

Spotting sparrows: Using a citizen science-based approach to research Spanish Sparrow roosts and promote urban conservation in Malta

Nicola Piludu & Jennifer Law

Introduction

The involvement of untrained volunteers from local communities to perform conservation research can be traced back to at least 1900, when the National Audubon Society started its annual Christmas bird count (Cohn 2008). Under the name of citizen science the practice has in recent years become a popular approach, with thousands of projects currently active around the world (Bonney *et al.* 2014). While the validity of data collected by citizen scientists has often come into question (Cohn 2008), the approach is generally recognised to have the advantage of allowing research at a very fine scale while engaging local communities in conservation (Dickinson *et al.* 2012).

The Spanish Sparrow *Passer hispaniolensis* (Temminck, 1820) is one of the most abundant breeding birds in Malta (Sultana *et al.* 2011). The species is perfectly adapted to urban habitats and is widely distributed in cities and towns across the country, which is reflected in its Maltese name *għasfur tal-bejt*, “house bird” (Sultana *et al.* 2011). Spanish Sparrows are arguably the species with which the Maltese community is the most familiar, and was selected as the object of a citizen science project called “Spot a Sparrow” (SaS). BirdLife Malta led the project in partnership with The Inspire Foundation (from now on, “Inspire”), the leading Maltese charity working for people with disabilities.

SaS was launched in October 2014, and addressed a number of environmental and social issues. The project’s main objective was to map Spanish Sparrow roost sites, particularly in urban areas, in order to ensure their protection by local councils. The secondary objectives were to raise awareness about urban wildlife in Malta, to develop a sense of community in urban areas, and to promote integration between several groups, especially those with disabilities and mental health issues.

Methods

Spanish Sparrows roost communally in large-crowned trees (*e.g. Ficus sp., Quercus sp.*) in urban areas, with larger roosts counting up to 30,000 birds (Sultana *et al.* 2011). Their roosts are easy to identify by the public, as birds can be spotted as they congregate in the canopy. Additionally, roosting Spanish Sparrows engage in very loud vocalisations that can be heard from a large distance, further simplifying the identification process by untrained citizen scientists.

A dedicated website was designed as the main data-collecting tool for the project. The website was based on the map application Google Maps (Google 2015), displaying an interactive map of the Maltese Islands with the location of identified roosts marked by small project logos. Buttons placed on the right-hand side of the map guided citizen scientists through the identification and reporting processes. Citizen scientists were instructed to visit green urban areas at sundown to look for large trees; trees were to be considered roost sites if large numbers of sparrows were seen flying towards them or loud chirping was heard coming from them. Once a roost site was identified, citizen scientists were asked to report it by pinpointing the exact location on the interactive map, and were given the option to provide comments and to attach a photograph of the site.

Reported roosts were automatically entered in an online database, which was only accessible from the back end of the website and could be downloaded as a spreadsheet. Based on the provided coordinates, the website automatically assigned the reported roost site to a specific district and city. Reported roost sites were visited by teams from BirdLife Malta or Inspire in order to confirm their identification before they could be uploaded on the map. BirdLife Malta provided a training session to Inspire educators, who then took their clients on fieldtrips to verify roosts. The training and participation of Inspire in field surveys was arranged so as to address the second objective of the project: promoting the integration of people with disabilities. Data was collected between 28 November 2015 and 6 December 2016.

Results

A total of 147 roost sites were recorded and confirmed. Roost sites were identified in all six districts in Malta, covering 45 local councils (Table 1). The northern district had the highest number of roost sites (43), while the district of Gozo and Comino had the lowest (12); no records

have been submitted for Comino (Table 1). The councils of San Pawl Il-Baħar (15) and Rabat (11) were the ones with the highest number of roosts reported.

Table 1. Number of roost sites in each district and local council

District	Town		District	Town	
Southern Harbour (22)	Bormla	2	Western (27)	Attard	3
	Floriana	2		Iklin	2
	Kalkara	1		Lija	2
	Luqa	3		Mdina	3
	Marsa	2		Mtarfa	2
	Paola	3		Rabat	11
	Tarxien	4		Sigġiewi	2
Northern Harbour (20)	Valletta	2	Northern (43)	Żebbuġ	2
	Żabbar	3		Burmarrad	4
	Birkirkara	5		Għargħur	3
	Gżira	1		Magħtab	1
	Ħamrun	3		Mellieħa	9
	Qormi	3		Mġarr	2
	Msida	1		Mosta	2
Santa Venera	1	Naxxar	7		
Sliema	5	Gozo and Comino (12)	San Pawl Il-Baħar	15	
St. Julian's	1		Għajnsielem	1	
South Eastern (23)	Birżebbuġa		3	Nadur	1
	Gudja	1	Victoria	7	
	Għaxaq	7	Xlendi	3	
	Marsaskala	4			
	Marsaxlokk	3			
	Qrendi	1			
	Żejtun	1			
Żurrieq	3				

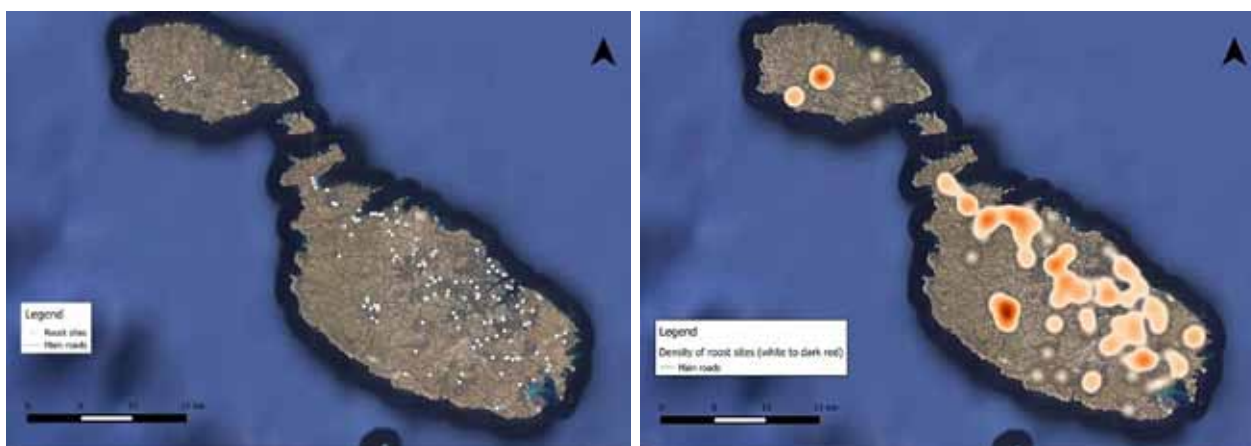


Figure 1. Location of sparrow roost sites (left) and heat map showing density (right)

Discussion

While data collection was open to the general public, the project made a specific effort to engage the urban community. Most supporting events were carried out in cities, and the great majority of roost sites were recorded in the large urban area that runs in parallel to Malta's northeastern coast. Outside of this, a high concentration of roost sites was recorded in the historic towns of Mdina and Rabat in Malta, and Victoria in Gozo. Conversely very few roost sites were identified in the predominantly rural Gozo and the southwestern coast of Malta. This is not entirely reflected in the numbers at district level, as the lack of roost sites in the larger northern district is balanced out by the high number of roost sites in the Rabat-Mdina urban area.

The aim of the project was to collect data on the location of important roost sites to protect urban trees, which is why the data was made available to relevant authorities, as well as guidelines for bird-friendly tree management. It is relevant to note that as part of SaS, and in parallel with a similar initiative focussed on White Wagtails *Motacilla alba*, BirdLife Malta discussed with Valletta Local Council the management of their urban trees. Several clusters of trees in the city are important roost sites for both Spanish Sparrows and White Wagtails, and following meetings with BirdLife Malta pruning of one of the main sites on Triq ir-Repubblika was carried out according to the provided guidelines. Opportunistic observations in December 2015 suggest that proper pruning is indeed resulting in higher numbers of birds roosting in the city; however, it is recognised that a more standardised effort needs to be employed to verify this and further research is recommended.

As previously mentioned, the validity of the data collected through citizen science projects is often questioned. This was carefully considered when designing the methodology, and in order to make sure that the highest possible number of records was approved it was decided that data collected be kept as simple as possible. For this reason the public were asked only to record the roost site location, and to disregard the collection of other data (e.g. weather, tree species, other bird species present), ultimately resulting in very simple data that does not allow for stronger analyses. We believe that this resulted as well in a higher number of roosts being properly identified, which was the primary objective of the project. This notwithstanding, we believe that the project provides a strong starting point, and that further effort is employed in researching roost sites across the Maltese Islands.

Conclusion

Overall, a large quantity of data has been obtained from across a considerable area, and at a minimal cost. The easy identification of sparrow roosts allows for high public participation and ensures that data is largely reliable. As such it may be concluded that citizen science proved to be an effective method for data collection regarding Spanish Sparrow roosts in Malta. That being said, further research using more robust methodologies, such as systematic counts of major roosts, is recommended. From a conservation perspective, the project succeeded in engaging the Maltese community in urban wildlife, integrating people with disabilities in the research project, and improving the management of urban trees, and we encourage the development of similar initiatives in the Maltese Islands.

Acknowledgements

SaS was funded at 90% by EEA/Norway Grants, which was administered by SOS Malta. We would like to thank the Inspire and BirdLife Malta teams for assisting in verifying roost sites.

References

- Bonney, R., Shirk, J.L., Philips, T.B., Wiggins, A., Ballard, H.L., Miller-Rushing, A.J. & Parrish, J.K.** 2014 Next steps for citizen science. *Science* 343: 1436–1437.
- Cohn, J.P.** 2008 Citizen science: Can volunteers do real research? *BioScience* 58: 192–197.

Dickinson, J.L., Shirk, J., Bonter, D., Bonney, D., Bonney, R., Crain, R.L., Martin, J., Philips, T. & Purcell 2012 The current state of citizen science as a tool for ecological and public engagement. *Frontiers in Ecology and the Environment* 10: 291–297.

Google 2015 Google Maps. USA.

Sultana, J., Borg, J.J., Gauci, C. & Falzon, V. 2011 **The Breeding Birds of Malta**. BirdLife Malta. Malta.

Nicola Piludu - info@birdlifemalta.org

Jennifer Law – jennyz2k3@hotmail.com