

**“Wetlands: water, life, and culture”**

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## **Enhancing the information on Wetlands of International Importance (Ramsar sites): the role of the Ramsar Sites Database**

### **Introduction**

1. This paper provides background information in support of COP8 – DR 13 concerning developments in data handling and presentation of information on designated Ramsar sites. The paper has been prepared by Ellen Diémé, Douglas Taylor, and Scott Frazier of Wetlands International, as part of their role in maintaining and developing the Ramsar Sites Database on behalf of the Convention.
2. The paper briefly reviews developments in the data management of the ‘core’ Ramsar Sites Database, development of a more comprehensive Web-based set of Ramsar site information products, and opportunities for further enhancing the accessibility of additional information relating to Ramsar sites.

### **What is the Ramsar Sites Database?**

3. The Ramsar Sites Database is an information system comprising a computer database and a Web site (<http://www.wetlands.org/RDB/Directory.html>) managed on behalf of the Convention by Wetlands International under contract from the Ramsar Bureau.
4. The database (“the Ramsar Sites Database”) holds the official information provided by Parties for each Ramsar site through the Information Sheet on Ramsar Wetlands (RIS). The Web site holds the *Ramsar Sites Directory*, containing concisely written descriptions of each Ramsar site in a standard format, also taken from the RIS. The Web site also links Directory entries to simplified country and site location maps, and it also provides graphical and tabulated summaries of information on Ramsar sites, presented at global and regional levels.
5. As part of its information management role for Ramsar sites, Wetlands International also holds a large paper archive of official Ramsar site information, including copies of all RISs, maps and supporting materials. As well as facilitating the handling of data in the core Ramsar database and the answering of queries concerning Ramsar sites from the Ramsar Bureau and other organizations and individuals, this paper archive acts as a security for the originals of Ramsar site information held in the Ramsar Bureau.
6. Over the past three years, the Database has been developed to become a more powerful tool which enables flexible analyses to be carried out upon request. The primary development has been the “live” Web-based presentation of the Database content in the

Sites Directory. The Directory has been published on a three year cycle. The 7<sup>th</sup> edition will be released at COP8 on CD-ROM in Web-based format and is also introduced through a booklet: *Ramsar Sites: Directory and Overview - A guide to the Ramsar Convention's Wetlands of International Importance*.

### The core Ramsar Sites Database

7. The core Ramsar Sites Database holds data derived from the information provided by Contracting Parties in the "Information Sheet on Ramsar Wetlands" (RIS) completed when they designate a Ramsar site, extend it, or update information about it.
8. This is in line with COP4 Recommendation 4.7 which established that the "data sheet developed for the description of Ramsar Sites . . . be used by Contracting Parties and the Bureau in presenting information for the Ramsar database".
9. Since few information fields in the current RIS contain coded information, for entry of data into the Ramsar Database the information provided by a Contracting Party in the text fields of the RIS is interpreted and coded using standard lists of categories for database entry. This then permits interrogation of the database to provide analyses of the status and characteristics of sites in the Ramsar site network.
10. The core Ramsar Sites Database is a "conventional" relational electronic database. This means that it is a computerised database composed of various interlinking Files or Tables. The main tables contain Records of Sites. Each Record of a Site contains multiple Site-specific subjects or Fields. These fields are based on the subjects covered by the RIS.
11. In structure, the Ramsar Sites Database consists of a suite of specialised databases which support and are linked to the main Sites database. These databases include data dictionaries and meta-databases (data on datasheets and data on maps). A Geographic Information System (GIS) has been added which can be linked with the Ramsar Database to display various themes of information.
12. For each designated Ramsar site, Contracting Parties also provide a map or maps. Paper maps are stored with the paper archive copy of the RIS; digital maps are filed electronically as part of the Database.
13. The primary purpose of the Ramsar Sites Database is to provide a data retrieval and analysis system on Ramsar site information, which has the capability of providing data and information analyses to support and assist Contracting Parties, the Ramsar Bureau, and others with the implementation of the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Resolution VII.11).
14. Access to the Database and retrieval of records is managed by Wetlands International, and while no direct public access to the Database is currently available, enquiries concerning individual sites are processed by database staff of Wetlands International, and information supplied on request to enquirers.
15. The Database is used to answer a significant number of enquiries, many of a substantial nature, concerning Ramsar site information. Since 2000, Wetlands International database

staff have provided responses to a total of 365 requests for data and information, including 151 from or forwarded by the Ramsar Bureau.

16. It is anticipated that the recent and future developments to improve Web-based access to Ramsar sites information (see below) will provide answers to an increasing number of simple needs for information on Ramsar sites, so reducing the need for many users to make specific requests to Wetlands International.
17. Future developments of the Database in the 2003-2005 triennium will include integration of Ramsar site maps with the RIS-derived text records, and the creation of links from the Database to electronic copies of the RISs themselves, as supplied by Contracting Parties, and links between these and the Site Directory entry for each Ramsar site.
18. It is also planned to establish ways of making the up-to-date Ramsar Sites Database itself (including access to the original RISs themselves) available 'on-line' to those with computer Internet access, so that the information it holds can be directly interrogated for analyses of Ramsar site information.
19. So as to make the data held by the Ramsar Sites Database available for a wider variety of purposes, data from the Database is also provided to Columbia University's Center for International Earth Science Information Network (CIESIN) under a three-way Memorandum of Understanding between the Ramsar Bureau, Wetlands International, and CIESIN for use in the "Ramsar Wetland Data Gateway". This Gateway is further described in COP8 DOC. 34.

### **The Ramsar Sites Directory**

20. The Ramsar Sites Directory is a service provided by Wetlands International for the Convention as part of its work in making accessible data and information on Ramsar sites. The Directory presents concisely written descriptions of each Ramsar site in a standard format and length, taken from the information provided by Contracting Parties in the RIS – the level of detail of which varies considerably.
21. An update of the Directory is prepared for each meeting of the Conference of the Parties to the Convention. It was published in hard copy until COP6; thereafter it has been made available as an electronic product available on CD-ROM and on the Internet. The latest update of the full Directory will be launched at COP8.
22. This COP8 edition of the Directory is the seventh successive issue prepared for a Ramsar COP, and includes full Directory entries prepared for the 1,140 Ramsar sites for which data were available as of 28 February 2002. Directory entries for more recently designated or updated Ramsar sites are prepared progressively and made available immediately through the Web-based interface to the Ramsar Sites Database (see below).
23. The principal value of the Directory is that, regardless of the version or completeness of the RIS provided by Contracting Parties, a common standard is achieved in the presentation of available site information. Not only does this enhance the legibility and accessibility of individual site descriptions, but it enables more consistent comparisons between sites to be made.

24. Directory entries include a summary of why the Ramsar site is important and full scientific names of key species recorded. In the edition prepared for COP8, each Directory entry is available as a Web page and also in two widely used downloadable formats (MS Word and PDF). A choice of access to the Directory is provided via clickable maps or via country tables.
25. A valuable additional value of preparing the Directory entries is that, in creating each site record, an effective consistency check is made on the data in the original RIS and the Database entry. In a number of cases this has led to corrections and improvements to the data on the Ramsar site, agreed by Contracting Parties with the advice of the Ramsar Bureau.

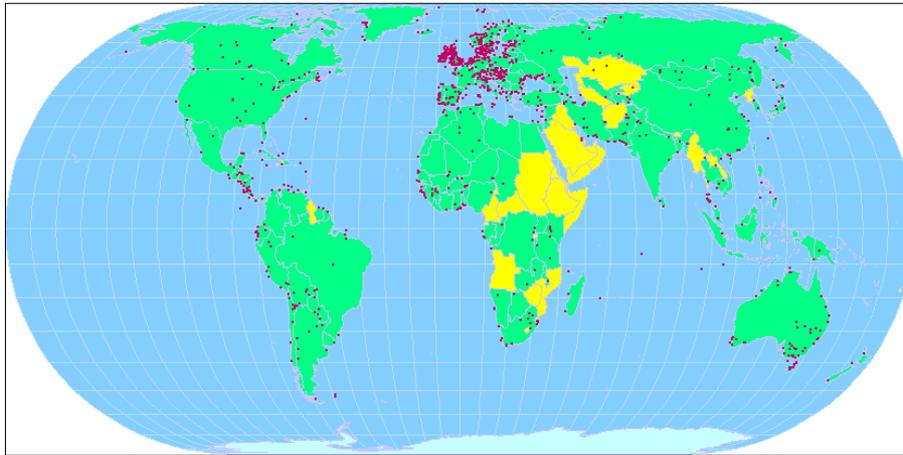
### **The Web-based Ramsar Sites Database interface**

26. With effect from COP8, the existing practice of triennially releasing revised and new Directory entries will be replaced by continuous “live” Internet presentation of updated and new entries, to reflect the progressive designation of new sites by Contracting Parties and the revision and updating of existing site information.
27. The Web-based presentation of Ramsar sites information has been progressively developed and enhanced during the 1999-2002 triennium. The interface can be accessed on the Wetlands International Web site on <http://www.wetlands.org/RDB/Directory.html>
28. The Web presentation includes all Ramsar Sites Directory entries, accessible through ‘clickable’ country maps and country tables, a number of thematic and regional analyses of designated Ramsar sites and their characteristics, and an increasing number of more detailed Ramsar site maps. The CD-ROM version of the Directory to be released at COP8 contains this full Web-based presentation. As outlined above, future enhancements to the Web-based interface will include access to electronic copies of original RISs and maps.

### **A review of data holdings in the Ramsar Sites Database**

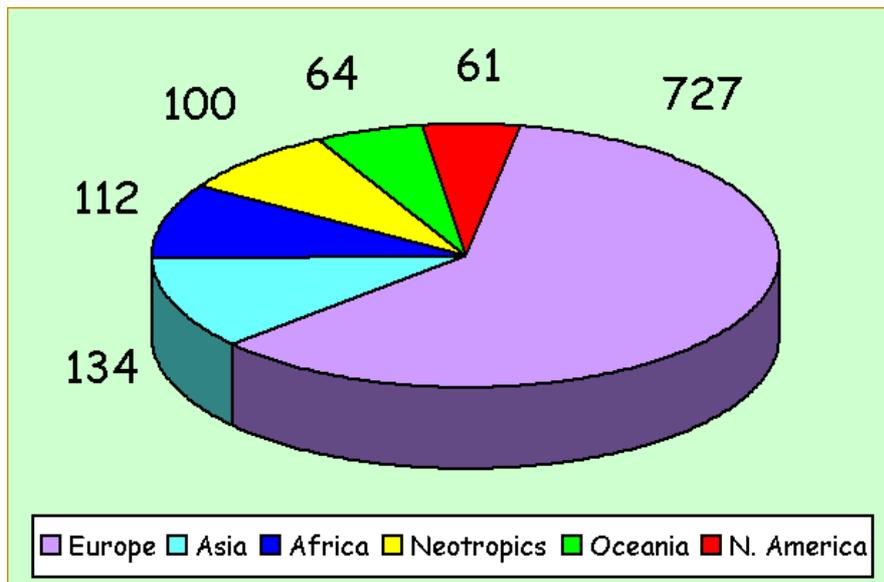
29. A brief summary of the distribution and some of the characteristics of the current Ramsar sites network, produced from analysis of the Ramsar Sites Database, is provided below.
30. As of September 2002, the Database holds coded information on 1,198 Ramsar sites designated by 133 Contracting Parties, and covering a total area of over 103.4 million hectares. This includes an additional 208 sites covering of over 31.8 million hectares designated since COP7. The global distribution of Ramsar sites is shown in Figure 1.

Figure 1. Global distribution of Ramsar Sites. Contracting Parties are coloured green.



31. On accession to the Convention, each Contracting Party is required to designate at least one site to the List of Wetlands of International Importance. 36 Parties, 26 of which joined the Convention over three years ago, have only designated a single first site. Between them these Contracting Parties (27% of the total number of Parties) have designated only about 8.8% of the total area of sites in the Ramsar List, and their designation of more sites, as expected under the Convention, would significantly enhance the List.
32. By far the largest number of Ramsar sites (727, over 60% of the total) are in Europe (Figure 2). However, area distribution of designated sites between the different Ramsar regions is more even (Figure 3). However, designations by Asian Contracting Parties remain particularly small (by both number and area designated), although the number of designated sites in Asia has doubled since COP7. Although numerous, many European Sites are small and form only 19% of the total area designated. However, the percentage of Europe's landmass that has been designated (approximately 0.8%) is comparable to other Regions such as Africa (approximately 0.9%)

Figure 2. Regional distribution of Ramsar Sites (number of Sites)



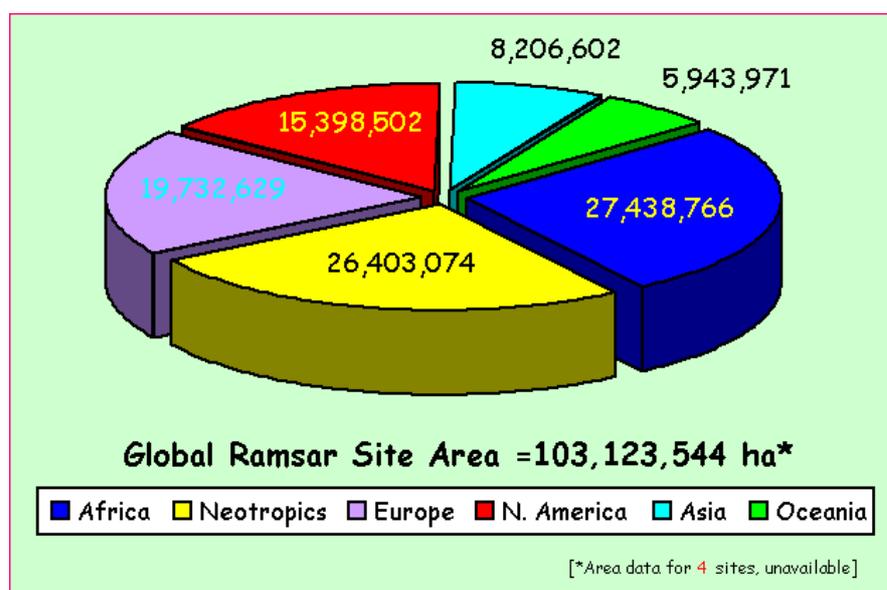


Figure 3. Regional distribution of designated Site area (hectares)

33. Each of the eight Criteria (as established by Resolution VII.11) used for identification and designation of Ramsar sites has been widely applied. The number of sites for which each Criterion has been applied is as follows:

Criterion	Number of Sites
1	755
2	598
3	643
4	382
5	387
6	380
7	111
8	129
Criteria codes not stipulated or no information received	237

34. For most designated sites, more than one Criterion has been applied. Note that Criteria coded in the Database are those identified specifically in the relevant section of the RIS by a Contracting Party: other Criteria, sometimes according to the more detailed information provided in an RIS, may also apply to some designated sites. Note also that for a significant number of designated sites, Contracting Parties have not yet provided information about which Criteria apply to the designation.
35. Criteria 7 and 8, concerning fish, were adopted more recently (COP6 in 1996) than the other six Criteria – so the smaller number of sites designated under these Criteria is mostly a reflection of this later adoption. 103 sites (28.5% of the total designated since COP6) have been designated under either or both Criteria 7 or 8, an indication of the major importance of wetlands in sustaining fish populations.

### The status of Ramsar site information

36. One important function of the Ramsar Sites Database is to maintain information on the status and quality of the information provided by Contracting Parties in relation to their commitments concerning the use of the RIS, provision of adequate maps, and periodic updating of the RISs. This is then provided to the Ramsar Bureau so that they can work with Contracting Parties to identify and improve missing and inadequate information on designated Ramsar sites.
37. As is summarised below (see also COP8 – DR 10), whilst for many sites there is high quality information provided, there remain a significant number of designated sites for which the expected information is missing or inadequate.
38. At the beginning of 1996, 65% of 771 Ramsar sites were represented by an RIS or equivalent. Some 18% of sites were without appreciable data of any kind, and the remaining 17% of sites had unsatisfactory datasheets (i.e. poor coverage of RIS information categories). Many of the existing data were also many years old. The overall state of maps, albeit subjectively assessed, was likewise very poor.
39. As of September 2002, 1,198 Ramsar Sites are represented by 1,017 RIS/equivalents (85%) and 102 “unsatisfactory” formats (<9%). There are 79 Sites (<7%) with no datasheets. There are 1,162 maps present (97% of Sites), of which only 216 maps are subjectively rated as “poor to very poor” (~19%). Thus over the past six years there has been an overall marked increase in the proportion of sites which now have at least adequate information.
40. In addition to the assessment of quality, Wetlands International has also made a subjective rating the general “quantity” of information provided on Ramsar sites. 954 (or ~85% of) Sites have a “high” *overall* quantity of data, and 104 (~9%) sites have a “low” quantity.
41. It should be noted that using the correct data format and populating all the prescribed information categories does not automatically ensure data quality. Up to this point there has been no mandated data checking process/protocol, but the most obvious apparent discrepancies or mistakes in RIS entries are routinely investigated.

### Increasing access to data and information on Ramsar sites through the Ramsar Sites Database

42. To date, only data and information supplied by Contracting Parties specifically concerning the designation of Ramsar sites has been input to the Ramsar Sites Database. As described above, the primary source of this data is the Information Sheet on Ramsar Wetlands (RIS). Where appropriate or necessary, Database records are updated with information provided by the Contracting Party through a new or updated RIS, from a Ramsar National Report from the Contracting Party, or from correspondence from the Convention’s Administrative Authority for that country.
43. With the rapidly increasing advances in database technology and the availability of data and information in electronic formats, there are increasing opportunities to link the Ramsar Sites Database with other types of supplementary data and information concerning a Ramsar site, so that it can be made more publicly accessible.

44. The added value of this approach is already being demonstrated by the development of the “Ramsar Wetland Data Gateway” (see COP8 DOC. 34), through which the information supplied by Contracting Parties on Ramsar sites, held in the Ramsar Sites Database, is linked to other relevant spatial datasets. This is designed to aid analysis and interpretation of Ramsar site information in a variety of wider contexts.
45. Opportunity exists also to link the Ramsar Sites Database information to other *bona fide* sources of data of impeccable scientific and technical quality, so as to assist users in accessing a fuller range of data and information relevant to Ramsar sites, their status and management. There are several types of such material: additional information on Ramsar sites provided by Contracting Parties, other datasets managed by Wetlands International (for example, the International Waterbird Census), and other datasets managed by other organizations, through access agreements such as that established with CIESIN concerning the Ramsar Wetland Data Gateway.
46. A key additional dataset which does not yet adequately exist is a digitised set of site boundaries for all Ramsar sites. Such a dataset would greatly facilitate a wide range of spatial presentations and analyses of Ramsar sites in relation to other features of the sites and their surroundings. Ways of establishing and keeping up to date such a dataset are currently under discussion between the Ramsar Bureau, Wetlands International, the World Conservation Monitoring Centre (UNEP-WCMC), and others.
47. Such augmentation of access to data and information concerning Ramsar sites would provide users at both national and international levels with an increasingly useful tool to analyse and compare the status and characteristics of Ramsar sites, would facilitate “catchment approach” analyses, and would enhance transboundary cooperation on shared wetlands through improved information (e.g. on hydrology and land use).
48. It is planned that as part of the future development of the Ramsar Sites Database, and in line with COP8 – DR 13, linkages will be established between the core Ramsar Sites Database and other relevant and appropriate sources of data and information.
49. Essential to this approach will be a clear labeling of data sets so as ensure that it is clear to users at all times whether they are accessing RIS-derived information from the core Ramsar Sites Database and other supplementary datasets. Such supplementary data, depending on their nature, would be stored in an additional or separable database module, or would be flagged and audit-trailed for differentiation or filtering.
50. When such supplementary data is sourced to augment Site Directory entries, any such additional data sources would be clearly cited.