

BIODIVERSITY MONITORING

MENORCA

Common blue (*Polyommatus icarus*) © GOB Menorca

MENORCA, WITH ITS SURFACE OF 700 KM², IS CHARACTERIZED BY THE DIVERSITY

of agricultural practices and landscapes in a small area, thanks to its geomorphical and microclimatic characteristics. Wetlands, dune and cave ecosystems are also a part of the landscapes found on Menorca. Nowadays, more than 70% of the island is dedicated to farming to produce food. Agriculture is prominently focused on cereal crops for livestock, but it is increasingly dedicated to vegetable crops, as well as vineyards and olive orchards. In addition, pastoralism is practiced with cows and sheep of which there are local breeds. This variety of activities creates a heterogeneous mosaic landscape. Crop rotation is typical of Menorca. It protects the soil from overexploitation. Rotational grazing is also practiced with livestock to allow the grasslands to regenerate. Local institutions support local breeds and extensive agriculture, making Menorca the only study site where the trend towards extensive agriculture is quite positive.

In addition, ecosystems are interconnected thanks to the forest mosaic and the network of water and linear elements such as dry-stone buildings. These walls which stretch for 12,000 km have marked the island's landscape for centuries and are actively maintained. Biodiversity is thus preserved from fragmentation, contributing to explain the numerous significant wildlife communities present in Menorca.

Farmers are confronted with many challenges, from environmental to economic or cultural. In response, the GOB (Balearic Group of Ornithology and Defense of Nature) developed a Land Stewardship Scheme. It aims to create a network of farms economically viable while using an ethical and environmentally sustainable method of farming.



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Red kite (*Milvus milvus*)

1. OBJECTIVES

Unlike other pilot sites, the aims in Menorca are to test if the stewardship system implemented in 37 farms has positive impacts on biodiversity, and to assess the evolution of farmers' practices. A reference state is defined at the beginning of the programme through flora and fauna inventories and habitat mapping.

In this perspective, based on local studies, this factsheet describes indicators used to set up the monitoring programme implemented in this pilot site. The aim of this bioindicator monitoring programme is to check the evolution of farms biodiversity.

SELECTED INDICATORS

Indicators were chosen to highlight changes in biodiversity and the impact of management practices on soil composition in the duration of the stewardship programme. As such, butterflies, coprophagous and some plant species were selected.

2. METHODS

2.1. METHODS PHASE 1

19 farms were initially included in the monitoring programme. Nowadays it includes already 26 farms. Surveys are made twice a year, both during spring time (May and June). They are performed by volunteers trained to carry out the different protocols and recognize species.

2.1.1. BUTTERFLIES

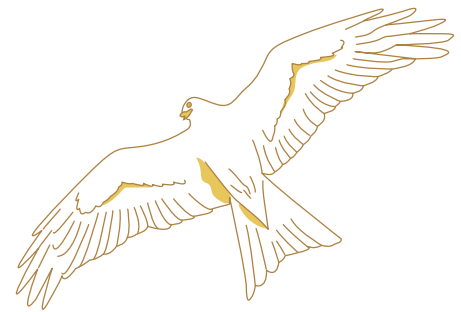
Butterflies are sensitive to vegetation structure and vegetation composition, especially fragmentation. Since many species are sedentary, they are reliable indicators of local practices. 26 butterfly species are present in Menorca, but, in order to avoid confusion with rare and similar species, only 22 are shown in the guide provided to volunteers.

METHODS FOR BUTTERFLY DATA COLLECTION

Volunteers need to count all butterflies by species in a 5x5x5m cube while walking steadily forward. They also have to specify the wind speed from 0 to 5, and nebulosity from 0 to 8.



Sheep stockbreeding is one of the main agricultural activities in Menorca. Talatí de Dalt is one of the farms adhered to the Custòdia Agrària programme where sheep are bred. © GOB Menorca



Sulla coronaria is nowadays a native crop in Menorca, but it was initially introduced by the British to the island. It is used as forage for cattle and has many benefits for the soil because it is a leguminous plant and has a fertilizing effect. © GOB Menorca

2.2.2 COPROPHAGES

Studying cow manure decomposition and the presence of coprophagous gives information on soil richness, pesticide/herbicide usage, and the use of drugs for animal health.

METHODS FOR COPROPHAGES DATA COLLECTION

The survey takes place in a field visited by cows the previous week. At least 10 excrements are studied along a 150m zig zagging transect, while avoiding those too dry that may be from the previous year. For each excrement are noted the decomposition state, the presence of galleries, if animals are present and if so, to which of the 9 groups it belongs (diptera, isoptera/hymenoptera, isopod, beetle, myriapod, mollusc, larvae, arachnids or dictyoptera).

2.2.3 PLANTS

Plants were selected according to their abilities to be indicators of nitrogen enrichment (eutrophication) or pesticide use. Among them are studied:

- Weeds (non-cultivated plants), which indicate an absence of herbicides
- Thistles, as indicator of high level of nitrogen and soil impoverishment
- Poppies, which indicate an absence of herbicides, chosen for its easily recognisable features and colour
- Cloves, indicator of ecological balance of pastures.

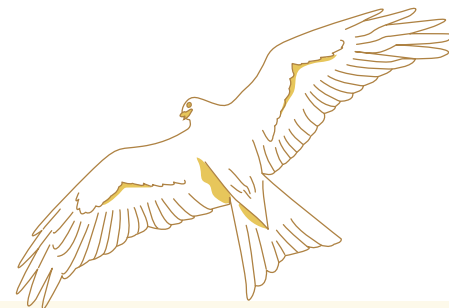
METHODS FOR PLANT DATA COLLECTION

Along each transect, the abundance of these indicator plants species are noted (from 1 to 4) on a 10m strip (5 meters on each side of the transect).

Complementary information is added, such as the type of habitat, presence of cattle or crops, plant diversity, rare species...



Donkeys in priority habitat
© GOB Menorca



2.2. METHODS PHASE 2

Based on the results from Phase 1, the methodology for the data collection was modified during Phase 2.

In Phase 1, the data collection was conducted during both spring and autumn seasons, while in Phase 2 the data collection was undertaken in two rounds in spring only, because of the abundance and diversity of plants and butterflies during this season. Furthermore, it was easier to identify and differentiate plants during the blossom season rather than in autumn, in the absence of flowers.

Another update to the monitoring methodology was about the matrix for the assessment of the coprophagous activity, which was made more specific in order to clearly determine the stage of decomposition.

3. CONTACT

Alliance for Mediterranean Nature and Culture

<https://www.mednatureculture.org/>

GOB Menorca

www.gobmenorca.com/custodiaagraria

International Union for Conservation
of Nature and Natural Resources

<https://www.iucn.org/>

Tour du Valat

<https://tourduvalat.org/>

MAVA Foundation

<https://mava-foundation.org/oaps/promoting-sustainable-land-use-practices-2/>

