**Prymnesium parvum: ‘Invading the Mediterranean inland waters’**

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**Aim**
- Review the published information on *P. parvum* blooms occurrence in Mediterranean inland waters
- Highlight the compositional diversity and ecology of the *P. parvum* blooms in inland waters of Greece and Cyprus

**Methods**
- Search Scopus, Web of Science, Google Scholar databases for *P. parvum* in inland waters
- Identification and enumeration of phytoplankton using light microscopy (Utermohl’s method)

**Tracing *Prymnesium parvum* blooms in the Mediterranean**

*Prymnesium parvum* blooms have been reported in 5 out of the 21 Mediterranean countries
- Blooms were recorded in shallow brackish waters with salinities 1-13 psu
- Death of biota were reported during all bloom incidents

**Prymnesium parvum invading the inland waters of Greece and Cyprus**

**Figure 1:** Map of the Mediterranean area. Red dots point out the sites in the countries with recorded blooms of *P. parvum*

**Figure 2:** Maximum abundance of *P. parvum* in the recorded blooms (fish kills, bird deaths)

**Figure 3:** Map of Greece & Cyprus respectively. Red dots point out the sites with recorded blooms of *P. parvum* (Lake Koronia 1), Gerani Wetland 2, Karla Reservoir 3 and Lake Athalassa 4

**Table 1:** Maximum depth (cm), maximum salinity (psu), time of occurrence and phytoplankton species recorded in the study sites during the blooms of *P. parvum*

<table>
<thead>
<tr>
<th>Water Body</th>
<th>Max Depth (cm)</th>
<th>Max Salinity (psu)</th>
<th>Time of occurrence</th>
<th>Other phytoplankton species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Koronia</td>
<td>90</td>
<td>9.3</td>
<td>September 2004</td>
<td></td>
</tr>
<tr>
<td>Karla Reservoir</td>
<td>150</td>
<td>2.1</td>
<td>March 2012-2016, September 2016</td>
<td><em>Pseudanabaena helvetica</em>, <em>P. limnetica</em> (green algae), <em>Monoraphidium</em> (diatoms)</td>
</tr>
<tr>
<td>Gerani Wetland</td>
<td>100</td>
<td>1.3</td>
<td>August 2010</td>
<td><em>Nitzchia</em> species, <em>Pseudanabaena</em> <em>limnetica</em>, <em>Monoraphidium</em> (diatoms)</td>
</tr>
<tr>
<td>Lake Athalassa</td>
<td>200³</td>
<td>1.3</td>
<td>March 2014</td>
<td><em>Monoraphidium</em> (diatoms), <em>Nitzchia</em> (green algae), <em>Pseudanabaena</em> &quot;helvetica&quot;, <em>P. limnetica</em></td>
</tr>
</tbody>
</table>

³Data from the Division of Hydrometry, Water Development Department of Cyprus

**Figure 4:** Maximum abundance of *P. parvum* in Lake Koronia, Karla Reservoir, Gerani Wetland & Lake Athalassa (fish kills, bird deaths)

**Figure 4:** Light micrographs (phase contrast) of *P. parvum* blooms in Gerani Wetland, Karla Reservoir, Lake Koronia and Lake Athalassa

- *P. parvum* blooms were prevalent in shallow and brackish waters (<6 psu) in all seasons
- *Prymnesium* blooms were recurrent with high abundances of other phytoplankton species such as cyanobacteria (e.g. *Anabaenopsis e lenkini i*, *Pseudanabaena limnetica*), chlorophytes (e.g. *Monoraphidium* *griffithii*), diatoms (e.g. *Nitzchia* species) and dinoflagellates (e.g. *Pfiesteria piscicida*)
- Fish kills and/or bird deaths were recorded in all the waterbodies

**Current status & Future perspectives of *Prymnesium parvum* blooms in the Mediterranean inland waters**

- At present, there are several important gaps regarding data on the presence and ecology of *Prymnesium parvum* blooms in the inland waters of the Mediterranean area, probably associated with a deficiency in identifying the species and of insufficient monitoring
- In this sensitive to climate change area, salinization of inland waters is expected to promote the proliferation of *Prymnesium parvum*, making the challenge of assessment and management strategies greater