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The effect of vegetation and water depth on nest patterns of the Eurasian coot (*Fulica atra*)

Ali UZUN*

Department of Biology, Arts and Science Faculty, Sakarya University, 54140 Serdivan, Sakarya – TURKEY

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Abstract: Nest characteristics of the Eurasian coot (*Fulica atra*) and the effect of vegetation and water depth on nest size were investigated. The study was conducted in 2008 on Poyrazlar Lake (Sakarya) in northwest Turkey. Depth and distance from the edge has no effect on internal nest diameter; however, nest height and external diameter are correlated with water depth.

Key words: Eurasian coot, nest size, Poyrazlar Lake, Turkey, water depth, edge

Nest size has been shown to influence clutch size and reproductive success in birds (Moller, 1982; Slagsvold, 1982; Polomino et al., 1998). Thus, outside factors affecting nest size play a role in the reproductive success of birds. The effect of environmental factors on nest size seems to be especially significant for water birds. Research has been carried out among Rallidae, especially the American coot (*Fulica americana*), while less data are available for the congeneric Eurasian species, *Fulica atra* (Fortunati and Battisti, 2011). In this study, the effect of distance from the vegetation edge and water depth on nest size of the Eurasian coot (*Fulica atra*) was investigated (n = 23). A Eurasian coot breeding population in Lake Poyrazlar in northwest Turkey (40°50'N, 30°28'E) was studied from March to August, 2008. The Eurasian coots built their nests on water vegetation, including the following species: sea club-rush (*Scirpus maritimus*, 45%), common spike-rush (*Eleocharis palustris*, 30%), and reeds (*Phragmites australis*, 25%). All Eurasian coot nests

studied were located in clumps of sea club-rush vegetation. Eurasian coots build a new nest every year (Samraoui and Samraoui, 2007). Worn-out sedge from the previous vegetation season is the primary nesting material. However, some artificial materials that were thrown into the lake, such as nylon fishing wire, were also used to construct the submerged outer layer of these nests. Nests were constructed by adding nest materials successively, beginning under the water among the young sedges. Because they were built among the sedge, the nests were protected from the destructive effects of strong wind and waves. The nest roofs were domed and covered with the green sedge found nearby. These roofs provided some protection against predators, such as magpies (*Pica pica*), crows (*Corvus cornix*), and marsh harriers (*Circus aeruginosus*).

Nests (n = 23) were located 6–24 m from the bank, depending on the presence of emergent vegetation and water depth. The nests were well

* E-mail: aliuzun@sakarya.edu.tr

hidden. The water depth for nesting sites varied from 40 to 72 cm (Table). Nest dimensions are listed in the Table. There was no correlation between water depth and internal nest diameter, despite the increase in the internal nest diameter towards the inner part of the lake ($r = -0.19$, Figure 1). However, there was a strong correlation between water depth and both nest height and external nest diameter ($r = -0.91$). Nests became lower and smaller as the water depth increased (Figures 2 and 3). In addition, there was no correlation between internal nest diameter and distance from the edge of the vegetation, whereas the external diameter ($r = -0.64$, Figure 4) and height ($r = -0.92$, Figure 5) decreased with the distance from the edge of the vegetation ($r = -0.39$, Figure 6). As expected, 2 environmental factors (distance from the edge of the vegetation and water depth) played major roles in nest site selection and

nest size for the Eurasian coot. According to this study, water depth appeared to be more important than vegetation. The fact that there were no nests among the sedge in deeper water supports this hypothesis, although the sedge was close to the vegetation edge. The distance between the nest and vegetation edge depended directly on sedge density and indirectly on water depth. Nests were built in areas of appropriate water depth based on the existence and density of the sedge in the water, and, as water depth increased, the quantity of nesting material also increased. However, this resulted in a decrease in nest diameter and height. After building a nest in deep water, the Eurasian coot gave little regard to the safety and balance of the nest, but the reverse was true if the nest was located in shallow water. Therefore, contrary to expectations, the smaller the Eurasian coot nest dimensions,

Table. Dimensions (cm) of common coot nests ($n = 23$).

	Mean	SD	Min	Max
External nest diameter	27.02	0.98	21	37
Internal nest diameter	15.41	0.28	14	18
Nest height	10.69	0.60	6	15
Water depth	54.38	2.02	40	72

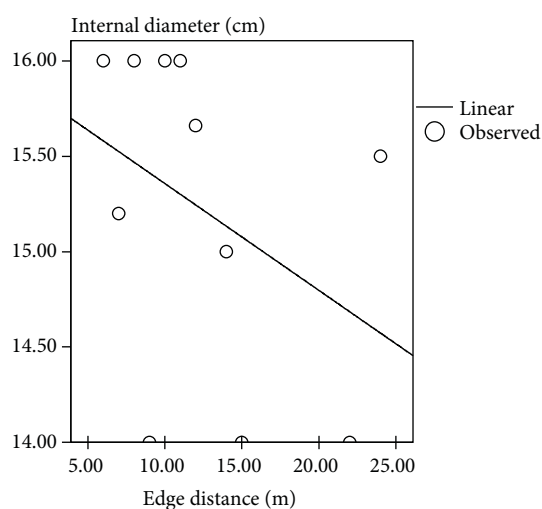


Figure 1. Correlation between the distance from the edge of the vegetation and internal nest diameter.

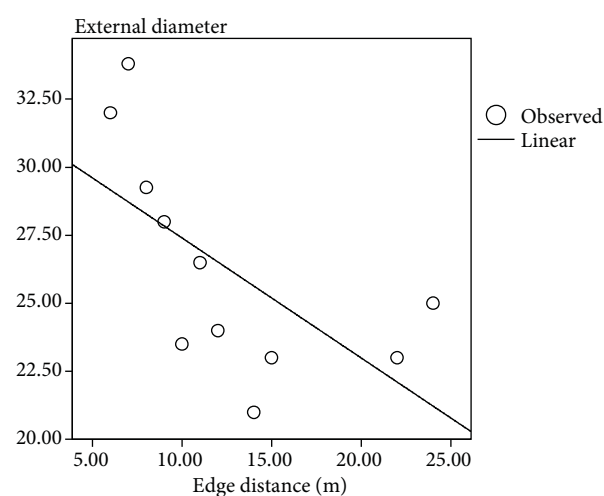


Figure 2. Correlation between the distance from the edge of the vegetation and external nest diameter.

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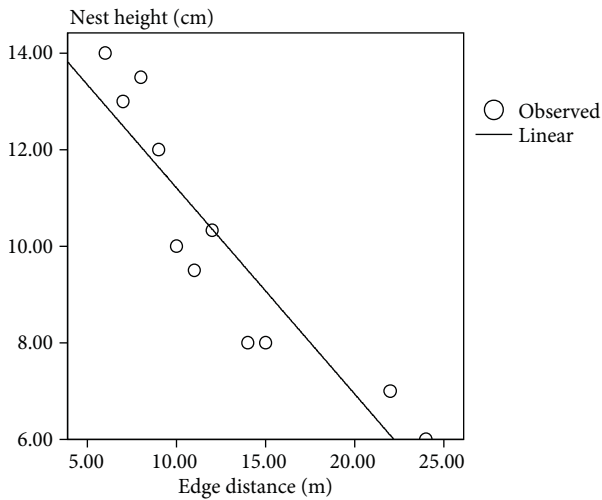


Figure 3. Correlation between the distance from the edge of the vegetation and nest height.

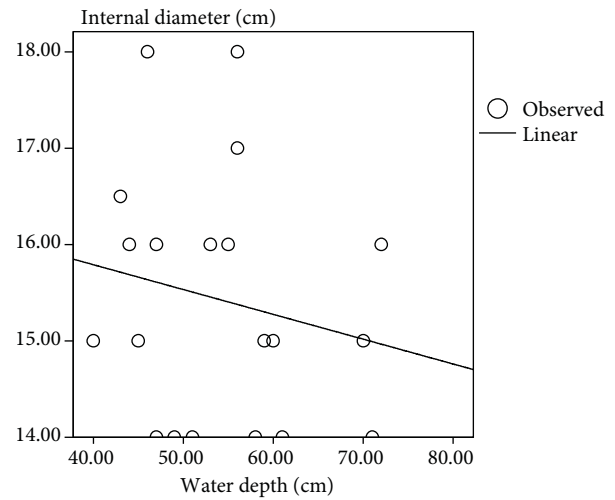


Figure 4. Correlation between the water depth and internal nest diameter.

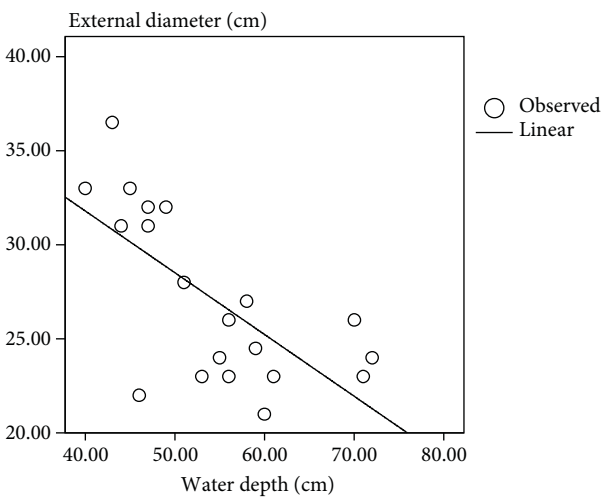


Figure 5. Correlation between the water depth and external nest diameter.

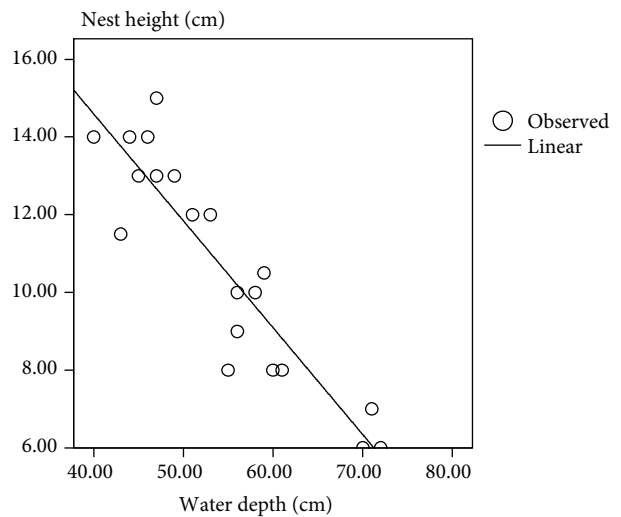


Figure 6. Correlation between water depth and nest height.

the higher the reproductive success. Smaller nests are better protected against predators as they are located farther from the edge of the vegetation and in sites with deeper water; as a result, smaller nests led to higher reproductive success in the Eurasian coot. The direct relationship between nest location and clutch size has previously been reported for the

cattle egret (Kopij, 1997). However, no correlation is expected between clutch size and nest size in the Eurasian coot because the mean clutch size of the Eurasian coot does not depend on nest location, whereas, for some other water bird species, nest location correlates significantly with clutch size (Kopij, 1997, 1999a, 1999b).

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