

**TOWARDS A  
PAN-MEDITERRANEAN WETLAND  
INVENTORY  
A FEASIBILITY STUDY**

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## INTRODUCTION

[AUTHORS NOTE: please send any comments and corrections to [ptomas.tdv@gmail.com](mailto:ptomas.tdv@gmail.com) ]

The need for wetland inventory and monitoring at pan-Mediterranean level including wetland area, quality and biodiversity has been raised since the early times of MedWet. A detailed analysis of the methodologies and the coverage of wetland inventories in all the Mediterranean countries were carried out in the framework of the MedWet 1 project<sup>1</sup>. In 1995, five countries had carried out a national wetland inventory and four had a preliminary inventory. On the basis of this study, a standard inventory methodology was developed<sup>2</sup>, and completed by a database software (version 3.0 issued in 2002). Since then the MedWet Inventory methodology has been used or tested in a number of countries, either directly (Portugal, Greece, Albania, Slovenia, FYROM, Morocco, Italy: Tuscany, Spain: Murcia, etc.) or adapted (France: the adaptation done by the Agence de l'Eau Rhône-Méditerranée-Corse (RMC) is being used in Bouches du Rhône, Gard, Haute Corse, Corse du Sud, Hérault). This methodology is also being tested in other parts of the world such as South Africa, Colombia, Argentina, Cambodia and New Zealand.

This report presents the preliminary results of a feasibility study for a Pan-Mediterranean Wetland Inventory (pre-PMWI). The recommendation to create a Pan-Mediterranean Wetland Inventory by 2010 was made by the MedWet/Com, at its 4<sup>th</sup> meeting in Sesimbra, Portugal in 2001. At the same meeting, the MW Inventory Working Group (MW-IWG) was formally established bringing together Tour du Valat, EKBY, SEHUMED, the MW Coordination Unit, Wetlands International and the Ramsar Secretariat, under the chairmanship of ICN.

Since then, efforts have been made to (1) promote the MedWet Inventory methodology for national and regional wetland inventories throughout the Mediterranean, and (2) to improve and further develop the MedWet Inventory tools, and in particular the MedWet Database (MWD). A new version of the MWD (version 3.0) was developed by EKBY which is acting as the MWD Technical Unit, and it was presented at the Ramsar COP 8 in November 2002 in Valencia<sup>a</sup>.

During the eleven years of MedWet, a number of wetland inventories have been carried out at national or regional level using the MedWet methodology (Portugal, Greece, Albania, Slovenia, Morocco, Tuscany, Murcia), and adaptation of it (France RMC) or a specific national format (Spain). However, during this period there has been no attempt to compile the data from the different inventories in order to obtain an overall picture of the location of the wetlands in the Mediterranean and their extent. During the MedWet Team meeting in March 2004 in Valencia, it was agreed that the compilation of the existing inventory datasets would be a useful contribution to an initial assessment of the state of Mediterranean wetlands. So under these premises, Tour du Valat and EKBY decided to initiate a collaboration in order to produce a first compilation to be presented at MedWet/Com6 in the form of a preliminary Pan-Mediterranean Wetland Inventory (pre-PMWI).

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<sup>a</sup> Between 1993 and 2004 three versions of the MWD have been produced. The three versions follow the base structure of the MedWet Inventory methodology which remains unchanged: the data files are compatible between the three versions, and the dictionaries (on human activities, impacts, protection designations...) and species lists are the same; so the three versions are compatible and data from the older ones can be imported in the new ones (see annex). Also the three versions keep compatibility with Ramsar and Natura 2000 forms.

The goals of this first phase are to start identifying inventory gaps in terms of geographic coverage and data coverage, and to assess the age of each available dataset in order to study the feasibility of a Pan-Mediterranean Wetland Inventory to be completed in 2005 and beyond with the support and participation of the MedWet/Com members. It is by no means a complete analysis as it has not been possible to obtain all the existing inventory datasets.

## METHODOLOGY

Therefore, since June 2004, Tour du Valat has tried to gather inventory data from different Mediterranean countries. Among the existing inventories, only a few are available in digital (computer) format, while others only exist on paper. Due to strong time constraints for doing this first exercise, focus was given to make the analysis of a number of countries/regions which hold digital inventory datasets. The countries/regions approached are presented in table 1.

**Table 1. Countries, regions and departments approached for the pre-PMWI**

<i>Country/Region/Department</i>	<i>Organisation</i>	<i>Included in PMWI</i>	<i>Inventory methodology</i>
<b>Albania</b>	ECAT	Yes	MedWet
<b>France: Bouches-du-Rhône Gard Haute-Corse Corse du Sud</b>	Tour du Valat	Yes	RMC (MW adapted)
	CEN-LR	Yes	RMC ( “ )
	OEC (Corsica)	No	RMC ( “ , not yet completed)
<b>Greece</b>	EKBY	Yes	MedWet
<b>Italy: Tuscany Italy</b>	ARPAT	Yes	MedWet
	Min.Environment	No	N/A
<b>Morocco</b>	ISR	No	MedWet (?) – N/A
<b>Portugal</b>	ICN	Yes	MedWet
<b>Slovenia</b>	Min.Environment	Yes	MedWet
<b>Spain</b>	DGB (DGCN)	Yes	Spanish NWDB
<b>The FYROM</b>	BSPSM	No	MedWet (only on paper)

Once the inventory databases were received by Tour du Valat, they were transferred to EKBY for the analysis. Analysis included: a) harmonization of data into one archive, b) identification of difficulties and obstacles, and c) reporting.

The MWD ver. 3.0 (MWDv3) was selected to be the tool for the creation of the Pan - Mediterranean Wetland Inventory archive. The subset of data that decided to form this archive are presented in table 2.

**Table 2. Data Fields decided to form the PMWI archive**

<i>Data field(s)</i>
Site name
Site code
Wetland area
Geographic coordinates
Catchment area data (if available)
Ramsar wetland types (if available)
Wetland values (if available)
Conservation Status (if available)
Habitats (if available)
Flora (if available)
Fauna (if available)
Human activities (if available)
Impacts (if available)

In order to complement the information from national sources and to complete the geographic coverage for those countries where we had not been able to obtain any dataset, we approached Wetlands International who holds one of the most complete datasets of wetland sites for the International Waterfowl Census. Unfortunately, the data could not come in time to be analysed and incorporated into this report. However, it should be included in a future phase of the pre-PMWI.

## **RESULTS**

### **1) Wetland inventories included in the PMWI**

In total, eight organisations supplied datasets in digital format from their national/subnational wetland inventories. This first test has therefore been carried out using computerised data for five entire countries: Albania, Greece, Portugal, Spain, Slovenia, as well as the Tuscany region in Italy and the Bouches-du-Rhône and Gard departments in France.

### **2) Existing inventories according to MWD2000/MWDv3 format**

Only four countries are known to have national wetland inventories according to MWD2000/MWDv3 database format: Albania, Greece, Portugal and Slovenia. However, the Portuguese MWD database was not available, as only an Excel file was supplied instead, containing wetland names, codes, area and geographic coordinates.

The French RMC database, on the other hand, though close to the MWD2000 database format, cannot be incorporated using the standard procedures due to differences in the relational model in respect to the MWD.

Therefore, among the datasets provided, only three were available in the MWD format (either MWD2000 or MWDv3): Albania, Greece and Slovenia. While data from Bouches-du-Rhône, and Gard (France) was in the RMC format, data from Spain was from the provisional Spanish National Wetland Database and data from Tuscany and Portugal was in an Excel file.

### 3) Age of the datasets considered

Most of the datasets obtained were rather recent, all being dated after year 2000 (at least partly). The most recent datasets provided are from Tuscany, collected in 2003-2004 under the MedWet/Regions project, and from Albania, collected in 2001-2003. In some cases (e.g. Spain, Greece) data were from a period of several years (see table 3).

**Table 3. Age of the datasets considered**

<i>Country/Region/Department</i>	<i>Year</i>
<b>Albania</b>	2001-2003
<b>France: Bouches-du-Rhône, Gard</b>	2001-2002
<b>Greece</b>	1998-2002
<b>Italy: Tuscany</b>	2003-2004
<b>Portugal</b>	1993-2004
<b>Slovenia</b>	1998-2000
<b>Spain</b>	1996-2003

### 4) Comprehensiveness of the datasets

As mentioned before, some of the inventory datasets were not complete; due to time constraints, Portugal provided a rather simplified dataset that included only site name, site code and geographic coordinates. But in reality ICN holds a very detailed database that will hopefully be made available for analysis in the near future.

A part from the basic fields (site name and code), all the inventories analyzed include data on wetland surface and catchment area. Only Albania and Greece provided both complete inventory datasets that also include data on Ramsar wetland types, wetland values, conservation status, habitat types, flora, fauna, human activities and impacts. Data from Slovenia include flora and fauna. The datasets from Spain and France, while complete, they have a different format, so only the basic fields could be imported (table 4).

**Table 4. Fields imported into the pre-PMWI from the datasets provided**

Data field(s)	Albania	France: BdR, Gard	Greece	Italy: Tuscany*	Portugal*	Slovenia	Spain
Site name	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Site code	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	No	Yes	Yes
Geographic coordinates	Yes	No	Yes	Yes	Yes	Yes	Yes
Catchment area data	Yes	Yes	Yes	Yes	No	Yes	No
Ramsar wetland types	Yes	No	Yes	No	No	No	No
Wetland values	Yes	No	Yes	No	No	No	No
Conservation Status	Yes	No	Yes	No	No	No	No
Habitats	No	No	No	No	No	No	No
Flora	Yes	Yes	Yes	No	No	Yes	No
Fauna	Yes	Yes	Yes	No	No	Yes	No
Human activities	Yes	No	Yes	No	No	No	No
Impacts	Yes	No	Yes	No	No	No	No

\* Portugal and Tuscany have full datasets in the MWD format, but it was not possible to use them.

### 5) Total number of wetlands per country included in the pre-PMWI.

8.210 wetlands are covered by computerised wetland inventories in the seven countries included in this pre-PMWI. These wetlands cover a surface area of 764.351 ha (table 5). Among the seven datasets provided, two of them alone (Slovenia and Spain) cover for 73,6% of the total number of wetlands, while in terms of wetland area they suppose 29% of the total area covered.

**Table 5. Number of wetlands and wetland area per country**

<i>Country</i>	<i>Number of wetlands</i>	<i>% wetlands</i>	<i>Wetland area (ha)</i>	<i>% wetland area</i>
Albania	792	9,65%	101.132	13,23%
France: Bouches-du-Rhône Gard	406	4,95%	213.668	27,95%
Greece	411	5,01%	216.032	28,26%
Italy: Tuscany	31	0,38%	11.909	1,56%
Portugal	527	6,42%	N/A	N/A
Slovenia	3.525	42,94%	35.344	4,62%
Spain	2.518	30,67%	186.266	24,37%
<b>Total</b>	<b>8.210</b>	<b>100,00%</b>	<b>764.351</b>	<b>100,00%</b>

## CONCLUSIONS

First, it should be noted here that more countries than those analysed have undertaken a wetland inventory since 1990<sup>1</sup>, and that this feasibility study is by no means an exhaustive analysis as it has not been possible to obtain all the existing inventory datasets.

In fact, it is important to mention that under the present circumstances, it is not easy to obtain and to analyze the existing inventory datasets due to the following reasons:

- Not all the Mediterranean countries have carried out a comprehensive wetland inventory, although most of them certainly hold important datasets on many wetlands; this is the case of Algeria, Egypt, France, Israel, Jordan, Lebanon, Libya, Morocco, Serbia and Montenegro, etc.<sup>b</sup>
- A part from the datasets that we have analyzed, many existing datasets are older than five years (inventories carried out before 2000), a few being almost 10 years old. This is the case for Tunisia, Italy, Turkey.
- In many countries that have carried out a complete or partial inventory, data are not available in digital (computerised) format. This is the case of FYROM.
- It is not always easy to identify the organisation/people in charge of the inventory, and when identified, it may not be easy to obtain the datasets.
- In several countries that have an inventory database, the absence of a commonly accepted format is a serious obstacle to compile a PMWI. The MWD2000/MWDv3 database format, though officially accepted by MedWet and supported by Ramsar is not yet widely adopted by the countries.
- Some of the Mediterranean countries that adopted the MWD2000/MWDv3 database format changed its model in order to cope with specific national requirements. This although was allowed by the software (*MedWet wanted to provide an open tool for easy adaptation*) produced difficulties and obstacles in union data from different countries.
- Many of the existing wetland inventories lack cartographic coverage, mostly being a descriptive picture of the values and functions of wetlands at a specific moment.
- Yet in most cases, the inventories are not used for surveillance purposes, despite the potential for e.g. following the changes in wetland area, especially if using GIS. Therefore, it is not easy to use the current data for assessing the state of Mediterranean wetlands.

On the other hand, the availability of time and economic resources to the people involved both in national inventories and the PMWI is often limited. This may conduce to incomplete wetland inventories or to inventories lacking of a database support; also in many cases this is the cause for not including remote sensing and GIS techniques at a wide scale (e.g. regional or national scale).

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## RECOMMENDATIONS FOR FUTURE WORK

The Pan-Mediterranean Wetland Inventory can be a reality by 2010 only if this is considered a priority by the Mediterranean partners. The main goal of the PMWI should be to contribute to the assessment of the state of wetlands in the Mediterranean region, in the framework of an Observatory of Mediterranean Wetlands. The next steps to be taken should be defined in a work programme that can include:

- Update the analysis of the status of wetland inventories in the Mediterranean region (the inventory of MW inventories). This should allow to assess the inventory work that has been carried out in all the Mediterranean countries at national and subnational scale since the publication of the 1995 report<sup>1</sup>. It should also allow to identify the organisations and experts working on this subject. The results should be widely disseminated and regularly updated.
- While analyzing the status of wetland inventories, continue to compile existing digital wetland datasets from regional, national and international sources, and to include them in the PMWI.
- Agree on the core (minimum) data fields to be included in the PMWI, as well as on the type of analysis needed in order to make the PMWI useful for assessing the state of wetlands in the Mediterranean region.
- Promote and mobilize countries to carry out wetland inventories under a common standard methodology (e.g. MedWet) and using GIS technology, in order to facilitate the assessment of the state of Mediterranean wetlands.
- Develop means for easily submitting data through internet into a common Pan-Mediterranean Wetland Database, and facilitate/stimulate the submission of the data to the establishment of a complete PMWI.
- Develop partnerships, provide technical support and training to those countries/regions that are willing to launch or to update a wetland inventory in line with the previous conclusions.
- Develop partnerships with international organisations holding pan-Mediterranean datasets concerning wetlands (Wetlands International, IUCN, WWF, BirdLife International, Blue Plan, WCMC, etc.) in order to be able to establish collaborations towards completing the PMWI.
- Secure funding to carry out the previous recommendations, in particular launching wetland inventories and the compilation of the PMWI. The Interreg IIC South (MedWet CODDE) project could be a first step for developing this. A part from national funding sources, potential funding agencies are SMAP, GEF, FFEM, LIFE 3<sup>rd</sup> countries, MEDA, national development cooperation agencies and others, as regards non EU countries; and LIFE, INTERREG, FP6 and others for EU countries.

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<http://www.medwet.org/medwetnew/en/04.RESOURCE/04.3.publications.html>

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