

Conservation Angling for Salmon on the Tyne (CAST)

Why did we do this?

This is the second of two documents produced by the CAST Working Group in 2019. In response to the national consultation, Managing Salmon Fisheries in England and on the Border Esk, in 2017, and the Salmon and Sea Trout Protection Byelaws introduced in 2019, a Working Group assembled in order to update the existing Tyne “Voluntary Code of Conduct”, which dates from 1999. The CAST documents supersede that voluntary code.

CAST is conceived as an evidence-based guideline, as the authority of our group resides solely in the process by which our conclusions were reached and the evidence on which these conclusions were based. We think that CAST summarizes the evidence that is available, supplemented by opinion from a broad spectrum of angling constituencies. We believe that by the adoption of our guideline, anglers demonstrate they are applying the highest standards based on current evidence. We intend to review our document on a regular basis.

On many rivers, salmon stocks are in serious decline. Tyne stocks however remain relatively stable, meaning the Tyne is designated as a river Probably not at Risk by the Environment Agency. It is our responsibility to safeguard and enhance this status, by helping minimize the impact angling may have. This guideline aims to improve this contribution by informing anglers of the impact they may have on salmon stocks. In this document, we emphasize: -

- the survival of salmon after catch and release
- measures anglers can take to maximize this survival.

Our recommendations take into account the impact on survival while also considering the impact on the angler.

We also wish to promote angling as an accessible activity for all, for its social and economic benefits. We wish to enhance the Tyne as a successful salmon angling river.

The recommendations we make almost certainly apply equally to sea trout, although the sea trout is not our main focus.

Although we did not include recommendations about biosecurity in our summary, brief mention is made in this document.

How did we do this?

A working group (for membership see end of document) came together for three meetings in spring 2019 to formulate a guideline for Conservation Angling for Salmon on the Tyne. The group felt that an evidence-based guideline was the optimal output for which we should aim. We felt it was important the guideline was balanced, taking into account the impact of our recommendations on the angler in relation to the benefit to the salmon population.

Evidence was gathered by PA and JB. The main source of the evidence was recent reviews of catch and release angling, but this was supplemented by recourse to original literature where uncertainties arose. In addition, local data from the River Tyne were kindly supplied

by staff at the Environment Agency (to whom we are very grateful). Data on river temperatures and catch rates were made available to us. We interpreted the evidence from the scientific literature in the context of the experience of the members of the working group.

Goals of CAST

The goals of CAST are to:-

- Enhance salmon numbers by increasing catch and release (C&R) and by good C&R practice.
- Promote angling for its value to society.
- Comply with and improve upon the Environment Agency's C&R targets for the river.

The position of the Environment Agency for the Tyne (and Wear), classified as "Probably Not at Risk" is summarized as follows: -

"For rivers assessed as "Probably not at Risk" we have set no formal Catch and Release target – although we would support and encourage high levels of Catch and Release on these rivers, and aspire to levels similar to those required of poorer performing rivers."

Although not specifically stated, this implies an increasing level of C&R is needed to achieve greater than the current levels of around 80%.

The Guideline

Legal Obligations

Anglers should be aware of all the legal obligations bearing on their sport. In particular they are reminded of the need to release all salmon caught before June 16. We also encourage anglers to complete catch returns in a timely and honest way in order for current stock levels to be understood as fully as possible.

The Impact of Catch and Release

After recognizing their legal obligations, anglers should:

Recognize that C&R is successful.

Most salmon survive catch and release and go on to breed successfully in the absence of deep hooking or heavy bleeding (strong evidence). This evidence is particularly clear for fish caught by fly fishing or spinning with most lures (strong evidence).

Acknowledge that the optimal policy for catch and release is to release all salmon that will survive. Before June 16, all salmon must be returned by law.

If all anglers who catch salmon on the Tyne remove just one fish each season one in five of the rod catch is removed, one in twenty of the total run.

Salmon may be caught more than once (strong evidence), so a released salmon contributes to the pool of fish that may be caught. Salmon parent varying numbers of offspring (strong evidence). This means that the effect of killing one particular fish is hard to predict, although broad generalizations may be made.

If you must take a salmon.

We know that the C&R rate would be 80% if all anglers who caught any salmon took just one fish in the season (strong evidence). This conclusion is based on catch data from the River Tyne over a 10-year period. This rate is the same as the current rate of C&R (2018). The EA target for C&R rates in “Probably not at Risk” rivers is for stable or improving C&R rates, and to aspire to levels similar to those required of poorer performing Probably at Risk rivers (i.e. 90%). The average Tyne run of salmon is approximately 12000 over a representative five-year period (2012-2016) (strong evidence). Salmon catches over the same period averaged approximately 3000 (strong evidence). Applying the current 80% C&R rate means that on average 600 fish are killed each year, (20% of 3000, one in five of the fish caught). This means that one in 20 of the total run are killed.

If anglers must take a salmon, which fish would it be least damaging to remove from the breeding population?

Deeply hooked or heavily bleeding fish are more likely to die than fish hooked in the mouth (strong evidence). It may be humane to kill such damaged fish that will be less likely to survive, and that would make good eating. Some of these damaged fish may however survive.

Small male salmon in general parent fewer offspring than larger fish (weak evidence), although the contribution of individual fish is unpredictable. It is likely that killing small male salmon will damage the next generation rather less than killing other fish.

Large male salmon individually tend to contribute more to the breeding population than small salmon (weak evidence) and tend to parent larger salmon (strong evidence).

A hen salmon lays 7-800 eggs per pound weight. Some hen fish parent many more than their fair share of the next generation (strong evidence).

Coloured fish, close to spawning, make poor eating (opinion, generally recognized), so should never be killed. Taking gravid fish is illegal.

Angling Practice

Anglers should

Avoid angling from late morning until late evening if the weather is hot and the water low.

Salmon caught and released are more likely to die when the water temperature is above 18-20° (64.4-68.0°F) (strong evidence). The precise threshold is uncertain (strong evidence). Tyne water temperatures are above this level from late morning to late evening during hot weather when the river is low (strong evidence).

Temperatures are higher in the South Tyne than the North or Main Tynes. Low catches are expected in these situations (strong anecdotal evidence). If you can measure water temperature, this recommendation can be understood as a need to avoid angling if the water temperature is above around 20°C, 68°F.

Choose fly fishing in preference to spinning and particularly to bait fishing.

Fly fishing results in low mortality, lower than spinning overall (strong evidence). The breeding potential of fly-caught salmon is much the same as fish that have not been caught (strong evidence). Some studies show that even when a large proportion of the fish studied are caught on spinning baits (except flying Cs), survival to reproduce is high (strong evidence). Bait fishing has the highest mortality (strong evidence). Spinning and bait fishing are more accessible than fly fishing, and the benefits of fly fishing only on fish survival have to be balanced against the effect on the angler who is less physically able or has not learned to fly fish (opinion).

Use strong enough tackle to subdue the fish quickly, and play the fish hard to do so.

Fish played to exhaustion have more physiological disturbance and have a lower survival rate (strong evidence).

When fly fishing, anglers should

Use standard size 6 hooks (or equivalent) or smaller, and might choose to use single, double or treble hooks, although the last may cause more damage to the mouth.

Different hook sizes in the range usually used for fly fishing do not clearly produce different mortality (strong evidence). Hooks with larger gape have the potential to produce more damage around the mouth (opinion).

Single hooks do not clearly cause less mortality than multiple point hooks (strong evidence).

Consider using barbless hooks for more rapid unhooking and reduced mouth damage.

Barbless hooks allow more rapid unhooking, and produce less damage to the mouth (strong evidence). However, their use produces a small uncertain increase in survival, and they increase the rate of loss of hooked fish (strong evidence).

When spinning, anglers should

Modify lures with multiple hooks, reducing the number of hooks to one.

Lures with multiple hooks cause more damage to fish than lures with one hook (strong opinion).

Use standard size 6 hooks or smaller and might choose to use single or treble hooks, although the latter may cause more damage to the mouth.

Different hook sizes in the range used for spinning do not clearly produce different mortality, except when using Flying Cs (see below) (strong evidence and opinion).

Hooks with larger gape have the potential to produce more damage around the mouth (opinion).

Single hooks reduce mortality slightly over multiple point hooks (strong evidence).

Consider using barbless hooks for more rapid unhooking and reduced mouth damage.

Barbless hooks allow more rapid unhooking, and produce less damage to the mouth (strong evidence). However, their use produces a small uncertain increase in survival, and they increase the rate of loss of hooked fish (strong evidence).

Avoid the use of larger flying Cs, and consider the use of barbless trebles size 6 or less, or barbless singles with these lures.

Standard Flying C lures cause high mortality, due to deep hooking (strong evidence with support from opinion). Flying Cs with size 4 treble hooks cause high mortality (strong evidence).

When bait fishing, anglers should

Use barbless circle hooks and fish the bait actively.

Circle hooks produce less mortality than standard hooks when bait fishing (strong evidence). Deep hooking (with its high mortality) is more common when bait is fished passively. Deep hooking is less likely if the bait is kept moving (strong evidence).

When landing and handling fish, anglers should

Use a landing net.

Fish are vulnerable to mucus loss, scale loss and fin splitting during landing, especially with knotted or soft nylon nets (strong evidence), or if beached (opinion). Knotted nets are illegal. Nets with rubberized mesh produce less damage than nylon nets, and less mucus loss than wet bare hands (strong evidence). Mesh size has a mixed effect (strong evidence): large mesh causes more fin splitting; small mesh causes more mucus loss. We recognize that in some situations, nets may be difficult to use and their use even dangerous for the angler in fast water (opinion).

Handle the fish as little as possible and only with wet hands.

Even bare wet hands cause mucus loss (strong evidence), so this should be minimized.

Keep fish in the water as much as possible, keeping the fish in or briefly just above the water for photography.

Short periods of air exposure (less than 10 seconds) are not harmful (mixed evidence and opinion). Air exposure up to 30 seconds reduces breeding success (weak evidence). Clearly very long air exposure times are harmful to fish. Brief periods of air exposure (within the range typically encountered) have little impact on survival (strong evidence).

Carry pliers or forceps to aid unhooking and be able to cut the line if the hook needs to be left in the fish.

Deeply hooked fish have a high mortality although may survive even if the hook or fly is cut off in the fish (strong evidence).

Hold fish upright in the water with gentle support while it recovers but do not move the fish in the water to increase flow over the gills.

No resuscitation techniques have been shown to be effective. Increasing flow across the gills may be harmful (weak evidence).

Wait for the fish to maintain its normal swimming posture before release.

If the fish is able to hold itself upright, it is ready to be released (strong evidence). This may take as long as 30 minutes (opinion).

Biosecurity

Anglers should

Follow the advice in the “Check, Clean, Dry” document, particularly when returning from abroad

<http://www.nonnativespecies.org//checkcleandry/index.cfm>.

The River Tyne is at risk of damage from invasive species such as Gyrodactylus, Chinese mitten crab and some damage has already occurred (strong evidence and opinion). Anglers offer a particular threat when returning from countries where Gyrodactylus is present (opinion).

The Working Group

Chair

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Reading List

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