Initiating a collaborative monitoring system to survey Maltese orchids

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Orchids have always garnered the interest of enthusiastic amateurs and non-professional researchers as a charismatic species group and have become a flagship for Mediterranean flora. At the same time they are a decent indicator for biodiversity and environmental quality through their association with specific pollinators and mycorrhizal fungi. Historical records for orchids occurring in the Maltese Islands number some 30 different species, but there is little to no comprehensive data on their abundance and distribution.

Citizen science has become increasingly popular in the last few decades for species observations and monitoring of biodiversity. Collecting data through a collaboration between experts and non-professionals can reduce costs, and benefits valuable projects that rely on observations over long periods of time or in large areas. At the same time citizen science provides opportunities for education and awareness. However, a lack of a standardised approach for these observations and a way to verify their reliability can reduce their scientific value.

As part of the MABIMO (Malta Biodiversity Monitoring) initiative, a standardised and nationwide orchid survey was carried out, to create a baseline for orchid monitoring and conservation in Malta. The surveys were performed by non-professional volunteers. With the use of a mobile application, they could collect data in the field and upload it automatically to a central server. Collected information was then verified by experts. We created an approach trying to maximise data collection and minimise errors for observations by non-trained volunteers.

The Maltese Islands were divided in standardised 4 km^2 grid cells, which were further subdivided in 1 km^2 cells. A 1 km^2 grid cell in each 4 km^2 cell was chosen at random for

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surveying. In all, the islands were divided into 80, 4km^2 grid cells, of which, 70 were surveyed. 2,336 individual orchid plants making up 12 of the orchid species known to exist on the Maltese Islands were recorded.

This communication will present our standardised approach to the surveys and how we set up reliable data collection through digital surveys. We will discuss what can be learned from our current results and examine the validity of a citizen science approach in large scale orchid monitoring.