

Key nesting islets and feeding sites for Mediterranean Shag *Gulosus aristotelis desmarestii* in west Cyprus

Christou A.^a, Kassinis N.^b, Leontiou S.^a
^aBirdLife Cyprus, ^bGame and Fauna Service



INTRODUCTION

Mediterranean Shag *Gulosus aristotelis desmarestii* is one of three breeding seabirds in Cyprus. Until recently, knowledge about the breeding locations of Mediterranean Shags on the island has been limited, with just one colony, on the Kleides archipelago on the north-east tip of Cyprus, being the subject of regular monitoring efforts¹. Sightings of the species elsewhere indicated that the species is also concentrated in the southwest and northwest coasts. Within the framework of the project "LIFE IP Pandoteira" (LIFE+18 IPE/CY/000006), the Cyprus Game and Fauna Service and the NGO BirdLife Cyprus have joined forces to fill the gaps in the knowledge for this species. Surveys were performed to identify the breeding distribution of Mediterranean Shag in Cyprus, and the important resting and feeding areas.

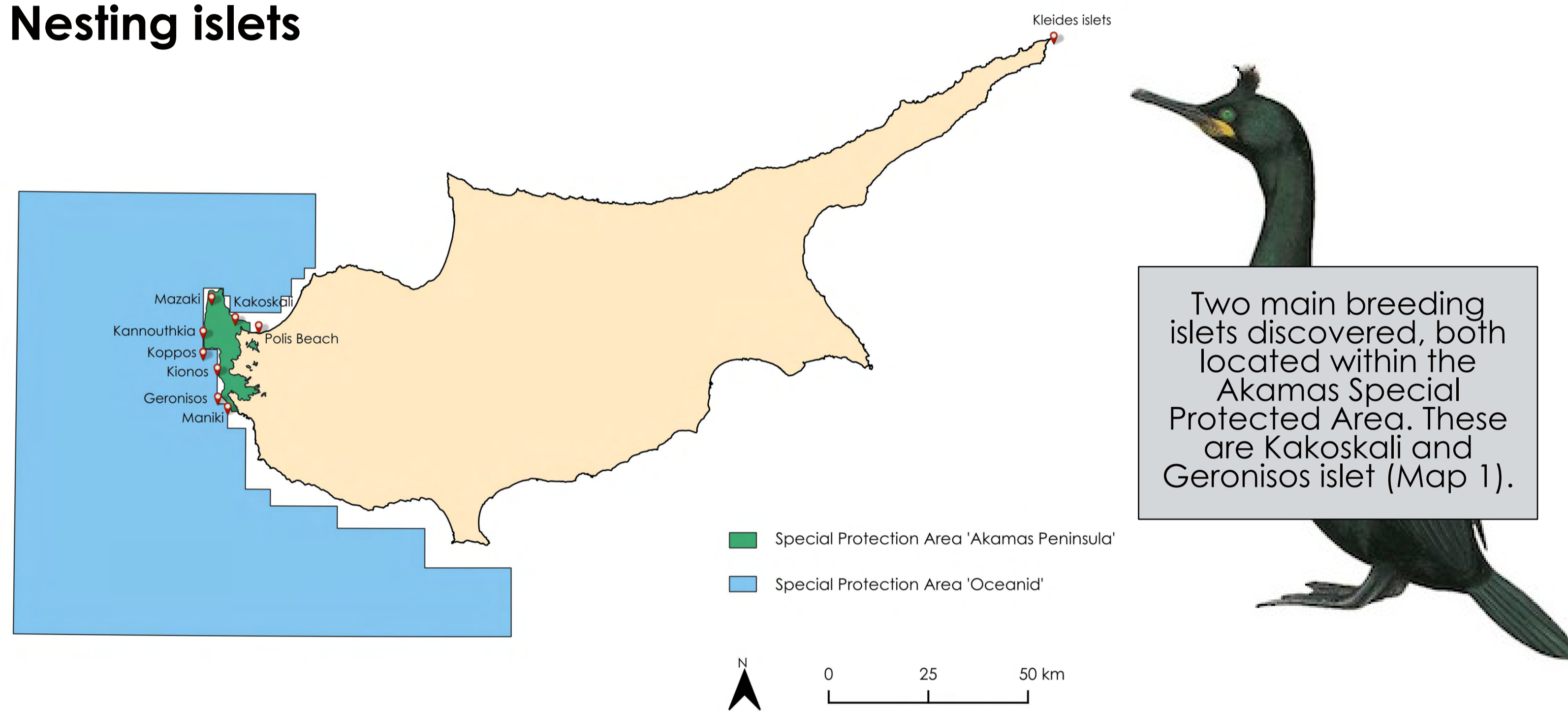
METHODOLOGY

A coastal boat survey was carried out during 2022 – 2023, focusing on the western and southern coastline of Cyprus. Potentially suitable islets, identified under an earlier seabird project², were closely surveyed to identify their suitability to host breeding Mediterranean Shag. 12 potentially suitable islets were identified, as well as 5 coastal cliff / rocky coast locations where potential breeding activity was recorded. We disembarked on all potentially suitable islets and located nests on two of them (Map 1). Additionally, GPS tags were deployed on 7 individual birds (2 adults, 5 chicks). Adults were tagged close to their nests during the breeding season and all juvenile birds were tagged as chicks at around 6 weeks old.



RESULTS

Nesting islets



Map 1: Map shows all relevant islets, localities and Special Protection Areas mentioned in the poster.

Throughout the 2022-2024 breeding seasons monitoring efforts, a total of 25 active nests were recorded on Kakoskali and Geronisos islets (Table 1).

	2021-2022	2022-2023	2023-2024	Total number of nests per islet
Kakoskali	2	4	10	16
Geronisos	0	4	5	9
Total number of nests (both islets)	2	8	15	25

Mortality of juvenile birds

Here, it is worth noting that a very high mortality has been recorded in juvenile birds only a few months after fledging (88.4 days average lifespan, with a maximum of 140 days) (Table 2).

Metal ring	Date of death	Data (days alive)	Cause of death
K021	23/07/2023	140	Bycatch.
K022	29/05/2023	85	Internal bleeding caused by heavy parasitic load.
K023	23/06/2023	110	Unknown. Bird was not found.
K024	05/05/2023	61	Internal bleeding caused by heavy parasitic load.
K030	09/06/2024	46	Results pending.

Contrasting adult and juvenile bird movements

The adults seem to be more targeted and consistent in their movements when compared to juvenile birds. Adult birds made trips mainly around the breeding island, while any movements covering distances above 10 km were rare. In general, juveniles were observed to have more exploratory tendencies than adults and travelled further away from their nesting area (Table 3).

	Average depth (m)	Maximum depth (m)	Maximum distance travelled from breeding grounds (km)
Juveniles	4.67	40.40	72
Adults	9.55	34.56	39

Both adults and juveniles make a significant use of the islet of Mazaki. Additionally, both age classes were observed to take advantage of any available rock near the coast (including the breakwaters in Polis).

Project Action Partners:

Co-funded by the European Union:



References / Acknowledgements:

The bird tagging efforts were supported by an external field ornithologist, Angelos Evangelidis.

Editing: Zoltán Tölgyesi

¹Monitoring is performed by Kuskor.

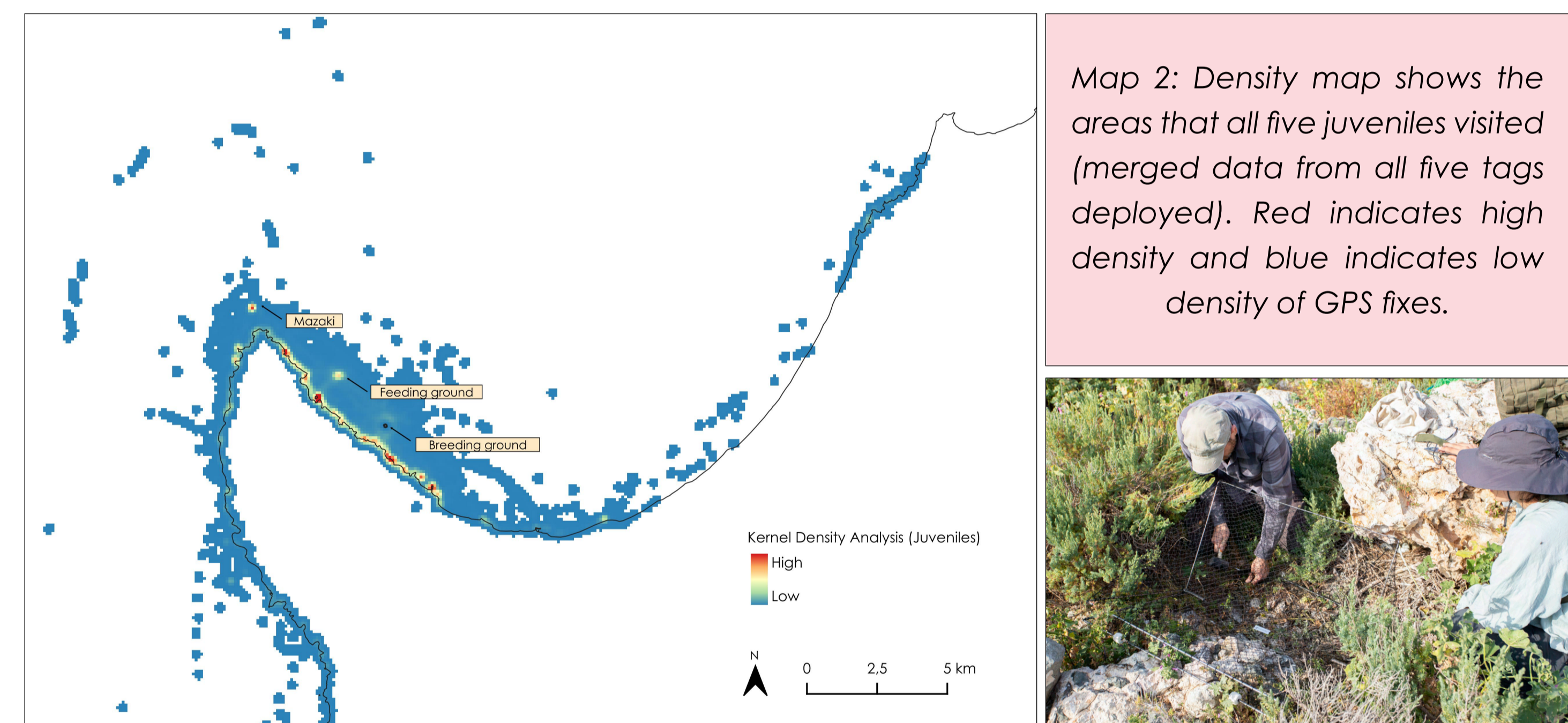
²Funded by the Trevor Poyser Grant.

Photo credits: Zoltán Tölgyesi, Treehouse Films LTD.

Resting and Feeding Sites

Juveniles

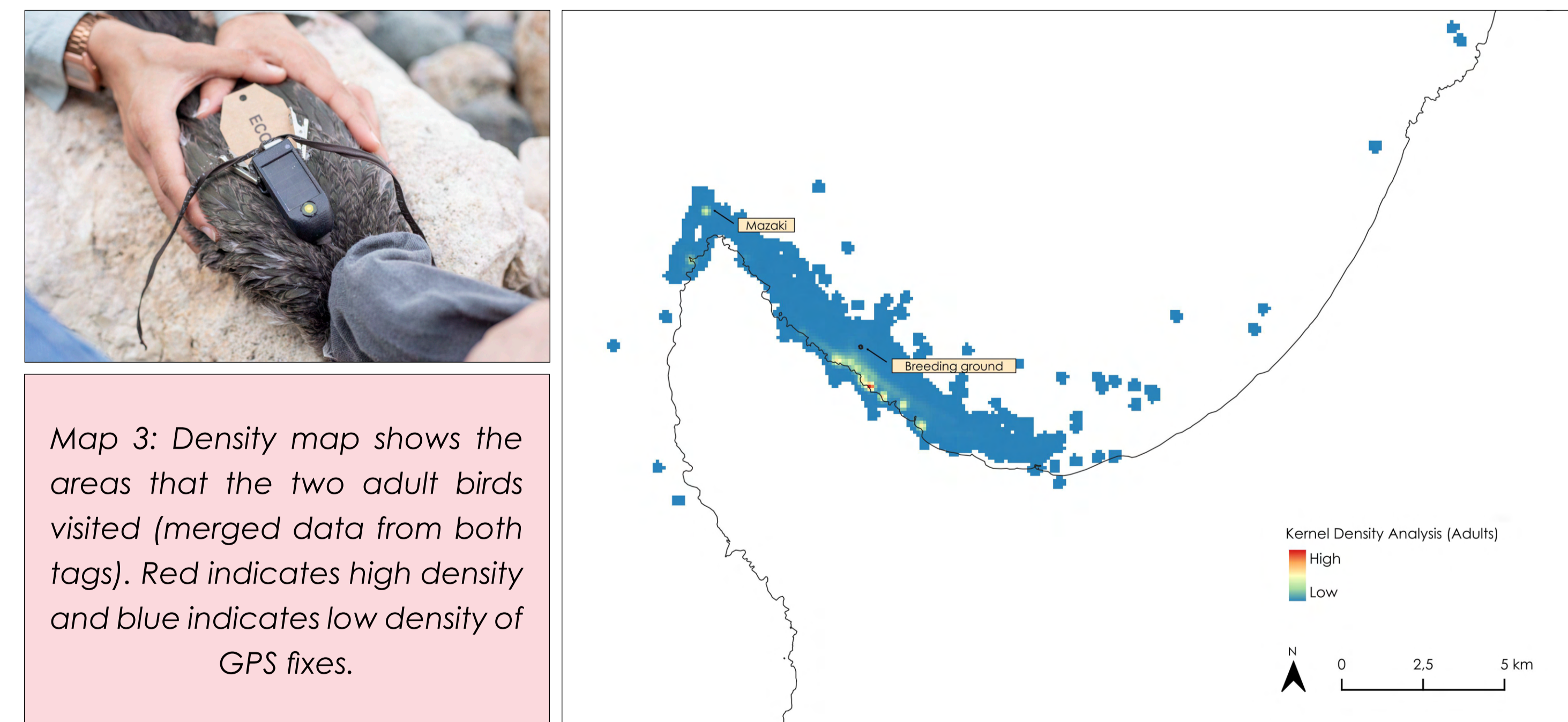
A density map was produced using Kernel Density Estimation (KDE) analysis for all five tagged juvenile birds combined (Map 2). The locations represent either feeding or resting activity, as the birds often emerge from a dive and then rest or feed on a nearby rock. From the analysis of the data, it is obvious that young shags make use of rocky surfaces, especially the ones found within close proximity to their breeding grounds. For example, all five birds used the nearby rocky coastline, as well as the islet of Mazaki, which appears to be a good resting area or a place where the birds land to eat their catch. The most interesting finding is the hotspot area, west of the breeding site, which is not a rocky islet. The particular location is a rich *Poseidon* meadow site (seagrass), which suggests that it is a high productivity feeding location for the young birds. Some of the young shags made use of other islets, such as Maniki, Kionos, Koppas, Kannouthkia, or rocky surfaces such as wavebreaks at Polis beach.



Map 2: Density map shows the areas that all five juveniles visited (merged data from all five tags deployed). Red indicates high density and blue indicates low density of GPS fixes.

Adults

A KDE density map was produced for both tagged adult birds combined (Map 3). The locations represent both feeding and resting activity. The data shows that adult shags make significant use of the coastline within close proximity of the breeding grounds. Another area frequently used by both adult birds is the islet of Mazaki.



Map 3: Density map shows the areas that the two adult birds visited (merged data from both tags). Red indicates high density and blue indicates low density of GPS fixes.

MANAGEMENT AND CONSERVATION MEASURES

The majority of the areas that all tagged birds used (adults and juveniles), are within already designated Marine Protected Areas (MPAs), such as Oceanid, Akamas and Polis – Gialia. However, even if these areas are protected on paper, the legislative framework for their management is not yet established.

The information gathered through this work has for the first time identified not only the key breeding sites of the species, but also the important resting and feeding areas of Mediterranean Shags in Cyprus. This information will be used to push for better protection of the species, through concrete and targeted conservation actions, including proposals for new protected areas. The results also provide evidence for advocacy for the establishment of legal protection measures for the key Mediterranean Shag breeding and feeding sites.