Elytra, *Tokyo*, **38**(1): 61–64, May 31, 2010

A Colluvial Slope as a Hibernating Habitat of Littoral Beetles in Eastern Hokkaido, North Japan

Masaaki NISHIKAWA

Kashiwagaya 1112–16, Ebina, 243–0402 Japan

Abstract A colluvial slope as a probable hibernating habitat of littoral beetles is discussed for further searches of ordinary habitat, on the bases of the topographical condition and the record of aggregated species.

Unusual microhabitats of Japanese littoral beetles have gradually been clarified in the passed several years (MARUYAMA, 2004; HAYASHI, 2007). However, their behaviors in a winter survival seem to be hardly known as yet in comparison with those in an active season. In mid September of 2008, I visited a seashore of Kushiro, the Pacific coast of eastern Hokkaido, in search for halophilous beetles, and found some littoral beetles from a colluvial slope, which is rather distant from their typical habitats hitherto known. As this peculiar condition seems to me to suggest seasonal change of their habitat for hibernation, I made this short report for further searches.

List of Species Collected

The collecting data are: Shiundai in Chiyo-no-ura beach [42°57′ N 144°23′ E], Kushiro-shi, eastern Hokkaido, North Japan, 13–IX–2008, M. NISHIKAWA leg.

Family **Agyrtidae**

Lyrosoma pallidum (ESCHSCHOLTZ, 1829); 1 ex.

Family **Staphylinidae**

Amblopusa magna ZERCHE, 1998; 1 ex.

Liusus humeralis (MATSUMURA, 1911); 1 ex.

Family **Curculionidae**

Emphyastes mannerheimi EGOROV et KOROTYAEV, 1976; 14 exs.

Thalasselephas major EGOROV et KOROTYAEV, 1976; 2 exs.

Thalasselephas maximus ZHERIKHIN, 1990; 2 exs.

Thalasselephas minor EGOROV et KOROTYAEV, 1976; 98 exs.

Summary of Topography and Habitat

The collecting site is situated outside the eastern end of Chiyo-no-ura fishing port,

which is formed on narrow shores between the breakwater of the port and the cliff of Shiundai hill (Fig. 1); there are several heaps of wrack near the shores. The microhabitat of the beetles recorded above is in the colluvial slope of the landward Shiundai at a distance of ca. 10 m from the nearest seashore via sand deposits (Fig. 2); the slope almost faces west, consisting of slate layers which have been weathered probably by a frost shattering with seeps of underground water, and have formed many irregular cracks (Fig. 3); the beetles dwell in the depths of these cracks under the eaves like clastic gravel deposits together with halophilous talitrids (Amphipoda) and terrestrial centipedes and mites.

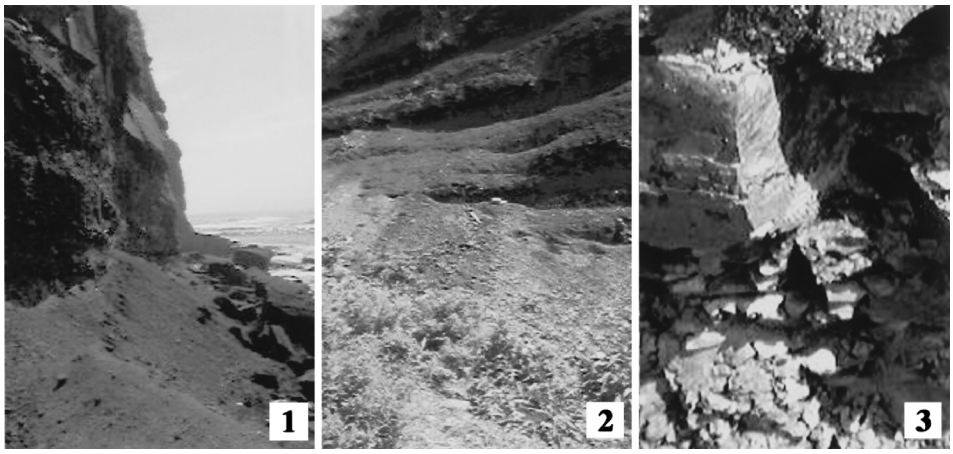
I searched for those animals by digging ca. 0.1 m in a range of ca. 0.5×0.5 m of the slope. On the other hand, no beetles were found under wrack and decayed sea algae in the supralittoral zone near the slope though some halophilous hydrophilids were found there.

Discussion

All the members of the agyrtid genus *Lyrosoma* have been known as littoral dwellers generally occurring under decayed sea algae (SCHAWALLER, 1998; MARUYAMA, 2004). The microhabitat of *Lyrosoma pallidum* recorded herein is very similar to that of *L. pallidum* and *L. opacum* in Hamanaka-chô, ca. 50 km east-northeast of Kushiro recorded by HORI (2001). *Lyrosoma pallidum* [=*L. chujoi* and *L. ituropense*; SCHAWALLER (1998)] has so far been obtained from April to June, and from August to September in Hokkaido; its newly-emerged adults seem to appear in the spring, and to estivate during the summer, since some teneral specimens have been obtained in May (HIRANO, 1971) and the adults disappear in the mid summer (HIRANO, 1971; NISHIKAWA, 1997); after estivation, they are active again to hibernation. However, their mating activity and larval stage have not yet been observed.

One of the two staphylinids, *Amblopusa magna*, has been known as an intertidal beetle. MARUYAMA (2002) surmised it as an upper hypogean dweller based on its habit and characteristic appearance. This species has been recorded from Hokkaido in April and July (AHN, MARUYAMA & ÔHARA, 1999). Another one, *Liusus humeralis*, is a regular member of supralittoral habitats mainly obtained in Hokkaido by sifting sea algae washed ashore, and has been recorded from July to August (NAOMI, 1982, as *L. hilleri* (WEISE); WATANABE, 1983; MARUYAMA, pers. comm.).

The species of the curculionid genera *Emphyastes* and *Thalasselephas* have been known as the supralittoral dweller. They are found ordinarily from seaweeds buried in sand and gravel in the daytime (EGOROV & KOROTYAEV, 1976; MORIMOTO, 1993; HORI, 1994; MARUYAMA, 2002, 2004), but are probably nocturnal since they are found on beach at night (KOJIMA, pers. comm.). MORIMOTO (1993) pointed out that their distribution is related to the occurrence of the eel grass genus *Zostera* species (Liliopsida). HORI (1994) empirically stated that small sandy beach following a promontory forming an inlet is a best collecting site of these curculionids, because wracks of



Figs. 1–3. Habitat of littoral beetles in the autumn of Kushiro, eastern Hokkaido. —— 1, Cliff of Shiundai in the seaward side; 2, colluvial slope of Shiundai in the landward side; 3, microhabitat of the beetles.

seaweeds are easily accumulated in such a beach, which is similar to those around Shiundai in topographical condition. The curculionids have been obtained from the spring until the autumn, though their previous records from Hokkaido are really scarce; they may hibernate probably in the adult stage, since the newly-emerged adults of *E. mannerheimi* appear at the end of August as observed by EGOROV and KOROTYAEV (1976) in the Russian Far East.

All the beetles recorded are flightless, with the exception of alate *L. humeralis*, and dwell constantly in the littoral zone in their active season. The aggregation of the beetle individuals is proper to consider that the majority of them migrated only crawling from the typical habitats, and aggregated to the colluvial slope for hibernation as the result, judging from the decreasing temperature of the eastern Hokkaido area in the mid September (HORI, 2001; KOJIMA, pers. comm.). At this point of view, the colluvial slope of Shiundai seems to be well suitable for their hibernation since it has a moderate humidity, and protects the aggregate against temperature fluctuations even in the real winter season, though it is exposed directly to sunlight (cf. DANKS, 1981). However, such slopes do not exist in all seashores where the beetles dwell. For instance, it is very likely that the upper hypogean zone distant landwardly from their typical habitats is ordinarily used for hibernation so far as the migratory beetles are concerned. In any case, direct observation of overwintering beetles at such sites is necessary to confirm this prediction.

要　　約

西川正明：北海道東部における海浜性甲虫の越冬場所としての崖錐. —— 北海道東部の釧路市

の海岸で，9月中旬に波打ち際から 10 m 程度離れた崖錐において，甲虫類 7 種が集合している状態が発見された．海浜性甲虫の活動期における生息場所は徐々に明らかになってきているが，越冬がどのような場所で行われているかについては情報が少ない．この論文では，そうした情報の蓄積を喚起するために，今回発見された甲虫類とそれらの越冬場所について論じた．

Acknowledgements

I thank Dr. Hiroaki KOJIMA of Tokyo University of Agriculture, Atsugi, and Dr. Munetoshi MARUYAMA of Kyushu University Museum, Fukuoka, for species determination of the Curculionidae and the Staphylinidae, respectively. Mr. Shigehisa HORI of the Historical Museum of Hokkaido, Sapporo, and Dr. Shun-Ichiro NAOMI of the Natural History Museum and Institute, Chiba, kindly gave me important information of halophilous beetles.

References

AHN, K.-J., M. MARUYAMA, & M. ÔHARA, 1999. The intertidal beetle *Amblopusa magna* ZERCHE (Coleoptera, Staphylinidae, Aleocharinae) new to Hokkaido and the Kuril Archipelago. *Elytra*, *Tokyo*, **27**: 641–642.

DANKS, H. V., 1981. Arctic Arthropods. A Review of Systematics and Ecology with Particular Reference to the North American Fauna. [i–v]＋608 pp. Ent. Soc. Canada, Ottawa.

EGOROV, A. B., & B. A. KOROTYAEV, 1976. Review of the weevil tribe Emphyastini (Coleoptera, Curculionidae), habitants on the supralittoral of the Japan, Ochotian and Bering Seas. *Trudy zool. Inst. Akad. Nauk SSSR*, *Leningrad*, **67**: 43–55. (In Russian with English title.)

HAYASHI, M., 2007. Collecting methods of marine Coleoptera in the coast of Japan Sea. *Newsl. Staphylinidol. Soc. Japan*, *Tokyo*, (32): 1–2. (In Japanese with English title.)

HIRANO, Y., 1971. *Lyrosoma chujoi* abundant in Hakodate. *Gekkan-Mushi*, *Tokyo*, (8): 36. (In Japanese.)

HORI, S., 1994. Collecting records of littoral weevils from Ishikari Bay, the Japan Sea coast of central Hokkaido, North Japan. *Jezoensis*, *Sapporo*, (21): 57–58. (In Japanese.)

———— 2001. A new record of *Lyrosoma opacum* (Coleoptera, Agyrtidae) from Japan mainland. *Gekkan-Mushi*, *Tokyo*, (367): 5–7. (In Japanese with English title.)

MARUYAMA, M., 2002. Littoral rove beetles of Hokkaidô. *Nat. & Ins.*, *Tokyo*, **37**(12): 17–21. (In Japanese with English title, key words and abstract.)

———— 2004. Marine insects. *Ibid*., **39**(12): 4–7. (In Japanese with English title.)

MORIMOTO, K., 1993. An outline of the beach beetle fauna in Japan. *Nat. & Ins.*, *Tokyo*, **28**(11): 2–6. (In Japanese with English title.)

NAOMI, S.-I., 1982. Revision of the subtribe Xanthopygina (Coleoptera, Staphylinidae) of Japan, I. *Kontyû*, *Tokyo*, **50**: 125–133.

NISHIKAWA, M., 1997. *Lyrosoma ituropense* HLISNIKOVSKÝ (Coleoptera, Agyrtidae) from Hokkaido, North Japan. *Elytra*, *Tokyo*, **25**: 121–122.

SCHAWALLER, W., 1998. Revision of the genus *Lyrosoma* MANNERHEIM, 1853 (Coleoptera, Agyrtidae). *Ent. Bl*., **94**: 127–133.

WATANABE, Y., 1983. The Japanese species of the genus *Liusus* SHARP (Coleoptera, Staphylinidae). *Kontyû*, *Tokyo*, **51**: 214–220.