



Sampling Fish for the Water Framework Directive

Transitional Waters 2010

Inner Kenmare River



Iascach Intíre Éireann
Inland Fisheries Ireland

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1. INTRODUCTION

A fish stock survey was conducted on the Inner Kenmare River Estuary in the South Western River Basin District (SWRBD) as part of the programme of fish monitoring for the Water Framework Directive (WFD), between the 29th and the 30th of September 2010 by staff from Inland Fisheries Ireland.

The Inner Kenmare River Estuary covers an area of 3.79km² and is located on the southern edge of Kenmare town, Co. Kerry (Fig. 1.1). This water body is a drowned valley, bordered by the Iveragh Peninsula to the north and the Beara Peninsula to the south. It receives freshwater from the Sheen, Roughty, and Finnihy rivers. The Inner Kenmare River Estuary is divided into two sections, separated by a road bridge (Fig. 1.1). The area above the bridge is relatively shallow and has extensive mud flats at low tide, whilst the lower section is deeper and suitable for mooring boats. Its banks are heavily forested with native broadleaf species (Plate 2.1). Pressures affecting this estuary include urban development, agriculture, navigation and aquaculture.

The lower end of Inner Kenmare River Estuary lies within the Kenmare River SAC which contains reefs, caves and shallow bays, all of which are listed in Annex I of the EU Habitats Directive (NPWS, 2004). Many important Annex II listed species are present in this area, including the common seal and otter (NPWS, 2004).

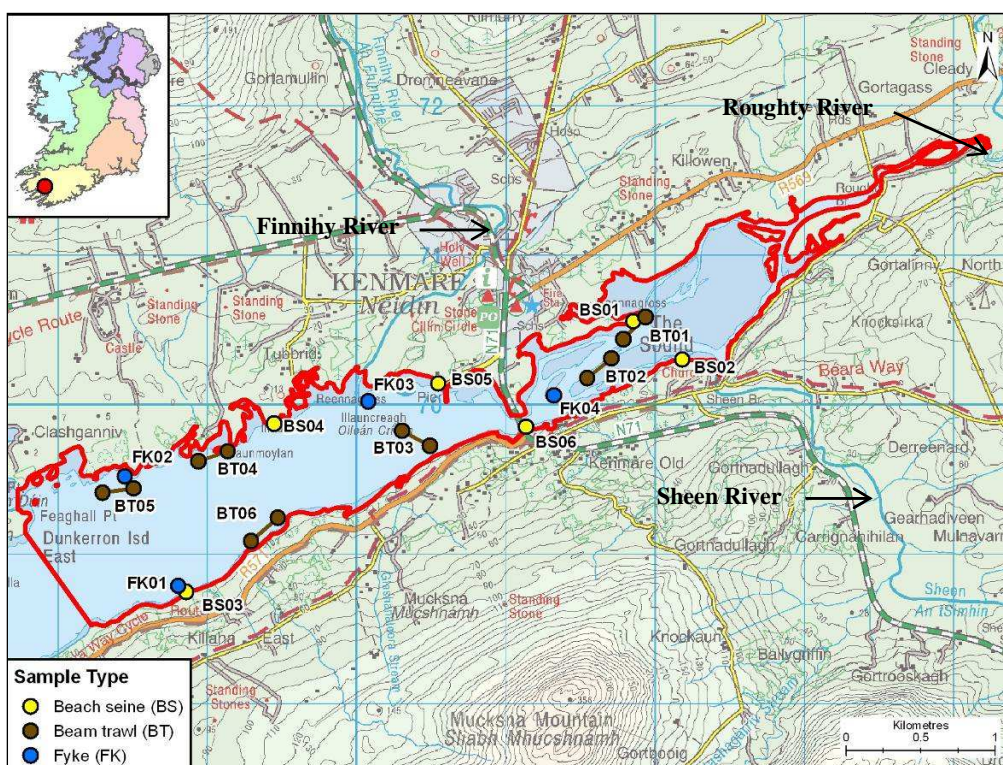


Fig. 1.1. Location map of the Inner Kenmare River Estuary indicating sample sites, September 2010

2. METHODS

Current work in the Republic of Ireland and United Kingdom indicates the need for a multi-method (beach seine, fyke net and beam trawl) approach to sampling fish in estuaries and these procedures are now the standard IFI methodology for fish stock surveys in transitional waters for the WFD monitoring program.

Beach seining is conducted using a 30m x 3m net (10mm mesh size) to capture fish in littoral areas (Plate 2.1). The bottom of the net has a weighted lead line to increase sediment disturbance and catch efficiency. Fyke nets (15m in length with a 0.8m diameter front hoop, joined by an 8m leader with a 10mm square mesh) are used to sample benthic fish in the littoral areas. Beam trawls are used for sampling benthic fish in the littoral and open waters, where bed type is suitable. The beam trawl measures 1.5m x 0.5m, with a 10mm mesh bag, decreasing to 5mm mesh in the cod end. The trawl is attached to a 20m tow rope and towed by a boat. Trawls are conducted along transects of 100m in length.

Sample sites are selected to represent the range of geographical and habitat ranges within the water body, based on such factors as exposure/orientation, shoreline slope, and substrate type. A handheld GPS is used to mark the precise location of each site.

All nets are processed on-site by identifying the species present and counting the total numbers caught in each. Length measurements are recorded for each species using a representative sub-sample of 30 fish, while scales are only collected for certain species, such as salmon and sea trout. Unidentified specimens were retained for subsequent identification in the laboratory.

A total of six beach seines, four fyke nets and six beam trawls were deployed in the Inner Kenmare River in September 2010.



Plate 2.1. Setting a seine net in the Inner Kenmare River Estuary

3. RESULTS

A total of 20 fish species were recorded in the Inner Kenmare River Estuary in September 2010 (Table 3.1). Scad (Atlantic horse mackerel) was the most abundant species, followed by fifteen-spined stickleback, sprat and sand goby (Table 3.1). Flounder and scad were the only species captured using all three netting methods, although, beach seine nets were by far the most effective method for capturing scad. T

A sub sample of juvenile flounder and plaice were measured and these ranged in length from 6.2cm to 16.5cm and 6.8cm to 14.3cm respectively (Figs. 3.1 and 3.2).

Salinity values taken at beach seine and beam trawl sites ranged from 4.23ppt to 22.3ppt.

Table 3.1. Number of each species captured by each gear type in the Inner Kenmare River Estuary, September 2010

Scientific name	Common name	Beach seine (6)	Fyke net (4)	Beam trawl (6)	Total
<i>Trachurus trachurus</i>	Scad	250	8	1	259
<i>Spinachia spinachia</i>	Fifteen-spined stickleback	130	-	2	132
<i>Sprattus sprattus</i>	Sprat	72	-	-	72
<i>Pomatoschistus minutus</i>	Sand goby	49	-	22	71
<i>Gasterosteus aculeatus</i>	Three-spined stickleback	46	-	-	46
<i>Agonus cataphractus</i>	Pogge	-	6	23	29
<i>Merlangius merlangus</i>	Whiting	-	29	-	29
<i>Chelon labrosus</i>	Thick-lipped grey mullet	22	-	-	22
<i>Platichthys flesus</i>	Flounder	4	11	4	19
<i>Pleuronectes platessa</i>	Plaice	-	3	12	15
<i>Ciliata mustela</i>	Five-bearded rockling	-	11	1	12
<i>Syngnathus rostellatus</i>	Nilsson's pipefish	1	-	4	5
<i>Anguilla anguilla</i>	European eel	-	3	-	3
<i>Gadus morhua</i>	Cod	-	2	1	3
<i>Syngnathus typhle</i>	Deep-snouted pipefish	-	-	3	3
<i>Solea solea</i>	Sole	-	2	-	2
<i>Taurulus bubalis</i>	Long-spined sea scorpion	-	1	1	2
<i>Atherina presbyter</i>	Sand smelt	1	-	-	1
<i>Salmo trutta</i>	Brown trout	1	-	-	1
<i>Trisopterus luscus</i>	Bib	-	1	-	1

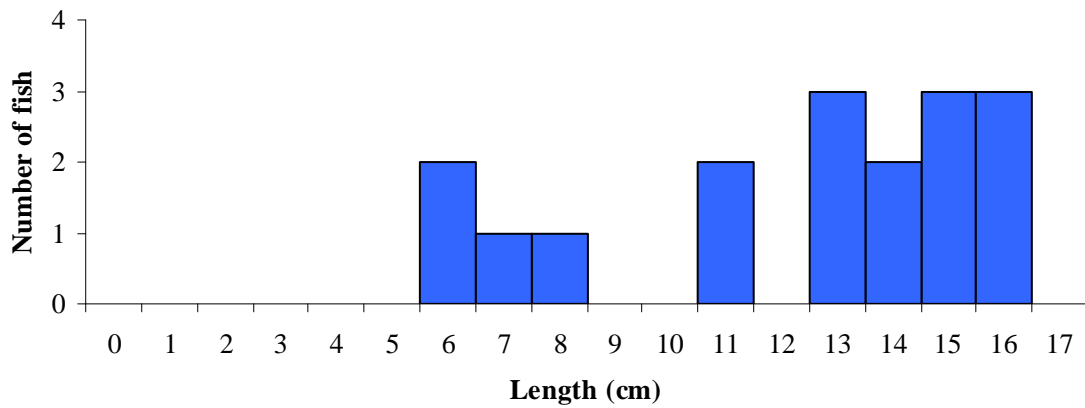


Fig. 3.1. Length frequency distribution of a sub-sample of flounder in the Inner Kenmare River, September 2010 (n=17)

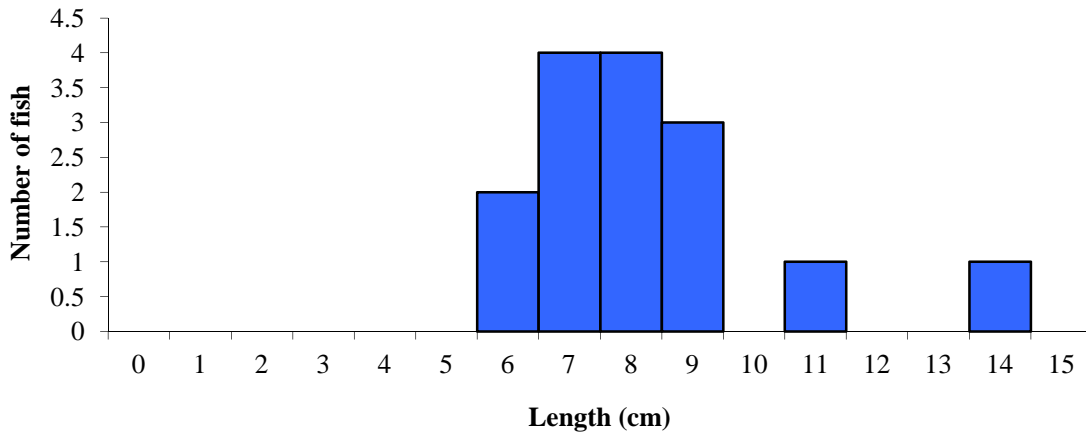


Fig. 3.2. Length frequency distribution of plaice in the Inner Kenmare River, September 2010 (n=15)

4. SUMMARY

A total of 20 fish species were recorded in the Inner Kenmare River Estuary, which is relatively high when compared to other transitional water bodies surveyed around Ireland during 2010. The diversity of marine fish recorded here, as well as the high salinity levels, indicate that saltwater influence in this estuary is greater than that of freshwater, hence less numbers of freshwater species. Species richness and distribution for selected species among all transitional water bodies surveyed can be seen in the 2010 WFD summary report (Kelly *et al.*, 2011).

An essential step in the WFD monitoring process is the classification of the ecological status of transitional waters, which in turn will assist in identifying the objectives that must be set in the individual River Basin Management Plans.

A new WFD fish classification tool, Transitional Fish Classification Index or TFCI, has been developed for the island of Ireland (Ecoregion 1) using IFI and Northern Ireland Environment Agency (NIEA) data. This is a multi-metric tool based on similar tools developed in South Africa and the UK (Harrison and Whitfield, 2004; Coates *et al.*, 2007). The TFCI is still undergoing further development in order to make it fully WFD compliant and to account for differences in estuary typologies; however, at this stage it has been used, along with expert opinion, to provide draft ecological status classifications for each transitional water body surveyed for the WFD.

Using this approach, the Inner Kenmare River Estuary has been assigned a draft ecological status classification of “Good” based on the fish populations present.

The EPA have assigned the Inner Kenmare River Estuary an overall interim draft classification of “High” status, based on general physico-chemical elements, phytoplankton, fish and macroalgal growths.

5. REFERENCES

- Coates, S., Waugh A., Anwar A. & Robson M. (2007) Efficacy of a multi-metric fish index as an analysis tool for the transitional fish component of the Water Framework Directive. *Marine Pollution Bulletin*, **55**, 225-240.
- Harrison, T.D. and Whitfield, A.K. (2004) A multi-metric index to assess the environmental condition of estuaries. *Journal of Fish Biology*, **65**, 683-710.
- Kelly, F., Harrison, A., Connor, L., Matson, R., Morrissey, E., Feeney, R., Wogerbauer, C., O’Callaghan, R. and Rocks, K. (2011) *Sampling Fish for the Water Framework Directive – Summary Report 2010*. Inland Fisheries Ireland.

NPWS (2004) *Kenmare River. Site synopsis, site code: 002158.* Available at:
<http://www.npws.ie/media/npwsie/content/images/protectedsites/sitesynopsis/SY002158.pdf>

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