

PRELIMINARY INVESTIGATIONS INTO THE MORPHOLOGY OF THE CRESTED TERN *Sterna bergii* IN SOUTH-EAST TASMANIA

ERIC J. WOEHLE^{1,3}, WILLIAM C. WAKEFIELD²
and MARGARET WAKEFIELD²

¹37 Parliament Street, Sandy Bay, Tas. 7005

²12 Altna-Craig Avenue, Lenah Valley, Tas. 7008

³Present address: Department of Ecology and Evolutionary Biology,
University of California, Irvine, California 92717 USA

Received 1 December, 1988

Hierarchical cluster analysis of morphological data (total head length, exposed culmen and tarsus) from 56 Crested Terns *Sterna bergii* from south-east Tasmania enabled the identification of an individual's sex. Both total head length and exposed culmen can be used to differentiate the sexes as there is no overlap present. Tarsal lengths, due to a large degree of overlap, are of limited use. Comparison with unpublished morphological data from Western Australia indicates that a geographic variation exists between populations in Australia. Future studies should collect morphological data in order to describe the extent of this variation.

INTRODUCTION

The Crested Tern, *Sterna bergii* Lichtenstein, has been recorded breeding throughout the coastal regions of Australia (Serventy *et al.* 1971; Blakers *et al.* 1984). Previous studies on the species have focused on breeding biology (Dunlop 1985a; Hulsman 1977 and Langham and Hulsman 1986), moult (Dunlop 1985b) and behaviour (Dunlop 1987). Davies and Carrick (1962) investigated chick recognition by incubating parents. Carrick *et al.* (1957) and Carrick (1959) in early studies described movements of banded individuals.

The only published morphological data were presented by Serventy *et al.* (1971) for 12 individuals, and Pringle (1987) who presented ranges for morphological parameters, mostly from Serventy *et al.* (1971). Neither gave a source locality for the data. Hence there are no data available on any sexual or geographic variation that may be present in the various breeding populations around Australia. Such data are fundamental to determining the taxonomic status of a population throughout its range, concomitant to any ecological studies that are undertaken.

This paper presents the results of an analysis of morphological data collected from a breeding population in south-east Tasmania. These results provide a basis for comparisons in future studies in other parts of Australia.

METHODS

All data were collected between 11 January and 29 November 1987 from breeding adults on Spectacle Island (42°52'S, 147°36'E), Lachlan Island (42°39'S, 147°59'E) and Curlew Island (43°26'S, 147°10'E) in south-east Tasmania. Adults were captured using walk-in traps made of large mesh (c. 20 mm) chicken wire set over nests with eggs.

Standard measurements (total head length, exposed culmen and tarsus) were collected from 56 birds concurrent with banding operations. Body weights were collected but not analysed due to daily individual variation. Similarly, wing and tail lengths were obtained but not analysed due to variation from moult and abrasion. Cloacae were not examined during the data collection.

The data were subjected to a hierarchical cluster analysis examining euclidian distances between the data points in 3-dimensional space. Full mathematical treatments can be found in Pielou (1984) and Field *et al.* (1982). The analysis constructed a dendrogram based on unweighted-pairs group averaging linkage, describing the similarities between the individual's morphological data, and divided the data into clusters, from which univariate statistics were generated. No