WFD intercalibration technical report

Mediterranean GIG - Rivers
Macrophytes

15 June 2007
3.1. Introduction

On the Mediterranean area, the river quality assessment by Macrophytes was still very embryonic when the IC process started. Most of the few available data were collected very late, since a part is stemming from 2007 survey campaigns. Thus, for now, the aim of this stage of IC Macrophytes was logically restricted to an inventory of existing methods and available national data. Additionally, the problems and perspectives for a second stage of this IC are briefly discussed.

3.2. Countries involved

For Macrophytes, the 7 countries of the Mediterranean GIG provided very different answers (Table 3.1).

Table 3.1: Methods and data from the countries of the Med GIG Rivers.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Answers</th>
<th>National contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyprus</td>
<td>Neither method nor data yet but macrophytes/diatoms survey program started in 2007.</td>
<td>Gerald Dörflinger Eva Papastergiadou (?)</td>
</tr>
<tr>
<td>France</td>
<td>Method and few data.</td>
<td>Christian Chauvin</td>
</tr>
<tr>
<td>Greece</td>
<td>Very few data, to be considered that Greece cannot participate to this exercise.</td>
<td>Ioannis Karaousas</td>
</tr>
<tr>
<td>Italy</td>
<td>Recent participation, just few data available from 2007 campaign.</td>
<td>Maria-Rita Minciardi</td>
</tr>
<tr>
<td>Malta</td>
<td>Method in progress, no data yet</td>
<td>Sarah Debono</td>
</tr>
<tr>
<td>Portugal</td>
<td>Method and data.</td>
<td>Maria-Helena Alves</td>
</tr>
<tr>
<td>Spain</td>
<td>Data available from Eastern Spain, not provided yet.</td>
<td>Antoni Munne Torras Jose Luis Moreno</td>
</tr>
</tbody>
</table>

3.3. National Assessment Methods

At this stage, 4 countries are using macrophyte-based river assessment methods:

France: IBMR


Official method: YES (French norm).

Sampling season: Spring to autumn

Sampled zone: only channel area (area in water)

Sampled facies: lentic and lotic (submerged and floating vegetation)
Italy: IBMR


Official method: NO. Method recently used in Northern Italy.
Sampling season: Spring to autumn
Sampled zone: only channel area (area in water)
Sampled facies: lentic and lotic (submerged and floating vegetation)

Portugal: MTRp


Adaptation to Portugal river types.

Official method: YES.
Sampling season: Spring
Sampled zone: channel area (area in water, including the in-stream part under water most of the time)
Sampled facies: all habitats in the river reach.

Spain : IVAM


Official method: NO. Method used in several eastern Spain basins.
Sampling season: Spring to autumn
Sampled zone: only channel area (area in water)
Sampled facies: lentic and lotic (submerged and floating vegetation)

Two of these three methods are fairly widely used and already included in IC process in another GIG: IBMR (FR-originated) and MTR (UK-originated) are quite similar in the field protocol, in the taxa types taken in account, and in the calculation principle. The main aim of both methods is to estimate the trophic level by population scoring. The IVAM used in Spain is a recent original method, derived from a 3 basins survey in Eastern Spain. The aim of this protocol is a trophic level estimation. So far, the 3 methods seem to have the same target, and to survey the same aspects of river ecological quality. This point is important for the IC, as in another GIG a major problem is the huge difference of “philosophy” between some groups of assessment methods.
3.4. Available Data

The available declared national datasets are indicated in Table 3.2.

Table 3.2: Data sets provided by each country.

<table>
<thead>
<tr>
<th>Countries</th>
<th>Total number of samples</th>
<th>Number of Reference samples</th>
<th>Supporting chemical data</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>14</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Italy</td>
<td>18</td>
<td>2</td>
<td>?</td>
</tr>
<tr>
<td>Portugal</td>
<td>32</td>
<td>21</td>
<td>32</td>
</tr>
<tr>
<td>Spain</td>
<td>169</td>
<td>41</td>
<td>169</td>
</tr>
</tbody>
</table>

The repartition on the 5 IC river types defined for Mediterranean area is quite heterogeneous according to countries (Table 3.3)

Table 3.3: Number of samples for each IC type and country.

<table>
<thead>
<tr>
<th>IC river types</th>
<th>Types definition</th>
<th>FR</th>
<th>IT</th>
<th>PT</th>
<th>SP</th>
<th>Number of samples</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-M1</td>
<td>Small - Mid-altitude</td>
<td>4</td>
<td>1</td>
<td>32</td>
<td>17</td>
<td>54 (+)</td>
<td>4</td>
</tr>
<tr>
<td>R-M2</td>
<td>Medium - lowland</td>
<td>2</td>
<td>1</td>
<td>20</td>
<td>29</td>
<td>52 (+)</td>
<td>4</td>
</tr>
<tr>
<td>R-M3</td>
<td>Large - lowland</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>36</td>
<td>46 (+)</td>
<td>2</td>
</tr>
<tr>
<td>R-M4</td>
<td>Small - mid-altitude Medit</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>61</td>
<td>61 (+)</td>
<td>1 (3?)</td>
</tr>
<tr>
<td></td>
<td>mountains non assigned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-M5</td>
<td>Temporary, small - lowland</td>
<td>0</td>
<td>?</td>
<td>15</td>
<td>26</td>
<td>41 (+)</td>
<td>2 (3?)</td>
</tr>
</tbody>
</table>

Just 1 country (SP) may provide data for all types. If we consider that a minimum of 20 surveys/country is needed in order to be able to intercalibrate one type, it can be seen that only for R-M2 (medium-lowland) IC would be possible and for only 2 countries (in grey in the table).

One of these types, corresponding to the large lowland rivers (R-M3) and including a significative part of the data, probably cannot be included in the exercise, as shown by another GIG.

3.5. Problems to be expected

The data representativity has to be improved. Indeed, some national organizations are not able to provide an actual “national” dataset, mainly because of the non official status of the
methods, or lack of a common answer from different administratively autonomous regions. On this point, more data would be expected if the exercise was concerning more national experts. Furthermore, some countries (GR) are not yet actually involved, or quite recently (IT), in this Macrophyte IC.

**The existing methods are trophic level oriented.** This is precisely the original problems of macrophytic populations in river studies. In the Mediterranean zone, the functioning of streams is quite specific. Thus, it is not absolutely sure that the trophic aspect is the best one when assessing the global ecological status of watercourses, in a WFD compliant approach. In the CBGIG, the limits of an exclusive trophic level assessment was shown, particularly for the widest types (lowland medium size rivers) and regarding the requirements of reference conditions definition. It is to be feared that the hydrological features make a major stressing impact on the river ecological structure in these Mediterranean regions, and thus the trophic level cannot be assessed with enough sharpness and relevance. This crucial topic remains to be discussed, and tested between different areas, in and out the Mediterranean domain.

**The actual novelty** of this kind of approach in Mediterranean rivers requires validation. The response of the used index or of new ones to be proposed has to be studied further.

**The new national protocols** which will be developed will have to take into account the current requirements, but also the chosen “philosophy” of other methods. For example, the difference in the sampled area (channel vs. banks) may cause major biases in the results comparison.

**The problem of the large rivers** approach has to be addressed by the Med GIG. Very likely, the sazonality and inter-annual variability of rivers from Mediterranean climate regions cause additional problems when compared to the other GIGs.

### 3.6. Some general comments and future work

Regarding the current IC options, the option 2 seems to be the most applicable. Thus an ICM is required. With trophic-oriented methods, the most relevant ICM will be very likely a trophic metric. What about the response of this kind of index in non permanent streams? We will have probably to discard a significant part of the Mediterranean rivers network from the exercise, focusing only on the small and medium permanent rivers.

There is obviously a wide interest on river assessment by macrophytic compartment. The majority of the involved countries are starting or reinforcing their efforts on collecting data and improving methods. But, at this present stage, it is also obvious that there is not yet enough neither methodological background, nor consistent data to try a reliable IC process in the Mediterranean zone. A second stage of the IC process may probably begin with the discussion of these methodological topics.

The Med GIG suggests that the Macrophyte IC is extended for an additional period of 1 – 2 years.