Utilization of Artificial Floating Objects as Nest Platforms by Little Grebes and Eurasian Coots in Lake Teganuma, Central Japan

Takashi Hiraoka*

Key words: Little Grebe, *Podiceps ruficollis*, Eurasian Coot, *Fulica atra*, Nest platform, Artificial material, Lake Teganuma.

キーワード: カイツブリ, *Podiceps ruficollis*, オオバン, *Fulica atra*, 台座, 人工巣材, 手賀沼.

The nest of the Little Grebe *Podiceps ruficollis* usually consists of a heaped mass of water plants half submerged in the water and forming a platform above the surface. The nest is anchored to submerged vegetation or to branches of bushes growing in water (Cramp and Simmons 1977). Kawachi (1982) refers to a nesting attempt of this species on a piece of polystyrene foam in a pond in Tokyo, but provides no details. The nest of the Eurasian Coot *Fulica atra* is a bulky structure of dead and live plant stems and leaves, and is usually either placed on the bottom in shallow water (Cramp and Simmons 1979), or built as a floating structure fixed to the stems of emergent vegetation (Saito 1994). Although this species has been reported to nest on artificial platforms and rafts in the Western Palearctic (Cramp and Simmons 1979), there are no reported instances of nesting on artificial platforms in Japan.

During a field study of the breeding biology of the Yellow Bittern *Ixobrychus sinensis*, five instances were recorded of Little Grebes and Eurasian Coots utilizing artificial objects floating in the emergent vegetation as nest platforms. This paper describes these observations in detail.

Field work was conducted over four breeding seasons (late May to middle August), 1992–1995, in Lake Teganuma, a freshwater lake in the southern Kanto region, 30 km north-east of Tokyo in central Japan (35°51'N, 140°01'E). The lake has an area of 650 ha and the mean depth is 0.9 m (Environment Agency 1989). It is fringed with emergent vegetation of reed *Phragmites communis*, wild rice *Zizania latifolia*, cattail *Typha angustifolia*, and lotus *Nelumbo nucifaga* (Asama 1989). The Yellow Bittern study was conducted mainly in patches of cattail. Urbanization upstream and around the lake has caused heavy eutrophication (Asama 1989). There are various pieces of artificial objects drifting or caught among the emergent vegetation.

When a bird nest built on an artificial floating object was located, the shape of the object was recorded and the size measured. The water depth at the site was also measured, and the relationships between the nest and the surrounding vegetation were examined. The contents of the nest were examined and recorded as often as possible.

Received 2 August 1996, Revised 18 October 1996, Accepted 20 October 1996.

* Yamashina Institute for Ornithology, 115 Konoyama, Abiko, Chiba Pref., 270–11 Japan.

Three nests of the Little Grebe and two nests of the Eurasian Coot were found on artificial floating objects. The three Grebe nests were active, but neither of the two Coot nests were in use.

Nests of the Little Grebe

Nest A

This nest was discovered on 16 June 1992 in a cattail swamp (Fig. 1-A). The nest was constructed of dead plant material on a polystyrene foam board 30 cm long $\times$ 21 cm wide $\times$ 3 cm thick. This board was the lid of a container used for frozen or iced products. The water depth around the nest was 50 cm. The board had no support or anchoring, but was lodged among the thick stands of cattail, which prevented it from drifting away.

The nest contained two eggs on 16 June, four eggs on 17 and 18 June, five eggs from 19 to 30 June, two eggs on 3 and 4 July, and one egg on 6 July. In early August the board was still there but almost all of the nest material had been washed away. The data suggests that at least some eggs of the clutch hatched successfully, although it is doubtful that all the five eggs did. Since eggs of the Little Grebe hatch asynchronously (Cramp and Simmons 1977, Kawaguchi 1934), it is natural to assume that the two eggs found on 3 July were the fourth and fifth eggs. Thus the first to third eggs should have hatched on or before the morning of 3 July. Considering that the incubation period of a Little Grebe egg

Fig. 1. Nests of the Little Grebe and the Eurasian Coot utilizing artificial objects floating in the emergent vegetation in Lake Teganuma. Shaded areas represent parts under water.

A: Little Grebe nest on a polystyrene foam board in a cattail swamp (17 June 1992).

B: Little Grebe nest on a wooden board in a cattail swamp (24 June 1993).

C: Little Grebe nest on a worn piece of log in wild rice vegetation (23 June 1994).

D: Eurasian Coot nest on a wooden board in a cattail swamp (9 July 1993).

E: Eurasian Coot nest on a car tire in a cattail swamp (15 July 1995).

is at least 20 days (Cramp and Simmons 1977, Kawaguchi 1934), the third egg should have been laid on or before 13 June. The data shows only two eggs present on 16 June. This indicates that at least one egg was lost before hatching. However, on 3 July the two eggs were warm, indicating that incubation was still under way at this time. In addition, eggs disappeared gradually from 30 June to 6 July. These observations suggest that at least some of the eggs hatched successfully.

Nest B

This nest was found on 22 June 1993 in a cattail swamp (Fig. 1-B). The nest was constructed of dead plant material on a wooden board 125 cm long $\times$ 16 cm wide $\times$ 2 cm thick. The water depth around the nest was 50 cm, and the board floated without any support or anchoring. The board was lodged among the cattails, and thus did not drift away.

The nest contained four eggs from 22 June to 7 July, three eggs on 8 July, two eggs on 9 July, one egg on 10 July, and no egg on 11 July. The eggs were warm on almost all the occasions they were examined, indicating incubation. The disappearance of one egg each day strongly suggests that all the clutch hatched successfully.

Nest C

This nest was found on 23 June 1994 in a narrow belt of wild rice between a cattail swamp and a reed bed (Fig. 1-C). The nest was constructed of dead plant material on a worn piece of log 106 cm long and about 12 cm in diameter at the thickest part. The water depth around the nest was 20–30 cm. The piece of wood was grounded lightly on the bottom with some dead plant matter working as a cushion between the piece and the bottom. There was no anchor connecting the piece with the bottom, but the piece was grounded well enough to prevent drifting. However, even if the water level had risen and the piece had floated, it would probably have lodged among the wild rice, and not drifted very far.

The nest contained three eggs on 23 June, and four eggs on 30 June. It was not visited thereafter, and there is no information on hatching success. Because the laying interval of this species is 1–2 days (Cramp and Simmons 1977), the four eggs recorded on 30 June, seven days after three eggs were observed, must represent the full clutch of this nest. The eggs were warm on 30 June, indicating incubation.

Nests of the Eurasian Coot

Nest D

This nest was discovered on 8 July 1993 in a cattail swamp (Fig. 1-D). The nest was built mainly of dead cattail blades on a wooden board 180 cm long $\times$ 30 cm wide $\times$ 3 cm thick. The water depth around the nest was 50 cm. The board had no support nor anchoring, but floated while lodged among the cattail stands. In addition, blades of the surrounding cattails were tucked into the nest, fixing the board at the site.

The nest contained one egg from 8 to 12 July, but the egg was cool on all four occasions when it was examined. On 10 July the egg was half buried in the nest material, and by 15 July it had disappeared. The nest had apparently been abandoned before the clutch was complete.

Fig. 2. Eurasian Coot nest on a car tire in a cattail swamp (15 July 1995).

Nest E

This nest was found on 15 July 1995 (Fig. 1-E, Fig. 2). The nest was made mainly of dead cattail blades, and was situated on a 45 cm diameter car tire that floated at the edge of a small area of open water in a cattail swamp. The water depth around the nest was 30 cm. Although the tire itself was not anchored, blades of the surrounding cattail stands had been tucked into the nest material. Thus the tire was loosely fixed at the site. The nest contained no eggs. Some gray adult Coot body feathers and a fresh piece of Coot excrement were on the nest. The inside of the nest was neatly pressed into a rounded cup, with little deformation. These observations suggest that the nest had been in use until quite recently.

Although breeding success was not confirmed by direct observations for any of the three Little Grebe nests, it is probable that breeding was successful in at least two nests (nests A and B). The two Eurasian Coot nests observed here are not sufficient to show that this species is able to nest successfully on artificial objects. However, if we weigh the evidence found in nest E, it seems probable that the Eurasian Coot will breed on artificial platforms in Japan, as it does in the Western Palearctic.

The use of a man-made object as a floating platform is not likely to affect safety from predators, so long as the nest site is appropriate. Predators would have as much difficulty

in reaching such a nest as in reaching a nest made only of natural material. On the other hand, parent birds receive a benefit in using a ready-made artificial platform in that they can reduce the amount of energy required for nest building, because less nest material is needed, and the nest building process is much simpler. Thus utilization of such a platform would enable parent birds to direct more energy to other aspects of breeding activity, contributing to breeding success.

The only apparent problem in using a floating object is that it may drift away when pushed by wind or waves. However, in the instances shown above, the objects were secure either because they were lodged among the surrounding emergents, or moored by blades tucked into the nests. In fact, nests on floating objects may have an advantage over those on fixed platforms, in that they are able to cope with much larger changes in water level.

I would like to thank Dr. Kevin Short for improving the English of this paper.

References

- Asama, S. 1989. Teganuma no seitaigaku. (Ecology of the Lake Teganuma.) Ron Shobo Publishers, Nagareyama. (In Japanese.)
- Cramp, S. and Simmons, K. E. L. (eds.) 1977. The Birds of the Western Palearctic, vol. I. Oxford University Press, Oxford.
- Cramp, S. and Simmons, K. E. L. (eds.) 1979. The Birds of the Western Palearctic, vol. II. Oxford University Press, Oxford.
- Environment Agency (ed.) 1989. Nihon no kosho kankyo. (Lake Environments of Japan.) Printing Bureau, Ministry of Finance, Tokyo. (In Japanese.)
- Kawachi, H. 1982. Toshi ni ikiru yacho. (Wild birds that live in urban habitats.) Yurikamome (Newsletter of the Tokyo Chapter, Wild Bird Society of Japan) 317: 8-9. (In Japanese.)
- Kawaguchi, M. 1934. Kaitsuburi no seita. (Ecology of the Little Grebe.) Tori 8(38): 229-247. (In Japanese.)
- Saito, Y. 1994. Observation of the nests of Coots *Fulica atra* at the Tega marsh. Bull. Abiko City Mus. Birds 3: 15-25. (In Japanese with an English abstract.)

千葉県手賀沼における水面に浮く人工物上でのカイツブリとオオバンの営巣例

千葉県手賀沼の抽水植物群落で、水面上に浮いた人工物上にカイツブリおよびオオバンが営巣した以下の5例について報告する。

巣A: ヒメガマ群落内の発泡スチロールの板の上の、産卵期から孵化期のカイツブリの巣、巣B: ヒメガマ群落内の木の板の上の、抱卵期から孵化期のカイツブリの巣、巣C: マコモ群落内の磨耗した丸太の上の、産卵期から抱卵期のカイツブリの巣、巣D: ヒメガマ群落内の木の板の上の放棄卵1卵を含むオオバンの巣、巣E: ヒメガマ群落内の自動車タイヤの上の最近まで使用されていたと考えられるオオバンの巣。

巣A, B, D, E では、人工物は何の支えもなく浮いており、抽水食物に囲まれているだけだった。オオバンの巣D, E では回りのヒメガマの葉が巣の中にかくしこまれて、巣が動かないようにするのを助けていた。巣Cでは丸太は軽く水底に接していたが、抽水食物に囲まれているため、仮に水位が上がっても移動しそうななかった。カイツブリの巣A, Bではヒナが孵化したと考えられた。水面上に浮いた物体を巣の台座として利用することは親鳥の造巣の労力を軽減させるので、いくつかの条件がそろえば繁殖成功に資すると思われる。