

Barn Owl diet on Lemnos Isl. NE Aegean, based on pellet analysis

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Introduction

Lemnos Isl., located in the NE Aegean region, is the 8th largest island of Greece with a very interesting biodiversity. However, some of its aspects have been poorly documented so far, particularly its mammalian fauna. Among the few recorded mammalian species are the fallow deer (*Dama dama*), restricted around the island capital and the widespread rabbit (*Oryctolagus cuniculus*) and mole rat (*Nannospalax xanthodon*). This study, based on Barn Owl (*Tyto alba*) pellet analysis, provides new data on the small mammal biodiversity of Lemnos Isl., for which very little is known. Owl pellets (Fig. 1) are the non-digestible food remains (e.g. bones), regurgitated by these birds and their study constitutes an effective, non-invasive tool, for local animal recording.



Fig. 1: Barn Owl pellet

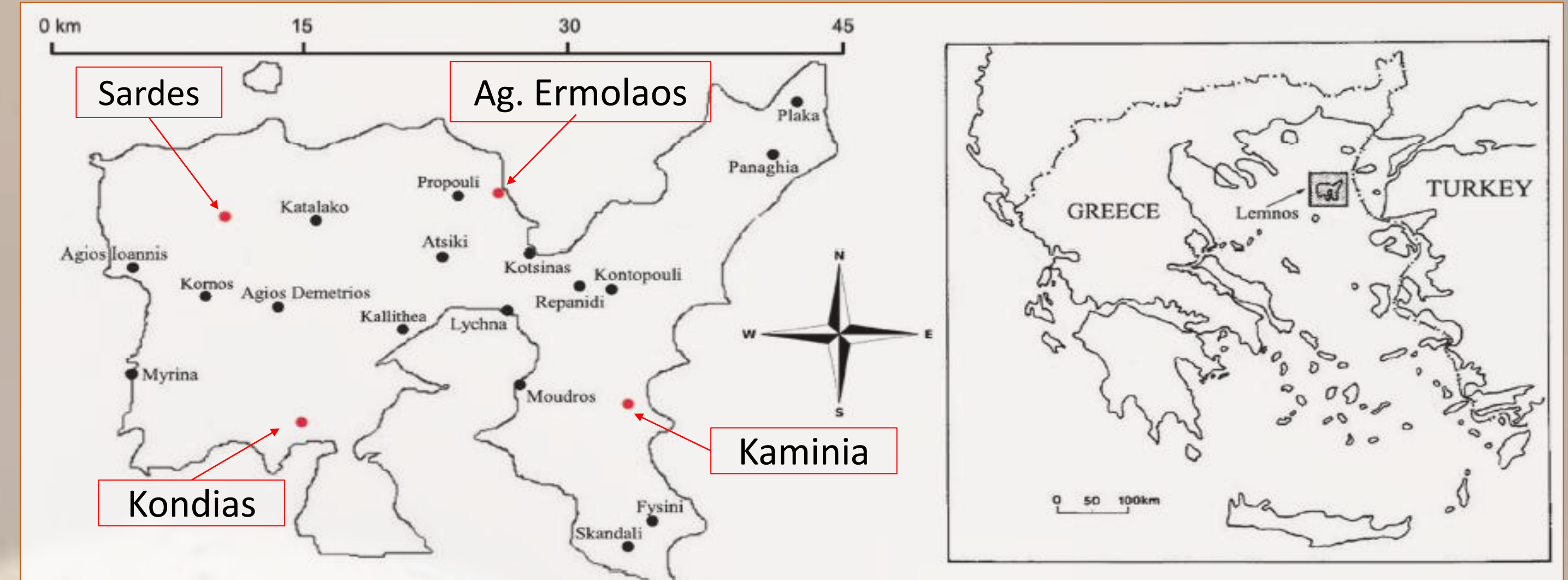


Fig. 2: The four sampling regions on Lemnos Isl. for the pellet analysis (in red).



Fig. 3: Prey remains, retrieved from one pellet (left) and organized in skeletal groups (right).



Fig. 4: Cranial (in blue frame) and post-cranial elements of Eulipotyphla (left) and Rodentia (right) individuals.

Materials & Methods

A total of 210 Barn Owl pellets, collected from four geographically representative regions of the island (Fig. 2), were processed and analyzed, as follows:

- Careful pellet dissection, in order to isolate all identifiable cranial and post-cranial skeletal elements (Fig. 3 & 4).
- Thorough cleaning of prey remains from unusable material.
- Skeletal element and species determination, using identification keys and comparative material, available in the lab.
- Calculation of Minimum Number of Individuals (MNI)-index, based on: (a) cranial elements and (b) both cranial and post-cranial skeletal elements.
- Assessment of the level of bone breakage and calculation of various skeletal element proportions in the pellets.

Results & Discussion

Based on the pellet analysis, our results showed that:

- Five taxa of small mammals were recorded for the first time on Lemnos Isl., i.e., *Mus macedonicus*, *Mus musculus domesticus*, *Apodemus sp.*, *Crocidura suaveolens* and *Crocidura leucodon*.
- The diet of the Barn Owl on Lemnos Isl. consists mainly of small mammals, complemented, however, by other small animals, particularly arthropods and secondarily amphibians and birds.
- For all studied regions, the most abundant taxa in the Barn Owl diet were *Mus macedonicus* and *Crocidura suaveolens* (Fig. 5 & 6), possibly indicating some preference by the predator and/or a higher abundance of these small mammals in the area (complementary field studies required to verify this).
- The diet composition of the Barn Owl is generally similar among the studied regions (Fig. 6), with the remarkable exception of Kondias, where Orthoptera constitute almost one third of the diet and, secondarily, of Ag. Ermolaos and Sardes, with a notable prevalence of *Mus macedonicus* and *Crocidura suaveolens* (Fig. 7), respectively (Fig. 6 - blue arrows).
- The calculation of the MNI-index, based either on exclusively cranial or on both cranial and post-cranial elements, revealed no significant differences between the two approaches (Table 1).
- The assessment of the breakage and the proportions of the skeletal remains found in the pellets, indicates that there is no selective consumption or destruction of the different prey skeletal parts (data not shown).

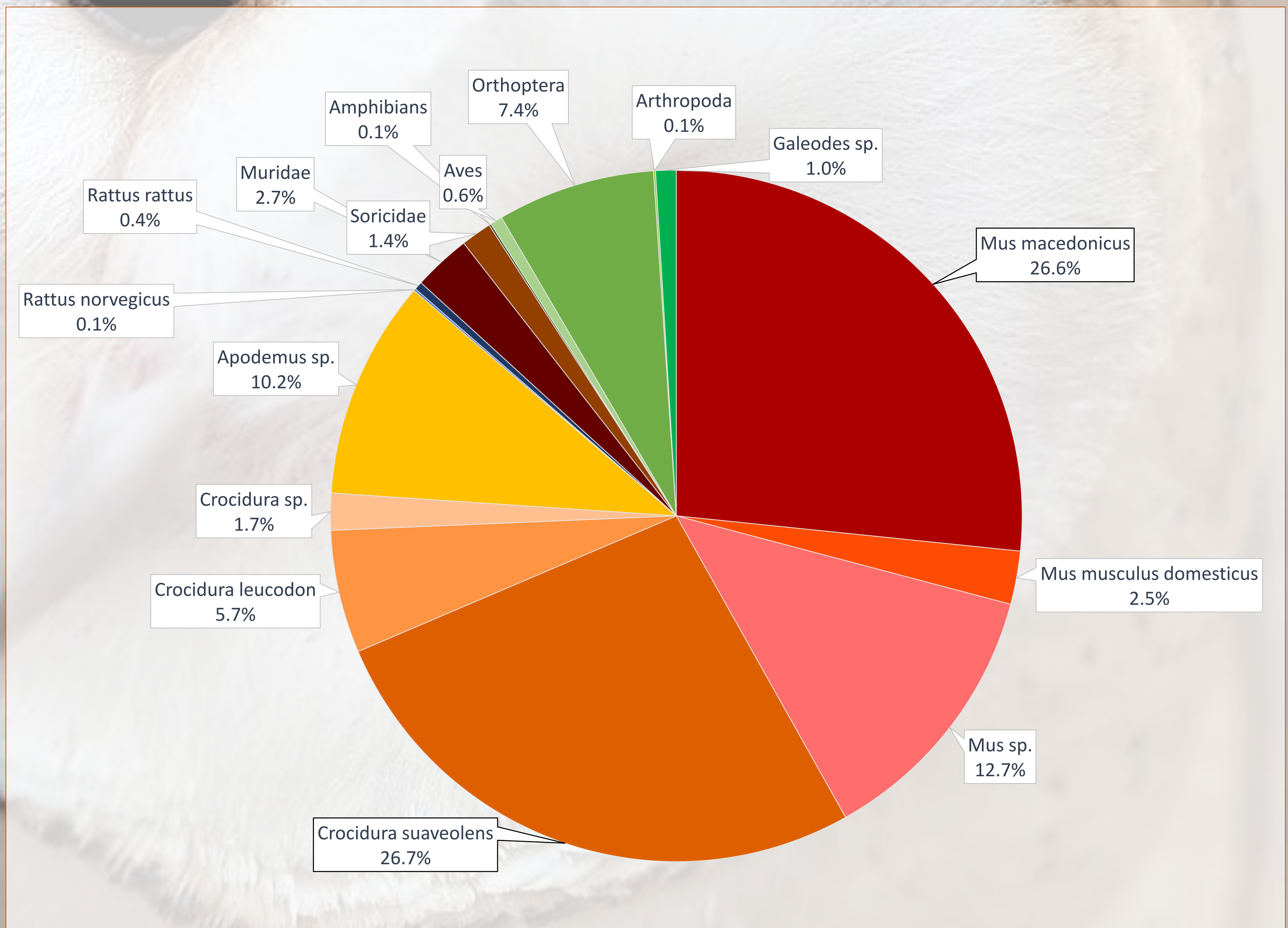


Fig. 5: Percentile contribution of each taxon to the Barn Owl diet on Lemnos Isl.



Table 1: MNI calculated based on exclusively cranial (left) and on both cranial and post-cranial elements (right).

	MNI (cr)	MNI (cr+ p-cr)
sum	566	598
average	4.72	4.98
median	4	4
st. dev.	2.03	2.11
min	1	2
max	10	10

Fig. 7: A remarkable case of contents in a single pellet from Sardes, with remains of at least 15 individuals: 9 *Crocidura suaveolens*, 5 *Orthoptera* and 1 *Galeodes sp.*

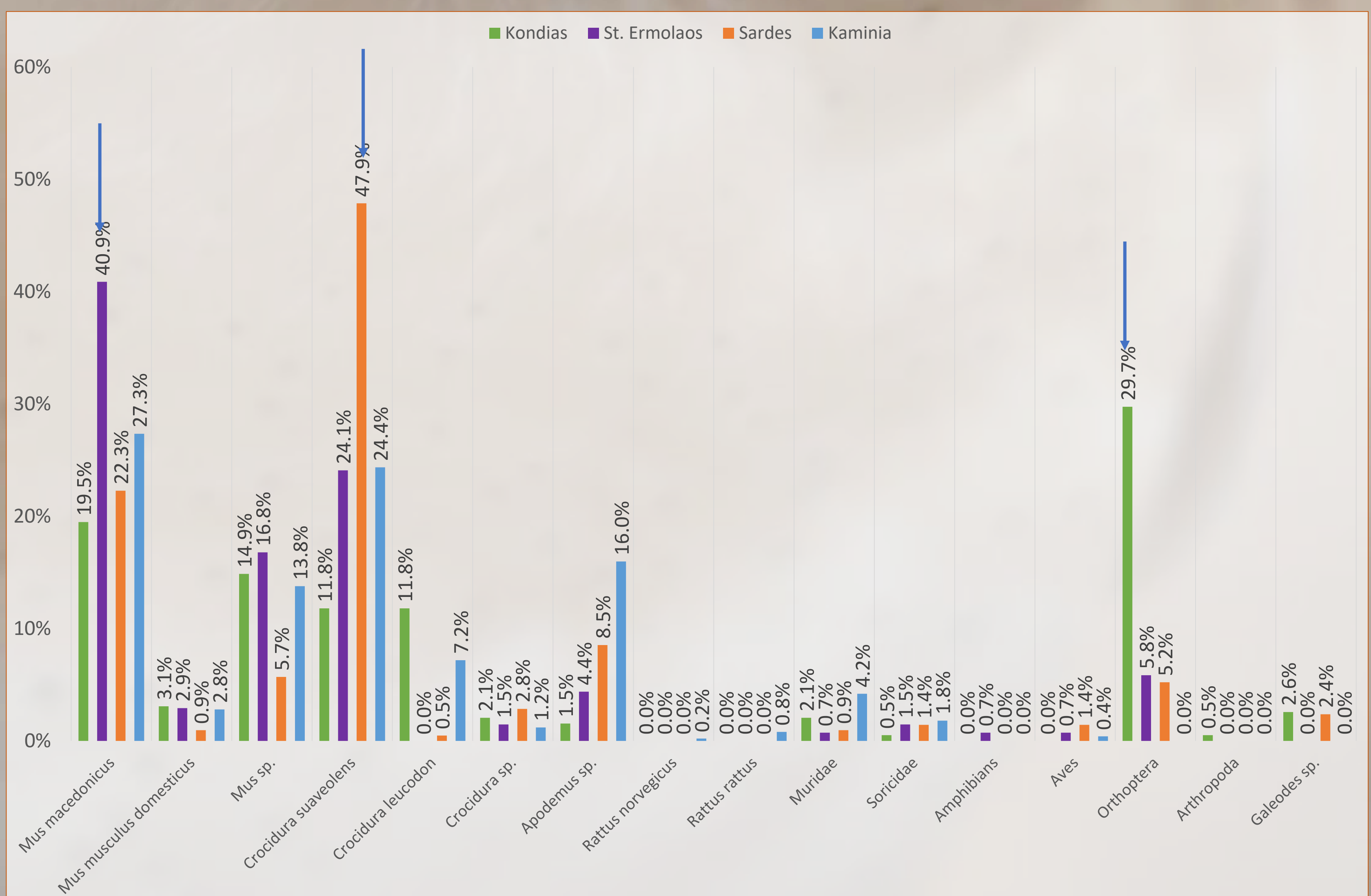


Fig. 6: Percentile participation of consumed taxa in each region by the Barn Owl.