Annual and seasonal changes in community structure of shorebirds at the Kuma River Estuary, Japan

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Keywords: Annual and seasonal changes, Reclamation, Resting place, Shorebirds, Species composition

Abstract

Huge tidal flats at the northern area of the Yatsushiro Sea provide important habitat for migrating shorebirds. In particular, according to the national shorebird survey of The Monitoring Sites 1000 Project, the Kuma River Estuary was ranked 8th, 7th, and 8th in the spring, autumn and winter of 2015, respectively, in Japan in terms of total numbers of shorebirds recorded. Recently, however, some resting sites of shorebirds in the hinterland of this area have been turned into industrial or residential areas and the resulting decrease in appropriate resting sites has become a serious problem for many shorebirds. We carried out a survey of annual and seasonal changes in the shorebird community at the Kuma River Estuary (foraging site) and nearby reclamation areas (resting sites) from 1985 to 2015 to verify the importance of these areas as migration sites. At the survey areas, 44 shorebird species were observed, and the total number of shorebirds exhibited a long-term downtrend. Kentish Plover (*Charadrius alexandrinus*) and Dunlin (*Calidris alpina*) made up 15.3% and 50.0% of the total shorebirds (3,215 birds per year on average) found at the Kuma River Estuary, respectively, and 27.4% and 64.5% of the total shorebirds (1,279 birds per year on average) found at the reclamation areas, respectively, from 1985 to 2005, indicating that they were major species and greatly depend on the reclamation areas. Since 2006, however, the number of shorebirds found at the reclamation areas, especially of the above two species, has decreased sharply because of land-drying works. This indicates that the long-term decreasing trend of shorebird abundance was partly due to the shortage of hinterland areas where shorebirds rest during high tides. The seasonal visiting pattern of shorebirds was divided into 7 categories: spring-autumn, spring, spring-winter, spring-autumn-winter, autumn, autumn-winter, winter. For example, many Kentish Plover (autumn-winter type) were observed during autumn and winter, and many Dunlin (spring-winter type) were observed during winter and spring. Most shorebird species stayed at the Kuma River Estuary all year round except in summer, indicating that the Kuma River Estuary is an important wintering site.