Central Fisheries Board

Proposal for a Salmon Survey in Waterford Estuary

May 2010

The Central and Regional Fisheries Boards

Draft Proposal for a Salmon Survey in the Waterford Estuary in 2010

Southern Regional Fisheries Board & Central Fisheries Board

June 2010

INTRODUCTION

Since 2007, salmon are being managed on an individual river basis relative to meeting river specific conservation limits. Rivers with a salmon run predicted to be above the CL in a given year are allocated a surplus above CL, which may be shared by angling and commercial exploitation. Rivers not meeting CL but meeting more than 65% of CL are closed to any harvest fishery but are generally open for catch and release angling (on management advice) to provide an index of salmon stock based on rod catch. Rivers not meeting 65% of CL are closed to angling and commercial exploitation.

In recent years, the percentage of the conservation limit achieved by rivers in the Waterford district has varied, table 1. The river Barrow (including the Pollmounty river) has remained consistently below CL while the Nore has exceeded CL in the last two years. The Suir (including the Clodiagh, Lingaun and Waterford Blackwater rivers) has increased the proportion of CL being met annually since 2007.

% CL Achieved

	2010	2009	2008	2007
	%	%	%	%
Barrow	39	40	42	27
Nore	119	104	81	84
Suir	96	85	79	74

For the 2010 season, the Barrow remains closed to salmon exploitation, the Suir is open for catch and release angling and the Nore has a surplus of 2,277 salmon.

Catchment wide electro-fishing has been used as a stock assessment tool in recent years to provide information on rivers where no other stock assessment method (counter, rod angling, redd count) is available. Catchment wide electro-fishing on the Barrow in 2007 and 2009 has provided a catchment average over both years combined of 14 salmon fry, which is below the threshold of an average of 17 salmon fry advised by the SSC to allow another index of salmon stock abundance to take place, i.e. catch and release angling.

Proposal for a Survey in Waterford Estuary in 2010

The Standing Scientific Committee has provided advice on the rivers entering Waterford estuary for 2010 (SSC Report 2010) which is based on the best information then available. In the context of the Rivers in Waterford estuary, The Standing Scientific Committee advises that:

- Harvest of salmon should only be allowed on stocks from rivers where there is a surplus above the Conservation Limit identified and that no more than this surplus should be harvested.
- Harvest fisheries should not take place on stocks from rivers without an identifiable surplus above the Conservation Limit.
- No harvest fisheries should take place in those rivers where the average rod catch has been less than 10 salmon annually and which are not meeting Conservation Limits, until such time as additional information becomes available to assess the status of these stocks relative to their Conservation Limits.

Due to the different status of individual stocks within the stock complex, mixed stock fisheries present particular threats to stock status (ICES 2010). The objective of the catch advice from the SSC is to ensure that harvest fisheries only take place on river stocks meeting and exceeding Conservation Limits. The Conservation Limit for Atlantic salmon is defined by NASCO as the spawning stock level that produces long term average maximum sustainable yield. The means to achieve this objective is to only allow harvest fisheries which can specifically target single stocks which are meeting their Conservation Limits. The SSC strongly advise that all fisheries should operate only on the target stock as close to the river mouth or within the river to achieve this.

While the advice from the Standing Scientific Committee remains unchanged in this regard, there is a management proposal to conduct a survey to establishing the genetic makeup of the estuary stock while minimising any risk to salmon stocks. This document outlines the survey proposal which will be supported by detailed management and scientific protocols.

A proposal has been made by the Waterford Estuary Fisherman's Association to the Minister of State at the Department of Communications, Energy & Natural Resources, Mr Lenihan, to conduct a survey fishery in Waterford estuary in 2010. The Minister has indicated his willingness to examine the proposal. The CEO of the Southern Regional Fisheries Board has liaised with the Department regarding the implementation of such a study in the Waterford estuary in 2010. The proposal has two primary objectives;

1. To determine genetically the current extent of Irish river of origin salmon captured in Waterford estuary and to also determine the presence, if any, of salmon from other countries in the estuary.

2. To capture salmon over an extended period in summer and autumn to determine river of origin by genetic analysis within the Barrow / Nore / Suir river complex to provide a qualitative assessment of salmon stock abundance on the river Barrow where no stock estimate is currently available. A stock quantitative abundance estimate is available for the Nore and Suir rivers based on rod catch.

Criteria for a Survey

If a survey fishery is to be conducted in the Waterford estuary in 2010, there is a priority to have little or no mortality of salmon as both the Suir and Barrow rivers are currently below CL and any sampling would require to be non-destructive. This prerequisite largely determines the capture method for any survey. Based on past experience, the use of traditional drift nets are likely to cause injury and/or mortality of at least a proportion of salmon captured and should not be the proposed as the primary survey method. Comment is made below on the merits of using a range of possible survey methods to capture salmon to obtain a genetic sample and allow salmon to be released unharmed.

Possible Fish Capture Methods;

1. Snap Nets / Bag Nets

Snap nets have been traditionally used on the Barrow/Nore Suir estuaries to capture salmon commercially. They are a traditional inshore nets similar to a seine net operated between two boats (cots) with the head rope being manually dropped to entrap fish entering the net. When a salmon is felt hitting the net, the lead (bottom) rope is "snapped" upwards to enclose the fish inside the net. The two fishermen draw the net towards each other, bringing the cots together. The advantage of using snap nets is the ability to release salmon alive and unharmed after taking a genetic tail clip sample.

Snap nets have been used in the Barrow, Nore and Suir estuaries (fig 1) but have not being operated in the larger Waterford estuary south of Cheekpoint and their success in the larger estuary is unproven. Another related fish capture method is bag net fishing, fishing a larger net between to punts rather than smaller cots. It may be

possible to use snap nets at locations 1 & 2 (see below) to capture and release salmon after taking a genetic sample.

2. Use of a Head Weir Salmon Trap

A number of old salmon head weirs were fished below Cheekpoint to capture salmon in the past but have not been operated in recent decades. Investigations have indicated that very considerable repair and renovation of these head weirs would be required to have then operate effectively and this fish capture option is therefore not available.

3. Use of Seine Nets

Seine nets have been used by the Central Fisheries Board in conjunction with the Southern Board in recent years to sample shad and other estuarine fish in the Waterford estuary. Some salmon have been captured alive and in good condition during these surveys and seine nets may provide a useful method of salmon capture.

4. Draft Net

There is no history of draft net fishing for salmon in the Waterford estuary but if a suitable location could be found, draft netting would provides another method of fish capture. However, like all methods of catch and release, some mortalities are likely to ensue.

5. Trammel Nets

The estuarine fishermen posed the possibility of using trammel nets to capture salmon in a survey. A trammel net consists of three layers of net. A slack, small mesh, inner panel of netting is sandwiched between two outer layers of netting, which are taught and have a larger mesh size. The inner panel may be made of twisted or monofilament nylon, whilst the outer panels are generally made of twisted nylon filament. In a trammel net, fish may become wedged, held by the mesh around the body, caught by the gills; and tangled, held by teeth, without necessarily penetrating the mesh. Trammel nets also entangle fish in bags or pockets of netting and while some salmon may be captured alive, this capture method is likely to result in significant mortality of fish.

6. Survey Nets

Multi-mesh survey nets comprising six different mesh sizes (2, 3, 3.5, 4, 5, 5.5 inch) are currently being used to capture sea trout in estuaries for research purposes and may provide another method to sample and release adult salmon. Traditional drift nets use a mesh size of four and seven eight stretched mesh. It is likely that salmon will be captured by the teeth in the smaller mesh sizes (2 & 3 inch) of the survey nets and can be released unharmed after taking a genetic sample. Salmon may also be meshed at the dorsal fin in the larger mesh sizes allowing fish to be sampled and released. The proportion of mortalities being encountered could be monitored and the mesh size of the nets being fished could be altered to reduce mortalities.

7. Use of salmon seized from illegal fishing

During the course of routine fishery protection in the Waterford estuary, salmon are taken from illegal nets annually. Any salmon seized downstream of the Barrow/Nore/Suir confluence can be used to provide a genetic sample for analysis. Such fish will also be used to provide information on sea age, sex ratio, fecundity, etc.

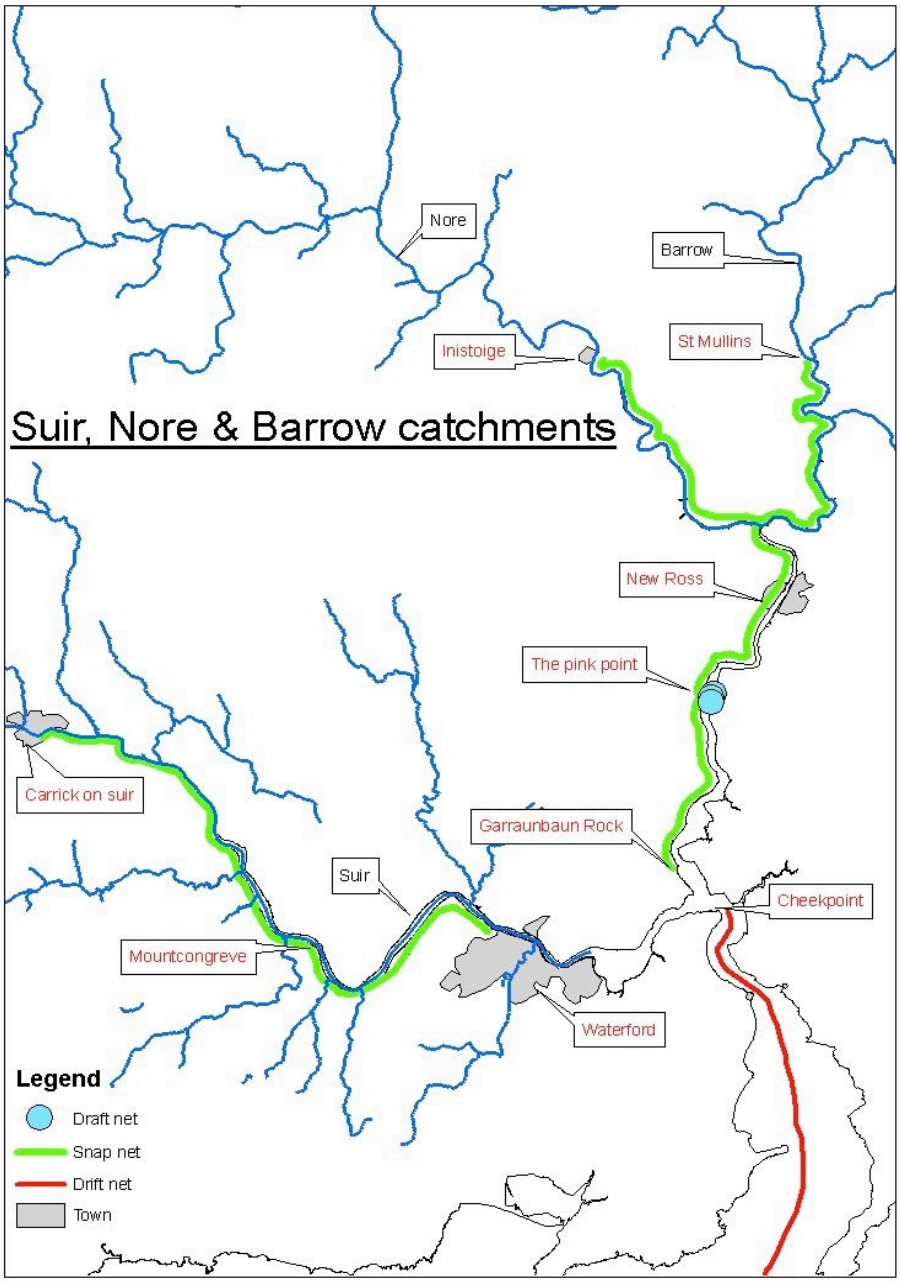


Figure 1. Waterford Estuary

Location & Timing of Sampling
The objective of the survey is to determine the proportion of the salmon run temporarally and spatially destined for the Barrow, Nore and Suir over the main period of the salmon run. Recent genetic analysis of salmon from the Waterford estuary indicates that it is possible to distinguish genetically salmon from each river with a high degree of certainty.

Sampling locations will be required in Waterford estuary and at locations further inside the estuary. Five locations are proposed to determine the mixed stock nature of the salmon run at varying distances along the estuary. The exact locations of sampling will be determined by Southern Board staff in consultation with local fishermen. A scientific input will also be necessary on the location of sampling to ensure that the overall survey objectives can be met. Sampling over four discrete periods from June to early October period would allow the proportions of salmon from each river to be determined on a seasonal basis. Fishing during day light hours would be important from a health and safety perspective.

Number of Salmon Required
From the estimate of salmon recruits assessed to return in 2010, based on data over the last five years, the proportion of the total salmon run predicted to enter the Barrow, Nore and Suir is 13%, 40% and 46% respectively based on all three rivers combined. Sampling at five locations over five periods, June/ early July, late July / early August, late August / early September, late September / early October and late October / early November with a target of 40 salmon per site on each of the five occasions giving an overall target sample of 1000 salmon.

The survey objective is to genetically sample and release all salmon captured. However, a small number of salmon mortalities may occur and any such fish will be used for biological analysis (sea age, sex ratio, fecundity) and feed into the models for Waterford estuary rivers. It is likely that sampling over one season will not be sufficient to determine with any degree of confidence the genetic make up of salmon stocks entering Waterford estuary and the survey may be required to be repeated in 2011.

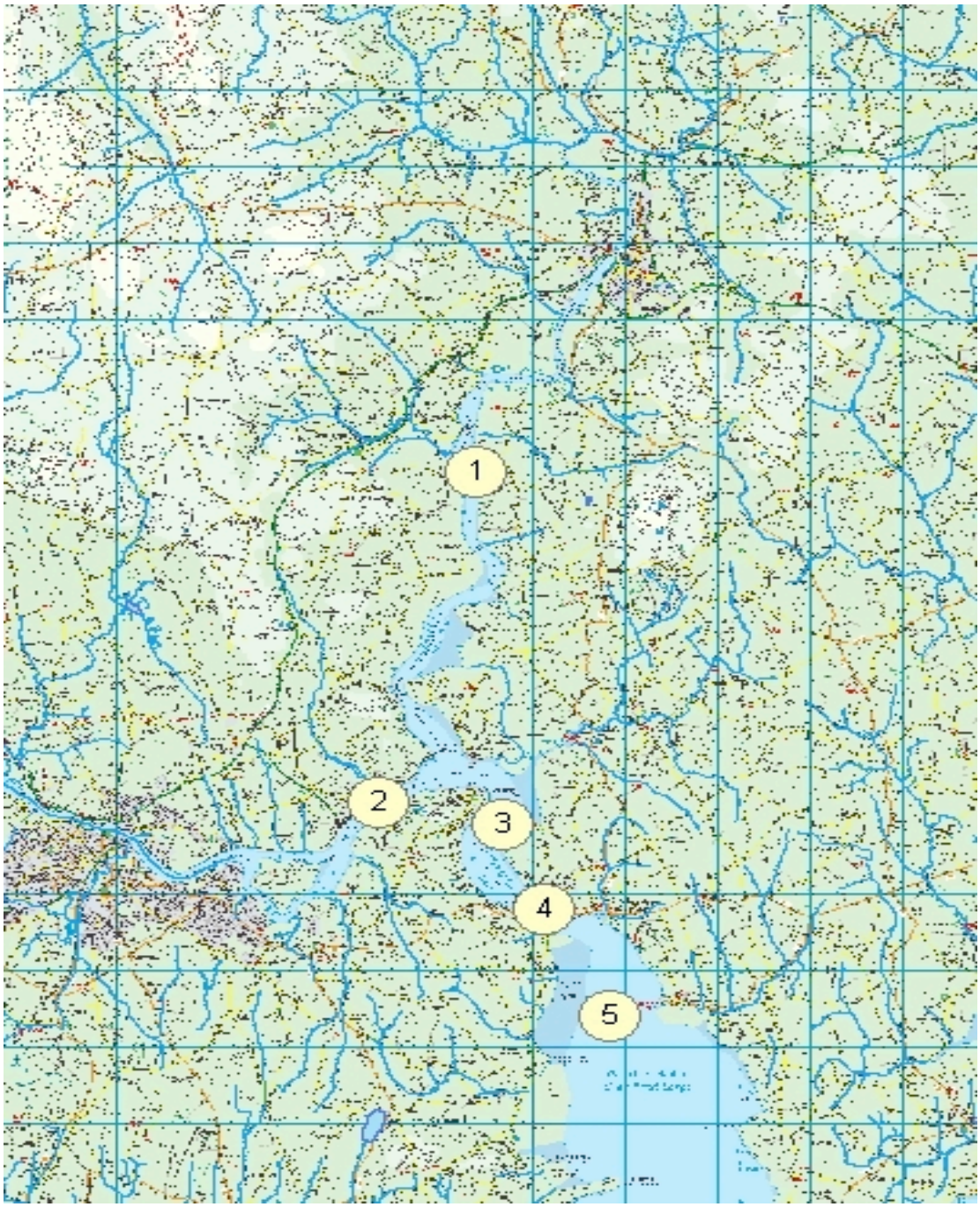
Genetic Sample Collection
Salmon scales from the Waterford estuary have been used in the recent past to provide samples for genetic analysis. The geneticists have recommended that all future fisheries samples for analysis need to be tissue-based rather than scales as the new genetic methods usually require high-quality DNA in reasonable quantities which is often difficult or impossible to obtain from preserved scales. For this reason it is proposed to take a tissue sample from the tail area using a punch (tail punch) which will be preserved in alcohol. A scale sample will also be taken for age analysis.

Preferred Survey Method
It is proposed to trial the use of snap nets to capture salmon at locations 1 & 2 (see below). If this method is not successful, survey nets may need to be employed. Based on the discussion of possible fish capture methods set out above, a combination of fish

capture methods focusing on survey nets, seine nets and snap nets will most likely provide samples for genetic analysis while allowing salmon to be released unharmed. Any fish capture method which results in fish mortalities will be reviewed. If a survey fishery is to proceed, Inland Fisheries Ireland Clonmel will issue a Section 18 permit setting out the conditions of the survey and advise on the most appropriate fish capture method.

Survey Costings.

With a target sample size of 1000 salmon, the cost of genetic analysis and production of a report is estimated at €25,000. The cost of fishing operations to capture salmon will depend to some extent on the capture method used. Cost related to the Southern and Central Fisheries Boards will involve travel and subsistence and are estimated at €15,000. Further cost for fuel for fishermen involved in aspects of the survey and contingency costs may bring the overall estimated cost to €45,000.



Proposed locations for genetic sampling of salmon in the Waterford estuary

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