



Distribution and Conservation of Long-billed Plovers *Charadrius placidus* in Korea

In-Kyu Kim¹, Hansoo Lee¹, Woon-Kee Paek², Seung-Hwa Yoo¹, and Joon-Woo Lee^{3*}

¹Korea Institute of Environmental Ecology, Daejeon 305-509, Korea

²Department of Natural History, National Science Museum, Daejeon 305-705, Korea

³Department of Forest Resources, Chungnam National University, Daejeon 305-764, Korea

Abstract: The Long-billed Plover *Charadrius placidus* of distribution was surveyed from 2002 to 2005, on rivers, streams and coasts of 38 areas within Korea. The Sum of highest numbers (sum of peak counts) of Long-billed Plovers at 24 sites was 198 individuals. Number of observed individuals during breeding period was 88 individuals, 129 individuals during the migration period, and 56 individuals during the wintering period. The Long-billed Plover breeds and migrates throughout Korea. They spend winter south of 37° latitude. Highest numbers (73 individuals) were observed at Daejeon. Therefore, streams and rivers of Korea are considered as an important habitat for the Long-billed Plover.

Key words: Daejeon, Stream, Breeding, Wintering, Endangered species

Introduction

The Long-billed Plover *Charadrius placidus* is a species of small-to-medium-sized birds (body length: 19~21 cm) in the Charadriidae family and the Charadriiformes order. It is mostly a migratory bird coming to Korea for spring and autumn. Some are known to spend winter in the southern region (Austin, 1948; Won, 1981, 1993). In the case of Japan, although it is a summer visitor in some areas, it is mostly a resident bird in many areas (Austin and Kuroda, 1953; Brazil, 1991). Long-billed Plovers are found in the Maritime Provinces of Siberia, eastern and northeastern China and Japan. In winter, they migrate from Nepal and India to Indochina, southern China, Korea and Japan (King and Dickinson, 1998; Robson, 2002; MacKinnon and Phillipps, 2006). Although the Long-billed Plover looks similar to Little-ringed Plover *Charadrius dubius*, its size is bigger, bill darker and tail longer (del Hoyo *et al.*, 1996).

There are only about 10,000-25,000 Long-billed Plover individuals surviving worldwide. Internationally, 1% of total individual's amount to 250 individuals (Wetlands International, 2006), In Korea, the Ministry of Environment designated the Long-billed Plover as a legally protected bird species. As for overseas studies on breeding and behavior of plovers, there have been many, including

Mountain Plover *Charadrius montanus* (Graul, 1975), Wilson's Plover *Charadrius wilsonia* (Bergstorm, 1988), Piping Plover *Charadrius melodus* (Cairns, 1982; Goldin and Regosin, 1998). However, details on breeding of Long-billed Plovers are hardly known (del Hoyo *et al.*, 1996), and no published information is available on their distribution in Korea. Therefore, this study aims to discover the distribution of Long-billed Plovers in Korea.

Method

Distribution was surveyed in rivers, streams and along coasts of 38 areas in Korea. The distribution was surveyed from 2002 through 2005, separating each year into the breeding period (March through August), the migration period (September through November) and the wintering period (December through February). In nine cities and counties, including Daejeon, rivers and streams were surveyed once in each season, during which the observed locations, number of individuals and breeding were checked. Given the limitations of the survey, irregularly surveyed data were used for the others 12 cities/counties (Fig. 1).

Results

From 2002 through 2005, among 38 survey sites in streams, rivers and coasts in Korea, the sum of highest numbers (Sum of peak counts) of Long-billed Plovers

*To whom correspondence should be addressed.

Tel: +82-42-825-6477

E-mail: jwlee@cnu.ac.kr

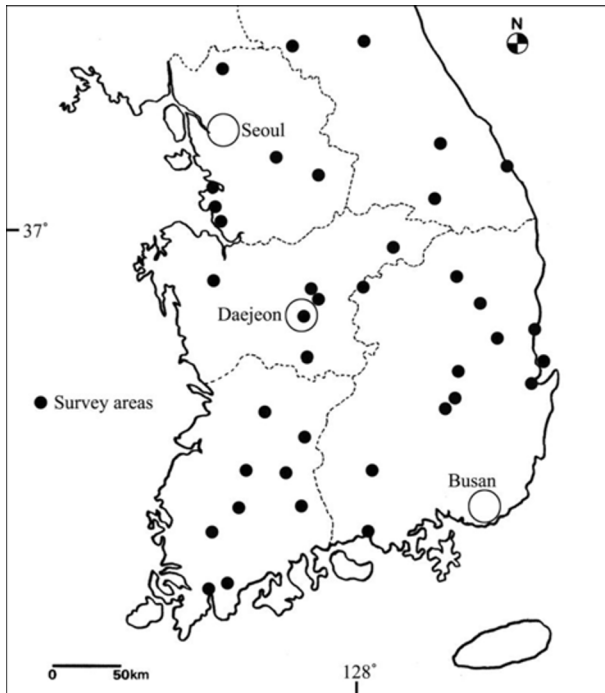


Fig. 1. Map of survey areas (●)

observed in 24 sites was 198 individuals. In the breeding period, the sum of highest numbers of Long-billed Plovers observed at 17 sites was 88 (Fig. 2). The highest number (26 individuals) was observed at Gap Stream in Daejeon. The lowest number (1 individual) was observed at Jiseok Stream in Naju (Jeollanam-do) and Seosi Stream in Sacheong County (Gyeongsangnam-do). In the migration period, the sum of highest numbers of Long-billed Plovers observed at 10 sites was 129 (Fig. 2). The highest number (73 individuals) was observed at Gap Stream in Daejeon, the lowest number (1 individual) at the Imjin River in Yeoncheon County (Gyeonggi-do). In the wintering period, the sum of highest numbers of Long-billed Plovers observed at 11 sites was 56 (Fig. 2). The highest number (15 individuals) was observed at Jeonju Stream in Jeonju (Jeollabuk-do), the lowest number (1 individual) at Gam Stream in Cheongwon County (Chungcheongbuk-do) and Sacheon Bay and Gwangpo Bay in Sacheon (Gyeongsangnam-do).

The results show that Long-billed Plovers breed at watersides covered with gravel or sand scattered with sedges along relatively big streams or rivers throughout of Korea. In the migration period, they migrate along streams and rivers in Korea. They spend winter in streams, rivers or coasts located south of 37° latitude.

Discussion

In the past, Long-billed Plovers were known to pass through Korea in spring and autumn and spend winter in

southern regions (Austin, 1948; Won, 1981, 1993). However, findings from this study show that they arrive at most rivers and streams in Korea to breed and spend winter in areas south of 37° latitude. In particular, during the migration period, number of observed individuals was 129, which are more than 0.5% (125 individuals) of the estimated surviving population in the world (Wetlands International, 2006). This result indicates that Korea is an important breeding ground and stopover site. Moreover, in the case of Jeju Island, which was excluded in this study, there is a record that as many as 105 individuals arrived at tidal flats and coasts during the spring migration period in 1998 (Kim *et al.*, 1999).

According to Kim *et al.* (2002), Long-billed Plovers incubate for 33 days, which is longer than the incubation periods of the Little-ringed Plover (22~28 days) and the Kentish Plover *Charadrius alexandrinus* (23~29 days) (Won, 1981; del Hoyo *et al.*, 1996). Therefore, It is more difficult for Long-billed Plovers to succeed in breeding when disturbed by external factors. Little-ringed Plovers and Kentish Plovers, other similar species that arrive and breed in Korea, have diverse breeding grounds, including riversides and coastlines. If the environment is appropriate, they breed collectively (Byrkjedal, 1988; del Hoyo *et al.*, 1996). On the other hand, Long-billed Plovers breed individually at the watersides of streams or rivers. They prefer an environment that is covered with gravel and sedge plants (Kim *et al.*, 2002).

In general, during the breeding period, plovers fly in the upper air to attract predators approaching their nests or take defensive actions using the broken-wing display (Byrkjedal, 1989; Tinbergen, 1990). In the case of Greater-golden Plover *Pluvialis apricaria* or Eurasian Dotterel *Charadrius morinellus* they increase breeding success rates by aggressively taking defensive actions when natural enemies or people approach their nests or newborn chicks (Byrkjedal, 1987). However, in the case of Long-billed Plovers, compared to Little-ringed Plovers or Kentish Plovers breeding in the similar environment in Korea, they did not take aggressive actions against predators approaching their nests (Kim *et al.*, 2002). For parents to not behave aggressively when a predator approaches the nest or chicks and move away from the predator seems to be a defensive behavior unique to Long-billed Plovers. Accordingly, they have a survival strategy of selecting a habitat that harmonizes well with the colors of the parent bird, egg and chicks. Such habitat selection strategy is well known among Oystercatchers (Lauro and Burger, 1989; Lauro and Nol, 1995).

The breeding period of Long-billed Plovers starts earlier than other plovers and, thus, they are more vulnerable to natural enemies. In Korea, water levels are low and vegetation is not dense in April. Therefore, Long-billed

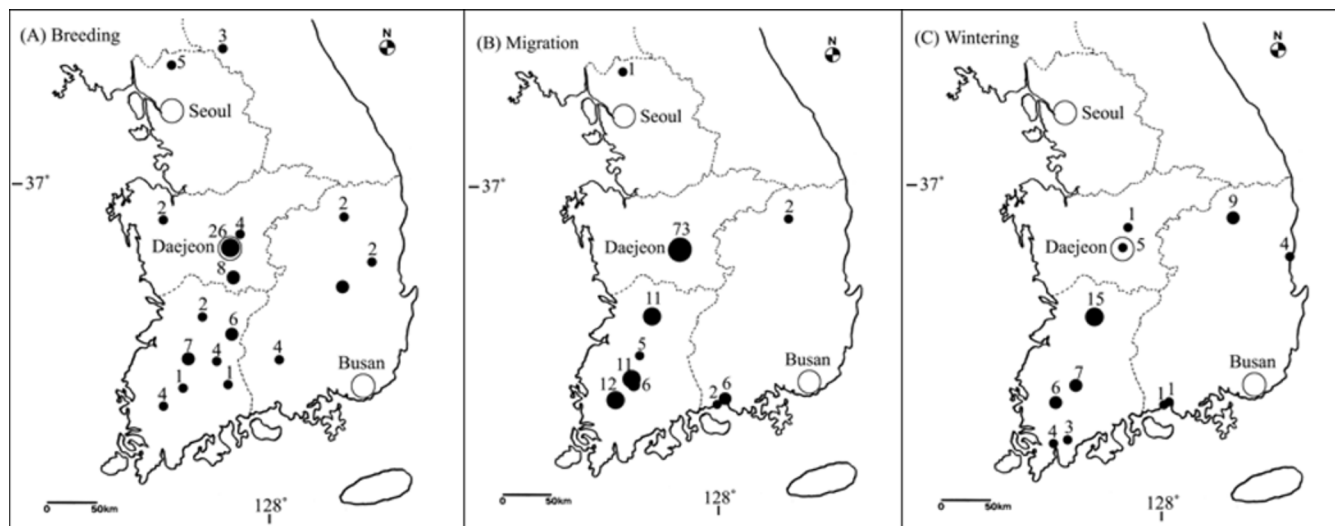


Fig. 1. Distribution of Long-billed Plover *Charadrius placidus* during the breeding (A), migration (B) and wintering (C) periods in Korea (Numeral on the ● Number of individuals).

Plovers are more easily exposed to their natural enemies. In addition, rivers and streams are accessible by urban people and they leave food wastes along the streams, which attract Magpies and cats; thus, Long-billed Plovers may easily fall prey to them.

In Korea, Long-billed Plovers prefer stream banks as their breeding grounds. Recent reduction of gravel banks is likely to result in a decrease of individuals. In Korea, improvement projects are underway in most streams to prepare for flood damage. Therefore, gravel banks along streams are disappearing and breeding grounds themselves are often destroyed. Therefore, in order to increase the population of Long-billed Plovers, naturally created gravel banks along rivers and streams used as breeding grounds or wintering sites should be protected in Korea as well as in other regions. If river improvement projects are initiated, gravel banks should be created artificially to provide breeding grounds and habitats for Long-billed Plovers.

References

- Austin, O.L. (1948) The birds of Korea. Bulletin of the Museum of Comparative Zoology 101. Cambridge, Massachusetts.
- Austin, O.L. and N. Kuroda (1953) Birds of Japan. Their status and distribution. Bulletin of the Museum of Comparative Zoology 109. Cambridge, Massachusetts.
- Bergstrom, P.W. (1988) Breeding biology of Wilson's Plovers. *Wilson Bulletin* 100: 25-35.
- Brazil, M.A. (1991) The birds of Japan. Christopher Helm, London.
- Byrkjedal, I. (1987) Antipredator behavior and breeding success in Greater Golden-Plover and Eurasian Dotterel. *Condor* 89: 40-47.
- Byrkjedal, I. (1988) Nest habitat and nesting success of Lesser Golden-Plovers. *Wilson Bulletin* 101: 93-96.
- Byrkjedal, I. (1989) Nest defense behavior of Lesser Golden-Plovers. *Wilson Bulletin* 101: 579-590.
- Cairns, W.E. (1982) Biology and behavior of breeding Piping Plovers. *Wilson Bulletin* 94: 531-545.
- del Hoyo, J., A. Elliot and J. Sargatal (Eds) (1996) Handbook of the birds of the world. Volume 3. Lynx Edicions, Barcelona.
- Goldin, M.R. and J.V. Regosin (1998) Chick behavior, habitat use, and reproductive success of Piping Plovers at Goosewing Beach, Rhode Island. *Journal of Field Ornithology* 69: 228-234.
- Graul, W.D. (1975) Breeding biology of the Mountain Plover. *Wilson Bulletin* 87: 6-31.
- Kim, I.K., H. Lee and W.K. Paek (2002) Breeding record of Long-billed Plover *Charadrius placidus* at Daejeon stream, Daejeon, Korea. *Korea Journal of Ornithology* 9:135-137.
- Kim, W.B., H.S. Oh, H.S. Park and I.C. Lim (1999) Shorebirds migration of major wetlands on Jeju Island, Korea. *Jeju Journal of Life Science* 2: 83-98.
- King, B.F. and E.C. Dickinson (1998) Birds of Southeast Asia. Periplus Editions, Hong Kong.
- Lauro B. and E. Nol (1995) Patterns of habitat use for Pied and Sooty Oystercatchers nesting at the Furneaux Islands, Australia. *Condor* 97: 920-934.
- Lauro B. and J. Burger (1989) Nest-site selection of American Oystercatchers (*Haematopus Palliatus*) in Salt Marshes. *Auk* 106: 185-192.
- MacKinnon, J. and K. Phillipps (2006) A field guide to the birds of China. Oxford University Press Inc., New York.
- Robson, C. (2002) A field guide to the birds of Thailand. Asia Books Co. Ltd, Bangkok.
- Tinbergen, N. (1990) Social behaviour in animals: with special reference to vertebrates. Chapman and Hall, London.
- Wetlands International (2006) Waterbird population estimates-Fourth edition. Wetland International, Wageningen, The Netherlands.
- Won, P.O. (1981) Illustrated flora and fauna of Korea. Vol. 25 (Avifauna). Sam-Hwa Book Publishing Co. Ltd, Seoul.
- Won, P.O. (1993) A field guide to the birds of Korea. Kyo-Hak Publishing Co. Ltd, Seoul.

[Received on August 31, 2009]