Eastern Marsh Harrier Chu-hi (Jpn) *Circus spilonotus*

Morphology and classification

Classification: Accipitriformes Accipitridae

Total length:	♂ 480mm	♀ 580mm	
Wing length:	380-430mm	Wingspan:	1132-1372mm
Tail length:	215-262mm	Culmen length:	28-31mm
Tarsus length:	85-91mm	Weight:	498-844g

Measurements after Enomoto (1941).

Appearance:

The plumage coloration of Eastern Marsh Harriers is basically brownish, but varies considerably (Morioka et al. 1995). There are types such as totally dark brown, off-white from the head to the leading edge of a wing, and pale brown with a vertical-striped underpart, bluish gray wing coverts and ashy brown rectrices. Although these variations are thought to be related to the differences of individuals, sexes, ages and breeding grounds, the detail is still unknown.

Photo 1. Eastern Marsh Harrier. [Michio Kobori]

Vocalization:

Eastern Marsh Harriers meow like "Mibyaa, mibyaa", when another harrier approaches their territory. They also threaten each other in dispute or other birds of prey, letting out a shriek like "Kyak-kyak-kyak-kyak". In addition, males call "Kuwe, kuwe" during the aerial display in the breeding period.

Distribution and Habitat

Distribution:

Eastern Marsh Harriers breed in the area from Lake Baikal to the Ussuri region, Mongolia, northeastern China and Japan, and migrate to Japan, Taiwan, Borneo, the Philippines, Southeast Asia and southern China in winter.

Habitat:

They occur in the vast reed bed of the coastal reclaimed land, large lakes and marshes, and the lower reaches of a large river.

Life history

Breeding system:

Eastern Marsh Harriers are generally monogamous, but some of them are polygamous. Though no polygamous breeding has been recorded in the vicinity of Lake Baikal, Russia, a single case of polygamy was reported from Sakata, Niigata Prefecture, central Japan (Chiba 2008).

In the breeding grounds, they start aerial displays as early as March, when they form a pair. They lay eggs in mid-April to May and fledge the young in July. They arrive at the wintering grounds around October and establish their own territory, but form a communal roost at night.

Population:

The number of Eastern Marsh Harriers breeding in Japan is estimated to be 60 pairs (Ura 2010). It is assumed, however, that the breeding population is somewhat larger because there are probably still undiscovered nesting grounds in Hokkaido in particular. The total population of the species wintering in Japan, on the other hand, has not been counted except for the roosting number of some areas, such as Watarase Marsh, Tochigi Pref., central Japan.

Nest:

They build a nest in wet reed beds or the dry tall grassland of Japanese pampas grass (*Miscanthus sinensis*), etc., piling up dry grass on the ground (Nishide 1979, Tada 2007, Naya et. al. 2007, Chiba 2008). The nest size is about 110-130cm by 80-90cm (Chiba 2008, Naya et al. 2007).

Egg:

They lay an egg at 3.3 day intervals on average (Nishide 1979). The clutch size is 4-7 eggs (Chiba 2008, Nishide 1979). The egg size is 48.0mm by 38.0mm on average (n = 5) (Chiba 2008). The egg color is grayish white (Chiba 2008).

Incubation and nestling periods:

Females mostly incubate eggs. The incubation period is about 28-34 days (Chiba 2008). Males primarily hunt during the breeding period (Nishide 1979). The young leave the nest about 28 days after hatching (Nishide 1979). According to the study conducted in the vicinity of Lake Baikal, Russia, 27-43% of the eggs fledged (Fefelov 2001).

Roost and roosting behavior:

In Watarase Marsh, Tochigi Pref., central Japan, Eastern Marsh Harriers use as a roost site a sparsely-grown reed or *Miscanthus sacchariflorus* bed with the dense undergrowth of 30-50cm sedges and grasses (Hirano et al. 1998). There are many spots with bended plants in the roost site because they stomp and crouch to sleep on the ground at night (Photo 2).

Photo 2. Roost site of Eastern Marsh Harriers.

They usually return to the roost 20 or 30 minutes after sunset in the evening and leave there about 20 minutes before sunrise in the morning (Hirano et al. 1998).

Diet and foraging behavior

There is only fragmentary information about the diet of Eastern Marsh Harriers during the breeding period in Japan. Chiba (2008) reported that they frequently hunted mice and occasionally captured larks in Sakata, Niigata Pref.. In the vicinity of Lake Baikal, Russia, voles and small birds accounted for 80% and 20% of the diet, respectively (Fefelov 2001). In Watarase Marsh, on the other hand, their diet included large birds (38.6%) such as ducks, medium-sized birds (4.7%) such as Brown-eared Bulbuls (*Hypsipetes amaurotis*) and thrushes, small birds (9.4%) such as Tree Sparrows (*Passer montanus*) and Skylarks (*Alauda arvensis*), medium-sized mammals (2.8%) such as weasels, small mammals (31.9%) such as voles and shrews, and fish (1.7%) (Hirano et al. 2006).

They adopt several foraging methods. For instance, they suddenly turn around and dive at the prey when they detect it near the ground, while making slow search flight over the reed bed (so-called surprise attack). They snatch the prey from other birds of prey (piracy) and also scavenge for carrion.

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Toshiaki Hirano

♪ http://www.bird-research.jp/1_shiryo/koe/chuhi_080110_watarase_hirano.mp3
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Topics of ecology, behavior and conservation

Feeding habitat in winter

The wintering habitat of Eastern Marsh Harriers is a vast reed bed (Photo 3), but what components of a reed bed are vital to their hunting?

Photo 3. Wintering habitat of the Eastern Marsh Harrier in Watarase Marsh

We studied the frequency of their search flight in the open area of burnt reed bed and the adjacent intact reed bed of Watarase Marsh in the winter of 2000 (Hirano et al. 2003). The result showed that the search flight frequency was significantly greater in the reed bed than the open ground (Fig. 1). This suggests the importance of intact reed beds for the foraging harriers. I also studied the search flight frequency in an area with man-made floating islands covered with vegetation and an open water area of Lake Yanaka in Watarase Marsh. The result showed that harriers frequently used the area with the islands as a hunting site, but hardly ever flew over the open water area (Hirano 2005).

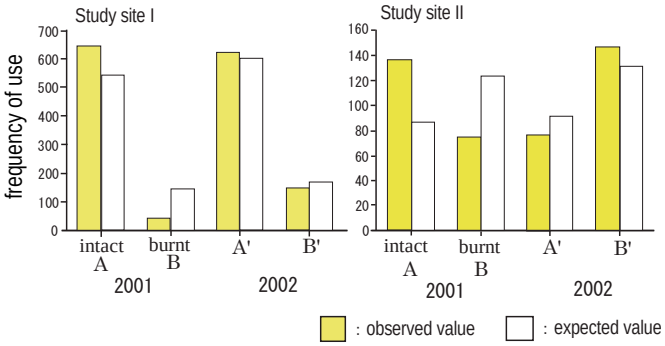

Fig. 1. Comparison of harrier foraging frequencies between the intact and the burnt reed beds. The foraging frequency was significantly higher in the intact reed beds (A) than in the burnt reed beds (B) in 2001 in both study sites of I and II, but the difference was not apparent one year later in 2002.

In addition, I studied the search flight frequency in an artificial reed bed with variety of habitats such as ponds, waterways and management roads and an adjacent dry reed bed (Hirano 2008). The result showed that harriers used the diverse reed bed with significantly higher frequency than the dry reed bed in two wintering periods (Fig. 2). I partitioned a reed bed with ponds and waterways into 100m by 100m squares to compare the search flight frequencies. They used the squares including ponds and waterways with significantly higher frequency than those with vegetation alone.

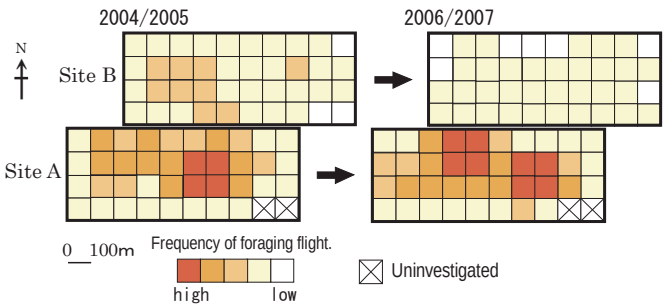

Fig. 2. Comparison of harrier foraging frequencies between reed beds with a complex (site A) and a simple structures (site B)

These results suggest that a tall reed bed is vital for the hunting of Eastern Marsh Harriers, but it is not sufficient. They also need a complex habitat composed of diverse components, such as ponds, marshes and narrow waterways because complex reed beds attract their major prey, such as ducks and are highly suitable for their usual hunting technique referred to as “surprise attack”. It is extremely important, therefore, to create and conserve diversified reed beds comprised of various elements, such as ponds, marshes and narrow waterways to conserve harriers including Eastern Marsh Harriers.

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

Author

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I have recently spent most of the year studying birds in Watarase Marsh, Tochigi Prefecture, central Japan. Especially these several years I have focused on the population statuses of crakes, Eurasian Bitterns and Japanese Marsh Warblers instead of the wintering ecology of the harriers. In order to collect the basic information which is instrumental to making Watarase Marsh a true paradise for marshland birds, I walk around the marsh in the darkness before sunrise rubbing my drowsy eyes.