm-petrel is the only seabird contributing to the falcons' diet, and a contribution of up to 35% has been observed in the Canary Islands.

*Geographical assignment



Nnoc_1=Upupa epops, Nnoc_2=Muscicapa striata, Nnoc_3=Luscinia megarhynchos, Nnoc_4=Sylvia communis, Nnoc_5=Hydrobates pelagicus, Nnoc_6=Coturnix coturnix, Nnoc_7=Chloris chloris,

Eleonora's falcons prey on species originating from various regions, ranging from the Mediterranean to the southern Scandinavian countries. The results of attributing the geographical origins of the falcons' prey validate the effectiveness of the utilized method, which involves hydrogen isotope analysis.



Falco eleonora; Nnoc_1 = Falco eleonora adult 1.....Nnoc_9 = Falco eleonora adult 9, Even if a location presents a perfect match (p-value close to one)

Concerning the attribution of the original sites of adult *Falco eleonora* using our prediction maps, the results indicate relatively low P values for the theoretical wintering sites in Madagascar and the Southeast region of the African continent. This suggests that the remiges p8 and p9 of adult *Falco eleonora* have molted on Galite Island.

IV-Conclusion and perspectives

This comprehensive study sheds light on the migratory behavior, molting patterns, and dietary preferences of Eleonora's falcons, contributing valuable insights to the broader field of avian ecology and conservation

In the absence of exact information concerning the moulting of *Falco eleonora*, it is recommended to repeat the isotopic analyzes of the hydrogen isotope on the plumes of adults upon their arrival in the archipelago in April/May.

All results concerning assignments to sites of origin should be taken with great caution in view of the low number of feathers analyzed for each prey