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Egg retrieval by Eurasian Stone-curlew *Burhinus oedicnemus*

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Keywords: Eurasian Stone-curlew, *Burhinus oedicnemus*, breeding, egg-retrieval

The retrieval of eggs naturally or artificially displaced from their nest was described for the first time by Lorenz & Tinbergen (1938) in Greylag Goose *Anser anser*. This behaviour has been reported subsequently for several species (Duncan 1984 and references therein, Giesen 1978, Kosten 1982, Pevett & Pevett 1973). Egg retrieval has an obvious adaptive value and thus it seems reasonable to hypothesize that it should be widespread among ground nesting birds. To our knowledge this behaviour has not yet been described in any species belonging to the family Burhinidae. Here we report the results of an experiment which documents the occurrence of egg-retrieval response in the Eurasian Stone-curlew *Burhinus oedicnemus*.

The experiment was performed on a nest in the Thapsos Peninsula, Sicily, Italy (37°09'N, 15°14'E), which hosts a consistent population of probably sedentary Stone-curlews (Grasso & Ientile 2001, Spina *et al.* in press). On 27 June 2008, during a survey on the reproductive biology of *Burhinus oedicnemus*, a nest was discovered which contained a single egg. Using the method reported in Carpita (2006), which is based on the reduction of egg density during incubation (Rahn & Ar 1974), we estimated the expected hatching date to be 16 July. After the egg did not hatch on that date, we continued checking the nest. On 2 August, the egg was still incubated, but we did not record any sign of imminent hatching, such as piping. At this point, certain of the egg's infertility, we decided to take the chance to test the occurrence of egg retrieval in this species with no harm to the reproductive output of this monitored breeding pair. Thus, on 2 August we displaced the egg about 30 cm from the nest lip, a distance well within

the retrieval limits recorded for other well studied species, such as geese (Duncan 1984, Pevett & Pevett 1973). The bird's behaviour was recorded using a well concealed video camera placed about 180 cm from the nest. The experiment began at midday.

The time sequence of the recorded behaviours is reported in Table 1. As we expected, the egg displacement clearly elicited an egg-retrieval response, which appeared to be quite similar to that described for the Greylag Goose (Lorenz & Tinbergen 1938). The observed sequence suggests that the bird, possibly a female according to its plumage characteristics (Green & Bowden 1986), soon became aware of the anomalous situation, but performed the egg retrieval behavioural pattern after some latency. As observed in other nests (n = 26) from the same study area (and monitored by the same technique), stone-curlews usually approach their nests quickly and silently and sit on the eggs almost immediately. However, in this case the observed individual stood near its nest for about 4 minutes, calling softly and repeatedly, before sitting on the empty cup (Fig. 1). This bird, in addition to this behaviour (i.e. brooding the empty nest) brooded the egg, once located, for about 15 minutes in the place in which it lay; only then did it start to move the egg back into the nest cup (Fig. 2).

Given the single observation, no generalization is allowed. It is interesting, however, that the observed latency is quite high with respect to other species, such as White-tailed Ptarmigan *Lagopus leucurus*, which usually responds almost immediately (Giesen 1978). It should be noted, however, that in White-tailed Ptarmigans the delay of the response seems to be inversely correlated to the displacement distance (Giesen 1978). Thus, it might be hypothesized that the observed latency was simply due to the distance of the displacement,

Table 1. Time sequence of recorded behaviours of a pair of Eurasian Stone-curlews at a nest where the single egg had been displaced by about 30 cm.

Time (min:sec)	Behaviour
00:00	Begin observations.
16:50	Both members of the breeding pair land near the nest. One bird approaches the nest cup calling repeatedly.
21:36	The bird sits on the empty nest cup (Fig. 1).
21:44	Bird stands up and walks toward the displaced egg and observes the egg.
22:15	Bird sits on the egg.
37:34	Bird stands up and sits down repeatedly on the egg and looks around.
38:07	Bird stands up and walks toward the nest cup.
38:31	Bird tries to sit down then stands immobile over the nest, softly calling.
45:46	Bird sits on the nest cup.
45:52	Bird stands up and partially retrieves the egg using its beak (Fig. 2A), then looks around and tries to sit down over the empty cup.
46:37	Bird retrieves the egg (Fig. 2B) and starts brooding.
76:22	End observations. Bird still incubates.



Fig. 1. Eurasian Stone-curlew sitting on the empty nest cup.



Fig. 2. Egg-retrieving: A first phase; B last phase.

which might be greater than that usually experienced by stone-curlews. Further studies investigating the effects of displacement distance, relative timing within the incubation period, and the breeding experience of breeding pairs would be needed to better understand the context of egg retrieval behaviour in this species. Our case study serves as the first record of egg retrieval in this species and may be regarded as an interesting starting point for further investigation.

We are grateful to M.T. Vinciguerra and D. Caruso for their helpful comments. We would like to thank also G. Nicolosi for helping us in the field. Humphrey Sitters improved the English.

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