Monitoring biodiversity of the buffer zone in Cyprus

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Introduction

Cyprus, located between Europe, Asia and Africa (Figure 1), has a considerable diversity of species and habitats and endemic, rare, and endangered flora and fauna. There are approximately 1.500 species and subspecies of flowering plants. About 8% of the indigenous plants, i.e. 125 species and subspecies, are endemic. The fauna of the island includes 30 mammal (Krystufek and Vohralik, 2001), 24 reptile, 3 amphibian (Atatür and Göçmen, 2001), at least 368 bird (Flint and Stewart, 1992) and a great variety of invertebrate (Georghiou, 1977; Platnick, 2006) species, many of which are endemic.

Despite this unique biodiversity, there is a general lack of complete studies from Cyprus. Whereas information about the presence of species is generally known, inventories with complete flora and fauna lists and basic population estimates do not usually exist. This situation is even more apparent for the buffer zone, the line dividing the Turkish- and Greek-Cypriot communities (Figure 1), for which there is a general lack of information. The only study in the buffer zone is on the endemic wild sheep, the Cyprus moufflon *Ovis orientalis gmelinii* (UNOPS/UNDP, 2005).

Figure 1. The position of Cyprus in the Mediterranean (inset) and the buffer zone (main map).

In this context, we have formed the first bi-communal academic network in Cyprus, and are undertaking a basic biodiversity survey of the buffer zone by identifying plant, mammal, bird, reptile, amphibian and invertebrate species in order to compile a species inventory. The project is supported by the United Nations Development Program - Action for Cooperation and Trust (UNDP-ACT) and is being carried out under the auspices of the Cyprus Environmental Stakeholder Forum.

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Figure 2. Eight study sites in the buffer zone.

Methods

Eight study sites have been selected across the width of the buffer zone (Figure 2) covering different habitat types, e.g. river, coastal, farmland etc. Since July 2007, basic flora and fauna surveys are conducted at all sites once every month. Plants are collected during flowering periods, and identified to species level. Large mammal surveys are undertaken with cameras with passive infrared detection systems (Figure 3). Small mammals are monitored with live traps and bat-detectors. Baseline bird surveys are carried out using line transects. Amphibians and reptiles are located with visual encounter surveys (Figure 4). Lastly, pitfall traps and sweep netting are used to collect invertebrates (Figure 5).

Figure 3. Downloading large mammal data from infrared cameras.

Figure 4. Looking for reptiles.

Figure 5. Putting pitfall traps.

Preliminary Results

Results are preliminary and cover the end of summer, autumn and winter, with more species expected to be observed in spring. So far, new distribution records for rare plants have been determined, e.g. *Mandragora officinarum* (Figure 6). Hedgehogs *Hemiechinus auritus,* hares *Lepus europeus cyprium*, and foxes *Vulpes vulpes indutus* (Figure 7) have been recorded in most areas while a population of about 200-300 Cyprus moufflon are regularly seen in Varishia (Figure 8) and there is one record of the endemic mouse *Mus cypriaca* so far.

With regards to birds, important populations of some vulnerable species have been recorded. For example, two wintering populations of about 200 individuals each of the Eurasian thick-knee *Burhinus oedicnemus* (Figure 9) have been discovered at two sites, while important numbers of the Northern lapwing have also been recorded. Lastly, ten reptile and amphibian species have been recorded so far, including the Mediterranean chameleon *Chamaeleo chamaeleon,* the blunt-nosed viper *Macrovipera lebetina* (*Vipera lebetina lebetina* ; Figure 10), the spiny lizard *Laudakia stellio*, and the green frog *Hyla savignyi*.

Figure 8. Varishia village and Cyprus moufflon *Ovis orientalis gmelinii*

Figure 6. *Mandragora officinarum*


Figure 7. Hares *Lepus europeus cyprium* and fox *Vulpes vulpes indutus*


Figure 9. Eurasian thick-knee *Burhinus oedicnemus*


Figure 10. Blunt-nosed viper *Macrovipera schweizeri*

Discussion

We present here a first study targeting the biodiversity of the buffer zone in Cyprus. The buffer zone has existed since the conflict in 1974, which resulted in a de-facto division between the Turkish-Cypriot and Greek-Cypriot communities. Many parts of the buffer zone are farmed, while others have been left untouched for the last 34 years. The objective of this study is to determine the flora and fauna species that exist in the buffer zone. Knowledge about the presence of these species will assist in the identification of the most important populations of particular flora and fauna species of conservation concern island-wide, and will provide valuable information concerning the possible presence and locations of wildlife corridors in the highly fragmented habitats and landscapes of Cyprus. Results are preliminary and some rare, endemic and vulnerable flora and fauna species have been recorded so far. We envisage that the outcomes of this project will assist in prioritizing conservation planning for target species and habitats on an island-wide basis, and hope that they will also set the foundations for future joint biodiversity studies in Cyprus.

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