

Large-billed Crow Hashibuto-garasu (Jpn) *Corvus macrorhynchos*

Morphology and classification

Classification: Passeriformes Corvidae

Total length: 540-600mm Wing length: 316-400mm
 Tail length: 205-255mm Culmen length: 62.0-76.5mm
 Tarsus length: 52-69mm Weight: 570-895g

The measurements of adult birds after Kuroda (1970) and Tamada (2004).

Appearance:

Large-billed Crows are black all over. Adult birds have blue to purple metallic sheen especially in the flight feathers, but juveniles have dull brownish flight feathers. The inside of a mouth is black in adults and red in juveniles. The iris is almost black in adults, but bluish gray in fledglings.



Photo 1. Large-billed Crow

Vocalization:

The most common call is "Kaa", but they have a wide variety of calls. For instance, they call "Ah-", "Core" and "Awa" in a clear voice, while they utter "Gurr" and "Gore" thickly when threatening.

Distribution and Habitat

Distribution:

Outside of Japan Large-billed Crows are distributed in the Russian Far East (Kamchatka, Sakhalin and Primorskii), eastern China, the Korean Peninsula, Mongolia, the Tibetan Plateau and from Afghanistan to Southeast Asia including a part of the Indonesian Islands and the Philippines (Goodwin 1986). In Japan they range from Hokkaido to Okinawa Island, but Large-billed Crows distributed from Amami-oshima Island to Miyakojima Island and those occurring in Iriomote and Ishigaki Islands are classified into *Corvus macrorhynchos connectens* and *C. m. osai*, respectively.

Habitat:

Large-billed Crows occur in forests, coasts and urban areas, but they are not abundant in farmland. Although there are studies on the ecology of Large-billed Crows living in urban areas, the details of the life in the forest that is assumed to be their original habitat is still unknown.

Life history



Breeding system:

They are monogamous and maintain their pair-bond over several years. Both males and females defend their territory. The territory size varies from 2 to 49 ha (Kuroda 1981, Matsubara 2003), but it is mostly 5-6 ha in urban areas.

It is unknown when and how pairs are formed. There is an observation record of the pair which was assumed to start breeding at the age less than two (Kurosawa 2000), but another report suggested that it took three years to start breeding (Kuroda 1981). There are flocks of non-breeders throughout the year, and they are assumed to consist primarily of young birds before breeding.

Nest:

Large-billed Crows generally build a nest in an ever-

green tree at a height of 10-20m. Some of them nest in roadside trees and on utility poles. The nest is plate-shaped and 50-60cm in the outer diameter. They use twigs for the exterior, but often wire clothes hangers in urban areas as well. They line the inner cup with fur, dead grass and the fibers of untwined ropes. Two or more nests are often found in a territory because there remain an unfinished nest, an abandoned nest after breeding failure and the remains of an old nest. Although some view that the crows make extra nests to prevent the detection of a true nest ("camouflage nest hypothesis"), there is yet no evidence to support it.

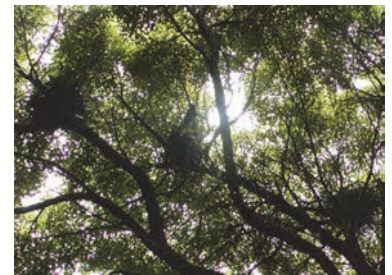


Photo 2. Three nests in a row [Emiko Morishita]

Egg:

The clutch size is 4-6 eggs. The egg size is about 45mm in the major axis. The color is pale greenish brown to pale greenish blue with dark brown flecks.



Photo 3. Eggs of Large-billed Crows. [Yoshihide Shibata]

Incubation and nestling periods and fledging rate:

Large-billed Crows lay eggs from late March to April. The incubation period is about 20 days and nestlings are brooded for about two weeks after hatching. Females mostly incubate eggs and nestlings. Males feed their incubating mate, but they rarely deliver food to the nest. They usually pass it to their mate near the nest or place it on a branch.

Both males and females feed nestlings, when they carry food directly to the nest. The nestling period is about 30-35 days and nestlings begin to fledge in late May. Young spend two or three months with the parents after fledging. The study conducted in Kyoto showed that the mean number of fledglings was about two birds with a range of 0-4 birds. In Tokyo, on the other hand, the fledging rate is 49.7% and the mean number of fledglings is 1.1 birds (Kurosawa & Matsuda 2003).

Diet and roost

Large-billed Crows are omnivorous (Ikeda 1957). The diet consists principally of fruits, such as cherries, hackberries, camphor berries, *Rhus verniciflua*, *R. javanica* and ivy (Ueda & Fukui 1992), insects, birds (including eggs, nestlings and fledglings) and animal carcasses. They may occasionally capture rock pigeons. In urban areas they tear plastic garbage bags apart at a garbage station and scavenge for food scraps (Kurosawa 2003). They frequently cache food as well.

Large-billed Crows are also famous for forming a communal roost, which is often shared with Carrion Crows (*C. corone*).

Topics of ecology, behavior and conservation

● Long-distance commute to the feeding site

The pair of Large-billed Crows that the author studied in Kyoto City nested in a Shinto shrine on the right side of the Takano River. The pair primarily used as a feeding site the garbage station in a large housing complex on the left side of the river. But a pair of

Carrion Crows defended as their territory the riverbed of the Takanō River between the nest and the garbage station. When heading for the garbage station on the other side, the Large-billed Crow pair took a shortcut across the riverbed without striking back at the territory owners if they tried to chase the pair off. Once the pair had crossed the river, however, it perched on a utility pole and began to call threateningly toward the territorial Carrion Crows. Large-billed Crows may rarely use a feeding site detached from their breeding territory like this pair.

Then, do Large-billed Crows not forage for food in a riverbed? The study conducted in Kyoto City showed that they mostly stayed in high places such as trees and the time spent on the ground represented less than 10% (Fig. 1.) They did not scavenge for garbage on the ground for a long time, but flew away quickly with a food scrap. They hardly ever turned stones over or shoved fallen leaves aside, looking for food as Carrion Crows often do, which suggests that the riverbed was not worth the trouble of expelling the Carrion Crow pair and possessing as a feeding site.

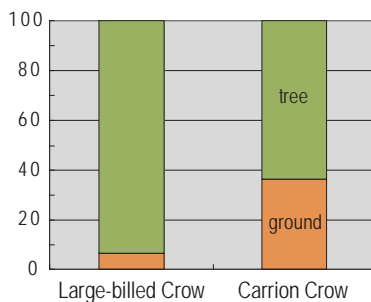


Fig. 1. Proportion of the time (%) crows spent during the observation.

● Effects of the change of food supply on home range and breeding performance

City-dwelling Large-billed Crows usually depend heavily on kitchen garbage. How does the change of garbage availability affect them? A pair of Large-billed Crows happened to nest near the author's house and often scavenged for food scraps at a garbage station in the neighborhood. One day the garbage station was covered with a protective net against crows. Then the pair moved to another garbage station to forage for food. But this station was also covered with a net. The pair moved to another station again. The pair changed its home range every time a garbage station was covered with a crow net. In addition, the number of fledglings of the pair tended to decline as the number of available garbage stations decreased (Fig. 2). The decrease of food supply due to netting may have affected the breeding performance of the pair (Matsubara 2003).

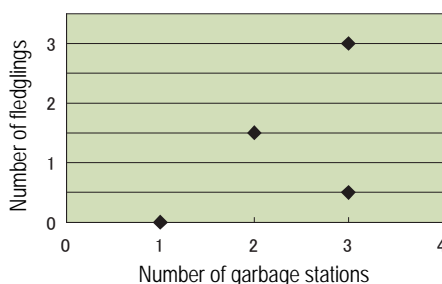


Fig. 2. Number of garbage stations available to Large-billed Crows and number of fledglings of the year. The mean number is shown when they nested twice. (From Matsubara 2003).

● What is known and what is still unknown

Researches show that the non-breeding Large-billed Crows of Tokyo leave their roosts around dawn for urban areas to scavenge for food scraps. They spend the rest of the day in parks and green spaces until returning to their roosts in the late afternoon. It is assumed that they frequently change their roosts and feeding sites (Morishita et al. 2003).

A study also indicates that Large-billed Crows have a gathering

call as Ravens (*Corvus corax*) (Soma & Hasegawa 2004), which suggests that they sometimes summon their companions.

In addition, the brain and cognitive studies of Large-billed Crows show that they are a quick learner with a long memory, which is probably related to food caching behavior and the complex relationship between individuals in their society.

The process of pair formation or the social structure, on the other hand, is still unknown in Large-billed Crows. There is also limited information on their breeding density and reproductive success. Large-billed Crows are not easy to observe in their range except for Japan because they generally occur in mountains and forests. I think, therefore, that they should be better studied in Japan where they are commonly found in the vicinity of humans.

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Languages of literature cited other than English: [J] in Japanese, [J+E] in Japanese with English summary.

Author

Hajime MATSUBARA

Graduate School of Science Ethology Laboratory, Kyoto University

I once called "Kaa", looking up at crows when they returned to the roost over my house. To my surprise, some of the crows responded to my call. When I think of it now, they may have called at that time by sheer chance. But I have started to look at crows since then. It has been more than ten years since I began to study the behavior of crows in a graduate school. Since there are many unknowns in crows (especially Large-billed Crows) and I have various themes to pursue, they are likely to be my long time partners.



hajime@um.u-tokyo.ac.jp