

# Looking after the youngsters

Tim Jacklin

Something struck me rather forcibly recently. Not literally, many of you will be disappointed to hear, but in a way similar to when you are looking for something in a cupboard, swear blind it isn't there, then call upon your wife/partner/significant other who proceeds to locate said item instantly from the most prominent place on the shelf in front of your nose. The subject of such a revelation was, wait for it... juvenile trout habitat. Now before you yawn and turn the page, just bear with me on this.

You could argue, quite reasonably, that somebody whose job it is to advise on improving wild trout stocks should be well-acquainted with the ins and outs of juvenile trout habitat. It's not that I wasn't aware of the existence or importance of it. I'm always banging on about habitat bottlenecks and how these might occur at the spawning, juvenile or adult stages of the trout life-cycle. The trouble is, it's just not that easy to put your finger on what juvenile habitat *is*, never mind whether it is good or bad. Spawning habitat is easy – there's a lovely riffle with nice clean gravels; adult habitat is easy – cor, look at that cracking deep pool on the bend with the sunken tree roots. But juvenile habitat...? Well, it's the bits in-between, isn't it; where it's too shallow to find big fish? Oh, yeah, and the feeder streams. Er, and the margins of the river. Hmmm, not terribly convincing.

There were two things that made me sit up and take more notice. The first was while proof-reading the draft of our excellent publication, the Uplands River Habitat Manual. Tucked away in there at the end of the first chapter is a table which shows the typical percentage survival of trout from one life-stage to another. From egg to emergence from the gravel this can be 80% or more - pretty good, I'm sure you will agree. It varies



Trout (top) and salmon parr. Ninety-five per cent perish in their first year.

considerably depending upon how much fine sediment finds its way into the gravel over the winter and much has been written previously about improving spawning conditions to boost egg survival. Once the trout hit their first birthday, their subsequent survival rate is reckoned to be 30% to 50% annually – not fantastic, but hey, it's a tough life out there in the wild. From when the little trout pop their heads out of the gravel up to that first birthday, the survival rate is about 5%. Whoa there! Run that by me again. Only five per cent, one in twenty, survive their first year of life – 95 per cent perish.

Now I know that fish have always had a rather *laissez-faire* attitude to the survival of their offspring. They take the scatter-gun approach to reproduction: lay loads of eggs and leave them to fend for themselves. Cod are a prime example of this, with millions of tiny eggs cast upon the ocean currents. Trout are a bit more careful, producing eggs the size of small peas, numbering in the hundreds to low thousands depending on the female's size, and burying them out of the way in the gravel. It does seem to me, though, that if you want to increase the numbers of adult trout in your river, that 95% mortality rate in the first year gives an awful lot of scope for improvement.



Spawning habitat – OK, but good for juveniles?

The second thing that caused the light bulb above my head to glow even brighter was the result of some work carried out on the River Manifold in Staffordshire. This is an upland river running off the southern end of the Pennines over a mainly millstone grit geology. A project funded by Severn Trent Water and involving WTT, Trent Rivers Trust and volunteers from Derbyshire County Angling Club (DCAC), saw several lengths of river bank with severely elevated rates of erosion tackled with soft revetments. This involved pinning brushwood along the toe of the banks to stem the erosion, trap silt,



Brushwood revetment on the River Manifold.

encourage vegetation and restore stability. This all went swimmingly well, with the erosion curtailed and DCAC kindly consenting to a length of the river being included in the Trent Rivers Trust's Peak District angling passport scheme. But get this – the following season, there were lots of small trout living along the sections of river where the brushwood was installed. Lots of small trout where previous angling and electric fishing had revealed virtually none. Now, this was interesting. Looking back it seems pretty obvious – the banks were bare and devoid of cover, tens

of metres of dense, woody material at and below water level was introduced and hey presto! Fish started living in it. But to me it was a solid demonstration of a practical improvement to juvenile trout habitat on an upland river. You can read elsewhere in this magazine about the importance of leaving shaggy margins on chalkstreams and resisting the tradition of giving them a close shave and 'putting the river to bed' for winter, but how many of us think about this principle on upland watercourses, or those Midland clay rivers? The issue on the latter rivers isn't usually over-zealous keeping, but the banks are often poorly vegetated because of grazing or erosion. I've seen many a slide at presentations where a shallow, rocky, upland stream is described as 'typical spawning and juvenile habitat' – spawning maybe, but juvenile... really? That brushwood on the River Manifold created a niche for young trout that didn't previously exist. It became a surrogate for healthy, well-vegetated margins and crucially continued to provide that niche over the critical winter period. There is also good evidence that the brushwood boosts invertebrate abundance and diversity, providing more food for the fish (watch this space for results of a study on this subject). Nothing had been done to improve spawning habitat, yet the numbers of small fish present rocketed. Just think about the implications of that for where we should target our habitat improvement efforts. We could spend a great deal of time and money on spawning habitat, but it could be wasted if we don't do something for the next life-stage. There are also some salutary lessons for the advocates of hatcheries and releasing large numbers of fry or parr – if there is nowhere for them to live, it's a waste of time. Juvenile habitat is the Cinderella habitat - so often overlooked.

So what can you do to chip away at that 95% death rate and help more fish to reach a respectable size? The change in size of trout

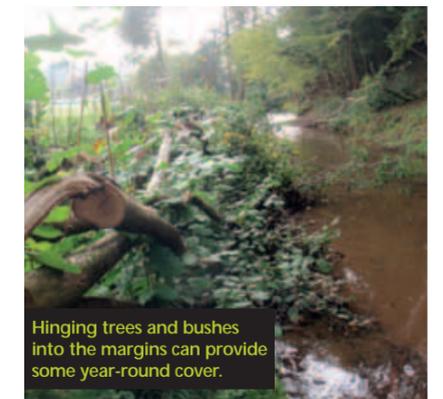
during its first year is relatively large, from the 1-inch fry that emerges from the redd in spring to the four to six-inch parr at the end of summer. It is not surprising that the habitat needs will probably change during this time and this probably accounts for some of the difficulty in precisely defining juvenile habitat.

It is well-known that right from the off the small trout are very territorial and literally can't stand the sight of each other. Visual isolation of the individual fish boosts the numbers that can co-exist in a given space; cobbles and boulders are great for achieving this. Think of those rocky salmon rivers and the number of parr that occupy those sorts of areas, each with their own little feeding station and convenient bolt-hole. Positioning similar rocks close to known spawning areas may be possible if your river lacks them, but it is probably easier and more effective to use the brushwood described above – either as lengths of bank revetment or simply bundles pegged in the margins.

Take a look at your river in the depths of winter, when the vegetation has died back to its maximum extent, and then imagine you are a six-inch trout with an extreme paranoia of being eaten by a goosander or your larger brethren. That should give you a good insight into the availability of juvenile habitat!



Good parr habitat provided by cobbles on the Avonmore River, Co. Wicklow, Ireland.



Hanging trees and bushes into the margins can provide some year-round cover.