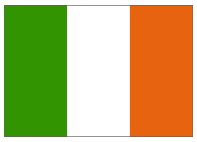

WFD Lake typology

SUMMARY NOTE OF IRISH LAKE TYPOLOGY TO BE APPLIED IN IRELAND'S RIVER BASIN DISTRICTS

Paper by the Working Group on Characterisation and Risk Assessment

Surface water guidance document

This is a practitioner's guidance paper on typology used for Irish lakes for the purposes of Article 5 characterisation in the River Basin Districts. A detailed report on a research project to verify this typology will be available in 2005.

REVISION CONTROL TABLE

Status	Approved by National Technical Coordination Group	WFD Requirement	Relevant EU Reporting sheets	Date
Final	March 2005	Characterisation	None	March 2005

Biologically Verified Typology for Lakes in Republic of Ireland
(DRAFT)

1 Background

Set out below are the details of a biologically verified lake typology to be used for the purpose of lake characterisation in Ireland as required under Article 5 of the Water Framework Directive (WFD) and in accordance to the technical specifications set out in Annex II of the Directive.

2 The Water Framework Directives

The Water Framework Directive (WFD) recognises that certain hydromorphological characteristics viz. altitude, depth and size of a lake waterbody and its catchment geology are important factors in determining the composition and abundance of biological communities in that waterbody. With a view to distinguishing the influences of these hydromorphological factors on the aquatic biota from those attributable to anthropogenic activities or pressures Article 2 and Annex II of the WFD state that each Member State shall categorise surface water bodies within each River Basin District as rivers, lakes, transitions and coastal waters or as Artificial or Heavily Modified Water Bodies. For each of these categories the relevant surface water bodies shall be differentiated according to hydromorphological type. This must be done according to the technical specification set out in Annex II.

3 Development of a Lake Typology in Ireland

Ireland and Northern Ireland had agreed that System B in Annex II would be appropriate to define hydromorphological typology for lakes in Ecoregion 17. It was further agreed that the following factors would be investigated as measures for establishing lake hydromorphological typologies (Annex II).:

Altitude
Latitude/longitude
Mean depth
Geology
Size
Conductivity

A working typology was drawn up and agreed. Lake types were set out and populated using existing data. Expert judgement was used to select approximately 60 sites considered to be at high or potential reference status and a programme to collect data on phytoplankton, macrophytes and littoral and profundal macroinvertebrates was put in place in 2001-2. These data were used in 2003 to produce a verified typology. A final report is due to be available on http://www.wfdireland.ie in 2005.

Altitude: There was insufficient overall biological data on lakes >200m to allow a statistical analysis to be carried out to determine if there is a difference between lakes <200m and >200m. However, **limited** data on macrophytes indicate no difference between the two altitude categories. (There are no lakes >800m in Ireland)

Alkalinity: **Three** alkalinity types were recognised from a statistical examination of the profundal and littoral macroinvertebrates and macrophytes data

Low Alkalinity $<20\ Mg^{-1}\ CaCO_3$
Moderate alkalinity $20 – 100\ Mg^{-1}\ CaCO_3$
High Alkalinity $>100\ Mg^{-1}\ CaCO_3$

Data were available for relatively few examples of lakes in the moderate alkalinity category and thus a degree of uncertainty exists regarding this type

Depth Consideration was given to mean depth and, in the case of profundal macroinvertebrates, the more relevant maximum depth in parentheses below. A formula relating both was used. A type, mean depth <4m (12m) was identified. A further type >4m (>12) was identified; this type will be subdivided further depending on the element being considered: mean depth 4-6 m and >6m for macrophytes and mean depth 4m (12m)–13m (40m) and >13m (40m) for profundal invertebrates.

Shallow lakes <4m (12m)
Deep lakes >4m (>12)

Size
Two types were identified, **<50ha>,** as being statistically significant

Small lakes <50ha
Large lakes >50ha

4 The Typology

Type 1 Low alkalinity, shallow and small
Type 2 Low alkalinity, shallow and large
Type 3 Low alkalinity, deep and small
Type 4 Low alkalinity, deep and large

Type 5 Moderate alkalinity, shallow and small
Type 6 Moderate alkalinity, shallow and large
Type 7 Moderate alkalinity, deep and small
Type 8 Moderate alkalinity, deep and large

Type 9 High alkalinity, shallow and small
Type 10 High alkalinity, shallow and large
Type 11 High alkalinity, deep and small
Type 12 High alkalinity, deep and large

Type 13 Some lakes >300 m altitude

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