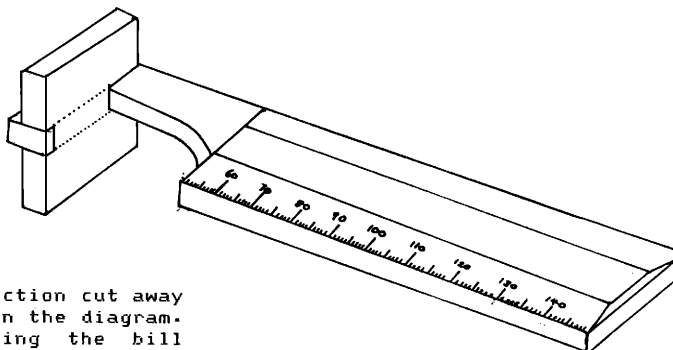


## A SIMPLE "HEAD AND BILL" RULER

C.M. Reynolds



This is a stepped-ruler with a section cut away for the bird's head as shown in the diagram. The measurement is taken by resting the bill tip on the scale and thus removes any risk of bending the bill. The original model was made from a length of scrap perspex of cross-section 4.5 x 0.5 cm. The cutaway was removed and a piece fitted in to form the stop. Then a white plastic ruler was glued into position, having carefully zeroed it. The surplus ruler was then trimmed off. It was originally designed with a gap of 48 mm for use on Dunlin *Calidris alpina*,

but during 2 year's use it has also proved to be suitable for other species up to the size of Bar-tailed Godwit *Limosa lapponica*.

C.M. Reynolds, 50 Strouden Avenue, Bournemouth, Dorset, U.K.

## THE NESTING HABITS OF AVOCETS IN THE EVROS DELTA, GREECE

Vassilis Goutner

### INTRODUCTION

The population of Avocets *Recurvirostra avosetta* breeding in the Evros Delta has declined steadily since 1982. This has been explained through competition with breeding Laridae for the limited breeding habitat available for these species in the delta (Goutner and Kattoulas 1984, Goutner 1985). In 1985 only 40 pairs of Avocets bred in the delta and in 1986 there were no more than 25 pairs.

Previous studies of Avocets in the Evros Delta have only briefly touched on habitat use (Goutner 1985). In order to undertake effective management of breeding areas for Avocets it is important to know how the birds use the available vegetation for nesting. The observed population decline in the delta has stimulated the conservation need for quantitative data for the management of nesting sites. Thus, during the 1985 and 1986 breeding seasons I collected relevant data from three small colonies present in the delta.

### STUDY AREA AND METHODS

I visited colony sites in May and June. All three colonies found occurred on islets of the "Drana" fish pond - description and maps are given in Goutner (1983, 1985). In May 1985 a mixed colony of 31 pairs of Avocets was made and 71 pairs of Little Terns *Sterna albifrons* along the bank of a 17.6 ha islet. In May 1986 a colony of 15 pairs of Avocets occurred on another islet (3.1 acres) together with 9 pairs of Little Terns and 2 pairs of Kentish Plovers *Charadrius alexandrinus*. This was the first time that breeding Avocets had used this islet; it was sparsely vegetated, separated from the mainland to its northern side by a deep canal

some 5 m wide and was surrounded by water at least 80 cm deep. Its maximum height above water was only 30 cm and the colony was flooded by high water which occurred due to strong SW winds at the beginning of June. A new colony of 11 pairs was found in late June on the first mentioned islet (550 m distant). This might represent a second breeding attempt by failed pairs. In the text below I describe these colonies as 1, 2 and 3 respectively.

I measured the percentage cover of vegetation around each nest in the colonies using a 0.5 m<sup>2</sup> grid, divided into 10 cm squares, by placing the nest in the central square. To measure the available vegetation, I walked transects across the colony (the area provided by connecting the peripheral nests with a line) throwing the grid "randomly" every few steps. For each nest and "random" sample I recorded the presence of all plant species.

### RESULTS AND DISCUSSION

#### Colony 1

This colony covered 0.70 acres. Figure 1 compares the cover around nests and that available within the whole colony. No significant difference was found. The presence of breeding Little Terns might have partly affected nest locations of Avocets through competition. However I found that Avocets occupied the breeding sites earlier even though the laying and hatching peaks were almost simultaneous. The Little Terns generally avoided vegetation in the colony (Goutner & Goutner in prep.). Consequently, the selection of nest sites by Avocets was relatively unaffected.

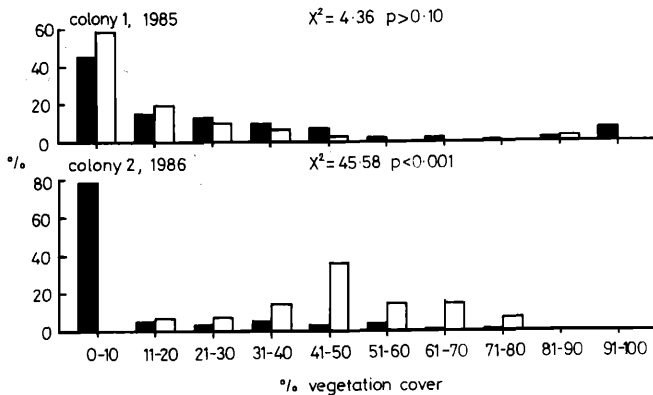


Figure 1. Percentage frequencies of cover categories at Avocet nests (open columns) in comparison to those available in their colonies (black columns).

Of 11 plant species found in the colony, only five were near nests. Of these, the most important in terms of frequency of occurrence were *Halocnemum strobilaceum* (also the most available species) and *Salicornia europaea* (Table 1).

#### Colony 2

In this colony (1.04 acres) the Avocets bred close to vegetation, the modal peak being in the 41-50% cover category (Figure 1). The only plant available was *Halocnemum strobilaceum* but this frequently retained dry masses of the waterplant *Ruppia maritima* left there by high waters. All 15 nests were found among this vegetation whereas of 153 random samples only 36 (23.5%) included vegetation.

Nine pairs of Little Terns also bred close to vegetation but less close than Avocets (Goutner & Goutner in prep.), suggesting that in this colony also there was no particular competition between the two species for cover.

Why did Avocets prefer to nest close to vegetation in this colony? I found no evidence of ground predators on this islet and avian predators were expected to be the largest threat. Corvids are the most common predators

Table 1. Comparison of the percentage frequencies of plant species near Avocet nests (B) and at random samples (A) in the Colony 1, 1985.

Plants	A (n=145)	B (n=31)
<i>Halocnemum strobilaceum</i>	66.2	58.1
<i>Arthrocnemum fruticosum</i>	17.2	-
<i>Halimione portulacoides</i>	9.0	6.4
<i>Salicornia europaea</i>	6.2	12.9
<i>Aeluropus litoralis</i>	6.2	3.2
<i>Bromus</i> sp.	2.7	-
<i>Suaeda splendens</i>	1.4	-
<i>Suaeda maritima</i>	0.7	-
<i>Limonium gmelinii</i>	1.4	-
<i>Limonium bellidifolium</i>	0.7	-
<i>Puccinellia festuciformis</i>	0.7	3.2
Unidentified plants	-	9.7

of Avocet eggs here (Goutner 1985) and some hundreds of immature Mediterranean gulls *Larus melanocephalus* also used part of the islet for day roosting. Open nest sites would easily be detected on such a small barren islet. However, the vegetation cover selected by Avocets and perhaps the good spacing of nests (ca. 0.07 acres per pair) evidently gave good protection, since no nests were destroyed by predators.

#### Colony 3

In this colony, eight (73%) of the eleven nests occurred in the 0-10% cover category and three (27%) within the 11-20% category. Although no measurement of the available cover was made (the colony was approximately linear), it appeared that the Avocets had made little effort to conceal their nests among the vegetation (only *Halocnemum strobilaceum*). Seven (64%) of the nests were among this vegetation and the remainder on bare ground.

The superficial and limited scope of this study cannot permit generalisation. A long term study with standard recording methods is required to evaluate habitat selection by nesting Avocets. I would be most grateful for any information and papers from WSG members working on this subject.

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Vassilis Goutner, Department of Zoology, University of Thessaloniki, 540 06 Thessaloniki, Greece

