



22nd November 2009

Dear Assembly Committee Members

Additional Written Evidence

Many thanks for the opportunity to submit evidence in person and to also provide this additional written material.

Canoes Disturbing Fish

I would like to make it clear that I feel the question being asked by the committee is not whether canoes can or do scare (I prefer disturb) fish, more that do they disturb them in such a way as to make angling and canoeing incompatible and whether the nature of the fish in Welsh rivers would in some way make them more susceptible to disturbance.

Background Information

There is very little in the way of empirical evidence relating to the effects of non-motorised boats on fish and I have only been able to find two studies specifically mentioning canoes, perhaps an indication of how the issue is regarded internationally.

Potentially the most important study looked at the effect of general recreational activity including swimming and canoeing in the Battenkill River in Vermont USA⁴. The Battenkill is a nationally famous trout fishing river but detailed tracking studies found that recreational activity did not significantly disturb the brown trout.

A study of a North American species of Sunfish⁹ found that passing boats could make them leave their nest sites (only sticklebacks build nests in the UK) for longer than usual, perhaps making the nests more vulnerable to predation. Slowly passing canoes had a greater effect than fast moving boats, an effect presumed to be caused by the length of exposure.

There have been a number of studies relating to motorised craft and fish behaviour in relation to general disturbance

The most quoted paper relates to experiments¹ carried out on Loch Lomond with firstly caged and then radio tagged trout to look at the effect of a boat passing by and overhead of the fish.

These experiments found the greatest effect was when the boat passed directly overhead even when the engine was not running. The radio tagged fish were found to swim quickly away from the boat with an associated period of increased activity after the incident. They concluded that for the boat to have an effect on behaviour it would need to be visible to the fish so in more turbid waters a boat could pass more closely to a fish without having an effect.

Two other studies relate to the use of motor boats in surveying fish populations and whether the boats would themselves affect the results.

The first studying the impact of a sonar boat on shoals of coarse fish⁵ found that small fish in particular were disturbed by the slowly moving motor boat, swimming away from the path of the survey boat. Larger fish did not seem to be perturbed by the passage of the boat. They concluded that fish 10m -15m away from the boat were not affected by the engine noise at all.

The second study³ on trout in a Canadian lake used radio transmitter tags to track the movement of fish in response to boat movements to see whether there was a significant change in behaviour. They found that even when in water less than two metres deep were not affected by the proximity of passage of either the survey boat or other recreational boats.

Studies into fish behaviour mention the ability of fish to learn and that, in line with most other animals they adapt to non-lethal disturbance, known as habituation, often very quickly. Experiments on some fish species have also found that when the disturbance ceases they lose the habituation but regain it much more quickly when the disturbance re-commences.

Evidence of habituation has also been reported on some other important American rivers where, despite very heavy canoeing pressure, anglers still travel long distances to fish the Au Sable River in Michigan. Salmon anglers also seem to report frequently catching fish whilst canoes pass perhaps due to the salmon being stirred into activity.

Elsewhere in the UK anglers⁶ report experiences of carp, once thought of as so wary that they were impossible to catch, becoming tolerant of general human disturbance (walkers and dogs), but leaving an area once angling activity commences.

There is however evidence that particularly naïve fish quickly adapt to the presence of predators whether other fish or anglers. Studies comparing trout behaviour in wild streams to more frequently fished rivers¹² found that whilst the trout in the remote river were easy to catch they quickly hid if scared. whilst in the more frequently fished river they were resistant to scaring but were harder to catch.

Anglers using canoes to access these remote rivers report⁹ that canoes did not seem to startle fish until directly overhead and then only making them move a short distance away from the canoe. Use of the canoes did not appear to affect their ability to catch the trout. This type of behaviour is in line with my own experience of salmon in the UK and Canada where they were seen to move a short distance as we passed but not to take flight. I have also observed similar reactions by coarse fish in clear water. In turbid water using high frequency sonar I have observed that there was no reaction from coarse fish when a kayak passed above the shoal.

Relevance to Sea Trout (Sewin) in Wales

Sea Trout are brown trout that for environmental or genetic reasons have migrated to salt water as juveniles returning as adults to spawn. They are found in most countries with an Atlantic coastline and fish exported to New Zealand by the Victorians also exhibit similar behaviour. In the majority of cases they return to their natal stream, although they do wander far more widely than salmon with fish from other European countries often found in British rivers.

There is no evidence to show they would behave any differently from naïve brown trout either in the UK or elsewhere in the world. Researchers have demonstrated that boats/canoes passing immediately over or close by trout will cause them to swim away from the craft and cause a period of increased activity but the most detailed field study of brown trout in small rivers failed to find evidence of disturbance from recreation. Researchers have also shown that resident trout can become more tolerant of boating activity.

The evidence of disturbance is insufficient to mandate against access for canoes. Their impact could be mitigated for by-

Preventing access to small (less than 5m wide) streams containing trout where there is the highest potential for fish/canoe interaction.

Setting levels on wider (greater than 5m, less than 15m) rivers below which access should be avoided at low flows to maximise the room for canoes to pass with minimal impact.

Limiting canoe access to the hours between agreed hours as is current practice in Belgium⁷ and France

As sewin are principally angled for at dusk or even in the dark placing time limits for access would also ensure the effect on angling success was kept to a minimum.

References

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Designation of Inland Bathing Waters

I am probably not the best person to speak authoritatively of the political ping pong which has ensued since the introduction of the EU Bathing Waters Directive. You may wish to contact Surfers Against Sewage or the Rivers and Lakes Swimming Association who may have more details. Members of your own Welsh Assembly should also be able to provide you with more

information, in particular why Wales still has no designated freshwater bathing areas even after over 20 years of legislation. I have included two downloads from a well respected website, the Environmental Data Services which should give some idea of what has ensued.

Chris Randall FIFM CEnv
On behalf of the Open Canoe Association

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