



Ready for release: an Irish lough trout goes back to fight another day.

Picture (c) Dennis Moss

Please release me...

Tim Jacklin takes a fresh look at catch-and-release practices and contemplates how the trout of Ireland's loughs may benefit from a better-informed approach.

Like religion and politics, whether to release or kill fish is a topic that polarises opinions and raises all sorts of moral and philosophical questions. Not being a philosopher and, some would say, lacking any morals, I am not qualified to comment upon such matters. I do however have some insight into the biological consequences of catch-and-release (or not) and its impact upon something that is of interest to all of us – the quantity and quality of fish there are for us to catch.

It doesn't take a genius to work out that in our populous world, banging fish on the head indiscriminately in a wild trout fishery can soon lead to low stocks and poorer fishing. One response to this is to introduce hatchery-reared fish, which many angling clubs do. Notwithstanding the concerns raised by stocking, which are the subject of ongoing debate, many anglers attach a premium to catching wild trout. If our wild trout stocks are to sustain reasonable angling pressure they need careful management and catch-and-release is an important part of that. In short, if we want to catch wild trout, we have to recycle them.

It was Lee Wulff, back in 1939, who said in his *Handbook of Freshwater Fishing*: "Game

fish are too valuable to be caught only once.” American anglers were at the forefront of what are referred to across the pond as special regulations – size limits, bag limits, method restrictions, catch-and-release – and our US sister organisation Trout Unlimited was formed in 1959 to campaign for better management of wild fish and less reliance on hatcheries. Their slogan ‘Limit your kill, don’t kill your limit’ epitomised the changing attitudes of the time and the growing realisation that wild fish are a precious and, if managed correctly, sustainable natural resource.

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Since that time, the implementation of special regulations has spread widely across the US and knowledge of their effects has grown. In a 1989 article ‘We’re Putting Them Back Alive’, reprised in his 2007 book, *About Trout*, Robert Behnke reviewed the topic. He highlighted that a combination of two factors significantly influence the success of catch-and-release:

- 1) how susceptible a species is to being caught and re-caught, and
- 2) the age structure and longevity of the trout population being fished.

The first point is illustrated by studies that have shown some species of trout are much more susceptible to capture than others. For example, consider how many hours of angling per surface acre of water each year it takes, on average, to catch each trout in a population twice. For brown trout (*Salmo trutta*), this has been shown to be between 200 and 2,000 hours (depending upon angler expertise and difficulty of fishing a given stream). Compare this with cutthroat trout (*Oncorhynchus clarkii*) for which the comparable figure is a meagre 10 to 20 hours. In the vulnerability to capture stakes, the running order is brown trout (least vulnerable), rainbow trout, brook trout and cutthroat trout (most vulnerable).

To put that in context, 500 yards of a 10-yard wide trout stream approximately represents an acre. So, if that stream is in the

western US containing cutthroats, two to four five-hour angling sessions on those 500 yards could “turn over” the population twice. If that stream is elsewhere and contains brown trout, it could take 40 - 400 five-hour sessions to do the same. My own gut instinct is that the figures for brown trout seem a little awry and they are a bit more susceptible to capture than suggested; however, let’s run with it for now as it illustrates the point.

It was studies involving cutthroat trout in Idaho and in the Yellowstone River in the 1970s that first showed that special regulations including catch-and-release could greatly increase anglers’ catch rate and the quality of fish caught. This was achieved by re-captures and greatly increased survival of older, larger fish. As can be seen from the figures above, even very light fishing pressure would cause extremely high mortality to a cutthroat population if anglers killed their fish.

In both these studies the cutthroat trout populations existed in environments where they could reach a relatively old age (around 7 years) and relatively large size (around 18 inches). This is significant, because any reduction in mortality rate is greatly compounded year-on-year. *Figure 1* shows this effect, where the total annual mortality rate (natural + angling induced) is reduced from 75% to 50%. By seven years old, there is more than 30 times the number of fish remaining at the lower mortality rate. No surprise then that in the Yellowstone study the numbers of trophy fish (18 inches +) caught by anglers increased dramatically in the years after the regulations were introduced.

In contrast, studies on brook trout populations (*Salvelinus fontinalis*) in Wisconsin and Michigan streams in the 1950s and 60s showed no effect of catch-and-release on fish abundance. In fact, in a typical example, a mile-long section of stream closed to angling for five years, had marginally fewer trout in it afterwards. This is because



Table 1 Brook trout mortality rates

Age	Mortality rate
Egg to age 0 (end of first growing season)	Very high (95%+)
Age 0 to 1 (over first winter)	50 - 60%
Age 1+ first spawning (in second autumn of life)	80 - 95%
Age 2 - 3	95 - 98%

the mortality rates of brook trout in these environments are naturally very high (Table 1). These fish live fast and die young, so the increase in mortality rate caused by angling is marginal; there is not the compounding effect described above. Hence catch-and-release has little effect on abundance or the ultimate size reached by these trout.

But what, if anything, does this mean for us on this side of the Atlantic where we are dealing solely with brown trout? Well, I believe there are lessons to be learned. Our brown trout is an incredibly diverse species with a great variety of forms and life histories, occupying widely different environments. Some populations may be analogous to the brook trout example, restricted in size by their environment and short-lived, but others may be comparable to the Yellowstone cutthroats, with the capacity to live longer and grow bigger if given the chance.

My friends Vaughan Lewis and Dennis Moss both have considerable experience of fishing the western Irish loughs, and have expressed concern about the deterioration in the quality of angling in recent years on waters such as Corrib and Mask, notably the steep decline in captures of larger trout. Even a cursory inspection of competition results for these waters will confirm things ain't what they used to be. Many explanations have been put forward as to why this might be – water quality, non-native weeds, proliferation of roach, trout changing their diet, predation by pike and/or cormorants, etc. It seems to me (and Dennis and Vaughan) however, that the 'elephant in the room' is in fact increased mortality rates of trout through increased angling pressure.

My own experience of fishing the western loughs is limited and recent, but I have been surprised by the number of boats on the water (comparable to commercial, stocked reservoir fisheries) and by the proportion of fish killed. I saw none returned during a week trip in May and data collected by Inland Fisheries Ireland lend weight to this observation. This got me thinking about the Yellowstone cutthroat studies mentioned above and whether there could be any parallels with the western Irish loughs.

The biology of the brown trout in the limestone loughs is right – they are relatively long-lived (six or more years) and continue to grow throughout their lives, reaching specimen sizes of five pounds and more (we are talking about 'ordinary' trout here, not the genetically distinct, even longer-lived, fish-eating ferox strain). The compounding effect of an increased mortality rate as shown in Figure 1 would certainly apply to a fish

population like this, leaving far fewer larger trout available for capture.

However, according to the American research, browns are far less vulnerable to capture than cutthroats, so theoretically the population should be more robust to exploitation. But this is all relative. The last 20 years have seen greatly increased angling pressure on the western loughs through increasing boat numbers, better information exchange on the 'hot' areas (via mobile phones and internet), more extensive access (via larger outboard engines) and developments in angling technique (such as deep buzzer fishing).

It is well within the realms of possibility that this increased pressure combined with low levels of catch-and-release has increased trout mortality to the point where the specimen trout for which these waters are famous are exceedingly rare. Take a look at Figure 1 again and apply it to a bay on Lough Corrib; what would you rather be fishing over – more than 90 six- and seven-year-old fish (four to six pounders), or five?

Bag and size limits (four fish over 13 inches per angler per day) have been introduced on the western loughs to try and reduce angling exploitation of the trout stocks, but like all fishery regulations they are only as good as the information they are based upon and how rigorously they are enforced. The cost and logistics

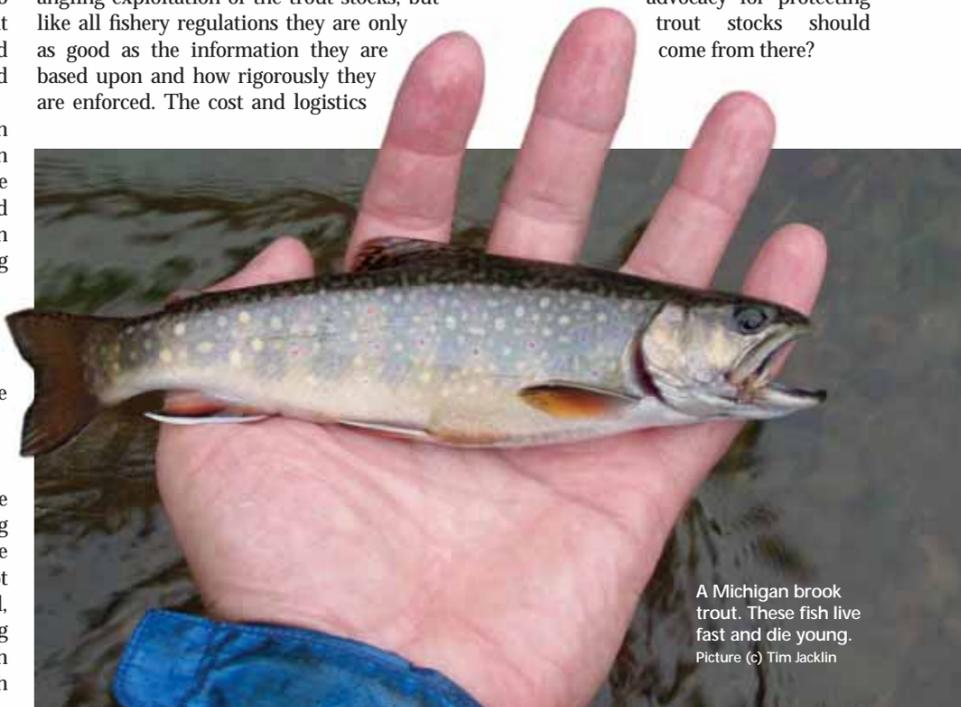
of accurately surveying trout stocks and policing regulations on such large waters with open angling access is challenging, to say the least. And last time a rod licence was suggested, which could help pay for such fishery services, it was vigorously rejected by angling interests.

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In my opinion, regulations are only one part of the solution. The will to preserve trout stocks needs to come from anglers themselves, as it did in the US with Trout Unlimited. If the effects upon trout stocks of angling-induced mortality were better understood and accepted, then something like a voluntary code of practice could work. It worked for threatened salmon

populations on the English chalkstreams where more than 90 per cent of fish caught by angling were being killed until the problem was explained and a voluntary code of practice introduced; within a few years the percentage of fish killed by anglers had dropped to under 10 per cent and there were few objections to the subsequent introduction of catch-and-release regulations by the Environment Agency. There are many jobs and livelihoods that depend upon good quality trout fishing in the Irish loughs – surely the most powerful

advocacy for protecting trout stocks should come from there?



A Michigan brook trout. These fish live fast and die young.
Picture (c) Tim Jacklin