

# Central & South Western Regional Fisheries Boards

## Proposal for a Pilot Salmon Fishery in Castlemaine Harbour in 2010

### **Summary**

The Minister of State at the Department of Communications, Energy & Natural Resources has requested advice on how a commercial salmon fishery could be operated on stocks in the Castlemaine Harbour Special Area of Conservation in a sustainable manner, maximizing the opportunities for commercial fishing while ensuring that stocks are not over-exploited.

It is proposed to permit, under section 18 of the Fisheries Act 1980, a pilot fishery in a particular area of Castlemaine Harbour to determine how a salmon fishery could be operated on salmon stocks in the harbour, maximizing the opportunities for commercial fishing while ensuring that at-risk stocks are not compromised and surplus stocks are not over-exploited. The pilot fishery would identify the proportion of salmon in catches from the Laune, Maine and other rivers entering Castlemaine and undertake additional genetic analysis on the salmon populations on the Behy and Emlagh rivers to confirm if both stocks are discrete from a temporal stability viewpoint. A detailed scientific and management plan including protocols for the operation of such a fishery will be drafted in consultation with the South Western Regional Fisheries Board and the Cromane fishermen. The results from this analysis will inform all stakeholders on where a commercial fishery might best operate in the common estuary while safeguarding the spawning requirements.

### **Background**

Five rivers designated as salmon rivers by the SSC enter Castlemaine Harbour, the Emlagh, Maine, Laune, Caragh and Behy. In recent years, three of these rivers, the Emlagh, Maine and Behy have been assessed as being below their salmon conservation limit. The Castlemaine draft net salmon fishery traditionally operated in the Cromane area (Areas A and B on map below). Advice from the Standing Scientific Committee has been that the Castlemaine draft net fishery represents a mixed stock fishery capable of intercepting salmon stocks for rivers which are below Conservation Limits and therefore should not operate at this location. A draft net fishery has also operated in the lower reaches of the Laune, Maine and Caragh rivers.

### **Status of Salmon Rivers Entering Castlemaine Harbour**

The Standing Scientific Committee has provided advice on this fishery for 2010 (SSC Report 2010) which is based on the best information then available. In the context of the Rivers in Castlemaine Harbour, 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 proceed with a fishery which has the potential to take stocks from more than one river and possibly from stocks which are not meeting Conservation Limits. In this context the following proposal to minimize the risks to stock sustainability from the operation of such a fishery has been requested and developed below.

### **Laune**

The Laune is above conservation limit and has a combined one-sea-winter and multi-sea-winter surplus of 5,870 salmon in 2010.

### **Maine**

A new fish counter was installed on the Maine and was operational in September 2009. By early December, 1,707 salmon had been verified by video on the Maine, providing a surplus above the conservation limit of 220 salmon for 2010. Many events registered by the fish counter could not be verified by video due to flood events and it is possible that some of these were also salmon. There has been a persistent decline in marine survival of most salmon stocks in the North East Atlantic (from Portugal to Russia) and in North America due to unfavourable marine conditions. However, provided marine survival does not decline further, it is anticipated that the surplus in Castlemaine may be greater in 2011 if full video verification can be achieved.

### **Caragh**

The Caragh River is above CL with a surplus of 684 salmon in 2010.

### **Behy & Emlagh**

Catchment wide electro-fishing has been used as an index of salmon stock abundance in rivers with no fish counters and where no angling has taken place to provide a direct assessment of salmon stock strength. Electro-fishing has been conducted on the Behy and Emlagh rivers in 2007, 2008 & 2009.

The Standing Scientific Committee concluded that a catchment-wide average of 17 sal fry/5min fishing was indicative of good catchment-wide spawning and subsequent

juvenile production (SSC, 2009). In 2009, this threshold value was applied to allow catch & release in previously closed salmon rivers including the River Maine.

Electro-fishing surveys have been carried out annually since 2007 in the Behy River. Salmon juveniles were recorded in all years. The Behy had a mean catch of 4 sal fry/5mins in 2009. The average value over the three years of the catchment wide survey was 8 sal fry/5mins which fell below the annual average threshold of 17 salmon fry. In a national context, the Behy catchment average was in the lower quartile of values recorded for 47 catchments sampled in 2009. However, the result clearly indicates that there is an established self sustaining salmon population in this catchment.

Electro-fishing surveys have been carried out annually since 2007 in the Emlagh River. As with the Behy, salmon juveniles were recorded in all years. A catchment-wide survey of the Emlagh catchment was carried out in September 2009. The average number of salmon fry captured was 13 sal fry/5mins which fell below the annual average threshold. In a national context, the Emlagh catchment average was in the upper middle quartile of the 47 rivers sampled in 2009. The average salmon fry figure for the Emlagh has risen from 4 sal fry/5mins and 10 sal fry/5mins in 2007 and 2008 respectively to 13 sal fry/5mins in 2009. Again, the result clearly indicates that there is an established self sustaining salmon population in this catchment.

The majority of the rivers known to be meeting and exceeding CL have a catchment-wide salmon fry index of 17 or higher. Based on recent electro-fishing data from both the Emlagh and Behy rivers, results indicate that the average salmon fry densities recorded are below the threshold considered by the SSC to be indicative of good catchment wide spawning.

### **Salmon Genetic Stock Analysis**

Juvenile salmon were collected from all five rivers entering Castlemaine Harbour in 2005 as part of the National Genetic Salmon Stock Identification project (ST-05-002) and analysed genetically. Results indicated that all five rivers had genetically distinct salmon populations. Genetic analysis of the Emlagh and Behy salmon stocks showed that both stocks were distinguishable from other rivers in the area suggesting that, at least in some years, there is a discrete salmon stock entering the Emlagh and Behy. At present the SSC consider that although small, these are two unique and self-sustaining populations. However, it is proposed to collect juvenile salmon from both the Emlagh and Behy in 2010 and confirm that both stocks are discrete from a temporal stability viewpoint.

### **Extent of Fishery and Precautionary Considerations**

The Standing Scientific Committee have assessed that the two rivers in inner Castlemaine Harbour, the Maine and Laune, are meeting their conservation limit with a surplus for 2010. The salmon surplus is large for the Laune (5,870) but low for the Maine (220). In the light of the advice already provided for the rivers entering into Castlemaine harbour for 2010, the Minister of State at the Department of Communications, Energy & Natural Resources has requested advice on how a commercial salmon fishery could be operated on these stocks in Castlemaine Harbour, maximizing the opportunities for commercial fishing while ensuring that at-risk

stocks are not compromised and surplus stocks are not over-exploited. The following proposal is designed to achieve each of these objectives

The scientific advice is that no fishery should operate along Cromane beach (areas A & B) as this fishery has the potential to be a mixed stock fishery capable of intercepting salmon stocks for rivers which are below Conservation Limits. Salmon from rivers in other fishery districts below CL were taken in this fishery in the recent past. The Minister has instructed that the pilot fishery should take place in areas A and B (the traditional public draft net fishery area) along the same lines as areas C and D, taking into account the heightened concern in relation to its mixed stock status, in order to corroborate the results of previous surveys and define the extent of mixing.

A fishery operated as close to the river mouths of the remaining rivers as possible will reduce the risk of intercepting the weaker stocks. Given the proximity of the River mouths of the Maine and Laune rivers, this is problematical and the objective of this proposal must be to minimise the risk to the River Maine stock by the operation of a commercial fishery in the estuary given the low surplus available on the Maine. This surplus would be divided between a draft net fishery in Castlemaine Harbour, any draft net fishery on the Maine, Laune and rod fisheries on the Laune and Maine. Based on the relative returns of salmon to each river (i.e. the Laune is forecast to have a total return of 8,591 salmon while the Maine is forecast to expect approximately 1,707 salmon), there will be a higher incidence of salmon returning to the estuarine area in proximity to both rivers. Run timing of salmon into Castlemaine is believed by local concerns to indicate that salmon enter the Maine later in the season and a large run of Maine fish may not be present during the period of the draft net season from June to early August. A further sampling in mid to late August will be undertaken (within the determined quota) to examine this thesis. The counter on the Maine may also support this thesis; however it should be noted that fish may reside in the harbour for a period while waiting for ideal river conditions for upstream migration. In the absence of empirical information to support this, from a precautionary perspective it would be necessary to cap the Castlemaine Harbour commercial fishery at a maximum of 800 salmon in order to reduce the possible risk of intercepting more than 220 salmon from the River Maine. However, to examine the specific run timing issue, a comprehensive set of genetic samples must be taken from all fish captured in the fishery to quantify the relative number and the timing of Maine fish in the fishery.

Pilot fishery locations

As part of the pilot fishery the genetic identification of the rivers of origin of the catch should be ascertained at varying locations within Castlemaine Harbour. Five locations (areas A – E, see map below) are being proposed for the pilot. A & B on the traditional Cromane beach area and C, D&E to the east of Cromane Point.

### **Survey method**

This will include supervised fishing by commercial fishermen and catch and release sampling by CFB/SWRFB staff to provide samples for genetic analysis. It will be important that fishing/sampling be undertaken at suitable locations spread over areas C, D and E as these are large areas the location of all fish captured will need to be geo-referenced. It may also be necessary for additional samples to be collected at locations in C, D and E by Fisheries Board staff, depending on the location and catches of commercial fisheries, to ensure a sufficient spread geographically of genetic samples and to enable full analysis of this Pilot fishery.

### **Pilot duration**

The purpose of the Pilot fishery is to determine the make up of salmon stocks from contributing rivers over time and location in Castlemaine Harbour. Salmon run timing may vary from year to year. In order to determine the nature of salmon stocks contributing to the fishery over time, the Castlemaine pilot needs to continue into late August to determine the mixed stock nature of this fishing location. The results of the pilot will thereby inform management where and when a fishery might operate in the future.

### **Catch Level**

The pilot foresees fishing in five areas and fishing over eight fishing periods. It should be noted for the allocation of sample quantity, area A&B are considered one location with a total sample size of 256 salmon and an associated total weekly catch of 16 salmon per area. A maximum of 552 salmon can be harvested in the inner Castlemaine harbour split between locations C, D & E east of Cromane Point with a maximum weekly catch of 23 salmon per area.

Samples from all of the fish captured at each location would be required to determine the relative exploitation rate of salmon from differing rivers in both time and space. The results of genetic assessment from the fishery will be important in determining the extent to which any fishery might operate in Castlemaine in the future.

A genetic sample would be retained from all salmon taken at these locations. Up to 25% of the salmon from each location is required for other scientific analysis prior to sale to gather data on length, weight, sex ratio, fecundity (number of eggs per fish), proportion of one sea winter and multi-sea-winter salmon, etc. These fish would be available for sale as gutted fish. This information is required to populate the catch advice models being used with more contemporaneous information to determine river Conservation Limits and salmon surplus for these rivers.

The provision of fully verified counter data is essential to this analysis and for future catch advice and it is essential that this is quality controlled to ensure a high degree of confidence in the figures being generated.

Operation of this fishery will also provide valuable information on the river of origin and run timing of salmon stocks in Castlemaine harbour which will help support a more sustainable fishery which may operate in the future.

### **Fishing Methods**

It is also proposed to examine the efficiency of different methods, while ensuring that any resulting mortality is confined within the prescribed sample size, and provision of a protocol similar to that used in the Cork Harbour fishery in 2004 (Appendix 1) will be prepared. Data on by-catch, salmon quality by capture method and capture rate by different methods will be recorded

### **Monitoring of the Fishery**

It is intended that this Pilot fishery will operate to agreed management and scientific plans and protocols, which need to be developed and agreed prior to commencement. In order to enable the collection of genetic material and a proportion of the catch for biological examination, staff from the South Western Regional Fisheries Board will monitor fishing operations and collect samples. Scientists from the CFB and Marine

Institute will advise on the overall scientific aspects of the programme. It will be important for a chain of custody to be in place for scale samples from each location for forwarding on to the genetics laboratory. It is proposed that the sale of salmon be undertaken under the supervision of the South Western Regional Fisheries Board.

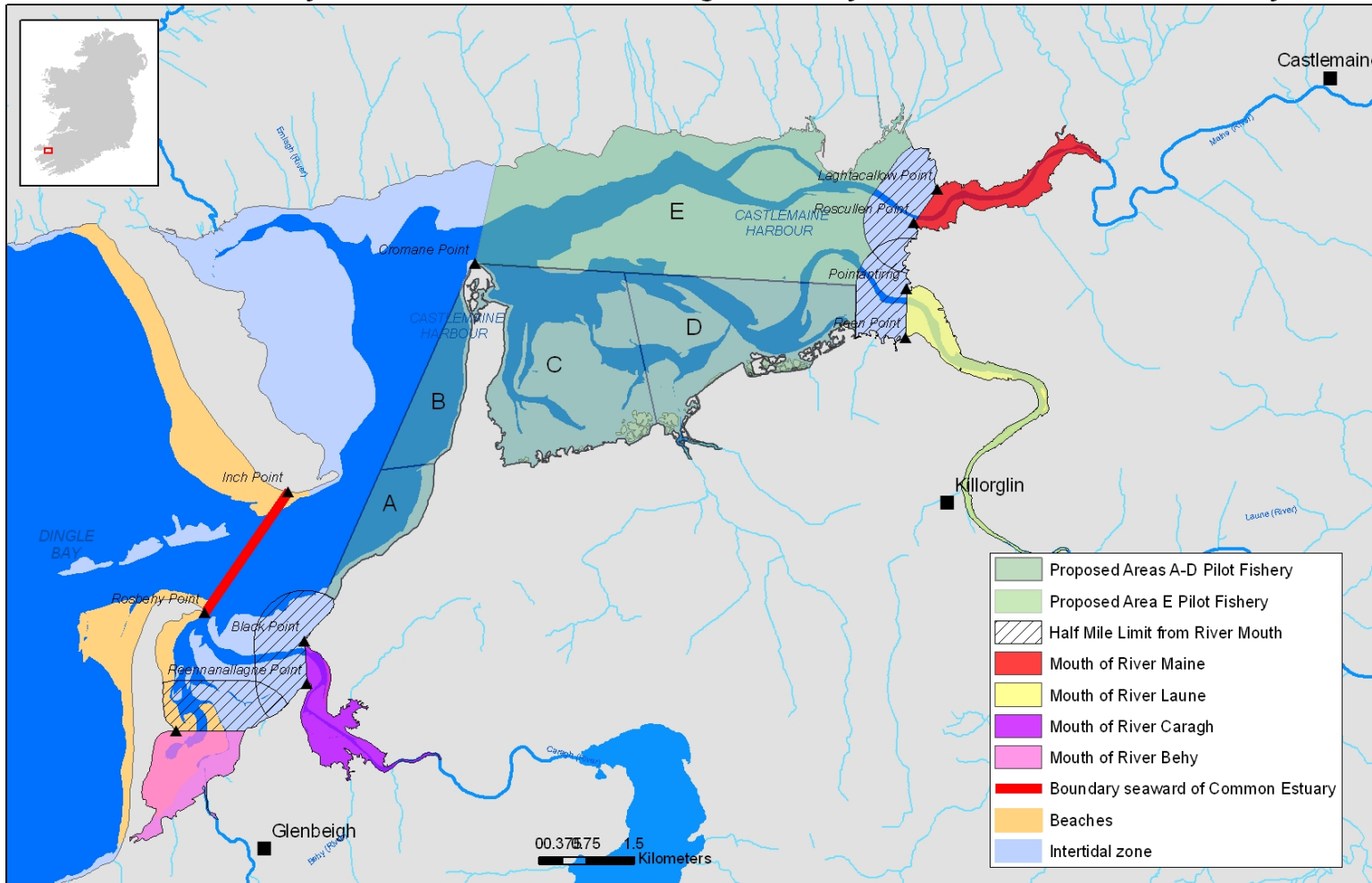
### **Costing**

The target sample size for genetic analysis is 800 samples over the fishing period. The cost of genetic analysis of 800 samples and provision of a report is estimated at €25,000. Cost of undertaking biological analysis of salmon and costs of sampling equipment and associated costs and Fisheries board costs are estimated at €25,000.

Part of the revenue generated from the sale of salmon could be used to meet the cost of the scientific analysis. The remaining funds will be used towards the costs of fishermen assisting in this project.

This document outlines the arrangements for the pilot fishery in Castlemaine Harbour and the additional genetic analysis on the salmon populations from all rivers which may be intercepted in a mixed stock fishery. A detailed management plan, which takes these biological concerns into account, will also specify the management protocols for the operation of the pilot fishery including the protection requirements.

### Common Estuary of Rivers Maine, Laune, Caragh and Behy, Castlemaine Harbour, Co. Kerry.



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**CORK HARBOUR DRAFT NET FISHERY**

Date: \_\_\_\_\_ Licence Operator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Finish Time: \_\_\_\_\_

**Draft Net Method:**

1. Traditional 3 crew method

2. Modified traditional using monofilament

3. Modified traditional (staked) method

4. Modified traditional (staked) using monofilament

**Catch Record:**

Total number of salmon

Total weight of salmon

**Bye-Catch:**

**Species**

**Total Number**

**Net Damage Category**

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_

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1	2	3	4

**Quality of Salmon**

Number of Salmon Bagged

Number of Salmon Meshed

No. of Salmon	Net Mark Category			
	1	2	3	4

No. of Salmon	Net Mark Category			
	1	2	3	4

**Net Marks**

- 1. Little or no sign of net marks
- 2. Some net mark damage mostly on dorsal fin
- 3. Net marks on dorsal fin and body
- 4. Considerable net marks visible and fish quality poor

COMMENTS

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