

## The coarse fishery close season in English rivers

May 2018

### Summary of coarse fish close season research proposals (review of 2004 APEM proposals and more recent suggestions)

The study group examined a range of proposed field-based and other projects that could improve our understanding of the risks around the close season, including those previously outlined by in a 2004 study carried out on behalf of the Environment Agency by environmental consultants, APEM.

The group concluded that there were no viable options.

To give any degree of scientific (i.e. statistical) certainty, the requisite studies are likely to be prohibitively expensive; extend over several/many years; and/or may only shed light on the risks to one or several species or river types. This view remains unchanged from the APEM study. While there may be scientific merit in pursuing these and doing so would give a valuable opportunity to engage anglers and fishery owners on the issue, the group concluded such studies would only ever provide an incomplete picture.

More detailed consideration of the potential options is given below.

<b>Review of APEM (2004) proposals</b>					
<b>Project title</b>	<b>Approach</b>	<b>Indicative cost</b>	<b>Timescale</b>	<b>Pros</b>	<b>Cons</b>
<b>Investigation of stress response in cyprinid fish during and outside breeding period</b>	Laboratory –and field-based based experimental studies – measurement of blood chemistry in relation to handling stress	£50-100k (2004 prices)	Minimum 1 year, preferably repeated.	Could provide evidence on differential stress response to capture and handling at different times of year	Could only be for limited number of species. No direct relationship between stress response and mortality or reproductive success. Questionable relationship with wild environments. Would be very expensive at current prices. Some indirect evidence in existing literature.
<b>Comparison of spawning behaviour and success of stressed and non-stressed fish.</b>	Lab or pond-based observations of fish subjected to capture etc. at spawning time	£50k at 2004 prices	Minimum 6 months, preferably repeated	A direct assessment of impacts of handling etc. on spawning behaviour.	Difficulty in facilitating natural spawning behaviour in a manipulated situation and after handling. Individual spawning behaviour highly variable anyway. Probably only some eurytopic species e.g. roach, perch, would be amenable. Limited extrapolation to open river systems. No direct assessment of spawning stress
<b>Comparison of rivers with and without closed seasons</b>	Comparison of fishery performance in similar English and Irish rivers. Desk study and possible field visit	£35k at 2004 prices	Desk study of fish population data from English and Irish rivers – 12 months depending	Would attempt to compare fish population size and structure in rivers which differed only in closed season arrangement	Irish rivers mostly fundamentally different from English ones irrespective of angling. Angling pressure in Irish systems relatively light and localised. High variability in time over both datasets.

			on availability of Irish data.		Availability of Irish data may be an issue.
<b>Fish distribution studies during the spawning season</b>	-to determine the extent of spawning aggregations and to establish the feasibility of establishing "sanctuaries". Visual observations, tagging and tracking work	£40k at 2004 prices	Three years minimum	Would identify specific areas and times where various species spawned, so that special protection could be developed in the absence of a blanket closed season	Does not answer the fundamental question of whether closed season angling has adverse effects on fish or fisheries
<b>Expert opinion survey</b>	Delphi technique or similar with panel of experts from various sectors of the fisheries and angling community	£10 k at 2004 prices (if delivered by consultancy )	6 months	A qualitative assessment of knowledge and opinion on risks and benefits of removal of closed season	It isn't research. It would be unlikely to bring in new, firm evidence for or against the closed season, would only provide an accompaniment to other evidence.
<b>Repetition of comparative studies on canals where closed season removed in 2000</b>	Examination of angling results from canals where closed season lifted	£10k at 2004 prices(if delivered by consultancy )	6 – 12 months	Could reveal whether lifting of the closed season has had adverse impacts on fish community or population structure. Relatively cheap if data is available	Doubtful whether there are sufficient good datasets to enable good comparisons to be made. Large changes in canal fisheries anyway largely due to improving water quality, therefore comparisons difficult. Dynamics of canal fish populations likely to differ

					from rivers so limited extrapolation possible
<b>Effects of angling for salmonids on coarse fish populations during the coarse fish close season on mixed population rivers.</b>	Questionnaire to assess the level of coarse fish capture by salmonid anglers during coarse fish closed season	£10k at 2004 prices(if delivered by consultancy )	Three years minimum	Could identify whether coarse fish capture during closed season by salmonid anglers is significant	Results would bear little relevance to opening rivers for 12 month a year bait fishing. Coarse fish are caught by trout and salmon anglers using fly and spinner but in relatively small numbers, angling pressure on mixed rivers by salmon and trout anglers is negligible compared to coarse angling. Only for grayling in trout waters would any sensible comparison be relevant or possible.

<b>Coarse fish closed season study group 2016 proposals</b>					
<b>Project title</b>	<b>Approach</b>	<b>Indicative cost</b>	<b>Timescale</b>	<b>Pros</b>	<b>Cons</b>
<b>Survival experiments to assess impacts of fish capture and handling during closed season on rivers</b>	Monitoring of survival of individual marked fish caught at different times of year in selected river reaches where all-year round match angling permitted by special dispensation.	£50k per annum	Minimum three years	Could identify whether fish caught and handled at certain times of year had consistently higher or lower survival rates than those caught at other times of year. Good opportunity for angler-engagement.	Very few river reaches would fulfil site criteria. Simulations suggest that unless differences were very large, unlikely to detect a difference given high background variation in natural survival rates, catchability, river conditions etc. Would be vulnerable to chance factors e.g. extreme events. Would be relevant to relatively few species. Could only be done on one river at once, multiple study sites (desirable) would increase costs further.
<b>Parentage experiments</b>	Experimental approach in semi-natural ponds or flumes: individual fish genotyped, some individuals caught, allowed to spawn naturally, progeny harvested and genotyped	£100k p.a.	Minimum 1 year preferably 3	Could provide evidence on differential breeding success of fish that have been caught and handled during the closed season period and those that were not – integrating impacts on actual fish survival and subsequent breeding success	Expensive; vulnerable to chance factors such as relatively few individual fish caught, mass mortality of eggs or fry prior to harvest, other factors that determine individuals' breeding fitness. Would only be possible with certain species, questionable extrapolation to wild waters.

<p><b>In-river behavioural observation of fish caught during closed season</b></p>	<p>Tagging and tracking of large chub, barbel, pike and subsequent capture on rod and line.</p>	<p>£30 - 60k if conducted through 3 year PhD,</p>	<p>Three years</p>	<p>Could indicate whether capture by angling impacts on movement to known spawning areas and participation in spawning</p>	<p>Would only be practicable for relatively small numbers of fish, individual behaviour is highly variable anyway. Would not provide information as to actual spawning success. Could only be done on certain species and sizes in small rivers. Some indirect information on this already available via other studies – barbel caught and tagged early in the closed season observed to move along with others and take part in spawning.</p>
<p><b>RAMP experiments</b></p>	<p>In-situ monitoring of reflex responses as proxies for physiological stress and as predictors for post-release mortality and behavioural impairment ('reflex action mortality predictors', hereafter 'RAMP').</p>	<p>£24k matched funding for 3 –year PhD</p>	<p>Three years</p>	<p>Would provide some assessment of whether there were indications of impaired recovery of individual fish caught and handled at different times of year, these can be used to model subsequent survival. Relatively cheap, good opportunity for collaboration and angler-engagement</p>	<p>Would only detect short-term impacts of handling, absence of short term effects may not preclude longer term reduced viability. Methods lend themselves to larger individuals and species. Relatively long timescale.</p>