The impact of the reduction of beach width by seawall construction on the distribution of ground prowling insects

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Seawalls were constructed on sandy beaches in the Sendai coast, Miyagi prefecture after the Great East Japan Earthquake occurred on 11 March 2011. These structures narrowed the beaches and it is concerned that the coastal ecosystems are degraded due to the direct impacts of habitat loss and indirect impacts of the increased environmental pressures from the sea such as waves, sand transportations, salt sprays, etc. It has been suggested that such anthropogenic impacts on ecosystems may also affect the nutrient cycle in the ecotone between sea and land, and it is required to clarify the impacts quantitatively. The purpose of this study was investigated whether the distribution of ground prowling insects living on the beach is affected by the reduction of the beach width caused by seawall constructions.
The survey was conducted in the coastline of Miyagi prefecture at five sites: Arahama A and B (Sendai City), Ido (Sendai City), Yuriage (Natori City), Kitagama (Natori City). These sites were selected considering the width of the beach and the state of the vegetation. Ground prowling insects were sampled by pitfall traps. The traps were set from the seawall to the shoreline in a direction vertical to the seawall at 20 m intervals for approximately 40 hours. These samplings were undertaken from 26 to 28 August 2020.
The results suggested that the loss of vegetation caused by the reduction of beach width affects the distribution of ground prowling insects. The narrower beaches received more environmental impacts from the sea, and it also lead to the loss of habitat of them and vegetation. In addition, Gonocephalum (Gonocephalum) recticolle and Meristhus (Sulcimerus) niponensis were found only in the vicinity of the seawalls in Yuriage, the widest beach (about 200 m width) of all five sites. At other sites, their habitat may have been lost due to the construction of seawalls.

