

EXECUTIVE SUMMARY

Introduction

This memorandum is one of a series of four GBRMPA Technical Memoranda dealing with the terminology, recognition and classification of coral reef cover and zonation features in the analysis of remotely sensed data of the Great Barrier Reef.

Objective

The memorandum presents the findings of a study to determine whether remote sensing can be used effectively to detect various coral reef resources and provide information of significant value to planning and management.

Summary

The study consisted of a cross comparison of results obtained from the interpretation of numerical (digital) Landsat multispectral scanner (MSS) data, enhanced Landsat MSS images and aerial photography and known ground data. Details of these comparisons are given and presented in tabular format.

The results indicated that groups of surface features or classes can be separated in the imagery and consistently interpreted. This record of consistency shows that the results are of informational value to planning and management programs. It is clear from the discussion that interpretation improves with the greater use and availability of ancillary data. Interpretive skill also increases if the interpreter is familiar with the subject conditions in the field.

The study identifies a number of factors which influence the separability, and therefore the interpretability, of features in the imagery. These both vary within Landsat images and air photos as well as from feature class to feature class.

It is concluded that class uniqueness, water depth, feature contrast, spatial resolution, class location (adjacency) and transient boundaries all affect separability and recognition and tend to operate as a suite with the position of a variable factor within the suite changing through time, operative technique and between classes.

Conclusion

It is clear that significant information can be obtained from remotely sensed data to permit a reliable, 70% accuracy, reconnaissance inventory of the coral reef resources of the Great Barrier Reef. The data has great potential utility for monitoring because it is obtained at regular intervals and can be analysed spectrally and spatially at a number of scales.

Further research and improvements in the technology can only improve the utility of remotely sensed data if it is obtained within an appropriate, integrated multi-stage inventory and monitoring framework. In additions to the spectrographic studies such a framework must be developed.