Korean J. Malacol. 38(3): 111-114 2022
https://doi.org/10.9710/kjm.2022.38.3.111

[단보, Short communication]

Report on the three new *Clithon retropictum* (v. Martens, 1870) habitats in small streams on Jeju Island off the south coast of Korea

Hyung-Mook Lim and Kwang-Sik Choi

Department of Marine Life Science (BK21 FOUR) and Marine Science Institute, Jeju National University, 102 Jejudaehankno, Jeju 63243 Republic of Korea

ABSTRACT

Small streams and connected estuaries on Jeju Island off the south coast of Korea are unique habitats for some marine invertebrate animals, including the neritid gastropod *Clithon retropictum* (v. Martens, 1870). According to the Korean wildlife protection and management act, the estuarine gastropod *C. retropictum* is one of the level II endangered animals due to its vulnerable habitat. In this study, we report three small streams connected to the sea on Jeju Island, Woldaecheon stream on the north, Changgocheon on the south, and Hadori migratory bird habitat on the east coast as new habitats of *C. retropictum*. Egg capsules of *C. retropictum* were commonly observed in the newly found habitats, although the density in each habitat was low, with less than one individual per m^2. Along with the previously reported habitats of *C. retropictum* on Jeju Island, those new habitats require special attention to protect from anthropogenic activities which may deteriorate and destroy the habitat.

Key Words: *Clithon retropictum*, endangered species, Jeju Island, habitats

INTRODUCTION

The Korean wildlife protection and management act lists a total of 267 animals and plants as endangered species To protect and conserve wildlife (Korean Red List of Threatened Species, 2014; Ministry of Environment of Korea, 2022). In the list of 267 endangered animals and plants in Korea, *Clithon retropictum* (v. Martens, 1870) (= *C. retropictus*), the neritid gastropod (Habe, 1961; Komatsu, 1986; Chung, 2003), is one of the 32 species of the endangered Korean invertebrate animals distributed in small estuaries and streams on the south coast of Korea and Jeju Island (Noseworthy *et al*., 2012, 2013; Lee *et al*., 2018; Noseworthy and Choi, 2021). This neritid gastropod occurs in a rather vulnerable habitat on Jeju Island, where the habitat is often deteriorated by anthropogenic activities (Noseworthy *et al*., 2013; Noseworth and Choi, 2021). Accordingly, habitats of the endangered *C. retropictum* need to be identified and recorded to protect and conserve this endangered species. In this study, we report three newly discovered habitats of *C. retropictum* on Jeju Island.

Received: September 10, 2022; Revised: September 20, 2022; Accepted: September 28, 2022
Corresponding author: Kwang-Sik Choi
Tel: +82 (64) 754-3422, e-mail: skchoi@jejunu.ac.kr
1225-3480/24819

THE NEWLY DISCOVERED *C. retropictum* HABITATS IN JEJU ISLAND

During April and June 2022, several small streams running into the coastal Jeju Island were surveyed to locate populations of *C. retropicum*. From the investigation, we identified three new populations of the neritid gastropod inhabiting small streams on the north, south, and east coast of Jeju Island.

1. Woldaecheon stream on the north of Jeju Island

Fig. 1 shows the locality of Woldaecheon stream in the western part of Jeju City (33°29'30" N, 126°26'80"

E), egg capsules, and mature *C. retropictum* occurred. Several patches of *C. retropictum* were identified from the stream near Woldaecheon Bridge. The density was very low, with approximately several adult individuals per 10 square meters. During the visit, numerous *C. retropictum* egg capsules (Fig. 1 C) were observed, suggesting that they reproduced and maintained a population in this habitat.

2. Changgocheon stream on the southwestern Jeju Island

In this study, a small population of *C. retropictum* was also found in the Changgocheon stream nearby the Hwanggaecheon Bridge in southwestern Jeju Island (33°14'20" N, 126°20'38" E, Fig. 1). At the newly found habitat (60 m × 30 m), several patches of adult *C. retropictum* were observed, with a density of 5 to 10 individuals per square meter. Numerous egg capsules could be seen on the boulders in the habitat, indicating that *C. retropictum* reproduces and sustains its population, although the density is low.

3. A small stream located upper area of the Hadori migratory bird habitat

Located on the northeastern part of Jeju Island, the Hadori migratory bird habitat is an artificial brackish water lake where a small stream from the north runs into the lake (Fig. 3A). During the investigation, we identified a small population (less than one individual per 10 meters square) of *C. retropictum* from the upper area (20 m × 3 m) of the lake.

SUMMARY

Fig.1. Woldaecheon stream in the western Jeju City, where a small population of *C. retropictum* was discovered in this study. **A**, Location of Woldaecheon stream; red dots indicate where small patches of *C. retropictum* were observed. **B**, The upper area of Woldaecheon stream where several patches of *C. retropictum* were observed. **C**, Egg capsules of *C. retropictum*, and **D**, the mature individuals.

Fig. 2. *C. retropictum* habitat in Changgocheon stream on southwestern Jeju Island. **A**, Location of the Changgocheon stream on the southwest coast of Jeju Island. **B**, a sky view of the newly discovered habitat, and the red dots indicate the observed patches. **C**, density estimation of *C. retropictum* at the study site. **D**, a mature individual, and the egg capsules.

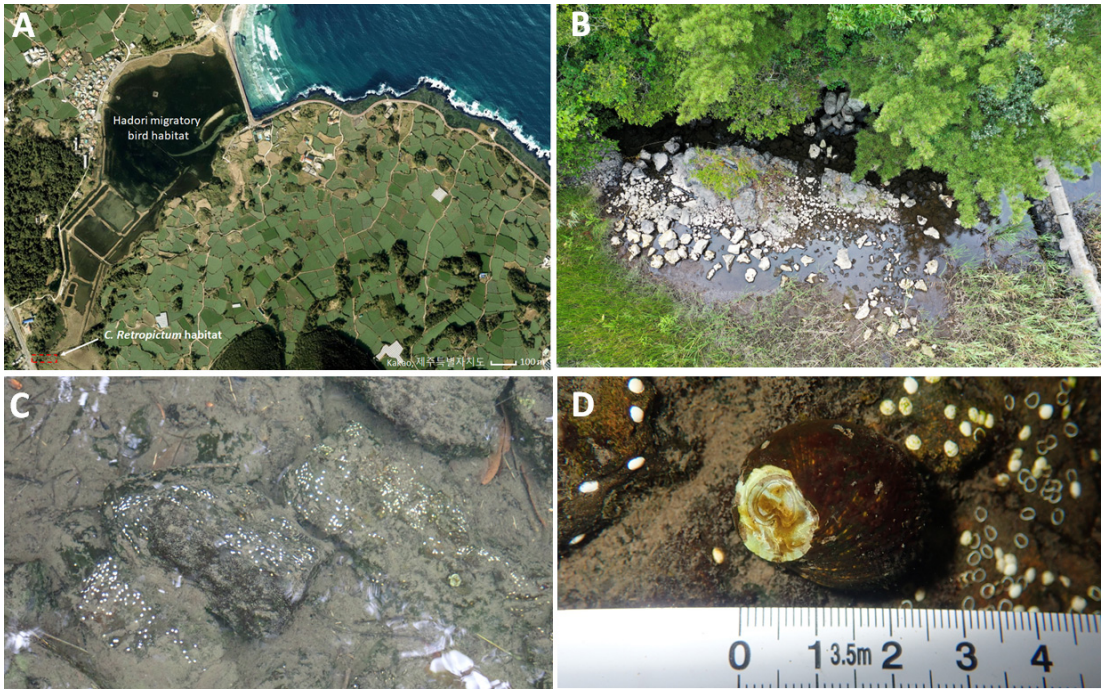

Fig. 3. A new habitat of *C. retropictum* discovered on northeastern Jeju Island. **A**, the new habitat was found in the upper area of a small stream running into the Hadori migratory bird habitat. **B**, a sky view of *C. retropictum* habitat, approximately 20 m long and 3 m wide. **C**, numerous egg capsules are found in the habitat. **D**, a mature individual, and the egg capsules.

Several localities on Jeju Island have been identified as habitats of the endangered neritid gastropod *C. retropictum*, as they form a patch on small rocks or boulders in rather clean water (Noseworthy *et al*., 2012, 2013; Noseworthy and Choi, 2021). In this study, we added three new localities, Woldaecheon stream, Changgocheon stream, and Hadori migratory bird habitat, as new habitats of *C. retropictum* in Jeju Island. These new habitats are characterized by a small area in a stream running into the seashore. The new habitats discovered in this study are considered vulnerable to natural hazards and anthropogenic activities since the size of the habitats is small. Accordingly, special attention is needed to protect *C. retropictum* in these small habitats through periodic investigation of the habitats.

ACKNOWLEDGEMENTS

This study was supported by a grant from Jeju National University (2022) to KS Choi.

REFERENCES

Chung, P.-R. (2003) Freshwater molluscs in Korea. Yunhaksa, Seoul, pp.284.

Habe, T. (1961) Colour illustrations of the shells of Japan. II. ix +, 66 pls. Hoikusha, Osaka, 182 pp.

Komatsu, S. (1986) Freshwater and brackish water neritid fauna in Taiwan (republic of China). *Venus,* **45**: 169-176.

Korean Red List of Threatened Species (Second Edition). (2014) Suh, M.-H., Lee, B.-Y., Kim, S.T., Park, C.-H., Oh, H.-K. Kim, H.-Y., Lee, J.-H., Lee, S.-Y. (eds), National Institute of Biological Resources, pp. 243.

Lee, S.-D.,??Kim, M.J., Kim, J.-S. (2018) Ecological characteristic of Clithon retropictus inhabitating in Yeoncho river in Southern Coastal Area. *Korean J. Environ. Ecol*., **32**: 591-602.

Ministry of Environment of Korea (2022) The Korean wildlife protection and management act. https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=32441&type=part&key=37#:~:text=The%20purpose%20of%20this%20Act,wildlife%20coexists%20with%20human%20beings.

Noseworthy, R.G., Ju, S.-J., Choi, K.-S. (2012) The occurrence of *Clithon retropictus* (von Martens in Kobelt, 1879, Gastropoda: Neritidae) in Jeju Island, Republic of Korea. *Korean J. Malacol*., **28** :81-90.

Noseworthy, R.G., Lee, H-J., Choi, K-S. (2013) The occurrence of *Clithon retropictus* (v. Martens, 1879) (Gastropoda: Neritidae) in an Unusual Habitat, Northern Jeju Island, Republic of Korea. *Ocean Science J*., **48**(3): 259-262.

Noseworthy, R.G., and Choi, K.-S. (2021) Report on the new habitat of *Clithon retropictum* (v. Martens, 1870) in a small estuary on the northern Jeju Island. *Korean J. Malacol.,* **37**(2): 41-44.