

information



NATURAL HERITAGE TRENDS

FRESH WATERS: PONDS

Ponds may be natural or man-made, permanent or temporary and may vary in size from 1m² to 2 hectares (SEPA 2000).

In Scotland, natural ponds occur in many areas, particularly where water tables are seasonally high (e.g. meander cut-offs, glacial depressions, bog-pools, tree-fall pools and dune slack pools). In the more intensively managed areas, however, land drainage and river engineering have considerably reduced the occurrence of natural ponds. In these areas, ponds which are dug deliberately (e.g. field ponds, forestry fire ponds) or created by other human activities (e.g. quarry pools) can provide semi-natural pond habitats, which are of value to wildlife and recreation.



Ponds are a natural waterbody type which have also been extensively recreated by man.

The most recent Countryside Survey (Haines-Young *et al.*, 2000) estimated the number of ponds in Scotland to be 140,000. However, this is likely to underestimate the number of seasonal ponds, urban ponds, bog pools and ponds in woodlands. The true number may be 30-50% higher. Pond density is estimated to be 1.6 ponds per km², slightly greater than in England and Wales. (Barr *et al.*, 1993, 1994 and Haines-Young *et al.*, 2000).

Ponds can be exceptionally species-rich and are particularly important for aquatic invertebrates, plants and amphibians. In Great Britain as a whole, for example, ponds are believed to support about 10% more invertebrate species, and twice as many Red Data Book invertebrate species, as rivers (Williams *et al.*, 1998). Ponds can be important for aquatic birds and mammals such as water vole, bats and otter.

Trends

- Pond numbers in Scotland declined during the second half of the 20th century but may have stabilised (Swan & Oldham, 1993; Swan *et al.*, 1994). In Scotland, the loss of ponds between the 1950s and 1980s was an estimated 7% compared with 17% for Britain as a whole.
- Between 1950 and 1970, pond losses were estimated to be 57% in Fife and 42% in Lothian Region (Swan and Oldham, 1993). Agricultural practices, mismanagement or infilling were thought to be the main causes. In contrast, the number of ponds in

Strathclyde Region increased by 19% (approximately 1,500 km² of this region was surveyed, accounting for around 1,000 ponds).

- The Countryside Survey (1990-1998) is designed to detect broad-scale changes among extensive habitats. It is not ideally suited to pond estimation and, as in the previous survey (1984-1990), results showed no significant change (Haines-Young *et al.*, (2000).

A survey of lowland ponds in 1996 (Williams *et al.*, 1998) showed that lowland ponds in Britain were badly degraded with less than half the expected number of wetland plant species when compared with 'minimally impaired' ponds (i.e. not exposed to damaging impacts such as agricultural runoff or intensive land management). Little is known about the ecological status of Scotland's upland ponds and pools.

It is likely that ponds deteriorated in Scotland during the 20th century through urban and rural land use intensification and acid deposition. Threats to ponds in Scotland include pollution (e.g. agricultural and urban runoff, acidification) and infilling. Many ponds are created for, or offer opportunities for, fishing but water column turbidity, loss of aquatic plants and predation on invertebrates may be consequences. New Zealand pigmyweed (*Crassula helmsii*), a non-native species, poses a threat to floristic diversity in some ponds in England and Wales and is beginning to spread to Scotland.

Sources

Historical trends, ecology and the management of ponds are summarised in Williams *et al.* (1999). Information on pond numbers is derived from the Countryside Survey 2000 (Haines-Young *et al.*, 2000), Swan & Oldham (1993) and Barr *et al.* (1994). The biological quality of ponds is mainly derived from the Lowland Pond Survey (Williams *et al.*, 1998) and from the databases of the National Pond Survey, maintained by Pond Action.

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