ASSESSING THE IMPACT OF DRYNESS ON HARVESTMEN (OPILIONES) FROM MONTADO (PORTUGAL)

LTER

IMPACT SHEET #13

LTSER-MONTADO: HERDADE DA RIBEIRA ABAIXO, COMPANHIA DAS LEZÍRIAS, PORTUGAL

Portugal is the most affected country by desertification in the European Union, which is aggravated in the South. The extraction of natural resources is sometimes inadequate and land-use intensification in "Montado" agro-forest systems has increased the pressure on biodiversity, especially on species vulnerable to dryness. Identifying the factors responsible for species occurrence in different habitats is crucial for understanding the impact of dryness and thus adjustment of land management.

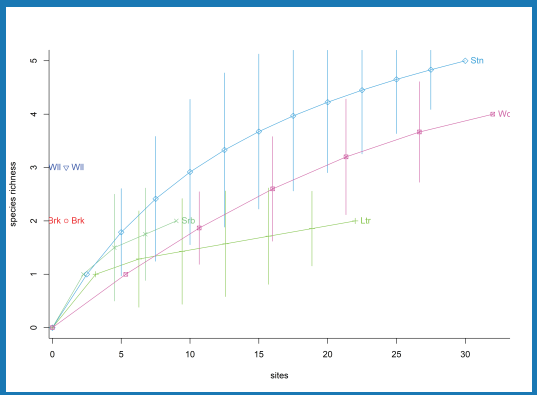
This study documents the distribution and the abundance of harvestmen species (*Arachnida: Opiliones*) in different microhabitats and under different land-use practices in Companhia das Lezírias (CL) and Herdade da Ribeira Abaixo (HRA) - the dominant "Montado" landscape. Harvestmen species are predators that act as natural enemies of crop pests providing primary pest control functions. They are especially abundant in mesic and wet environments, among the limiting factors of harvestmen distribution, humidity plays an essential role.

RESEARCH

Harvestmen were present in all investigated microhabitat types (i.e. under stones and woods, in litter, on vegetation (shrubs) and wall of constructions) in HRA, and only on vegetation (shrubs) and in litter near to river banks in CL.

The occurrence of harvestmen was low, only one individual was found in 25% of the investigated microhabitats. The stony oak woodland had the highest species richness. There were seven species in HRA and only three in CL. The stations differ in the vegetation cover, leaf-litter presence, shrub density and intensity of grazing. HRA has non-disturbed zones, fewer areas with shrub clearing, the grazing is restricted to small areas. In CL large areas are cover by agricultural fields or useed for cattle growing.

The difference in the harvestmen species richness in the two stations has been associated with both land management and an interaction between land use and soil type.



Site-based accumulation curve for species richness of harvestman community for each microhabitat type: Brk – bark, Wll – wall, Wod - wood, Ltr - litter, Srb – shrub and Stn - stone. The bars represent the 95% confidence intervals.

LTSER MONTADO, PORTUGAL

AIMS

- To document the harvestmen distribution and abundance in different types of (micro) habitats.
- To identify key characteristics of the habitat to maintain harvestmen populations.
- To assess vulnerability of harvestmen species to water stress dryness linked to different land use management in a "Montando" lanscape.

OUTCOME - IMPACT

Management measures that should be avoided in order to protect harvestmen and other drought sensitive species are:

- Removal of stones or wood (tree branch) from the soil, what reduces number of shelters;
- Removal of wood fallen over the ground, what restricts the use of microhabitats during the day in Herdade da Ribeira Abaixo;
- Interventions on the river banks, which affect the habitat use by species like *Nemastomella* in Companhia das Lezírias.

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Leiobunum grandola

The further research is aimed at investigation of: i) seasonal differences in harvestmen communities, ii) identification of the factors responsible for differences in species richness of the same habitats in the two sites, and iii) identification of the factors related to microhabitats features, which determinate the low occupancy by harvestmen.

PRIORITY THEMES

- BIODIVERSITY
- WATER
- PRODUCTION
- SERVICES
- INNOVATION
- PLANNING / MANAGEMENT
- SOCIETY
- RESILIENCE
- OTHER?

PRIORITY ECOSYSTEM SERVICES

- PROVISIONING
- REGULATING
- CULTURAL
- SUPPORTING
  BIODIVERSITY, HABITATS

AREA OF RELEVANCE, ACCORDING TO SDG

SDG - UN SUSTAINABLE DEVELOPMENT GOALS

FURTHER INFORMATION

Branco, J., Oliveira, M., Ferreira, R., Póvoa, O. (2014) Desertification in Portugal: causes, consequences and possible solutions. University "Aurel Vlaicu" of Arad, Scientific and Technical Bulletin, Series: Economic Sciences and Sociology 17:37–48.

Curtis, D. J., Machado, G. (2007) Ecology, in Harvestmen: The Biology of Opiliones, R. Pinto-da-Rocha, G. Machado, and G. Giribet, Eds., pp. 280–308, Harvard University Press, Cambridge, Mass, USA.

Oliver, T.H., Isaac, N.J., August, T.A., Woodcock, B.A., Roy, D.B., Bullock, J.M. (2015) Declining resilience of ecosystem functions under biodiversity loss. Nature Communications. 6: 10122.

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