
WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

MACQUARIE ISLAND (AUSTRALIA)

1. DOCUMENTATION

- (i) IUCN/WCMC Data Sheet (42 references); Supplementary information document provided by Australia 16 September, 1997.
- (ii) Additional Literature Consulted: IUCN. 1991. **A Strategy for Antarctic Conservation**. 85 p.; IUCN/SCAR. 1994. **Developing The Antarctic Protected Area System**. 137p.; Clarke, M.R. and P. Dingwall. 1995. **Conservation of Islands in the Southern Ocean**. IUCN. 180p.; Thorsell, J. 1993. Which Islands Merit World Heritage Status? *Insula* No. 2; Dingwall, P. 1995. **Ranking the World Heritage Values of Islands in the Southern Ocean**. Report to IUCN 8p.; Kerr, R.A. 1983. Ophiolites: Windows on Which Ocean Crust?; *Science* 219 (4590); Dingwall, P. 1997. **Islands of the Southern Ocean - A Comparative Matrix**. Department of Conservation. New Zealand.
- (iii) Consultations: 12 external reviewers.
- (iv) Field Visit: None

2. SUMMARY OF NATURAL VALUES

Macquarie Island (MI) is a 34km by 5km oceanic island in the Southern Ocean located about half-way between New Zealand and Australia. The island is the exposed crest of the undersea Macquarie Ridge which has been raised to its present position where the Indo-Australian tectonic plate meets the Pacific plate. MI is a section of oceanic lithosphere (ophiolite) formed at a mid-ocean spreading ridge and now exposed above sea level. These exposures of underformed basaltic rocks, dolerites and gabbros give evidence of sea-floor spreading in the area. The main landscape feature of MI is a central plateau rising to 300m bounded by cliffs and surrounded by a coastal platform up to 800m wide. There are several lakes on the island and several smaller offshore rocks and reefs in the Nature Reserve which extends 12 nautical miles out to sea. Total area is 12,785ha of land and 527,215ha of ocean. MI hosts a major population of royal penguins as well as four species of albatross and a large elephant seal colony but the World Heritage nomination is limited to its geological values.

MI was not recommended for the World Heritage List by the Committee in 1992 (see section 6 below) and has been re-nominated by the Government of Australia under natural Criteria i and iii.

3. COMPARISON WITH OTHER AREAS

As the nomination of Macquarie is based on geological values, comparisons are only relevant to similar geological features found elsewhere.

Of 105 natural and 15 mixed sites on the World Heritage List, 56 were inscribed under criteria that included their geological or physical landform values. Most of these sites also qualify under other natural criteria as well except for several which are focused on one feature such as the fossils at Messel (Germany) and the caves of Aggtelek (Slovakia/Hungary). (It is clear then that the World Heritage list for natural sites is not a

biocentric one but includes a large proportion of areas that have universally outstanding geological and landform features.)

Ophiolites are found in many localities around the world including Oman, Iran, Newfoundland, Scotland, Philippines, Kamchatka, China, Norway, Chile, Cyprus, Pakistan and Albania. All of these are distinct in some way with MI's "uniqueness" centred around the fact that it is an exposed segment of an oceanic lithosphere that is currently being uplifted. It is thus possible on MI to study an exposed portion of the earth's lithosphere on land.

Two other World Heritage sites that have ophiolite features are Gros Morne in Canada and Kamchatka in Russia. There are, of course, differences as these sites contain examples of continental ophiolites while MI is an oceanic ophiolite and it is also less contaminated through association with continental processes.

The only regional comparative study that has been done is the Delphi analysis in 1995 which ranked the relative importance of the nine subantarctic islands (see the Heard and McDonald Technical Evaluation for details). Four attributes were ranked with MI being considered as being the most distinctive on one of them - geological features. (MI was also ranked as the one where its biological values were most modified by humans.)

Other comparisons with areas that demonstrate the related but broader processes of plate tectonics (i.e. the movement of continental plates including sea floor spreading and subduction zones) have not been made. There are many locations, however, where these are evident and which have produced substantially more scientific outputs than MI where geological research has not been extensive (see section 5).

MI was included as one of 236 geological sites on a global indicative list prepared in 1993 by the IUGS working group. Numerous deficiencies in this study led to another IUGS initiative on "Geosites" which is compiling a register of important geological sites world-wide which is expected to surpass 2000 sites. These data do not provide a ranking or measure of importance but do provide an inventory of the large number of such sites that all contribute to the understanding of earth's geological heritage. (Unfortunately, after several requests, no reply from IUGS could be obtained on this nomination.)

4. INTEGRITY

MI Island is not only remote and rarely visited but is well protected and managed by the Government of Tasmania. Its geological attributes are not threatened in any way - indeed as a piece of very resistant exposed sea floor it is virtually immune from human impact. An approved legally binding management plan exists but this is focused on protection of biological values and gives very little attention to geological values on which the nomination is based. In relation to this, several reviewers noted the preponderance of research interest has been on the biological features and not the geological ones.

Questions of integrity relating to MI's biological values have been raised by reviewers but, as the site has not been nominated for these criteria (see p. 25 line 3), these concerns are not considered in this evaluation.

5. ADDITIONAL COMMENTS

- An important factor affecting the previous Committee decision on MI (see section 6 below) is the submission by the Government of New Zealand of a nomination for the five cool temperate subantarctic islands in their territorial waters for consideration in 1998. All four natural criteria (including geological) form the basis for this new nomination. MI has many biological affinities and shows a similar Pleistocene history with the neighbouring islands in New Zealand and reviewers have noted the potential of considering MI as part of a possible cluster World Heritage island site. The New Zealand nomination document notes that, in a biogeographical sense, Macquarie is a southern extension of the

New Zealand subantarctic island region and that "there could be merit in combining Macquarie and the New Zealand islands in establishing a single international World Heritage site."

- The supplementary information provided by Australia in response to the request of the June, 1997 Bureau was helpful in soliciting additional views of six geoscientists and two other experts. Not surprisingly, the scientists were all of the view that MI was a unique study site providing a window into the structure of oceanic crust. The distinctiveness of the ophiolite on MI as compared to other areas was also brought out. However, the fact that a minority of the references on the geological features of the island have been published (see bibliography in management plan and in the nomination), indicates that MI has been of much greater interest for sciences other than geology. Also, as none of the seven objectives of the Management Plan include any reference to MI's geological values, it appears that a low priority is given to these by management.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The 1992 World Heritage Committee meeting in New Mexico noted that MI:

"had interesting geological value but was of the view that its characteristics were not of universal significance. However, the Committee endorsed the recommendation of IUCN that the Australian authorities consider Macquarie in the wider sense of an oceanic island ecosystem representative of the subantarctic biogeographic realm. The Committee noted that Macquarie's values might be enhanced if it was assessed in combination with some of New Zealand's neighbouring island groups and in the long-term could be part of an international nomination."

The Committee's decision in 1992 that the site was not of universal significance was based on the natural criteria in force at that time. New criteria adopted since then have consolidated geological, landform and geomorphic features but not to the extent that there would be grounds for modification of the previous Committee decision.

Australia has not responded to the two recommendations of the 1992 Committee on considering MI in a wider sense and as part of a possible serial nomination with the neighbouring island groups in New Zealand.

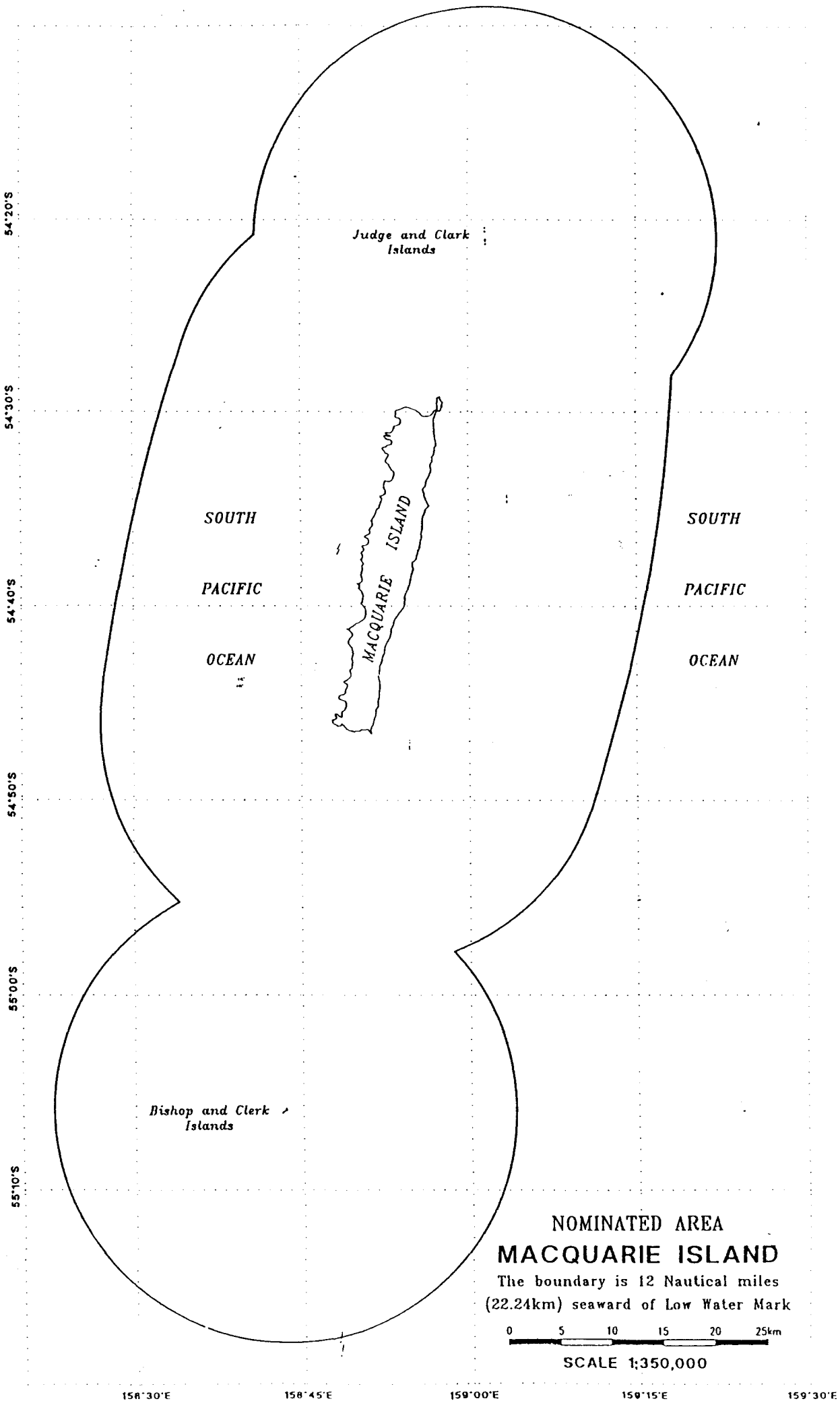
IUCN thus finds itself in the difficult position of evaluating a nomination where a previous Committee has taken a negative decision and where the State Party has not followed up on the two recommendations made at the time. Australia has certainly elaborated the nomination with the supplementary information from geoscientists that demonstrate the outstanding **geological** value of MI but not necessarily its outstanding **universal** value. It remains IUCN's view that such a narrowly-focused entity as an exposed oceanic ophiolite, despite the unquestioned evidence it provides in interpreting earth's geological past, is not sufficient by itself to be deemed **universally** outstanding. (A precedent for this view was the 1987 Committee decision not to inscribe the geological sequence at Jixian, China.)

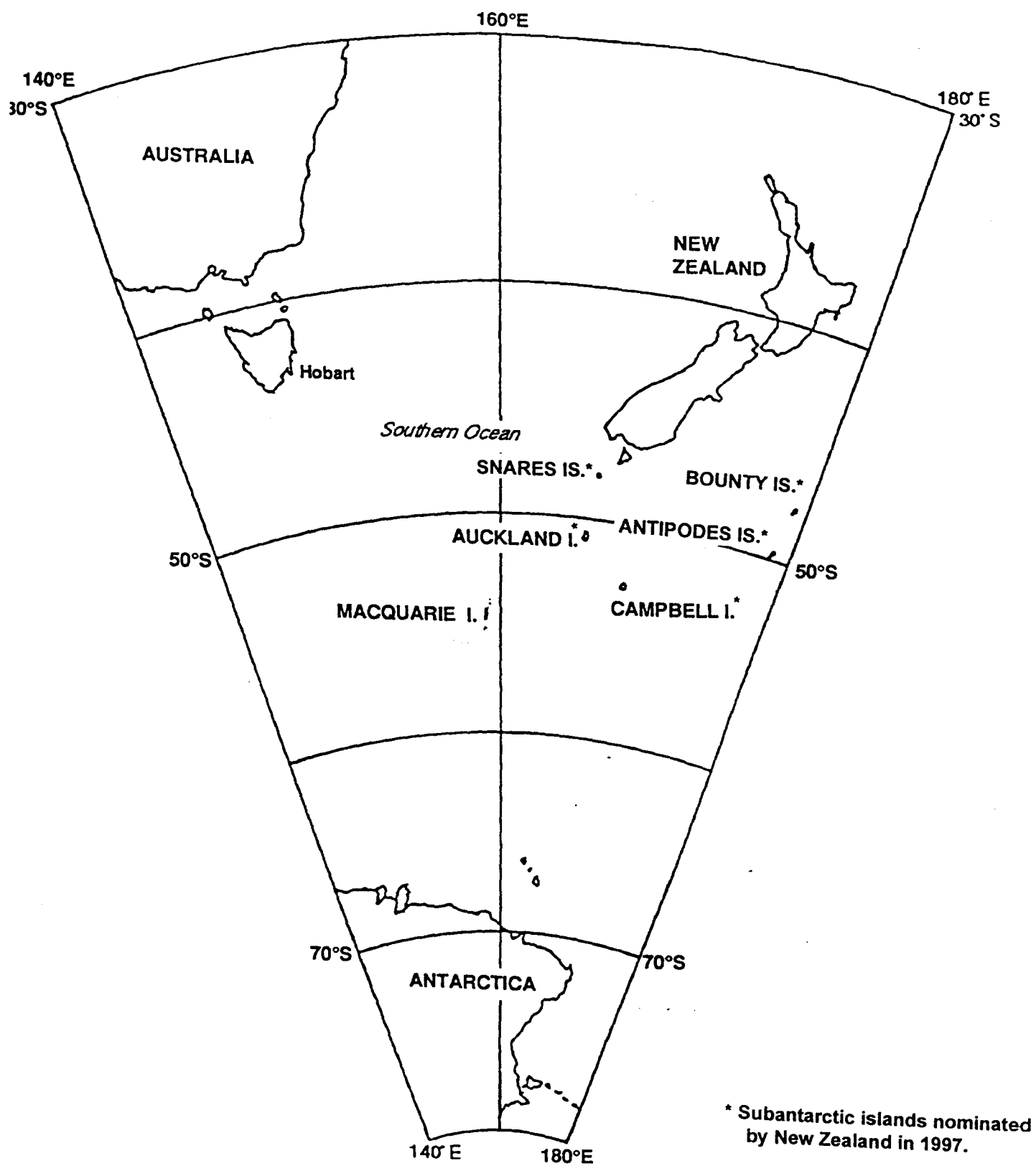
A review of which geological features (among the many thousands that exist) are universally significant at a global level is proposed for part four of the Global Natural Heritage Study in 1998. Should this global overview suggest that the oceanic exposure at MI is an essential and major factor in the explanation of earth's geological history, then the case for MI could be reopened. Until this contextual framework is available, however, the 1992 Committee decision not to inscribe the site on its own is still considered valid.

7. RECOMMENDATION

Noting the decision of the previous Committee, IUCN recommends that the Bureau **defer** a decision on the revised MI nomination until (1) a response is received from the Australian authorities on the decision and recommendations of the 1992 Committee; (2) the global theme study on geological features and landforms

is completed; and (3) the Australian authorities can consider if the site could also be considered under biological criteria; (4) the evaluation of the neighbouring subantarctic islands nomination from New Zealand is presented at the 1998 session of the Bureau.





Map 2 Macquarie Island Regional Location