

## 1. INTRODUCTION

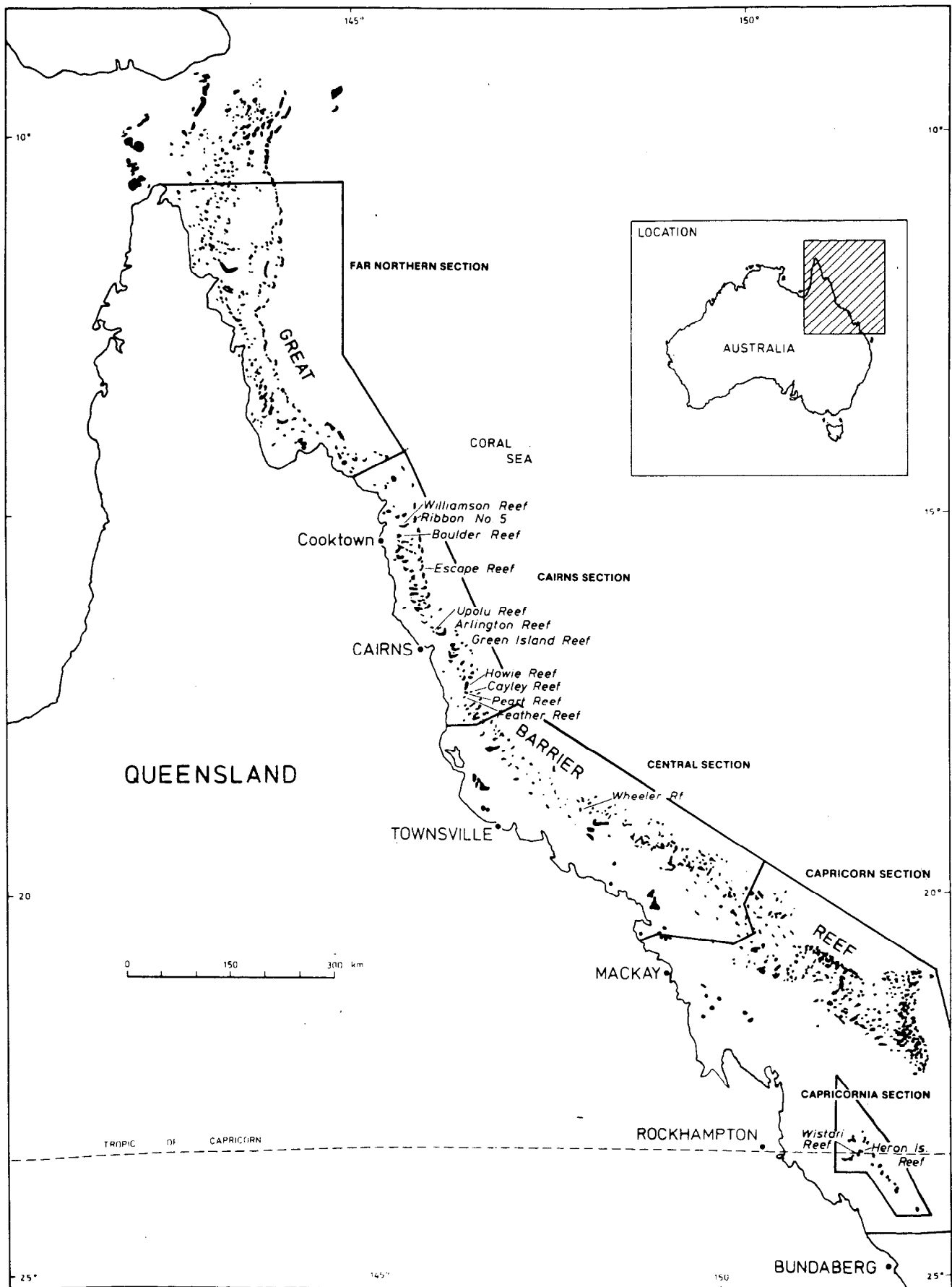
An integral part of any mapping program is the selection of a suitable classification scheme for use at any scale, for any area, and within the capability of the information gathering techniques being used (Anderson, 1971). In this paper, a classification system for reef covers and zonation for use with remotely sensed Great Barrier Reef (GBR) data is presented. It is designed for use with ground data and with aerial and orbital imagery for the labelling and recording of interpreted reef features on coral reefs of the GBR.

This paper is one of a set of three Technical Memoranda (TM) prepared for the Authority, the other two being of secondary importance. One, titled "Reef cover and zonation classification system for use with remotely sensed Great Barrier Reef data: User Guide and Handbook (TM-9)" (Kuchler, 1986b), describes and illustrates the operational use of the system presented here. A model handbook is detailed for easy and efficient user operation of, and recording from, the classification system. In the other paper, titled "Geomorphological nomenclature: reef cover and zonation on the Great Barrier Reef (TM-8)" (Kuchler, 1986a), a nomenclature for reef covers and zonation is detailed. It forms the basis of the classification system presented here.

The nomenclature paper was designed as a secondary document since this paper (TM-7) is the principal reference and therefore has primary relevance to data description and labelling operations.

A nomenclature was required for the classification system because scientists tend to label reef features without the aid of any generally accepted nomenclature, and therefore without consistency (Kuchler, 1986a).

Figure 1. Location of reefs.



Ground data and image interpretation maps of the GBR are required for a major study, the Barrier Reef Inventory ANALYSIS (BRIAN) project (Jupp et al., 1981a,b; Jupp et al., 1985). BRIAN is evaluating the cost-effectiveness of remote sensing methods for detecting and monitoring geomorphological features on reefs of the GBR. Standardised definitions and labelling of such features is of prime importance because of the need to cross-compare various maps and data sets.

The interpretation of remotely sensed imagery involves the completion of four steps;

- detection of features;
- recognition and identification of features;
- analysis and delineation of patterns;
- and classification of features.

In steps two and four, observed features are identified by interpretation of spatial patterns and 'colour' (or spectral data) and then classified into known categories. This is possible only if the interpreter has a certain knowledge or reference level which may be either of a general nature, such as knowledge of the whole GBR region; or be associated with the interpreter's specific professional knowledge, such as the resolution of the remote sensing system, the scale of data and the user's data needs (Witmer, 1978).

Use of a classification system, then, requires some background knowledge of the specific subject being classified, and is a requirement of the GBR system presented here.