ARPHA Conference Abstracts 8: e147837
doi: 10.3897/aca.8.e147837

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Conference Abstract

DNA metabarcoding study of the diet and feeding preferences of the Grey Plover (*Pluvialis squatarola*) during migration on the SW Black Sea coast, Bulgaria

Liliana V. Vassileva‡, Lyudmila Lozanova Lozanova‡, Martin Marinov‡, Boyko Neov‡, Jerome Moriniere §, Nikolay Simov|, Boris Nikolov‡, Stefania Klayn‡

‡ Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria
§ Zoologische Staatssammlung München, Munich, Germany
| National Museum of Natural History, Bulgarian Academy of Sciences, Sofia, Bulgaria

Corresponding author: Liliana V. Vassileva (lilianavassileva@gmail.com)

Received: 24 Jan 2025 | Published: 04 Feb 2025

Citation: Vassileva LV, Lozanova LL, Marinov M, Neov B, Moriniere J, Simov N, Nikolov B, Klayn S (2025) DNA metabarcoding study of the diet and feeding preferences of the Grey Plover (*Pluvialis squatarola*) during migration on the SW Black Sea coast, Bulgaria. ARPHA Conference Abstracts 8: e147837. https://doi.org/10.3897/aca.8.e147837

Abstract

We studied the diet composition and feeding preferences of the Grey Plover (*Pluvialis squatarola*) at its migration stopover at Pomorie Lake on the South-Western Black Sea coast, Bulgaria, through DNA metabarcoding of faeces.

Faecal samples were collected in autumn 2020 and spring 2021, preserved in 95% ethanol, and stored at -20ºC until DNA extraction and metabarcoding. Two molecular markers were initially targeted - ITS2 for plant identification, and CO1 for animal identification; however, the subsequent analyses focused on the dominant animal prey identified by CO1. Concurrently, coastal habitats where the birds were observed to feed, such as the surf zone and the sandy supralittoral shore, were also sampled to determine prey availability.

The Grey Plover had a broad diet spectrum, with 332 prey taxa in total identified by metabarcoding, belonging to 7 phyla, 14 classes, 24 orders, 78 families and 119 genera. The birds consumed both terrestrial and marine taxa, suggesting that multiple coastal habitats are used for foraging. Terrestrial arthropods, particularly insects, predominated in the diet, while mytilid bivalves were the most represented marine taxon.

The results suggest that at the studied migration stopover site at the SW Black Sea, the Grey Plover was a generalist feeder, which agrees with previous studies from different areas. Most birds fed on insects (Diptera, Lepidoptera, Hymenoptera); a few individuals also specialised on marine molluscs, arachnids and polychaetes. The most abundant potential prey in the environment were not the most frequently consumed, possibly because the sampling methods were not suitable for the full spectrum of available prey (particularly the flying insects).

We found limited seasonal variation in Grey Plover diet composition and preferences, with the proportions of some prey taxa differing slightly between seasons, probably due to seasonal variations in their abundance and activity in coastal habitats.

Our results contribute to the knowledge of Grey Plover diet, prey choice and habitat use in a little-studied region on the Black Sea-Mediterranean Flyway. The new information could contribute towards designing effective conservation measures to preserve habitat quality at stopover sites for this wader and others with similar ecology, ensuring migration success at a time when migratory bird populations are increasingly threatened by habitat loss and degradation.

The results are presented and analysed in detail in Vassileva et al. (2024).

The full CO1 dataset is available in BOLD (https://doi.org/10.5883/DS-PLUVS).

Keywords

shorebirds, Black-bellied plover, DNA metabarcoding, feeding preferences, coastal food webs, South-Western Black Sea

Presenting author

Stefania Klayn

Presented at

First annual national meeting of the Bulgarian Barcode of Life consortium - BgBOL, 5 December 2024, Sofia, Bulgaria

Acknowledgements

This work was supported by the Bulgarian National Science Fund, Projects of junior basic researchers and postdocs 2021 (project No. KP-06-M51/3 /12.11.2021), and the Bulgarian Biodiversity Foundation, Support of theses Project “Game Over? Do not let climate change endthe game” (sponsorship contract No. 15/18.02.2021).

The authors would like to thank Aneliya Bobeva, Boyko Georgiev, Nevena Ivanova-Kambourova, Simeon Borisov and Vaya Ezhova for their support, feedback and methodological help.

Funding program

Bulgarian National Science Fund, Projects of junior basic researchers and postdocs 2021 (project No. KP-06-M51/3 /12.11.2021)

Bulgarian Biodiversity Foundation, Support of theses Project “Game Over? Do not let climate change end the game” (sponsorship contract No. 15/18.02.2021)

Hosting institution

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences

Conflicts of interest

The authors have declared that no competing interests exist.

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- Vassileva L, Lozanova L, Marinov M, Morinière J, Neov B, Nikolov B, Simov N, Klayn S (2024) Prey availability and diet composition of the Grey plover (*Pluvialis squatarola*) during migration on the South-Western Black Sea coast, Bulgaria. Food Webs 41: e00373. https://doi.org/10.1016/j.fooweb.2024.e00373