



### Site Name: Lough Ennell SAC

### Site Code: 000685

Lough Ennell is a large, limestone lake, located 3 km south of Mullingar in Co. Westmeath. Much of the lake is shallow with a marl deposit. The River Brosna flows into the lake from the north at Butler's Bridge, and out from the south. Lough Ennell is a very good example of a marl lake with stonewort and cyanobacterial crust vegetation.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[3140] Hard Water Lakes

[7230] Alkaline Fens

Lough Ennell supports a specialist and diverse aquatic flora, dominated by stoneworts. A total of 13 stonewort species has been recorded, including two Red Data Book species, *Chara denudata* and *C. tomentosa*. *C. tomentosa* does not occur in Great Britain, is restricted to Irish marl lakes and has been known from Lough Ennell since 1841. Distinct zones of other marl lake specialist stoneworts occur in Lough Ennell, including *C. curta*, *C. rudis*, *C. contraria*, *C. virgata* and *C. denudata*. A characteristic and highly-sensitive cyanobacterial (blue-green algal) crust (or krustenstein) occurs in shallow waters. Average crust cover at Lough Ennell is 94% and average thickness 6 mm, similar to values in many of the best Irish marl lakes. Oncooids have been found in great abundance in shallow waters. These are pebble-like structures composed of calcified layers of cyanobacterial crust, particularly filamentous taxa such as *Schizothrix*, *Calothrix* and *Rivularia*. Water movement gives rise to their rounded shape.

Lough Ennell was severely impacted by eutrophication in the 1970s and 1980s owing mainly to the discharge of inadequately treated sewage effluent from Mullingar. This resulted in significant biological changes in the lake including a rapid decline in the cover abundance, density and depth distribution of stoneworts, increases in phytoplankton and filamentous algal biomass, decreased mayfly emergence and the collapse of the Brown Trout fishery. Since the installation and upgrade of an urban waste water treatment plant there has been significant, on-going recovery in Lough Ennell. Phytoplankton biomass and, hence, turbidity have declined with a corresponding increase in water transparency. As a result, the depth-distribution and abundance of stoneworts has increased and the characteristic stonewort zonation has recovered. Further habitat recovery is needed, however, including colonisation of

deeper water (7 m+) by stoneworts and reductions in the chlorophyll *a* concentrations of the cyanobacterial crust.

Much of the lakeshore consists of dry, stony ground colonised by calcareous grassland. These areas were formerly part of the lake bed but are now exposed as a consequence of drainage. Species such as Mountain Everlasting (*Antennaria dioica*), Hairy Lady's-mantle (*Alchemilla filicaulis* subsp. *vestita*), Frog Orchid (*Coeloglossum viride*), Fairy Flax (*Linum catharticum*) and Yellow-wort (*Blackstonia perfoliata*) occur here.

Alkaline fen is also found on the lake shore, with species such as Grass-of-parnassus (*Parnassia palustris*), Marsh Pennywort (*Hydrocotyle vulgaris*) and Bottle Sedge (*Carex rostrata*). In wet marshy patches along the shore Marsh-marigold (*Caltha palustris*), Brookweed (*Samolus valerandi*) and Lesser Water-plantain (*Baldellia ranunculoides*) are common.

Reedbeds and species-poor swamp vegetation fringe the lake in places, particularly around the points of inflow and outflow, and on the eastern shore around Tudenham Park. Common Reed (*Phragmites australis*) is abundant here. Water-plantain (*Alisma plantago-aquatica*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Tufted-sedge (*Carex elata*) also occur. The latter two species are of note in that they have restricted distributions in Ireland. The rare Fibrous Tussock-sedge (*Carex appropinquata*) has also been recorded from this site.

Mixed woodland of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) fringes the lakeshore to the north-west. Bluebell (*Hyacinthoides non-scripta*) and Lords-and-ladies (*Arum maculatum*) are among the woodland ground flora. Yellow Archangel (*Lamiastrum galeobdolon*), a rare plant listed in the Red Data Book, has been recorded in the woods along the eastern shores of Lough Ennell. This is the only record for this species outside the south-east of Ireland. The rare Myxomycete fungus, *Licea castanea*, has been recorded from woodland in the site.

Scharff's Char (*Salvelinus scharffi*), a distinct race of char which was once found only in Lough Owel and Lough Ennell, is now extinct. Notable aquatic invertebrates recorded from the lake include *Tinodes maculicornis* (Order Trichoptera), *Metalype fragilis* (Order Trichoptera), *Limnephilus nigriceps* (Order Trichoptera), *Picromerus bidens* (Order Heteroptera), *Monarthia humili* (Order Hemiptera) and *Donacia obscura* (Order Coleoptera).

This site shares an internationally important Greenland White-fronted Goose flock with Loughs Iron, Glen and Owel. The numbers of geese which visit Lough Ennell are lower than for the other lakes: 91 birds (3 year average peak). Nationally important bird populations which have been recorded on Lough Ennell are: Cormorant (average peak 149; absolute maximum 448); Mute Swan (average peak 424); Pochard (average peak 889; maximum 2,600 on 8/11/85); Tufted Duck (average peak 720) and Coot (average peak 639). All of these data were compiled from counts

made over 3 seasons, 1984/85 - 1986/87. A single count of 522 Golden Plover was obtained in that period, constituting a regionally important population.

Lough Ennell is an important amenity area, much used for fishing, boating and camping. Sections of the shoreline are managed for visitor access and amenity.

Lough Ennell is of significance as a midlands marl lake which supports a rich variety of lower plant and invertebrate species. Its lakeshore habitats, which include alkaline fen, a habitat listed on Annex I of the E.U. Habitats Directive, support a diverse flora. These habitats also provide important refuges for wildfowl.