



**UNIVERSITY OF CYPRUS**  
**DEPARTMENT OF BIOLOGICAL SCIENCES**

The Department of Biological Sciences cordially invites you to the thesis defense  
of the PhD candidate

**Martin A. Hellicar**  
(Dr. Alexander Kirschel Research Laboratory)

entitled

**“ASPECTS OF FARMLAND MANAGEMENT FOR BIRD CONSERVATION IN CYPRUS: DEFINING  
HIGH NATURE VALUE AREAS AND ASSESSING THE IMPACT OF GRAZING”**

Abstract

Heterogeneous, low intensity cropping and grazing systems are important areas for biodiversity conservation in Europe that are threatened by abandonment and agricultural intensification. These threats have been linked to large declines in farmland birds across Europe in recent decades. The HNVf concept aims to define biodiversity-rich farmland (cultivation and grazing land) to facilitate its protection and management and aid the recovery of farmland biodiversity, including birds. Grazing and browsing by sheep and goats has been an important anthropogenic influence on ecosystems in the Mediterranean for centuries, but has shifted in recent decades with a move from free-range grazing to the penning of livestock. Island populations, and especially those of endemics, can be particularly vulnerable to declines in abundance due to small population size. In Cyprus, concern over the conservation status of the endemic Cyprus Warbler *Sylvia melanothorax* centres on its potential vulnerability to changes in farming practice and possible competition from a recent coloniser, the Sardinian Warbler *Sylvia melanocephala*.

We examined two related aspects of management of semi-natural habitats in Cyprus for conservation: High Nature Value farmland (HNVf) areas and the grazing of scrub and open forest habitats by sheep and goats. While focusing on bird conservation as a whole, we examined the effects of farming practices on avian diversity, abundance of priority species overall and especially of the endemic Cyprus Warbler, recently classified as having an unfavourable conservation status by BirdLife International.

We used line transect breeding bird surveys to compare bird diversity and abundance at sites defined as HNVf under two different mapping models for Cyprus. Our aim was to examine whether

farmland classified as HNVf was important for bird diversity and priority species and to compare the mapping approaches, one a simpler model based on land cover data (CLC map), the other a more complex Cyprus Environment Department model (ED map) including layers relating to agricultural intensity. We also used Cyprus as a case study with the aim of assessing the impact of changes in grazing practice on bird and plant diversity, carrying out surveys of breeding birds and vegetation at sites in scrub and open woodland across Cyprus. We estimated grazing pressure and fire history at these sites and looked for associations between these factors and birds and vegetation. We also used these same surveys to compare densities of Cyprus Warbler and Sardinian Warbler at scrub sites subject to different grazing pressures.

We found a greater diversity of breeding birds at sites classified as HNVf under a combined ED and CLC mapping model and that this combined model predicted higher abundances of the endemic warbler. We also showed that grazing, fire and landscape diversity have an influence on avian and plant diversity and abundance, demonstrating the importance of anthropogenic disturbance for biodiversity. Cultivation (as a generator of landscape diversity) was found to have a positive influence on bird and plant diversity, while patterns for fire and grazing pointed to low disturbance levels being beneficial for birds and plants. For the two warblers, we showed that the Sardinian Warbler continues to increase in abundance over time and higher abundances of it were associated with lower Cyprus Warbler abundances. Sardinian Warbler however was negatively associated with all but very low grazing pressure, whereas the Cyprus Warbler was more tolerant of grazing.

Overall, we demonstrated the importance for biodiversity of low-level anthropogenic disturbance of farmland habitats through cultivation and grazing and identified a way forward for mapping HNVf in Cyprus. We conclude that the overlap between the two examined models best captures HNVf, but layers encompassing grazing land and priority habitats need to be added to better define HNVf in Cyprus and facilitate its protection and management for the benefit of farmland birds. Maintenance of low intensity grazing of scrub and open pine wood habitats can be recommended as beneficial for bird and plant diversity overall in Cyprus, and for the conservation of the endemic Cyprus Warbler in particular.

**Monday, May 13, 2019 at 09:00**  
**Building XΩΔ01, Room B004 (Panepistimioupoli Campus)**

**The presentation is open to the public.**