CONVENTION ON WETLANDS (Ramsar, Iran, 1971)

11th Meeting of the Scientific and Technical Review Panel
Gland, Switzerland, 8-11 April 2003

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Agenda items 6.1 v) and 6.1 vi)

Background material concerning assessing the effectiveness of the Convention

1. Attached is a COP8 Information Paper (COP8 DOC. 37) concerning an approach to measuring the effectiveness of the Convention through Ramsar site designation.

2. This approach is relevant to the STRP's high priority tasks on reporting on the status and trends of the ecological character of Ramsar sites (Agenda item 6.1 v) and preparing a set of indicators of the effectiveness of implementation of the Convention (Agenda item 6.1.vi).

"Wetlands: water, life, and culture"
8th Meeting of the Conference of the Contracting Parties to the Convention on Wetlands (Ramsar, Iran, 1971)
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Ramsar COP8 DOC. 37

The Ramsar Convention: Measuring its Effectiveness for Conserving Wetlands of International Importance

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Introduction

1. The Ramsar Convention (officially named Convention on Wetlands of International Importance especially as Waterfowl Habitats) takes its name from the town in Iran on the southern shore of the Caspian Sea, where it was first negotiated in 1971. The Convention is widely acknowledged to be the first of the modern global intergovernmental treaties on conservation and sustainable use of natural resources.

2. The Convention entered into force in 1975, and as of September 2002, it has 133 Contracting Parties. Ramsar provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Its mission is the "conservation and wise use of wetlands by national action and international cooperation as a means to achieving sustainable development throughout the world" (Ramsar COP6, 1996).

3. When joining the Convention, Contracting Parties agree to fulfill four obligations: (i) designate at least one wetland for inclusion in the List of Wetlands of International Importance (the "Ramsar List") and to promote its conservation, including, where appropriate, its wise use, (ii) to formulate and implement planning to promote, as far as possible, "the wise use of wetlands in their territory," (iii) to establish nature reserves in wetlands, whether or not they are included in the Ramsar List, and to promote training in the fields of wetland research, management and wardening, and (iv) to consult with other Contracting Parties about implementation of the Convention, especially in regard to trans-frontier wetlands, shared water systems, and shared species.

4. To be included in the Ramsar List, each wetland must comply with very specific criteria that defines it as a "Wetland of International Importance." These criteria are based on importance related to wetland uniqueness, species and ecological communities, waterbirds, and fish.

Purpose of this Study and Methodology

5. The Ramsar Convention has now entered into a mature stage. Its effectiveness is demonstrated by the growing number of Contracting Parties (currently 133), the number of listed sites (1180), the cumulative area covered by these sites (103 million ha), and the growing awareness about the importance of wetlands for environments and societies all over the world.

6. Until now, however, no systematic attempt has been made to measure and track the effect that Ramsar designation has had in terms of increased conservation[1] prospects for Ramsar sites. Although the assumption is that Ramsar designation increases conservation at each site, this hypothesis has not been formally tested.

7. The purpose of this study is to develop a methodology to measure changes in conservation prospects at Ramsar sites, and to apply this methodology to the Ramsar database in order to determine the extent to which Ramsar designation increases conservation. In addition, it is our hope that, if adopted and refined, this methodology can be used to track conservation prospects at Ramsar sites over time.

8. A database was established using the Ramsar database for 1993, 1995, and 1999[2]. Since data for 1995 complemented the 1993 data, 1993 and 1995 are combined for all analyses. For each period, the following fields were included for each site: Country, Site Code, Site Name, Designation Date, Geographic Coordinates, and Extension. For analysis purposes, other variables were added from World Bank databases including country economic and social indicators.

9. Three additional measurements related to conservation prospects were also created: human uses and local participation, conservation measures, and presence of adverse factors, and based on the "management effectiveness" scorecard of Hockings et al (2000). These dimensions were derived from the narrative data for each Ramsar site applying scores going from 1 to 4 for each measurement (Table 1).

10. For each measurement, a low score implies a low conservation prospect. For example, a low score for the measurement "human uses and local participation" implies low conservation prospects because of little local engagement and little benefit derived by local populations from Ramsar designation and thus lower sustainability. A low score for "conservation measures" is also assumed to imply low conservation prospects because of little on-site conservation action. Finally, a low score under "absence of threats" represents a high level of threat, thus low conservation prospects. When these scores are added together, a composite score for total conservation prospects is obtained. Thus, a total score of "3" would imply very weak conservation prospects, while a perfect score of 12 would reflect excellent conservation prospects.

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[1] Conservation in this context includes both protection and wise use.

[2] A comprehensive database with the list of sites is maintained by the Convention Secretariat through a contract with Wetlands International, and can be accessed online via www.ramsar.org.

Table 1
Conservation Prospects Measurements Applied to Ramsar Sites **Score**

(Adapted from Hockings et al (2000) - IUCN, following Ramsar database fields)

1. Human Uses and Local Participation	
a. No local engagement in site management	**1**
b. Some awareness and some participation by local communities	**2**
c. Education programs and local engagement including traditional human uses	**3**
d. Local communities fully participating in, and benefiting from site and/or human uses compatible with conservation objectives	**4**
2. Conservation Measures	
a. No appropriate legislation, unprotected	**1**
b. Legally protected, some research, some maintenance, little enforcement (or no protected but managed under special regimes)	**2**
c. Some Monitoring, Routine Patrolling, Enforcement	**3**
d. Monitoring Programs, Implemented Management Plan	**4**
3. Adverse Factors (absence of threats)	
a. Very serious degradation as a result of threats	**1**
b. Serious threats present	**2**
c. Some threats but mostly under control	**3**
d. No serious threats	**4**

x = Not known or not applicable

Results and Discussion

11. Table 2 shows the scores (total and for each measurement) aggregated by region for 1993/1995 and 1999. In 1993, regional differences in conservation prospects (measured by total score) are clearly visible among regions, and two groupings can be differentiated: 3 regions with overall low conservation prospects (Africa, Asia, and the Neotropics), and 3 regions with higher conservation prospects (Eastern Europe, North America, and Europe), with Oceania somewhere in between. By 1999 all regions except Eastern Europe improved their aggregate score. Relatively greater gains in the lagging regions resulted in overall convergence of scores between continents. However, these trend data must be treated with caution because the number of listed and reporting sites increased between the two periods; and data on human use is available only for less than half of the sites.

Table 2
Aggregate Results by Region
(Number of Observations in Parenthesis)

	1993/1995				1999			
	Human Use	*Conservation Measures*	*Absence of Threats*	*Total Score*	*Human Use*	*Conservation Measures*	*Absence of Threats*	*Total Score*
Africa	2.46 (36)	2.26 (62)	2.14 (51)	6.87	3.08 (50)	3.13 (71)	2.64 (72)	8.85
Asia	2.26 (26)	2.17(50)	2.45 (42)	6.89	2.95 (60)	2.99 (92)	2.76 (90)	8.69
Eastern Europe	3.38(19)	2.95(60)	2.85(61)	9.17	3.07(75)	3.17(108)	2.85(101)	9.08
N. America	3.05(23)	3.21(52)	3.24(52)	9.51	3.28(36)	3.33(42)	3.14(42)	9.75
Oceania	2.55(22)	2.82(48)	2.80(48)	8.17	3.21(39)	3.35(54)	3.13(54)	9.69
Neotropics	2.30(21)	2.52(48)	2.75(47)	7.57	3.06(33)	3.02(66)	2.78(65)	8.86
Europe	3.17(92)	3.15(396	3.11(376)	9.43	3.41(271)	3.49(438)	2.97(410)	9.87

12. More detailed examination focuses on changes in condition for sites observed in both periods. There are divergent trends in threat between sites with high and low starting points (table 3). Sites with the highest threat levels (lowest scores) in 1993/95 experienced reductions in threat; about half of those with scores of two or less recorded improvements, and only about 1% registered declines. On the other hand, 71% of the lowest-threat sites in 1993/95 recorded an increase in threat by 1999. While this may partially reflect regression to the mean (due to imperfectly measured indicators), the shifts are large enough to demand attention.

13. In contrast, there was a strong trend for sites to improve or maintain conservation measures (table 4). Only 8% registered a decline in these measures. Gains were particularly strong for those with initial score of 3: 42% improved and only 5% declined.

Table 3

Absence of threats (1993/95)	**Absence of Threats (1999)**				
	1	**2**	**3**	**4**	**Total**
1	2	10	6	1	**19**
2	2	51	57	2	**112**
3	1	59	276	34	**370**
4		2	73	30	**105**
Total	**5**	**122**	**412**	**67**	**606**

Table 4

Conservation Measures (1993/95)	**Conservation Measures (1999)**				
	1	**2**	**3**	**4**	**Total**
1	7	19	15	5	**46**
2	3	29	73	30	**135**
3	2	13	148	122	**285**
4		2	25	169	**196**
Total	**12**	**63**	**261**	**326**	**662**

14. We used multivariate analysis to confirm the statistical significance of the changes in protection and to assess differential performance due to characteristics of the site. (See note on methodology.) We found that higher initial scores were strongly and significantly related to higher final scores, but that the gains between observations were not affected by later (1995) vs. earlier (1993) initial observation. Area of the site had no significant impact on the amount of improvement. The country's GDP per capita had a slight positive impact on improvements, but this impact was not statistically significant at the 5% level. Location in the tropics resulted in a small and marginally significant reduction in gains.

15. When taken together, these results support the following findings:

    a. Ramsar-designated sites experienced a strong increase in protection efforts.
    b. The increase in protection was particularly strong in the developing world. Sites in the developed world had disproportionately achieved the highest protection rating at the time of initial observation and thus could not record gains.
    c. Ramsar-designated sites with high threat experienced a reduction in threat; but threat increased in sites with initially low threat.

16. The specific mechanisms responsible for these results are not known, but could include:

    a. More attention to conservation effort due to more funding (whether domestic or foreign), more threats as a result of heightened conservation effort in high-threat sites. The increase in awareness about the importance of conserving these sites, and more local stakeholder participation in conservation. This mechanism is supported by the statistically significant observed increase in conservation measures.
    b. A reduction in specific threat at initially low-threat sites may be due to secular trends in threats that are difficult to address in short time periods, such as non-point-source pollution leading to eutrophication.

17. Because correlation does not prove causation, however, it is not possible to unequivocally conclude that Ramsar designation *per se* increases conservation prospects. Given that the purpose of the Ramsar designation is precisely to increase the conservation and wise use of these sites, on the other hand, this hypothesis is consistent with the data. An alternative hypothesis could be that wetland conservation in general has improved over the last decade, and thus the observed result could have occurred even without Ramsar designation. This alternative hypothesis can only be disproved by running a test in which non-Ramsar wetland sites would be analyzed following a similar methodology. Unfortunately, the information does not exist to test such a hypothesis.

Shortcomings of the Analyses

18. The results found above are statistically significant and supported by the analyses. Nevertheless, they are dependent upon various assumptions and limitations of the data. These include:

    a. Conservation of biological diversity (including genes, species, ecosystems, processes, and evolutionary potential) can only be accurately measured through biological monitoring. Thus, "conservation prospect" is a proxy measurement implied to be synonymous with biological conservation.

b. The analyses rely on data provided by the parties themselves, and thus it could be influenced by a natural desire by contracting parties to highlight the positive achievements after designation. More standard and transparent measurements of conservation prospects could be developed in the future in order to avoid this potential source of error.

Conclusions

19. The study concludes that the designation of sites to be incorporated in the Ramsar database is likely to have improved the conservation prospects of these sites due to various factors, including increased awareness about the importance of these sites, increased conservation funding (both domestic and international), increase participation by local stakeholders in conservation, and reduction of threats. It is recommended that this methodology should be further refined, and that is should be applied periodically to track the progress of conservation at Ramsar sites over time.

Notes of the Methodology Used

20. Ordered probit analysis is used to model categorical dependent variables. The model assumes there is a latent (unobserved) variable y* that measures (for example) conservation effort in 1999. The model estimates y* as a linear function of explanatory variables, here including dummy variables representing the initial score in 1993 or 1995. The model also estimates three cutpoints for the latent variable. If y* is below the first cutpoint, then we observe a conservation score of 1; if y* is between the first and second cutpoints, we observe a score of 2 and so on.

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