Report back on a Systematic Environmental-Geographic Framework (SEGF) for Protected Areas under Annex V of the Environmental Protocol

CEP Working Paper from New Zealand

1. Background

New Zealand produced working papers 16 and 12 for CEP III and IV following intersessional contact group work on protected areas in 1999-2000. These papers noted that a Systematic Environmental – Geographic Framework (SEGF) would:

- attach substance to presently undefined terminology in Article 3(2) of Annex V of the Protocol; and
- fill a gap long noted during discussions by SCAR and others on the Antarctic protected area system.

The CEP IV (Report, paragraph 71) expressed interest in the issue and asked New Zealand to report back on progress at CEP V.

2. Comments from SCAR Contacts

Recommendation (b) in WP 12 (CEP IV), proposed that comment be sought on the concept of SEGF and protected areas from SCAR. The SCAR Group of Specialists on Environment and Conservation (GOSEAC) discussed SEGF at its meeting in April 2002. The group concluded that a SEGF tool, if used uncritically could encourage a box-filling approach to designating protected areas that might be counterproductive. GOSEAC suggested the SEGF tool might be better used within a modern approach to conservation within the Treaty system that SCAR may consider promoting. In view of the recent structural changes within SCAR, it was decided not to prepare a specific paper on SEGF for the SCAR meeting in Shanghai meeting or CEP V. However the Chair of GOSEAC (now disbanded) encouraged New Zealand to further develop the SEGF approach with a view to promoting discussion of the broader conservation objectives of the protected area system.

Members of the SCAR Geodesy and Geographic Information Working Group (GGI, now incorporated into the new Geoscience Standing Scientific Group) noted that within SCAR there was considerable experience and knowledge in spatial data fields, which would be useful for under-pinning a SEGF. It was suggested a small SCAR group could be tasked with such a role if it was felt appropriate.

The final outcomes of the Shanghai meeting were not known before this working paper was finalised. In particular the composition of groups, their chairs and how they will operate were not known. Therefore it is premature to recommend any specific way forward with SCAR except to note that expertise exists within SCAR to assist with SEGF development.

3. A simple yet practical example of a SEGF

WP 12 and 16 presented a map (Keage 1987) as an illustration of an SEGF. This example or model would work at a broad scale and add to the existing Udvardy classification

(1975) which is too coarse for Antarctica. The Keage approach would give a clear geographic basis to the Antarctic ecosystem classification system that was developed by SCAR in1977 after ATCM Recommendation VII-2 (1972) and modified by SCAR and IUCN in 1992 (Annex I) following paragraph 88 of the XIV ATCM report. That system would be particularly useful in small (e.g. ice-free) areas whereas the Keage approach would provide a suitable continent-wide scale.

The primary criteria or themes for a Keage-type model would need to delineate the main environmental drivers for habitats and ecosystems on the Antarctic continent. Similar biogeographic regionalisations elsewhere in the world recognise various attributes of climate, geology, geomorphology, landform and soils as the physical drivers of ecological processes. These in turn are responsible for driving the observed patterns of biological productivity, characteristic flora and fauna, and associated patterns of biodiversity.

On land in Antarctica a simple physical regionalisation might be obtained using only:

- ice catchment boundaries to delineate surface ice cover;
- regional geology in ice-free habitats to delineate broad geological boundaries;
- simple classification of geomorphology in ice-free habitats, and;
- surface climate, for example the position of the January 0ºC isotherm or similar environmental domains including distance from seasonally open sea (10 km, Annex 1) and altitude to delineate coastal zone habitat.

The primary criteria for inshore marine habitats might include:

- bathymetry; and
- floating ice cover type (including any seasonal duration)

Seafloor substrate, sedimentary environment, currents and other criteria could be developed in future if the model needed to be improved or extended offshore.

4. Use and need for such a Systematic Environmental – Geographic Framework

There are several ways in which a SEGF could be used to help implement the Protocol in addition to those noted generally in section 1 above.

- The Ross Sea Region State of the Environment Report (Waterhouse 2001) noted that a more systematic approach to protected area planning would provide an important basis for identifying, assessing and designating areas in the future.

In particular a SEGF would assist the protected area system by:

- providing another tool for modern approaches to conservation within the protection provided by the Protocol;
- enabling more systematic risk assessments of proposed protected areas by taking account of environmental and geographic differences in Antarctica;
- enabling representativeness of proposed and existing protected areas to be assessed efficiently, transparently and repeatedly. Representativeness is widely considered to be a very important part of protected area systems and was included in the Guidelines for protected areas accepted at CEP III (following several references in Antarctic Protected Area workshops);
- allowing Parties and the CEP to assess goals and achievement of targets for specific types or numbers of area that may be agreed as especially important (e.g. inviolate or reference areas (CEP I Report paragraph 49 iii, Njastad 1998);

- supporting the designation of Antarctic Specially Protected Areas by helping identify specific areas where additional protection would best be applied to designated species

5. Possible ways forward

A variety of other, generally more complex approaches for biogeographic regionalisations have been followed elsewhere in the world. Such options could be reviewed, environmental data could be compiled in a wide range of parameters and a new classification developed for Antarctica. This would be a huge task and after the last two years of raising the matter at CEP and earlier (e.g. Njastad 1998) it is considered unlikely that enough resources could be assigned to achieve it.

The simple example illustrated in working papers 16 and 12 for CEP III and IV discussed in section 3 above is based on an approach first developed in 1987. It could be reviewed by a small number of specialists to validate and update it where necessary by summarising existing data to achieve a useful, pragmatic biogeographic regionalisation before final presentation to the CEP. This would be a more manageable task but New Zealand cannot and should not, do this on its own. Wider engagement and input is required from the Antarctic community generally.

To this end, CEP members and SCAR could be asked to identify such specialists required. The scale of such a review and the extent to which it was data driven should be limited to constrain the size of the task, and ensure it was practical. Specific aspects or criteria incorporating wilderness and aesthetic values referred to in Article 3 of Annex V (e.g. distance from bases, natural/anthropogenic change) could be included (Lewis-Smith and others 1992) if the CEP thought this was appropriate at this time.

5. <u>Recommendations</u>

a) That the CEP note the work carried out to date on the concept of SEGF for the Antarctic protected area system under Annex V, in particular on the development of a tool to implement specific needs established by the Protocol

b) A small number of suitable specialists could be invited to review the Keage example and refine the suggested criteria for the framework, perhaps under the auspices of SCAR.

c) That the group report back to CEP VI.

d) If agreement and commitment cannot be obtained on a suitable way forward (as suggested in recommendations b and c above) then work on a SEGF for Antarctic specially protected areas should cease.

e) In this case Recommendation 6 of the 1992 SCAR-IUCN workshop should be adopted (i.e. to use the modified SCAR ecosystem classification matrix including the example in Annex 1 as the SEGF referred to in Annex V) or otherwise the purpose and need for a SEGF should be reviewed.

References

Keage P. 1987. Environmental zones and planning units - a basis for an Antarctic terrestrial protected area network. In “Conserving the natural heritage of the Antarctic realm” .IUCN .

Njastad B. (Compiler) 1998. Report of Antarctic Protected Areas Workshop, Tromso 23 May 1998. Norsk Polarinstitutt.

Lewis Smithm RI, DWH Walton and PR Dingwall (Editors) 1992. Developing the Antarctic Protected Area System. Proceedings of the SCAR/IUCN Workshop 29 June-2 July 1992. IUCN.

Udvardy MDF 1975. A classification of the biogeographical provices of the world. IUCN

Waterhouse, E (Editor) 2001. Ross Sea Region – A State of the Environment Report for the Ross Sea Region of Antarctica. NZ Antarctic Institute.

Annex 1. Antarctic ecosystem classification matrix after Lewis-Smith RI, DWH Walton and PR Dingwall (Editors) 1992, page 34. TO BE INSERTED

Environmental features / Biota (locally abundant)	Seasonally ice-free substrata and associated late snow beds							Permanent ice			
	Coastal (<10km from seasonally open sea)			Inland (>10 km from seasonally open sea)				Coastal (<10 km from seasonally open sea)		Inland (<10 km from seasonally open sea)	
	<1000 m alt.	>1000 m alt.	Geo-thermal	<1000 m alt.	>1000 m alt.	Geo-thermal	Adjacent to ice shelf	<500 m alt.	>500 m alt.	<500 m alt.	>500 m alt.
Vascular plants	3		-			-					
	6		-			-					
Bryophytes	7		-	-		-	-				
	16		1	2		-	1				
Lichens	14	-	-	-	-	-	-				
	20	-	-	1	1	-	1				
Macroalgae/ cyanobacteria	13		-	-		-	-				
	17		-	1		-	-				
Snow algae	3							1	1		
	11							-	-		
Microorganisms	? All	-	-	-	1	1	-				
	? All	-	1	3	5	2	1				
Invertebrates	10		-	-	-	-	-				
	11		-	-	-	-	-				
Birds/seals	16	-	-	-	-		-	2			
	16	-	-	-	1		1	1			
Sterile	-	-	-	1	2	1	-	1	1	-	-
	-	-	-	2	4	2	1	-	-	1	1

Upper values : SPAs
Lower values : SSSIs (no significant biotic variables in SSSI Nos. 2, 25, 26, 27, 28, 35, 36)

FIG. 1. Proposed Antarctic terrestrial ecosystems classification matrix