The Ecology and distribution of Irish Charophytes

Cilian Roden
GMIT Galway
What are Charophytes?

- Aquatic macroalgae 5-150 cm in size.
- Closely related to land plants.
- Tissue of very large multinucleate tubular cells.
- Reproduce by means of oospores, capable of dormancy.
- Some species spread by rhizoids or tubers.
Charophyte morphology

With or without cortex, oospores
How many species in Ireland

- Four Genera
- Chara with 16 species
- Nitella with 8 species
- Tolypella with 4 species
- Lamprothamnion with 1 species

There are about 50 species from Europe as a whole - so Ireland has perhaps 60% of the total.
Charophyte Biogeography

- Many species are more widespread in Ireland, e.g. Chara rudis
Where do they occur?

- Clear low nutrient still water is the commonest habitat
- They also occur in flushes, temporary pools, turloughs and even some rivers.
ZONES IN A BURREN LAKE
A PLANT FREE ZONE!

Figure 2 Lough Gealain
• the view from the ground
• Meso-oligotrophic.
• Mainly along west coast.
• Not greatly coloured by peat runoff, therefore clear.
• Often contains both Isoetes lacustris and Potamogeton perfoliatus.
• Chara muscosa, Nitella confervacea, Nitella spaniuclema? Chara virgata.
Nitella species and Chara virgata occur in Calcium poor clear loughs, dystrophic loughs often lack any any any species.
Transitional and coastal water lagoons

Lady’s Island Lake

Lamprothamnion papulosum

Lough Gill

Chara canescens
Lagoonal specialists and taxonomic run arounds

- The late Dr Brenda Healy pioneered lagoon research in Ireland
- She developed the idea of lagoonal specialist species
- Chara cannescens, C.baltica, Tolypella nidifica and Lamprothamnion are examples
- Problems of taxonomy persist
Minor habitats

- Flushes in the Burren with Chara vulgaris or C.contraria
- Flushes on Aran with C.gymnophylla
- Ponds with C.vulgaris
- Limestone puddles with Nitella opaca
Threats to the Charophytes

Phytoplankton blooms

Peat and sediment deposition
Competition from *Potamogeton* and other vascular plants

Abandoned Pier at Lough Derg

*Potamogeton alpinus* in Lough Bridget
Future Research

- Distribution and habitat maps would allow more accurate descriptions of sub lttoral vegetation.
- Many Irish taxa needs to be compared to European equivalents.
- Charophytes are excellent indicators of clean water, thus their distribution is of general interest.
- They dominate highly calcareous lakes with good salmonid fisheries, their ecosystem role is consequently of great Irish interest.
Acknowledgements

• Thanks to my colleagues Klaus Van de Wyer, Richard Lansdown, John Bruinsma, Nick Stewart and Jim Ryan for discussions, advice and help.

• My charophyte fieldwork has been funded by The Heritage Council, NPWS and the EPA, many thanks.