Abstract

[Project Information]

Project Title :	Ecological Research of Finless Porpoise as Top Predator in Coastal Ecosystem
Project Number :	JPMEERF20224R01
Project Period (FY) :	2022-2024
Principal Investigator :	Iwata Takashi
(PI ORCID) :	ORCID0000-0001-5492-9411
Principal Institution :	Graduate School of Maritime Sciences, Kobe University 5-1-1 Fukaeminamimachi, Higashinada, Kobe, Hyogo, 658-0022, JAPAN Tel: +81 78 4316323 E-mail1: iwatatakashi@gmail.com
Cooperated by :	
Keywords :	Passive Acoustic Monitoring, Environmental DNA, Stomach contents, Visual observation, Osaka Bay

[Abstract]

This study aims to contribute to the conservation of biodiversity in the eastern Seto Inland Sea by clarifying fundamental ecological information on the finless porpoise—an endangered species—including its distribution, diet, and habitat use characteristics in Osaka Bay, a region heavily impacted by human activity. To investigate the distribution of finless porpoise, visual observations were conducted from vessels along fixed routes, and water samples for environmental DNA (eDNA) analysis were collected at 100 sites. The results from both visual observation and eDNA analysis indicated that finless porpoises are distributed around the vicinity of Kansai International Airport. Moreover, the detection of porpoise DNA in areas where visual observations were not possible demonstrates the utility of eDNA methods for surveying the distribution of finless porpoises, a species that is often difficult to observe visually (Hashimoto et al., 2024). To analyse the diet of finless porpoises, stomach contents from 25 individuals were examined. The results revealed that porpoises in the eastern Seto Inland Sea primarily feed on squid and fish species. To investigate habitat use characteristics, hydrophones were deployed at six locations in Osaka Bay. Finless porpoise clicks were primarily detected in shallow coastal waters. In addition, common dolphin clicks were detected near the Akashi Strait. The detection rate of dolphin clicks increased from winter to spring, coinciding with the season of nori (seaweed) aquaculture. These findings suggest that seasonal environmental changes caused by human activities may be attracting common dolphins to this area (Iwata et al., in press). By integrating a variety of interdisciplinary methods—visual observations, eDNA analysis, dietary analysis, and passive acoustic monitoring—this study was able to systematically and comprehensively collect and evaluate ecological data on coastal small cetaceans, which has traditionally been limited and fragmented. These findings indicate that even in highly urbanised coastal areas, the coexistence of biodiversity conservation and human activity is possible through appropriate environmental management. Furthermore, the study provides practical and structural guidance for future coastal environmental policy development.

[References]

Hashimoto, N., Iwata, T., Kihara, N., Nakamura, K., Sakata, M. K., & Minamoto, T. (2024). Detection of environmental DNA of finless porpoise (*Neophocaena asiaeorientalis*) in Osaka Bay, Japan. *Conservation Genetics Resources*, *16*(3), 255-261. DOI: https://doi.org/10.1007/s12686-024-01361-7

Iwata, T., Matsumoto, T., Ogawa, I. M., Akamatsu, T., Araki, T. & Kimura, S. S. A possible example of the coexistence of dolphins and marine economic activity in Osaka Bay, Japan. *Aquatic Mammals* (in press)

This study was supported by the Environment Research and Technology Development Fund of the ERCA (JPMEERF20224R01) funded by the Ministry of the Environment.