



**10th Meeting of the Conference of the Parties to the
Convention on Wetlands (Ramsar, Iran, 1971)**

“Healthy wetlands, healthy people”

**Changwon, Republic of Korea,
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Report of the Chair of the Scientific and Technical Review Panel

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Annex 1: List of STRP products for the 2006-08 triennium

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For reasons of economy, this document is printed in a limited number, and will not be distributed at the meeting. Delegates are requested to bring their copies to the meeting and not to request additional copies.

1. Introduction

1. This report covers the work of the Scientific and Technical Review Panel (STRP) under its 2006-2008 Work Plan. The report is an expanded and updated version of previous STRP reports presented to the 35th, 36th and 37th meetings of the Standing Committee, and has been prepared by the Chair of the STRP, assisted by the Ramsar Secretariat.

2. Overview of the triennium

2. The appointed members of the Panel for the 2006-2008 triennium have been as follows:

- A. Regional representatives, with networking responsibilities:
Africa: **Dr Heather MacKay**
Asia: **Ms Rebecca D'Cruz**
Europe: **Dr Karen Jenderedjian**
Neotropics: **Ms Maria Rivera** (Dr Juan José Neiff from 2007)
North America: **Prof Roy Gardner**
Oceania: **Dr Philippe Gerbeaux**
- B. Thematic experts (for STRP priority work areas):
Wetland inventory and assessment, including indicators: **Ms Teresita Borges**
Wise use and ecological character: **Mr Randy Milton**
Water resource management: **Prof. Mike Acreman**
Ramsar site designation and management: **Mr David Stroud**
Wetlands and agriculture: **Dr Max Finlayson**
Communications, Education & Public Awareness (CEPA): **Ms Christine Prietto**
- C. The Convention's five International Organization Partners (IOPs):
BirdLife International: **Mr Dave Pritchard**
Wetlands International: **Mr Ritesh Kumar**
IWMI: **Ms Rebecca Tharme** (Mr Matthew McCartney from 2008)
IUCN: **Dr Mark Smith**
WWF: **Ms Archana Chatterjee**

Dr Heather MacKay was appointed as Chair of the STRP for 2006-2008, and **Ms Rebecca D'Cruz** as Vice-Chair.

3. A key theme throughout this triennium has been the importance of advancing implementation: implementation of Convention mechanisms, of wise use in general, and of specific aspects of STRP scientific and technical guidance. The current high political profile of climate change and its associated ecological, social and economic impacts is likely to be sustained, and we can expect this to greatly increase the urgency for demonstrated and effective implementation of response policies and associated scientific and technical guidance.
4. In several of the Thematic Work Areas, the Panel has continued last triennium's trend of taking a step back to consider and stabilize broader framework approaches and to assess medium and longer-term implementation needs and challenges before moving towards

detailed guidance and/or other scientific products. This is especially true for the Thematic Work Area on inventory, assessment, monitoring and reporting, since this particular area is central to the Convention's implementation. The work on indicators of Convention effectiveness continues to bring our focus back to ecological outcomes rather than administrative outcomes for implementation.

5. Under the current STRP *modus operandi*, the balance is improving between the various activities and responsibilities of the Panel, which include:
 - i) ongoing advisory functions, e.g., Ramsar Advisory Missions (RAMs), Montreux Record requests, responding to ad hoc individual requests for technical advice, and ongoing management of science programmes,
 - ii) responding to Parties' needs and requests for guidance and support,
 - iii) maintaining a big-picture view of likely future needs, challenges and emerging issues for the Convention, and
 - iv) collaborating at international level with scientific processes in other conventions and with agencies whose objectives are related to the wise use of wetlands.
6. We have also seen increasing emphasis on scientific and technical communication, both within the Convention, i.e., between STRP, other Convention bodies and the Contracting Parties, as well as outside the Convention, i.e., with other biodiversity-related conventions, other international sectoral initiatives that address aspects of wise use, other organizations and other international and regional scientific initiatives.
7. As always, the Panel recognizes and appreciates the support of the Secretariat staff, without whom we could not carry out our functions. We welcome the appointment of a Scientific and Technical Support Officer, but remain concerned about the limited personnel and capacity within the Secretariat, especially as the demands grow for scientific collaboration and coordination, both within and external to the Convention.
8. The STRP continues to evolve, as we have "learned by doing" over the years since it was first established. During this triennium and the previous triennium, the *modus operandi* of the STRP has matured and stabilized, offering an effective and efficient model for management and delivery of high-quality science into Convention processes at all levels, despite the Panel's limited resources and capacity. This model for a scientific and technical subsidiary body is also being viewed with considerable interest by other multilateral environmental conventions.
9. The Panel continues to work in an unusually open and inclusive manner, partly because this is more effective and enjoyable for all involved, partly because it enables us to consider a wide range of knowledge, views and experiences in our discussions, but also importantly because much of what we achieve with our limited resources can only be done through partnerships and collaboration with our IOPs and other international bodies and with our sister conventions.
10. In addition, Panel members willingly and consistently promote Ramsar in their own networks and in other programmes in which they are involved, and they are alert for relevant information, knowledge and expertise that could also enrich STRP discussions and products. Representatives of observer organizations at STRP meetings contribute

significantly to the quality of the discussions, and their enthusiasm is evident in the fact that they often subsequently become involved in specific STRP tasks.

11. During this triennium, Panel members, IOP member representatives and Secretariat technical staff have participated in a number of programmes and initiatives that are relevant to STRP work, such as Scientific Task Force on Avian Influenza, the 2010 Biodiversity Indicators Partnership GEF project, the “Wings over Wetlands” African-Eurasian migratory waterbirds GEF project, the Fourth World Water Forum, and a side event on wetland mitigation at the IUCN World Conservation Congress, and they have participated in numerous national and international conferences and symposia, speaking on wetland and Ramsar-related issues and topics. In that sense, the STRP participants have been active in championing the profile of the Convention and the work and expertise of the STRP.
12. In addition, many STRP members, observer organization representatives and invited experts are active and expert in general wetland science and technical issues, and this is reflected in the many and diverse scientific and technical papers and reports they have published during the 2006-2008 triennium that are relevant to the work of the STRP and the implementation of the Convention (see Annex 2). The listing includes papers and reports whose authorship includes STRP members (including IOP member representatives), representatives of observer organizations to the Panel, experts invited by the STRP to contribute to its work, and Ramsar Secretariat technical staff.

3. Intersessional events and meetings

13. Much of the Panel’s intersessional work in this triennium was conducted electronically, through the STRP Support Service (SuSe) Web site and e-mail. The Panel and its Working Groups have also held a number of formal STRP meetings and smaller group workshops to progress their priority tasks. Panel and working group meetings during 2006-2008 have been:
 - i) The 13th meeting of the STRP (30 May - 2 June 2006), and the 14th meeting of the STRP (28 January-1 February 2008), were both held in Gland, Switzerland. Full reports of the STRP13 and STRP14 meetings are available on the Ramsar Web site at www.ramsar.org/strp/key_strp_index.htm.
 - ii) The mid-term working meeting of all STRP Working Groups (26-30 March 2007), was also held in Gland, Switzerland.
 - iii) A joint STRP, CBD, and Ramsar Secretariat expert meeting was convened in Gland in March 2007 on “Wetlands, water, biodiversity and climate change”. The report of this workshop is being prepared for publication in the Ramsar Technical Report series, and a draft of the report, which was launched jointly by CBD Executive Secretary and Ramsar Secretary General on the occasion of World Biodiversity Day in June 2007, is available at: www.biodiv.org/doc/case-studies/wtr/cs-wtr-ramsar-en.pdf.

- iv) A meeting of European STRP National Focal Points (NFPs) was held in Austria from 17-19 September 2007. The report of this meeting is available on the Ramsar Web site at www.ramsar.org/strp/key_strp_index.htm.
 - v) An intersessional scientific and technical meeting on “Healthy Wetlands, Healthy People” was held in Changwon, Republic of Korea, in November 2007, to address the review and development of the Panel’s Wetlands and Human Health technical report and guidance on Highly Pathogenic Avian Influenza (HPAI). The outcomes of this meeting are fully represented in COP10 DR21 (HPAI) and COP10 DR23 and COP10 DOC. 28 (human health). The full review report on wetlands and human health is being finalized for publication as a *Ramsar Technical Report*.
 - vi) Further expert writing group meetings for the Panel’s Wetlands and Human Health report took place in Perth, Australia, in January 2008 and Kuala Lumpur, Malaysia, in April 2008.
 - vii) A drafting workshop for the “Changwon Declaration on human well-being and wetlands”, to be considered for COP10 adoption, was convened in Seoul, Republic of Korea, August 2008.
14. These additional meetings to the main STRP meetings were made possible through the generosity of Canada (through the CBD Secretariat), Austria, the Republic of Korea, and Sweden, which the Panel gratefully acknowledges.
 15. In addition, various smaller technical working meetings of task groups were held during the triennium, in relation to individual tasks in the STRP work programme.
 16. The Chair of STRP and the Deputy Secretary General participated in the first and second meetings of the Chairs of the Scientific Advisory Bodies of Biodiversity-Related Conventions (CSAB), in Paris (July 2007) and Bonn (May 2008). These meetings were organized and hosted by the Convention on Biological Diversity. The third CSAB meeting was to be held in Barcelona (October 2008) but has now been postponed. Additional information on this useful process for improving collaboration between conventions can be found in section 4 of this report.

4. Work Plan progress and outputs during the 2006-2008 triennium

4.1 Overview

17. At the beginning of the triennium, the Panel established nine Thematic Working Groups to progress the different aspects of its priority work. Some Working Groups have been led by the appointed STRP member for the theme; others have been led by the Chair (Heather MacKay) and Vice-Chair (Rebecca D’Cruz) of the Panel. It is anticipated that several of these Thematic Work Areas and their associated Working Groups will be maintained for the 2009-2011 triennium, in accordance with the current *modus operandi* of the STRP and as indicated in COP10 DR10 (“Future implementation of scientific and technical aspects of the Convention”).
18. The Working Groups established by the Panel for 2006-2008 are:

Working Group	Lead(s)	Co-lead(s)
1. Inventory, assessment, monitoring & indicators	Teresita Borges	Max Finlayson; Dave Pritchard
2. Wise use & ecological character of wetlands	Randy Milton	Rebecca D'Cruz; Maria Rivera
3. Ramsar site designation & management	David Stroud	-
4. Water resources management	Mike Acreman	Rebecca Tharme; Heather MacKay
5. Wetlands and agriculture	Max Finlayson	
6. Wetlands and human health	Max Finlayson	
7. Resolution VIII.45 and ongoing issues	Heather MacKay	Rebecca d'Cruz, Dave Pritchard
8. Communications, education, participation and awareness (CEPA)	Christine Prietto	Sandra Hails
9. Regional Networking	Rebecca D'Cruz	Heather MacKay

19. During its 13th meeting, the Panel reviewed, under each theme, the Immediate, High and Lower Priority tasks for the 2006-2008 triennium, as allocated by Parties at COP9 in Resolution IX.2 Annexes 1 and 2.
20. The Panel considered and developed mechanisms, using a standard pro forma, for the delivery of each of its Immediate and High Priority tasks, and also identified certain lower priority tasks that it considered could be progressed during this triennium within the capacity of the Panel members and observers and without the need for additional resources. The finalised Work Plan for the triennium was endorsed by the Standing Committee at its 35th meeting in February 2007, and is available at www.ramsar.org/strp/key_strp_index.htm.
21. Funding and resources were sufficient to enable all of the Immediate Priority tasks in the Work Plan to be initiated in this triennium, along with several of the High Priority tasks, as indicated in the Annex. The STRP is particularly grateful to the government of Sweden for its financial support to this work. In addition, aspects of this progress, including on some Lower Priority tasks, have been made possible through a significant amount of task-related work being undertaken by Panel members, IOPs, and observers on a *pro bono* basis.
22. A list of STRP scientific and technical products for COP10 consideration and other products prepared under the Panel's 2006-2008 Work Plan is provided in Annex 1 to this report. In support of various of the scientific and technical draft Resolutions and annexed guidances prepared for COP10 consideration, the Panel, with the assistance of the Secretariat, has also prepared a number of COP10 Information Papers, and these are also listed in Annex 1.
23. A number of Panel members and observers will be participating in COP10, and they will be available to assist and advise Parties in their consideration of the scientific and technical materials that are included in the COP draft Resolutions.

24. In addition to the materials provided to COP10, a number of other STRP 2006-2008 tasks will be delivered through publication of *Ramsar Technical Reports (RTRs)*. The RTR mechanism was established in the last triennium as a more lasting publication vehicle for the more detailed technical review and methodological reports prepared by the Panel. A list of those published during the triennium, and those that are currently in preparation, is provided in Annex 1.

4.2 Summary of progress by thematic work area

TWA 1: Inventory, assessment, monitoring and indicators

25. Tasks under this Thematic Work Area have formed a major and complex component of the Panel's work during the 2006-2008 triennium. The panel determined that this area of work in the triennium should focus on overall Convention data and information needs, as well as gap-filling for guidance concerning different aspects of the ecological character of wetlands, and that the outcomes of these should give a future focus for STRP work on issues of data and information specifically concerning Ramsar sites.
26. Major aspects of this work have been:
- further development of implementation plans, factsheets and example assessment for the indicators of the effectiveness of the implementation of the Convention;
 - guidance on describing the ecological character of wetlands;
 - a framework for detecting, reporting and responding to change in ecological character; and
 - a framework for the overall data and information needs of the Convention, at national and supranational scales.

TWA 2: Wise use and ecological character of wetlands

27. This Working Group has focused its attention on main three issues, and it is finalizing technical reports and other materials concerning these aspects of wetland wise use:
- a review of, and advice on, the range of response options relevant to wetlands provided by the work of the Millennium Ecosystem Assessment (MA) in relation to the existing suite of Ramsar implementation guidance;
 - following the publication of the work of the MA, a review of the global uptake and use of ecosystem services and related terminologies; and
 - a review and update of the wise use case studies originally published in the 1993 Ramsar publication *Towards the Wise Use of Wetlands*.

TWA 3: Ramsar site designation and management

28. The Working Group contributed to the review and finalization of the text of the *Field Guide for Wetland Managers* – a task carried over from its work in the previous triennium – now published in 2008 by WWF in association with Wetlands International and the Ramsar Convention.

29. In addition, work on supporting information and advice for Ramsar site designation and management during the triennium included:
- preparation, in collaboration with the IUCN Species Programme, of a report providing population estimates and 1% thresholds to support the application of site selection Criterion 9, adopted at COP9;
 - contribution to a review of biogeographic regionalization schemes for the coastal and nearshore marine environment and the development of a new globally applicable scheme (“Marine Ecosystems of the World (MEOW)”), to support the application of Criterion 1 and aspects of Criterion 3; and
 - an assessment of the current distribution of, and gaps in, the networks of designated Ramsar sites of different wetland types under Criterion 1, and further evaluation of the application of the MEOW scheme in identifying gaps and priorities for further designations.
30. The Working Group has also undertaken a provisional review of the current content and structure of the suite of guidance on identifying and designating Ramsar sites, including that in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* and related materials, in relation to the Ramsar Criteria and their long-term targets, and it has recognized a number of gaps and inconsistencies. It is anticipated that under this TWA the Panel will give further attention to this issue in its next cycle, along with addressing a number of other related tasks concerning data and information needs and provision for Ramsar sites.

TWA 4: Water resources management

31. The Working Group on water resources management has prepared a number of substantive documents in this triennium (see Annex 1). Primary tasks in this thematic work area have addressed:
- consolidation and updating of the Convention’s guidance on integrating wetlands into river basin management, including collation and analysis of case studies;
 - preparation of a number of technical reports and papers related to determination and implementation of environmental water requirements;
 - review of the Convention’s current guidance on water quality and determination of the needs for new or updated guidance.

TWA 5: Wetlands and agriculture

32. The main task under this TWA has been to prepare, in agreement and collaboration with the International Water Management Institute (IWMI), a report for the Ramsar Convention on the findings on wetlands, water and agriculture of the Comprehensive Assessment of Water Management in Agriculture (CA).
33. In addition, STRP agriculture and wetland experts have contributed to the work of the GAWI (Guidelines on Agriculture, Wetlands and Water Resource Interactions) project, established to respond to aspects of Resolution VIII.34. The GAWI project has focused on development of a framework for assessing and responding to agriculture and wetlands interactions.

TWA 6: Wetlands and human health

34. The Working Group established under this TWA has focused on preparing the requested review report on wetlands and human health as an emerging issue for the Convention. This substantial report – “*Healthy wetlands, health people – a review of wetlands and human health interactions*” – is nearing completion for publication as a *Ramsar Technical Report* and has involved significant contributions from a number of wetland and human health invited experts, importantly including the World Health Organization (WHO).
35. Also under this TWA, the Panel has maintained its watching brief on issues concerning wetlands, waterbirds and Highly Pathogenic Avian Influenza (HPAI). In response to a number of further developments and issues emerging on this matter, the Panel has prepared a substantive suite of guidance for Parties on preparing for and dealing with HPAI issues, largely in the form of a structured guide to available guidances on preparation and response, and including guidance directed at assisting wetland managers on HPAI.

TWA 7: Ongoing work, emerging issues and Resolution VIII.45 issues

36. Ongoing work of the Panel included responding to queries and requests for scientific and technical advice on an ad hoc basis, responding to queries related to Montreux Record issues, and reporting to Standing Committee meetings. The Panel also developed a relatively informal but structured process for dealing with a number of emerging issues, on which more details are provided in section 6 of this report. Issues related to Resolution VIII.45 have been addressed in part by the review of use and utility of the Convention’s scientific and technical guidance (see section 5.2), and by evaluation and refinement of the STRP’s *modus operandi* (see section 5.1).

TWA 8: CEPA

37. The Working Group on Communications, Education, Participation and Awareness (CEPA) represents a new and innovative commitment from the Ramsar Convention to integrate CEPA at every level of the Convention’s work. The CEPA Working Group has aimed, as part of its brief, to provide general advice on the work of the STRP to assure that it is relevant for the target audience. Priorities in this first cycle of the CEPA group’s operation have included a comprehensive survey of the use of the Ramsar guidance documents, contributions to the updated guidance on river basin management, and the production of a brochure to inform and support implementation of the Ramsar Convention at the national level.

TWA 9: Regional networking

38. The Working Group on Regional Networking was established in order to support further development of the principles behind the establishment of STRP National Focal Points (NFPs). This additional Working Group was identified at STRP13 as being essential given the importance of engaging more effectively with the network of STRP NFPs. Much effort went into making initial contact with STRP NFPs (although still with rather patchy success) in countries where Contracting Parties had appointed their NFPs.

39. The Working Group, assisted by the CEPA group, prepared a promotional brochure to explain the roles of NFPs to those newly appointed as NFPs. A meeting of European STRP NFPs was hosted by Austria in September 2007, and the recommendations of that meeting and other STRP meetings were incorporated into the terms of reference for STRP NFPs, as annexed to COP10 DR 9 (“Refinements to the *modus operandi* of the Scientific & Technical Review Panel (STRP)”).

New TWA: Wetlands and climate change

40. At its mid-term Working Group meetings in 2007, the Panel agreed to establish a new Thematic Work Area on climate change, and it anticipates that its work should continue as a priority in the 2009-2012 cycle. However, given the urgency of the issues associated with climate change impacts on wetlands, three priority tasks were commissioned during the 2006-2008 triennium (see also section 6.2 of this report).
41. These have included a review of the role of wetland restoration in climate change mitigation and adaptation; an overview of a simple approach to assessing wetland vulnerability to the hydro-ecological impacts of climate change; and a review of current knowledge and gaps in knowledge of the role of different types of wetlands in the global carbon cycle.
42. Summaries of the draft reports of this work are included in COP10 DOC. 25 (“Additional STRP information on climate change and wetlands issues”). The outcomes of these tasks will be used to develop the detailed scope of work for this thematic work area during the next triennium.

4.3 Summary of work related to STRP’s ongoing advisory and review functions

43. An ongoing area of responsibility for the STRP is to provide advisory and review functions related to the scientific and technical aspects of implementation of the Convention. The Panel offers these in two ways:
 - first, in a more formal manner through review of Montreux Record requests, review of Ramsar site designation information as and when requested by the Secretariat, participation in Ramsar Advisory Missions, and review of scientific and technical draft Resolutions submitted by Contracting Parties; and
 - second, in a more ad hoc manner by responding to requests for scientific guidance, information and support related to Convention activities and more general wetland management issues.
44. The STRP was represented by Dave Pritchard in the Ramsar Advisory Mission to the Lake Natron Basin in Tanzania during February 2008. The mission, jointly conducted with representatives of the Convention on Migratory Species (CMS) and the Africa-Eurasia Waterbird Agreement (AEWA), was concerned with development of a proposed soda ash extraction facility at the Lake Natron Basin Ramsar site. The report of this mission can be found at www.ramsar.org/ram/ram_rpt_59e.htm
45. Several requests have been received during this triennium for STRP comment on Montreux Record removal requests. Panel members have done their best to respond to these requests, but we have been constrained by members’ lack of time to peruse the

submitted technical documents and prepare formal responses, and also by the lack of first-hand knowledge of some of the sites concerned. However, these requests have led to useful discussion within STRP regarding the need for clear, consistent guidelines for scientific information requirements and administrative procedures associated with Montreux Record issues. COP10 DR 10 on future STRP priorities includes a relevant task on redesigning the Montreux Record questionnaire in the Thematic Work Area on inventory, assessment, monitoring and reporting.

46. The Panel also endeavours to respond to individual ad hoc requests for information and advice through electronic communications wherever possible, although responses to such requests are entirely dependent on members' time and availability. The STRP Support Service has been effectively utilised by the Panel during this triennium as a means to share information and discuss queries that have been received, but it is accessible only to Panel members, STRP NFPs, observers and invited experts. A fully functional STRP NFP network will be very valuable in providing scientific and technical advice, and we will continue our efforts to strengthen NFP networks. Additional potentially efficient mechanisms include improved liaison between the Secretariat's regional advisory teams and the STRP and participation of STRP members or representatives in regional meetings, where resources can be found to support this participation.

4.4 Collaboration with other conventions and international bodies

47. The publication of the Millennium Ecosystem Assessment (MA) at the end of the last triennium seems to represent an important "watershed moment" for the biodiversity and wetlands community worldwide. It is now very clear that the interconnected global challenges of ecosystem degradation, food security, water security, poverty reduction and climate change require equally interconnected and collaborative responses, and require those responses urgently, both from scientists and policy-makers, as well as on the ground in implementation.
48. An effective mechanism already exists for collaboration between the Secretariats of the Ramsar Convention and the Convention on Biological Diversity through the establishment of Joint Work Plans, a series of which have addressed implementation by Ramsar of the CBD's programme of work on inland waters and other relevant CBD programmes. The 4th Joint Work Plan was approved by Ramsar's Standing Committee and by the Parties at CBD COP9 in mid-2008. In addition, there is frequent communication and collaboration with secretariats of other biodiversity-related conventions on a day-to-day basis, but coordination and collaboration of the scientific programmes of work across these conventions have been surprisingly limited until recently. Several convention secretariats were represented at STRP13 and STRP14, and this proved to be very useful in raising awareness of areas of common interest and activity.
49. The CBD hosted a first meeting of the Chairs of Scientific Advisory Bodies of the biodiversity-related Conventions (CSAB) in Paris during July 2007. The group met again in Bonn in May 2008, and a third meeting was scheduled for October 2008 in Barcelona but has now been postponed to 2009. The intention of the CSAB meetings is to provide a forum for improving scientific collaboration in initiatives and issues of joint concern to all the biodiversity-related conventions. Many countries are Parties to more than one of the biodiversity-related conventions, and hence would benefit from collaboration and harmonization of scientific initiatives and guidance.

50. The emphasis at the initial CSAB meeting was on identifying possible areas for collaboration on programmes and projects related to climate change. Participants in the first and second meetings also shared information on how their scientific inputs to their respective conventions are managed and delivered, in order to understand potential opportunities for and constraints to collaboration. As the process continues, we hope to explore more substantive details of ongoing projects and programmes where collaboration and coordination would be beneficial, and to identify potential collaborative projects focused on implementation and achievement of common objectives.

5. Issues related to management and delivery of the STRP's programme of work

5.1 Overview and general issues

51. The STRP *modus operandi* approved at COP9 has proven to be suitably robust, providing clarity regarding priority tasks while still allowing considerable flexibility to address new issues as they emerge, depending on available resources. The STRP Oversight Committee has proven to be a most helpful aspect of the Panel's *modus operandi*. With the few refinements proposed in COP10 DR 9, we now have a powerful and flexible framework for managing and delivering high quality science into Convention processes at all levels. Attention in the next triennium should be focused on developing, where necessary, more procedural and administrative details, particularly where these will contribute to ensuring the continuity, credibility and transparency of STRP's scientific processes.
52. To some degree, the challenge of maintaining continuity in thematic work areas has been eased by the adoption of the current *modus operandi*, which allows us not only to undertake larger, longer-duration tasks and to develop a thematic work area over more than one triennium, but also facilitates the re-appointment, as appropriate, of Panel members and invited experts to see work through to completion in a specific thematic area.
53. Nevertheless we must also aim for some turnover in Panel membership in each triennium, since this brings new expertise and thinking into Panel processes. However, it will be important to establish ways to institutionalize the knowledge and progress made in one triennium to ensure rapid transfer to new and returning members in the next triennium. The STRP Support Service currently serves as an archive of sorts, and this potential could be developed further in future. In addition to our more formal guidance documents and content of scientific and technical Resolutions, the Panel has identified a range of STRP information products, including the *Ramsar Technical Report* series, Technical Advisory Notes, and internal briefing papers, all of which can be used to maintain a "paper trail" as a thematic work area or a task progresses. These products also have significant value in Ramsar's scientific and technical communication with other conventions, organizations and initiatives.
54. Ensuring adequate peer review of the Panel's substantive guidance documents remains challenging, principally due to the lack of time and resources on the part of Panel members and potential reviewers. Special efforts are always required to achieve adequate peer review of individual documents, and we greatly appreciate the willing contributions of many external reviewers who have assisted us, often under significant time pressures, in

reviewing technical documents. We have established a *de facto* editorial board for the *Ramsar Technical Report* series, consisting of the Chair and Vice-Chair of STRP, the Deputy Secretary General, and we have co-opted external peer reviewers as needed. We have also encouraged Working Group members to submit articles based on their work for review and publication in scientific journals, which complements and strengthens our peer review processes. Such publications are included in the list in Annex 1. An important task in the next triennium will be to develop and formalize editorial and review policies and procedures for the full range of STRP products.

55. Another issue that we have discussed during this triennium is whether it would be appropriate and feasible, given our current resource constraints, for the Panel to be more involved with Parties at regional and national levels in implementation support activities, particularly in capacity-building for the application of guidance prepared by STRP. The STRP NFPs could potentially make significant contributions to supporting and guiding implementation at national and site level.
56. As an initial step in seeking to provide such capacity-building, the STRP, including its IOP members, will be holding briefing sessions for Contracting Parties during COP10 on the scientific and technical aspects of the COP10 draft Resolutions on climate change, biofuels, Highly Pathogenic Avian Influenza (HPAI), and extractive industries.
57. In addition, the review of the use and utility of the Convention's scientific and technical guidance (see section 5.2 below) and the advice and insights of the Panel's CEPA Working Group during this triennium have been very helpful in guiding our thinking about how to enhance understanding and uptake of the Convention's scientific and technical guidance, and which target audiences may need to be a focus of future attention for providing guidance relevant to their needs.

5.2 Evaluation of the utility of the Convention's scientific and technical guidance

58. One particularly significant aspect of the STRP's work in this triennium has been the evaluation of the use, utility and availability of Ramsar's scientific and technical guidance (STRP task 3 in Working Group 8). This work speaks to aspects of Resolution VIII.45 as well as contributing intelligence to several other current STRP tasks, notably task 52 on data and information needs review. A detailed analytical report from the STRP's expert consultant Ms Gwen van Boven, based on a questionnaire survey of Convention national focal points, IOPs, wetland managers and others, has now been prepared and will be made available through the STRP pages of the Ramsar web-site, as will the findings of some related survey work in the Neotropics funded by the USA. The report identifies a number of important issues for the Convention concerning who knows about and uses the guidance and which guidance they find most (and least) useful, and identifies a number of key gaps in current communication processes.
59. In a related task (STRP Task 14 in Working Group 2), STRP expert consultants are conducting a review of the case studies contained in the book *Towards the wise use of wetlands* (1993), in order to update the studies where possible and extract lessons regarding the achievement of wise use. While this task will be continued into the 2009-2012 cycle, early results of the study have provided additional very useful ideas and recommendations regarding the utility, uptake and dissemination of the Convention's guidance.

60. An information paper on this issue is being prepared for COP10 (COP10 DOC. 21) – it provides a summary of the findings of the evaluation of the utility of the Convention’s scientific and technical guidance, as well as initial findings from the review of the case studies contained in *Towards the wise use of wetlands*.
61. The Panel will continue to work on this issue in the next triennium through the CEPA Thematic Work Area. There is clearly a need to take a more strategic view of the development, dissemination and utilization of scientific and technical guidance within the Convention, in order to utilize optimally the scientific and financial resources available to the Convention and the Contracting Parties, both for development of new guidance and for support in implementing existing guidance. There is also a need to consider how to prepare guidance in styles appropriate for different Convention users. The Panel aims to develop further recommendations for consideration by STRP and Standing Committee.

5.3 Regional networking – engaging involvement of STRP National Focal Points

62. The STRP is continuing to place high priority on this aspect of its work through the efforts of its Working Group 9 on regional networking. In this respect, the meeting of European STRP NFPs hosted by Austria was most valuable, and consideration is being given to holding similar such meetings, resources permitting, in other regions. The recommendations of the European meeting were considered during STRP14.
63. On the basis of our experiences in trying to engage STRP NFPs during this triennium, the Panel prepared more detailed terms of reference for STRP NFPs and recommendations for their selection and appointment. These can be found in the refined STRP *modus operandi* in the annex to COP10 DR 9. A brochure was prepared and disseminated during this triennium (“*Delivering the Ramsar Convention in your country. National Focal Points and their roles*”, downloadable from www.ramsar.org/index_nfp.htm) in order to provide more background information to appointed STRP NFPs on their role within Convention and STRP processes.
64. Nevertheless, the regional networking members of the Panel have continued to face considerable frustration in their attempts to establish even initial contact with a significant number of STRP NFPs appointed by Parties, and there has been further difficulty in establishing and maintaining such contact and involvement of STRP NFPs given the large number of changes made to such NFPs and reported to the Secretariat only in COP10 National Reports. The Panel urges all Parties to ensure that up-to-date information and any changes concerning their STRP NFPs are reported to the Secretariat, so that the information can be transmitted to the Panel members and full access to the STRP Support Service Web site provided.

6. Emerging scientific and technical issues

65. One of the key roles of the Panel under its current *modus operandi* is to identify and keep under review emerging issues that it considers should be addressed by the Convention. Progress on some specific emerging (and re-emerging) issues in the 2006-2008 triennium includes:

6.1 Earth Observation and Global Wetland Observation

66. The Panel has continued to take a keen interest in the actual and potential role of Earth Observation (EO, remote sensing) to support various aspects of Convention implementation, from supporting managers at the site level to providing global scale wetland status and trend information. The “GlobWetland Symposium” was jointly convened in late 2006 by the European Space Agency (ESA) and Ramsar. A symposium proceedings volume has been produced by ESA (“Globwetland: Looking at wetlands from space”, downloadable from www.globwetland.org/symposium06/symposium.html), and selected papers from the symposium are being published in a special issue of the scientific journal *Journal of Environmental Management* (see list in Annex 2). This includes an overview paper drawing on the results and recommendations of the symposium, jointly authored by STRP members and observers Heather MacKay, Max Finlayson, Dave Pritchard, Lisa Rebelo, Diego Fernández-Prieto of ESA, and Ramsar’s Deputy Secretary General.
67. The conclusions of the symposium support the increasing recognition of the interconnectedness of multi-scalar wetland inventory, EO, and climate change in relation to the findings of the Millennium Ecosystem Assessment (MA), notably the lack of global- and regional-scale quantitative data regarding distribution, extent, and condition of most wetland types. In addition, calls for collaboration with other conventions and MEAs are increasing the need for global and regional scale wetland-related information.
68. These factors have led to increased emphasis within the STRP on global- and regional-scale inventory and monitoring efforts, which were discussed in a special session during STRP14 concerning “global wetland observing systems”. This session included experts from two space agencies and several existing global observing system initiatives. Following on from the session at STRP14, a partnership-based approach to a possible Global Wetland Observing System (GWOS) was proposed and agreed. The task of drawing up the specifications for a GWOS has been included within the 2009-2011 scope of work for the Thematic Work Area on wetland inventory, assessment and monitoring (see COP10 DR 10 on “Future implementation of scientific and technical aspects of the Convention”).

6.2 Climate change and wetlands

69. An additional thematic work area on “Wetlands and Climate Change” was established intersessionally by the Panel, nominally led by the STRP Chair, in recognition of the significant and rapid developments that have taken place in this field since COP8 and the adoption of Resolution VIII.3. The Panel requested initial technical work to be undertaken for discussion at STRP14, and it discussed the scope, terms of reference, and priority tasks for this work area, in preparation for proposing a more comprehensive suite of activities in the coming triennium. Current work underway in this triennium is summarized above.
70. Work in the climate change TWA in the 2009-2012 cycle is likely to focus on three principal aspects:
 - improving our qualitative and quantitative understanding of the role of various wetland types in the global carbon cycle and in greenhouse gas emissions, in order to better understand the potential role of wetlands in mitigation of climate change;
 - providing information and simple tools to assess vulnerability of particular wetland ecosystems and associated human populations to the impacts of climate change (with an initial focus on hydro-ecological impacts); and

- developing understanding and guidance for management and restoration of wetlands in order to contribute to effective adaptation strategies.

71. An information paper has been prepared for COP10 (COP10 DOC. 25) that provides an overview of recent relevant initiatives and of the work done by the STRP to date with the assistance of invited experts. The Panel is most grateful to Mr Kevin Erwin of the USA, Dr Colin Lloyd and Dr Mike Acreman of the UK, for their very significant contributions in preparing the substantive scientific papers that are summarized in the Information Paper.

6.3 Highly Pathogenic Avian Influenza (HPAI)

72. The intersessional technical meeting in Changwon, Republic of Korea, in November 2007 brought together key experts on HPAI, wetlands and waterbirds, and this has allowed the Panel to make substantial progress on, amongst other issues, developing further technical guidance related to highly pathogenic avian influenza in fulfillment of its task 62 on “Responding to Highly Pathogenic Avian Influenza”. The Panel has prepared for COP10 a substantial guidance document concerning wetlands, waterbirds and HPAI (COP10 DR 21) which includes provision of a guide to the large and increasing range of existing guidance on different aspects of preparing for and dealing with HPAI issues, and it will continue to maintain a watching brief on the issue. Panel member Mr David Stroud participates in the multi-agency Avian Influenza Task Force and updates the Panel regularly on events and ongoing activities in this field.

6.4 Wetlands and mining/extractive industries

73. This topic was raised intersessionally as an important issue, in the light of an increasing number of requests for advice on such matters received from Parties by the Secretariat. A briefing paper was prepared for the STRP on wetlands and mining/extractive industries and was presented at the Africa regional meeting in November 2007 (“Economic trends in the mining sector and the implications for the protection and wise use of wetlands”, available at www.ramsar.org/mtg/mtg_reg_africa2008_index.htm), in order to support discussion of this topic by African Parties. The information paper provided to COP10 on this topic (COP10 DOC. 24) is an expanded version of the earlier briefing paper.

74. It is clear from discussions at the 36th meeting of the Standing Committee, and from our interactions with the regional teams within the Secretariat, that there is a high level of concern amongst Parties, especially those in the African and Neotropical regions, about the recent increases in exploration and development of extractive industries and the actual and potential threats these pose to a number of Ramsar sites as well as to many other wetlands. The Panel discussed this issue at length during our mid-term meeting and during STRP14, with valuable inputs from the Secretariat’s Senior Regional Advisors. The Convention does already have guidance on environmental impact assessment and strategic environmental assessment (Ramsar Wise Use Handbook 13, 3rd edition 2007) and updated guidance is being provided to COP10 as COP10 DR17, which should be applied in dealing with impacts of extractive industries. However, the Panel noted that several Parties might need additional technical support in making this generic guidance applicable to specific mining and extractive industries, and in responding to the challenges of accelerated timeframes for the permitting of exploration and development activities.

75. In response to the concerns already expressed by several Contracting Parties, the Panel has prepared a draft Resolution for COP10 on this topic (COP10 DR 26). The Panel has also proposed a task in the next triennium to review and evaluate available technical guidance on assessing, avoiding, minimizing and mitigating the direct and indirect impacts of extractive industries on wetlands.

6.5 Other sectoral and/or emerging issues

76. The Panel has established a “rolling list” of sectoral issues (i.e., those related to the interactions or impacts of a specific sector on wetlands) and emerging issues (those broader issues that influence the management, protection and condition of wetlands, but which are not limited to single sectors). At each of our meetings, we revisit each item on this list to discuss briefly and agree on whether it remains a potentially significant sector or issue for the Convention, whether the scope or urgency of the issue has changed, whether there is new information available regarding the sector or the issue, and finally whether action is required.
77. In some cases, the sector or issue has become sufficiently important that we have proposed a specific STRP task to address it, for example the task in COP10 DR 26 concerning guidance on mining and extractive industries. In the case of climate change, the global developments and policy initiatives related to this issue have been so broad and rapid that a new Thematic Work Area was established and several immediate priority tasks were initiated within the current triennium. Other sectors or issues may remain on the list, under a watching brief that includes opportunistic collation and sharing of relevant new information by Panel members, IOPs, observers and invited experts.
78. Overall responsibility for oversight of the rolling list of sectors and emerging issues rests with the Chair and Vice-Chair of STRP. The current list, along with brief descriptions of each issue/sector, is included in Annex 2 of COP10 DR 10.

7. Concluding remarks and acknowledgements

79. The Panel could not have achieved what we have in this triennium without the excellent support of the Ramsar Secretariat staff, including Deputy Secretary General Nick Davidson, assisted by Edgar Kaeslin, Catherine Loetscher, Mireille Katz, Sandra Hails, Dwight Peck, and the regional advisory teams. The working relationship between STRP and the Standing Committee, so competently chaired by Paul Mafabi, has been very positive and professional, and has helped us to navigate our challenging scientific agenda while remaining responsive and connected to the needs of the Parties. We also have appreciated the participation of the Secretary General Mr Anada Tiéga and the quiet wisdom that he contributes to STRP meetings, discussions and processes.
80. Our IOP representatives continue to provide STRP with the essential support of their organizational and individual expertise and experience, as well as access to their expert networks. The IOPs have been instrumental in developing and sustaining many of the working partnerships that allowed the Panel to significantly leverage our core funding and resources to deliver such a substantial body of work in this triennium. In particular, we acknowledge Matthew McCartney of IWMI and Mark Smith of IUCN for their efforts on specific tasks.

81. Representatives of a number of observer organizations, and invited experts, have worked with Panel members on various STRP tasks during the triennium, and the Panel appreciates not only their contributions to the preparation of documents, but also their participation in workshops and meetings, which brought a significantly increased range of expertise and specialist knowledge into our discussions. The Panel would particularly like to thank the following for their contributions: Claire Brown, Jerry Harrison and Peter Herkenrath (UNEP-WCMC), Rob McInnes (Society of Wetlands Scientists), Helen Byron (RSPB/BirdLife International), Tim Jones and Tim Davis (DJ Environmental), Ezequiel Lugo (Stetson Univ., USA), Ms Lucia Scodanibbio (Secretariat/Univ. of British Columbia), Bill Rowlston (South Africa), Janine Adams (South Africa), Jos Verhoeven and Mariet Hefting (Univ. of Utrecht, NL), Bruce Gray (Australia), Ruth Cromie and Rebecca Lee (Wildfowl & Wetlands Trust), Pierre Horwitz (Edith Cowan Univ., Australia), Chris Skelly (Brunel Univ., UK), Gwen van Boven (SPAN Consultants, NL), Colin Lloyd (Centre for Ecology & Hydrology, UK), and Kevin Erwin (Kevin L. Erwin Consulting Ecologist, Inc., USA).
82. We would also like to make special mention of Mr Dave Pritchard, who began the triennium as the IOP representative member for BirdLife International – and ended it as an invited expert. Few people understand the Convention's history and its current scientific needs and challenges as well as Mr Pritchard, and his insights have been invaluable in all areas of the Panel's work. During this triennium he has acted as task lead for a number of the Panel's major priority tasks, particularly for TWA 1 on inventory and assessment. We congratulate him heartily for his well-deserved 2008 Ramsar Award.
83. All the Panel members in this triennium have been enthusiastic and committed. Everyone has contributed significant amounts of time, energy and knowledge to make this a very productive triennium for the Panel. The Chair was very competently supported by Vice-Chair Ms Rebecca d'Cruz, who shared the load equally of keeping in touch with all the Panel's many interlinked tasks and initiatives.
84. It has been a privilege and a great pleasure for me to have been involved with the STRP over several years. I am now approaching my fourth Ramsar COP, and perhaps I can say that I am beginning to understand how the varied aspects of Ramsar fit together, and a little more about how Ramsar is connected with so many other international institutions, initiatives and agencies. The challenge ahead for all of us will focus on implementation. I believe that this Panel, building on the work of previous Panels, has significantly advanced our ability as a wetlands community to achieve wise use of wetlands on the ground, in the face of great global challenges facing us today: ecological, economic, social and political. I trust that the next Panel will have the support and the foundation they need to continue that advance.

Annex 1

STRP products 2006-2008

This Annex provides a summary listing of the STRP's scientific and technical guidances, reports and other products prepared through the work of its Working Groups during the 2006-2008 triennium.

The list is organized in four sections:

- A. Draft Resolutions and annexed guidances prepared for COP10 consideration
- B. COP10 scientific and technical Information Papers
- C. *Ramsar Technical Reports*
- D. Technical briefing notes and other materials

A. Draft Resolutions and annexed guidances prepared for COP10 consideration

These COP Resolutions and their annexed guidances are prepared by the STRP at the request of Contracting Parties at COP or Standing Committee and are designed chiefly for uptake and use by the Convention's national Administrative Authorities, including for their use in Ramsar-related national implementation involving other sectors of government and society.

- Refinements to the *modus operandi* of the Scientific & Technical Review Panel (STRP). COP10 DR 9
- Future implementation of scientific and technical aspects of the Convention. COP10 DR 10
- A Framework for Ramsar data and information needs. COP10 DR 14
- Describing the ecological character of wetlands, and data needs and formats for core inventory: harmonized scientific and technical guidance. COP10 DR 15
- A framework for processes of detecting, reporting and responding to change in wetland ecological character. COP10 DR 16
- Environmental Impact Assessment and Strategic Environmental Assessment: updated scientific and technical guidance. COP10 DR 17
- The application of response options from the Millennium Ecosystem Assessment (MA) within the Ramsar Wise Use Toolkit. COP10 DR 18
- Wetlands and river basin management: consolidated scientific and technical guidance. COP10 DR 19
- Biogeographic regionalisation in the application of the *Strategic Framework for the List of Wetlands of International Importance*: scientific and technical guidance. COP10 DR 20
- Guidance on responding to the continued spread of highly pathogenic avian influenza H5N1. COP10 DR 21
- Promoting international cooperation for the conservation of waterbird flyways. COP10 DR 22
- Wetlands and human health and well-being. COP10 DR 23
- Climate change and wetlands. COP10 DR 24
- Wetlands and "biofuels". COP10 DR 25
- Wetlands and extractive industries. COP10 DR 26
- Wetlands and urbanization. COP10 DR 27

- Wetlands and poverty reduction. COP10 DR 28

Members of the STRP also contributed to the drafting of the following two COP10 draft Resolutions:

- Enhancing biodiversity in rice paddies as wetland systems. COP10 DR 31
- The “Changwon Declaration”. COP10 DR 32

B. COP10 scientific and technical Information Papers

These Information Papers are being prepared by the STRP to provide supporting information for various of the COP10 draft Resolutions and their annexed guidances.

- Review of utility of COP scientific and technical Resolutions and guidelines, and their availability – key messages. COP10 DOC 21
- The global use of terminologies concerning ecosystem services. COP10 DOC 22
- Further development of indicators of effectiveness of the implementation of the Convention. COP10 DOC 23
- Wetlands and extractive industries – background information. COP10 DOC 24
- Additional STRP information on climate change and wetlands issues. COP10 DOC 25
- Progress in developing a framework and guidelines for wetlands and agriculture – Executive Summary: the work of the GAWI partnership. COP10 DOC 26
- Background and rationale to the Framework for processes of detecting, reporting and responding to change in wetland ecological character. COP10 DOC 27
- “Healthy wetlands, healthy people – a review of wetlands and human health interactions”: Executive summary. COP10 DOC 28
- Additional information on integrating the conservation and wise use of wetlands into river basin management. COP10 DOC 30

C. Ramsar Technical Reports

Ramsar Technical Reports (RTRs) provide the detailed technical background reviews and reports prepared by the Convention’s Scientific and Technical Review Panel (STRP) at the request of Contracting Parties that would previously have been made available in most instances only as “Information Papers” for a Conference of the Parties (COP). Publication of these materials as RTRs is designed to ensure increased and longer-term accessibility of such documents. Other reports not originating from COP requests to the STRP, but which are considered by the STRP to provide information relevant to supporting implementation of the Convention, may be proposed for inclusion in the series. All *Ramsar Technical Reports* are peer-reviewed by the members and observers appointed to the STRP and by independent experts.

RTRs are published in PDF electronic format and in English only, unless resources are available to provide them also in French and Spanish.

Published:

- Guidelines for the rapid assessment of inland, coastal and marine wetland biodiversity. 2006. *Ramsar Technical Report* No. 1 (published jointly as CBD Technical Series No. 22). English only
- Low-cost GIS software and data for wetland inventory, assessment and monitoring. 2006. *Ramsar Technical Report* No. 2. English & Spanish.
- Valuing wetlands: Guidance for valuing the benefits derived from wetlands ecosystem services. 2007. *Ramsar Technical Report* No. 3 (published jointly as CBD Technical Series No. 27). English, French & Spanish.

In preparation:

- Population estimates and 1% thresholds for the application of Criterion 9 for Ramsar site designation
- The role of wetlands in the global carbon cycle
- Vulnerability Assessment of wetlands: Guidance on methodologies for vulnerability assessment of wetlands to change in ecological character
- A simple framework for assessing the vulnerability of wetlands to the hydrological impacts of climate change
- “Healthy wetlands, healthy people”: a review of wetlands and human health interactions
- Biogeographic regionalisation, and the distribution and gaps in Ramsar site designations for different wetland types
- River basin management critical path application case studies
- Environmental flow determination and implementation
- Determination of environmental water requirements for estuaries, coastal and near-shore wetlands
- Determination of environmental water requirements for rivers
- An assessment of wetlands and agriculture interactions (joint publication with IWMI)
- The current status of wetland wise use for the wetlands covered by case studies in the *Towards the wise use of wetlands* Ramsar publication (1993)
- Response options relevant to wetlands from the work of the Millennium Ecosystem Assessment (MA)
- Wetlands, water, biodiversity and climate change (joint publication with CBD Secretariat)
- A framework for a wetland inventory meta-database
- A review of Ramsar sites and fisheries management
- The Convention’s development of Criteria and guidelines for Ramsar site designation 1971-2005

D. Technical briefing notes and other materials

- Wetlands and water quality. 2008. STRP discussion paper.
- Wetlands and Global Climate Change: The Role of Wetland Restoration in a Changing World. 2008. STRP discussion paper

- Management Planning for Wetlands. *A Field Guide for Wetland Managers*. 2008.
Published by WWF.

Annex 2

Scientific papers related to the work of the STRP published by STRP members, observers, and invited experts and Secretariat technical staff, 2006-2008

This Annex provides a listing of scientific and technical papers published during the 2006-2008 triennium that are relevant to the work of the STRP and the implementation of the Convention.

The listing includes papers and reports whose authorship includes STRP members (including IOP member representatives), representatives of observer organizations to the Panel, experts invited by the STRP to contribute to its work, and Ramsar Secretariat technical staff. The names of such authors are shown in *bold italic* text.

INVENTORY & ASSESSMENT, INCLUDING EARTH OBSERVATION

Journal of Environmental Management, 2008. In press. Special Issue: Papers from the ESA/Ramsar Globwetland Symposium on the use of Earth Observation for wetland inventory, assessment and management:

Earth Observation and wetlands.

D. Fernández-Prieto & C.M. Finlayson. Available online 18 April 2008

The role of Earth Observation (EO technologies in supporting implementation of the Ramsar Convention on Wetlands.

H. MacKay, C.M. Finlayson, D. Fernández-Prieto, N. Davidson, D. Pritchard & L.-M. Rebelo. Available online 6 May 2008

Monitoring and assessment of wetlands using Earth Observation: The GlobWetland project.

Kevin Jones, Yannick Lanthier, Paul van der Voet, Eric van Valkengoed, *Doug Taylor & Diego Fernández-Prieto Available online 21 July 2008*

Remote sensing and GIS for wetland inventory, mapping and change analysis

L.-M. Rebelo, C.M. Finlayson & N. Nagabhatla. Available online 25 March 2008

Special issue: Satellite-based radar – developing tools for wetlands management.

Finlayson, C.M., Rosenqvist, A. & Lowry, J. 2007. Aquatic Conserv: Mar. Freshw. Ecosyst. 17: 219-329.

Earth Observation for wetland inventory, assessment and monitoring.

Davidson, N.C. & Finlayson, C.M. 2007. Aquatic Conserv: Mar. Freshw. Ecosyst. 17: 219–228. DOI: 10.1002/aqc.846

The potential of long-wavelength satellite-borne radar to support implementation of the Ramsar Wetlands Convention.

Rosenqvist, A., Finlayson, C.M., Lowry, J. & Taylor, D. 2007. Aquatic Conserv: Mar. Freshw. Ecosyst. 17: 229–244. DOI: 10.1002/aqc.835

Establishing the best spectral bands and timing of imagery for land use – land cover (LULC) class separability using Landsat ETM+ and Terra MODIS data.

Biradar, C.M., Thenkabail, P.S., Islam, Md.A., Anputhas, M., *Tharme, R.E.*, Vithanage, J., Alankara, R. and Gunasinghe, S. 2007. *Can. J. Remote Sensing* 33 (5): 431-444.

Vulnerability assessment of important habitats for migratory species; examples from eastern Asia and northern Australia.

Finlayson C.M. 2006. In: Migratory Species and Climate Change – Impacts of a Changing Environment on Wild Animals. UNEP / Convention on Migratory Species, Bonn, Germany, pp 18-25.

Capacity building for multiple scale wetland inventory, mapping and change analysis.

Rebelo L-M, **Finlayson CM**, Nagabhatla N & Zomer R 2006. Proceedings of GlobWetland symposium, Looking at Wetlands from Space, October 2006, Frascati, Italy, European Space Agency.

The GlobWetland Symposium: summary and way forward.

Fernandez-Prietto D, Arino O, **Borges T**, **Davidson N**, **Finlayson M**, Grassl H, **MacKay H**, Prigent C, **Pritchard D** & Zalidis G 2006. Proceedings of GlobWetland symposium, Looking at Wetlands from Space, October 2006, Frascati, Italy, European Space Agency.

The comparative biodiversity of seven globally important wetlands: a synthesis.

Wolfgang J. Junk, Mark Brown, Ian C. Campbell, **Max Finlayson**, Brij Gopal, Lars Ramberg and Barry G. Warner . 2006. *Aquat. Sci.* 68: 400–414. DOI 10.1007/s00027-006-0856-z

Comparative biology of large wetlands: Kakadu National Park, Australia.

Finlayson, CM, Lowry J, Bellio MG, Walden D, Nou S, Fox G, Humphrey CL & Pidgeon R 2006. *Aquat. Sci.* 68, 374-399.

Valuing wetlands: guidance for valuing the benefits derived from wetland ecosystem services.

De Groot, R.S., Stuij M.A.M., **Finlayson, C.M.** & **Davidson, N.** 2006. *Ramsar Technical Report No. 3/CBD Technical Series No. 27*. Ramsar Convention Secretariat, Gland, Switzerland & Secretariat of the Convention on Biological Diversity, Montreal, Canada.

A new map of mangroves for Kakadu National Park, northern Australia, based on stereo aerial photographs.

Mitchell, A.L., Lucas, R.M., Donnelly, B.E., Pfitzner, K., Milne, A.K. & **Finlayson, C.M.** 2007. *Aquatic Conservation: Marine and Freshwater Ecosystems* 17, 446-467.

Dynamics of Usangu Plains wetlands: use of Remote Sensing and GIS as management decision tools.

Kashaigili, J.J., Mbilinyi, B.P., **McCartney, M.P.** & Mwanuzi, F.L. (2006) *Physics and Chemistry of the Earth* 31, 967-975.

Assisting the Conventions.

Spini, L. 2006. *GTOS Biennial Report 2004-2005* GTOS-40: 22-23. <http://www.fao.org/gtos/doc/pub40.pdf>

Biodiversity loss: GTOS [Global Terrestrial Observing System] and Target 2010.

Spini, L. & Scholes, R. 2006. *GTOS Biennial Report 2004-2005* GTOS-40: 24-25. (<http://www.fao.org/gtos/doc/pub40.pdf>)

GTOS [Global Terrestrial Observing System] and the Conventions.

Spini, L. & Sessa, R. 2007. *GTOS Biennial Report 2006-2007* GTOS-50: 26-27. (<http://www.fao.org/gtos/doc/pub50.pdf>)

A partnership to promote, harmonize and support global- and national-scale mapping and inventory for assessment and monitoring of wetlands in support of the Ramsar convention on wetlands and other biodiversity-related conventions.

Spini, L., Christian, R., **Davidson, N.**, **Finlayson, M.**, Latham, J. & Zomer, R. In press. *Mediterranean Wetland Inventory: The use of Earth Observation*. MedWet Initiative

Ramsar wetlands as sentinels for global coastal observations.

Christian, R., Mazzilli, S., **Spini, L.** & **Bridgewater, P.** 2006. *Paper at the 27th International Conference of the Society of Wetland Scientists*. (http://www.fao.org/gtos/doc/SWS2006_ChristianRR.doc)

Wetland ecosystems of national importance for biodiversity: criteria, methods and candidate list of nationally important inland wetlands.

Ausseil, Anne-Gaelle, **Gerbeaux, Philippe**, Chadderton, W. Lindsay, Stephens, Theo, Brown, Derek & Leathwick, John. 2008. Landcare Research Contract Report LC0708/158. Landcare Research/Manaaki Whenua. 174pp.

WETLANDS, WATER RESOURCES & AGRICULTURE

Improving Cross-Sector Policy Integration and Cooperation in Support of Freshwater Conservation.

Roux DJ, Ashton PJ, Nel JL & **MacKay HM** 2008. *Conservation Biology*, in press.

Managing wetland ecosystems – balancing the water needs of ecosystems with those for people and agriculture.

Finlayson, C.M. 2007. In King C, Ramkissoon J, Clusener-Godt M & Adeel Z (eds), Water and Ecosystems: Managing Water in Diverse Ecosystems to Ensure Human Well-being, UNU-INWEH, Hamilton, Canada. Pp. 24-38.

Use of a hydrological model for environmental management of the Usangu Wetlands, Tanzania.

Kashaigili, J.J., **McCartney, M.P.**, Mahoo, H.F., Lankford, B.A., Mbilinyi, B.P. & Tumbo, S.D. 2006. Colombo, Sri Lanka. *International Water Management Institute Research Report* 104. 47 pp.

Impacts of agricultural water use of the GaMampa wetland on the hydrology of the wetland and the Mohlapetsi River.

Masiyandima, M., **McCartney, M.P.**, Fritsch, J.M. & Rollin, D. 2006. *Paper presented at the Waternet Conference, Lilongwe, Malawi. 1-3 November 2006.*

Estimation of environmental flows in the Great Ruaha River Catchment, Tanzania.

Kashaigili, J.J., **McCartney, M.P.** & Mahoo, H.F. (2007) *Journal of Physics and Chemistry of the Earth* 32, 1007-1014.

Irrigation versus ecosystems – what are the choices?

Finlayson CM 2007. *Water*. August 2007: 38-43.

The contradictions of river regulation.

Finlayson CM & McCartney M 2007. *Aqua Australia*. Nov 2007: 1-3.

Regional and global concerns over wetlands and water quality.

Jos T.A. Verhoeven, Berit Arheimer, Chengqing Yin and Mariet M. Hefting 2006. *TRENDS in Ecology and Evolution* Vol.21(2): 96-103.

Wetlands for water and people – flowing together for a sustainable environment.

Davidson, N. 2008. Pp. 117-123 in: Sandlund, O.T. & Saksgard, L. (eds.) Proceedings of the Norway/UN Conference on Ecosystems and People – Biodiversity for Development – The Road to 2010 and beyond. Directorate for Nature Management, Trondheim.

Setting the scene.

Molden D, Faures J-M, **Finlayson CM, Gitay H**, Muylwijk J, Schipper L, Vallee D & **Coates D** 2007. In Molden D (ed), *Water for food, water for life: a comprehensive assessment of water management in agriculture*. Earthscan, London, UK, pp 41-53.

Trends in water and agricultural development.

Molden D, Frenken K, Barker R, de Fraiture C, Mati B, Svendsen M, Sadoff C & **Finlayson CM** 2007. In Molden D (ed), *Water for food, water for life: a comprehensive assessment of water management in agriculture*. Earthscan, London, UK, pp 57-89.

Agriculture, water, and ecosystems: avoiding the costs of going too far.

Falkenmark M, **Finlayson CM** & Gordon L (coordinating lead authors) 2007. In Molden D (ed), *Water for food, water for life: a comprehensive assessment of water management in agriculture*. Earthscan, London, UK, pp 234-277.

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