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Angling and wildlife conservation – are they incompatible?

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1 Introduction

The publication of which this paper is a part is based on a series of papers presented at a joint meeting organized by the Scottish Freshwater Group and the British Ecological Society in October 1985. Those invited to contribute to the meeting were asked to confine themselves to the theme of angling and wildlife in fresh water; otherwise, no restrictions were placed on the presentations. As a result, the approaches to the topic have varied: some are based on recent unpublished work, others are reviews of the state of knowledge, yet others represent statements of opinion rather than presentation of facts. These attitudes reflect the, sometimes controversial, public debate in which conservationists produce most of the data and anglers express their strongly held, but often less factual, opinions. All the papers have been edited and commented upon by independent referees (to whom we are very grateful), but the final texts are those of the authors and do not necessarily reflect the views of the editors, the Scottish Freshwater Group or the British Ecological Society.

The evidence presented would seem to indicate that the activities of anglers do harm certain kinds of wildlife in some situations. The conflicts have been reviewed by Edwards and Bell (1986). Much of the current controversy has arisen over the impact of lead fishing weights on swans (*Cygnus olor*) in England (Thomas *et al.* 1987), and there is no doubt that this is a serious problem in some areas. Anglers' litter, in addition to being unsightly and present in surprisingly large amounts at popular fisheries (Edwards & Cryer 1987), also has a serious impact on some birds and mammals. The presence of anglers often disturbs birds (Cooke 1987) and mammals, but, in some cases at least (eg otters (*Lutra lutra*)), this disturbance may not always be as serious as often supposed (Jefferies 1987). The activities of anglers can also alter the habitat in various ways (Murphy & Pearce 1987), sometimes unintentionally (eg by trampling down vegetation), but often intentionally as a management procedure (eg weed cutting and bank clearance). Anglers may also impinge directly on the biological communities involved by poisoning unwanted fish species (Morrison 1987), shooting supposed predatory birds (Mills 1987) or carelessly introducing new species to a water by releasing live bait at the end of a day (Maitland 1987).

Anglers respond to the accusations of harming wildlife in a number of ways. On the positive side, they point out that on a number of waters satisfactory multi-purpose use has been achieved where anglers, bird-watchers and other groups of people appear satisfied

with the situation (Parry 1987). In addition, partly because they are so numerous and therefore a powerful lobby, anglers also help to conserve natural waters by opposing pollution and other aspects of environmental damage (Mackay 1987). They are also an important element in detecting serious pollution incidents at an early stage and warning the authorities accordingly. On the other hand, some anglers deny that there is any evidence of damage. Others place the blame on a small unrepresentative minority of the angling fraternity, and point out also that there are many other types of water users creating similar problems – litter, disturbance, pollution, habitat damage, community modification, and so on.

It is the purpose of this paper to review the real problems in this conflict and to suggest ways in which they could be solved to the mutual satisfaction of both anglers and conservationists.

2 Problems and solutions

The increasing evidence of damage to swans and other wildfowl from lead fishing weights (and attached nylon) lost or disposed of by anglers makes it quite unacceptable that the situation can continue, and indeed considerable effort has gone into finding acceptable alternatives to lead. These alternatives are now available and there seems no reason why the manufacture, sale and use of the original dangerous weights should not stop, preferably voluntarily, but more realistically through appropriate legislation (which is at present receiving approval). How rapidly the environment will recover from such a ban is uncertain for, whilst past accumulations of lead shot are likely to remain for decades, centuries or even millennia, their accessibility for wildlife may be more limited in time.

Litter is a common problem in human society, always involving unsightliness and sometimes danger to wildlife and humans. Much angling litter is commonplace (eg waste paper, food cartons) but some is quite characteristic of the culprit (eg bait cans, hooks and nylon line). Angling is, to some extent, an organized sport, and there seems every reason to suppose that, if the will is there on the part of both angler and site manager, litter could be controlled. In some instances, more thought needs to be given to site design and maintenance, and further efforts devoted to the development of angler tackle, such as line which, once discarded, is recovered easily or degraded naturally.

Although anglers do disturb birds and mammals (and fish!), so do many other waterside users, sometimes

to an even greater extent where large numbers of people are involved. However, that should not be an excuse for anglers to evade their responsibilities. The onus is partly on them and partly on other interested groups to safeguard important wildlife areas or species by restricting their activities to the least vulnerable areas. Whilst there may be aspects of behaviour which distinguish the angler from other groups, perhaps the onus in safeguarding important wildlife areas or species lies with the conservationists, in restricting access and directing the public in general, as well as anglers in particular, to the least vulnerable areas.

Much habitat modification, however, lies in the hands of the managers of fisheries. Where the damage is indiscriminate (eg damage to vegetation by trampling or boats), there may need to be some restrictions. In addition, in considering bank clearance or river engineering of any kind, much more thought could be given to the needs of wildlife (eg the importance of cover to otters on at least one bank). The suitability of an area for different types of fishing also needs to be considered. Boat fishing, for example, may be more acceptable than bank fishing at a particular site because it would cause less disturbance to breeding and feeding birds.

The control of unwanted fish species by poisoning, and bird and mammal predators by shooting, once an entirely acceptable part of fishery management, has caused considerable controversy in recent years. The ecological basis for such practices is now being questioned, and a considerable amount of research needs to be carried out in the field of population dynamics, and particularly in such areas of competition as predator-prey relationships, before the efficiency of these practices can be rigorously assessed. The wholesale destruction of entire fish populations by piscicides simply to replace them with favoured (usually salmonid) species should also be considered more carefully than at present, taking into account all the relevant wildlife factors, including the needs of rare fish species. As well as removing fish from systems, anglers have been one of the main factors in the dispersal of fish species within the British Isles and here, too, much more control is needed if important systems and communities are to be adequately protected.

The idea of fish being regarded not only as the angler's quarry but also as wildlife requiring protection (Maitland 1985) may be taken further, and damage to fish stocks may be caused even when fish are returned to the water after capture. Some angling practices (eg keep-nets and weighing-in procedures) may adversely affect individual populations which are heavily fished. Groundbaiting may also have profound local effects on benthic communities, even though its contribution to the budgets of organic matter or phosphorus at sites is rarely substantial (Edwards & Fouracre 1983).

3 *A code of conduct*

Further legislation is often put forward as the best way of dealing with many of the kinds of problems discussed above. In fact, many of them are already covered by existing legislation (eg litter disposal, use of piscicides, introductions of fish) and, although this legislation could (and should) be improved and strengthened in some areas, another useful (and parallel) approach is through the development of a wider awareness among those involved in the problem. In the case of angling, the development of a code of conduct should be undertaken by the main national angling bodies. Unfortunately, at present, only a minority of anglers are associated with a club or organization, a situation that needs to be changed if any code of conduct is to be widely adopted. Perhaps more anglers would be willing to join organizations if more of the 'best' angling sites were controlled by (and therefore the responsibility of) local angling associations. Some of the most important suggested items considered in such a code could be as follows.

- i. Materials used by anglers should be as harmless to wildlife as possible. In particular, the use of lead should be completely phased out and, where possible, degradable lines, etc, should be developed.
- ii. Anglers should be strongly encouraged to take all litter home with them or dispose of it safely. Those responsible for managing angling sites and organizing competitions should provide litter receptacles, where appropriate, and penalize anglers responsible for littering.
- iii. Anglers should be encouraged to be more aware of the damage certain practices cause to habitats and to avoid such activities. Those responsible for managing sites should consult conservationists about the wildlife value of angling sites, and in particular about the presence of sensitive species. They should also take appropriate steps to minimize damage, for example by restricting access to sensitive areas and protecting eroding banks. Those involved in direct habitat manipulation for angling should seek advice from conservation bodies at the planning stage. More involvement of anglers with conservation issues would also be helpful, eg by having an angling representative associated with the local Naturalists' Trust and a conservation representative on the angling club committee.
- iv. Open discussion of the facts (or lack of them) concerning the role and impact of fish, avian and mammalian predators should be encouraged among anglers. Control measures involving the use of piscicides or the shooting of birds should be used only after careful consideration. Alternative measures should be considered more widely.
- v. All anglers should be made aware of the law relating to the movement of fish into and within Great Britain. Indiscriminate introductions of fish should be discouraged. Species of fish should not be used as live bait.

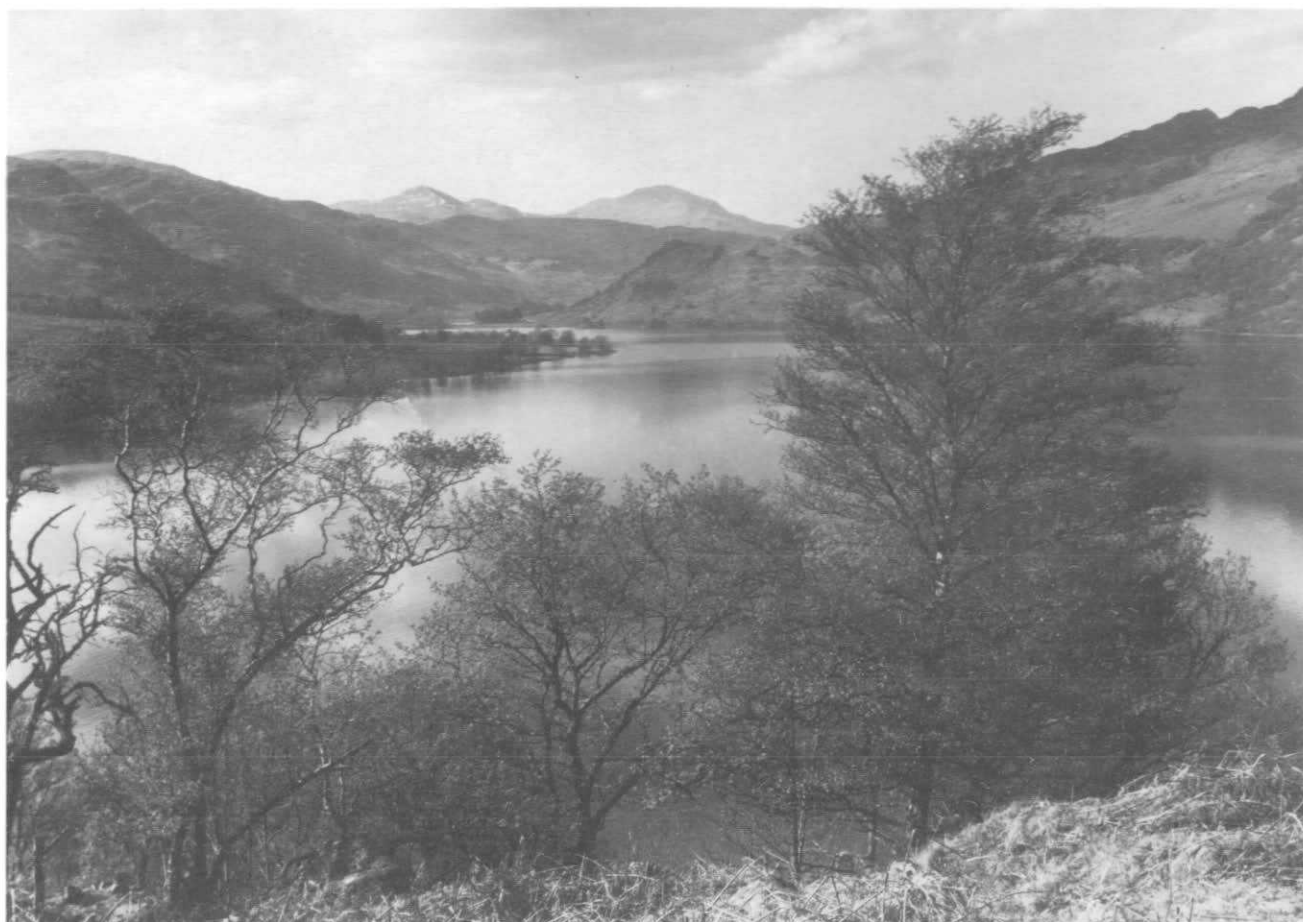


Plate 15. Loch Lomond – an internationally famous and successful multi-purpose water, whose fishery is well controlled by an angling association with over 1000 members. Part of the loch is a National Nature Reserve, and it is also important for water supply, boating, water-skiing, bathing and as an amenity (Photograph P S Maitland)

- vi. There are more than 50 000 lakes in Great Britain (Smith & Lyle 1979) and a similar number of streams and rivers, yet much of this extensive resource is under pressure. Anglers should be encouraged to remember that many other types of water users have requirements, and that priorities vary from place to place. Some waters are best suited for angling only, at others a multi-purpose use (eg angling, water supply, bird-watching) may be feasible (Plate 15), at yet other, perhaps important conservation sites, there should be no angling. There should be more consideration of zoning usage of sites, by space and/or time, to minimize or avoid damage to wildlife. Angling sites should be designed to encourage and channel the activities of anglers. Some important conservation waters have, and should continue to have, no fish, and their intrinsic scientific value should be made clear.
- vii. A continuing problem in developing management plans for fresh waters which involve anglers is the lack of adequate information on fish catches and effort. Where good data are available, they provide a rational basis for the management of the fishery (Bailey-Watts & Maitland 1984) and its integration with other local interests (Plate 16). Angling organizations and those responsible

for the management of fisheries should be encouraged to develop and adopt better methods of collecting and storing information on anglers and their catches in all parts of the country.

- viii. Angling organizations should seek further to cultivate a responsible attitude to the environment among all anglers, attract more anglers into joining an organization, and be more prepared to censor anglers who are irresponsible.

4 Research requirements

It is evident from the papers presented at the meeting, and from the ensuing discussion (which was not recorded), that not all the possible effects of angling on wildlife in fresh waters are fully known. Although many questions remain to be answered, that is no excuse for inaction on the part of the angling community. The effects of lead on birds are incontrovertible and voluntary action or legislation is needed now. The effects of litter, disturbance, habitat modification, piscicides and fish introductions are clear enough, even if more research is desirable. As yet, the merits of predator control are unclear, and this is a most important area for investigation. Thus, scientific research into several aspects of the problem is needed.

- i. There is an important gap in our knowledge of predator-prey relationships. What effect do pre-



Plate 16. Loch Leven – a National Nature Reserve of international importance for its wildfowl, but also a world-renowned and successful trout fishery. Good control of the fishery has meant that catch data are available for more than a century and these data have allowed a rational basis for fishery management (Photograph P S Maitland)

dators have on fish populations? Do they take surplus young fish without reducing the numbers available for angling? Do they, in any case, take unhealthy, perhaps diseased or parasitized, fish, leaving healthier ones for the anglers? Lastly, if predators are causing serious losses, how can they be effectively discouraged from taking fish, instead of being shot? Killing predators is often costly and at best only a short-term measure. Habitat manipulation to make fish less available may be a more cost-effective long-term solution.

ii. More studies of the effects of angling on potentially sensitive and rare species are needed, particularly of the long-term effects on breeding

and feeding behaviour, rather than just on the animal's initial reaction to humans. The behaviour of common species, such as mallard (*Anas platyrhynchos*), may not be indicative of the reactions of rarer wildfowl, for example. Most emphasis has been placed on birds so far, but animals other than birds need to be studied too. The level of disturbance tolerable at a site may depend on the species it is wished to encourage there.

iii. Much is known about the effects of habitat modification on wildlife, but there are gaps in our knowledge. For example, how does aeration affect the growth of aquatic plants? How can

emergent plants be encouraged to grow along banks disturbed by boats?

- iv. Safer alternatives to the present piscicides are needed to remove unwanted fish. We also need to know much more about the effects of competition among fish species. Is it really necessary to remove the unwanted fish already present at a site before introducing other, more favoured, species? What is the effect of introducing a new species to an existing stable community?
- v. More also needs to be known about the effects of angling practices on fish populations themselves, for they too are wildlife. Thus, we need to know more about the impact of capture, keep-nets, weighing-in procedures at competitions, and groundbaiting on fish populations and their environment.
- vi. It is also important to know more about the behaviour and attitudes of anglers so that acceptable and cost-effective solutions to various problems can be found.

5 Conclusions

Despite the obvious conflicts of interest in some areas, angling and wildlife are not necessarily incompatible. Where due consideration can be given to the effects of litter, habitat modification, disturbance and control of predators and competitors of fish, the 2 can often co-exist harmoniously. It may be, however, that at some sites priority is given to the anglers and at others to the wildlife, so that over a large area both can survive, if not actually co-exist.

Before such a situation is possible, however, more consideration of wildlife interests by anglers is needed. In particular, the sport needs to be better organized so that more anglers, by being members of angling clubs, are controlled to some extent, can be made aware of the needs of wildlife more effectively, and can be penalized if they are irresponsible. In England and Wales, control should be easier because all anglers need licences to fish. At present, communication amongst anglers is difficult because many do not belong to clubs or other angling bodies. In this connection, the numerous angling journals that are available could help enormously by carrying articles on various conservation issues from time to time. Angling organizations and site managers need to be more aware of wildlife, especially when designing angling sites and planning the modification of habitats or the control of mammals, birds or fish so that the effects can be minimized. In turn, conservationists can work more closely with anglers so that the latter are not kept out of areas where they would have a negligible effect on the wildlife.

6 Summary

This paper reviews the main conflicts between angling and wildlife conservation in fresh waters. The major problems which have arisen relate to the use of lead fishing weights, litter disposal, disturbance, habitat

alteration, the use of piscicides, shooting of bird and mammal predators, and the introduction and translocation of fish species. On the other hand, anglers are said to be very beneficial in supporting controlled multi-purpose use of waters and acting as a powerful lobby for pollution prevention. A code of conduct for anglers is suggested which would, to a large extent, eliminate the harmful effects of their activities. In addition, a series of research topics is proposed which would give answers to some of the problems that exist in this field at present.

7 Acknowledgements

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