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**ACTIVITY PATTERNS OF SOME INSHORE  
FISHING VESSELS IN 2006-2007**

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Days spent fishing by inshore boats are deduced from the “absence-from-port” pattern of the vessels concerned. The first of two photos shown here is of a small inshore fleet at 17.00 hours on a day in early autumn; in the second, taken at 07.00 hours the following morning vessels have departed to fish; they have been replaced on their moorings by curraghs which were used to bring the crews out from shore.

## **ABSTRACT**

Observations of daily “absence-from-port” patterns and indications of gears used were carried out on 147 vessels ranging from 5 to 13 m overall length, between April 2006 and March 2007 at three ports in west, southwest and southern Ireland. The vessels numbered approximately 6% of the total national fleet and they were larger than the average length of boats observing a daily working “absence-from-port” pattern. Fishing gears belonged to one of five categories: shellfish dredges, nets, hook and line, pots and otter trawl. More than half of the vessels observed did not carry any indication of fishing gear; 46 % had evidence of using one gear and 3% showed signs of using two. Activity (absence) patterns were low, ranging between 14 and 42 % of week-days on which observations were made. The annual pattern of gear usage described by BIM in 1999 was not apparent in any of the three ports. Instead, the local availability of fishing opportunities was influential in deciding which methods predominated. In only one port was there a marked seasonal activity pattern. Visible signs of vessel registration were similar to the situation in 2002.

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## INTRODUCTION

The definition of typical inshore vessels exploiting waters inside 12, and particularly 6 nautical miles of shore, varies throughout the European Union and within the British Isles. Bord Iascaigh Mhara (BIM) included boats <15m overall length (OAL) within this fleet (BIM, 1999) while the Department of Marine and Natural Resources (2002) stipulated 12m OAL as the upper limit for inshore fishing boats eligible for inclusion in their limited scheme for the licensing of such vessels. Britain favours <10m (Prime Minister's Strategy Unit, 2004) and the Scottish Executive refers to that dimension as typifying inshore boats (Scottish Executive, 2005).

Monitoring the activities of smaller inshore vessels presents considerable difficulties and they have been largely ignored in Ireland, in spite of the considerable capacity this group of vessels represents. When BIM estimated the participation of various vessel size categories in fishing activities they estimated that the total GRT of the <12m group of vessels was approximately twice as great as the GRT of boats >12m (Tully, 2002). The activities of boats fishing inshore waters are therefore largely unmonitored and, the precise composition of this fleet is a matter of conjecture.

According to the European fleet register, Ireland has approximately 2,500 vessels, but the fleet register contains details of only a proportion of these:

OAL, m	Registered
<12	1,051
12-24	331
24-40	155
>40	18
Total	1,555

In 2001, BIM carried out a survey of smaller boats working in waters close to shore (Tully, 2002). The results indicated that 61% (by number) of the vessels whose status they knew, were not on the vessel register and this also applied to an estimated 52% of inshore GRT and an estimated 52% of kiloWattage (kW). Registration of vessels varied on a regional basis, the highest percentage of unregistered boats, 86%, occurred in Co. Donegal. Greatest compliance was in Co. Wexford where 67% of vessels, associated with the South Wexford lobster Co-operative, were listed. Next highest was in the south west and in north Mayo where 50% of vessels were registered. The survey concluded that a large proportion of boats on the register no longer fished, but their owners retained the licences and therefore, that the number of licences was not necessarily an indicator of fishing activity.

In order to rectify the situation and to "legalise" the entire fleet which could then be managed, it was decided to create a "P"(ot) licence which could be claimed by vessels which did not have tonnage or kW (capacity) but which had a track record of fishing traps and creels illegally over the previous three years.

According to DCMNR (September, 2005), the new P licence was applied for by 735 vessels whose characteristics are compared with the existing fleet register and which bring the entire fleet to 2,290 boats.

OAL, m	Registered	P licence	Total
<12	1,051	<b>734</b>	1,785
12-24	331	<b>1</b>	332
24-40	155	<b>0</b>	155
>40	18	<b>0</b>	18
<b>Total</b>	<b>1,555</b>	<b>735</b>	<b>2,290</b>

There is, in addition, the whole question of salmon drift net vessels which were not licensed to fish for anything but salmon. It was generally supposed that many of these vessels would enter the inshore sector once drift netting had been discontinued; many however already used pots and old salmon nets set for gadoids and spurdog. BIM (1999) reported that a number of boats using drift nets already fished other gears. In order to bring the number of Irish vessels up to the total reported as belonging to the European fleet, it is proposed the balance be made up of mainly <12 m vessels from the salmon drift net fleet, now defunct, using static gears, giving the grand total below. The total of <12 m vessels (1,935) is not dissimilar from the total of <15 m boats, 1,849, reported by BIM in 1999.

OAL, m	Registered	P licence	"Salmon"	<b>Total</b>
<12	1,051	734	<b>150</b>	<b>1,935</b>
12-24	331	1	<b>60</b>	<b>392</b>
24-40	155	0	<b>0</b>	<b>155</b>
>40	18	0	<b>0</b>	<b>18</b>
<b>Total</b>	<b>1,555</b>	<b>735</b>	<b>210</b>	<b>2,500</b>

### Estimating fishing effort by the inshore fleet

Smaller vessels tend to concentrate their fishing methods into static gears, nets, traps and pots (BIM, 1999). Smaller inshore vessels are not required to maintain logs of landings; larger boats (>12 m) are but, hitherto, enforcement of this requirement has been lax. The activities of vessels which habitually exploit inshore waters are therefore largely unmonitored. Time series of LPUE of stocks exploited by smaller boats have been constructed on data obtained from buyers purchasing landings from them (for example: Fahy *et al.*, 2005 & 2006 and Meredith and Fahy, 2005). Time series of LPUE constructed from the financial records of processors provide details of only the métier/species on which data are sought; should a vessel switch to another métier or target species (polyvalency is more characteristic of smaller than larger vessels) those records may not be sought and may very soon cease to exist. For operational reasons, it is feasible to consult only a proportion of extant records. Such records tend to be ephemeral, available only for the period in which it is necessary to preserve them in order to comply with Revenue requirements. Their value deteriorates rapidly as memories of the undocumented fishing operations which generated them fade.

Estimating the LPUE of inshore boats through their sales records is a fruitful way of estimating the exploitation of species which are landed daily but this approach essentially takes account only of days on which landings are made. Fishing days on which nothing was caught, or on which gears were deployed whose target species was not of interest, are not recorded. The data in purchase records are effective in constructing time series of LPUE over the short or medium term but they do not take into account more subtle alterations in fishing method, such as a lengthening of the soak time for static gears. To overcome these deficiencies and to provide a more comprehensive account of inshore vessels, a pilot collection of data on daily activity patterns and gear usage by inshore vessels was initiated in 2006 at three ports.

## MATERIALS AND METHODS

### Collection of data

All inshore boats share one characteristic: they have a marked absence habit, leaving at dawn and returning in the afternoon of the same day to sell their landings. Thus, they can be embraced in the term “day-boats”.

Observations were made by staff employed by the Marine Institute in three ports, one in Co. Galway (port A), one in Co. Cork (port B), the third in Co. Waterford (port C). Occasional observations, once or twice a month after 17.00 hours, compiled a complete census of “inshore boats” in each fishing port. A record was maintained by each observer, of certain characteristics of each vessel, its estimated OAL and visible registration and gears used. Whenever the observer was available the presence or absence of these vessels in mid-morning of a normal working day (from approximately 10.00 to 12.00 hours) was recorded. Numbers presented in this report are the “absence-from-port” figures.

In port A, 68 mid-morning observations were undertaken between April 2006 and March 2007 inclusive. They ranged between 0 in January 2007 and 11 in August 2006 and they averaged 6.2 observations per month. In port B 110 mid-morning observations were undertaken between March 2006 and March 2007 inclusive. They ranged from 2 each in March and April 2006 to 15 in November 2006 and averaged 8.5 observations per month. In port C 89 mid-morning observations were made between April 2006 and March 2007 inclusive, ranging from 3 in January 2006 to 13 in August 2006 and averaging 7.4 per month.

Gears and associated equipment observed on vessels whose absence was noted during the survey were grouped under the following headings:

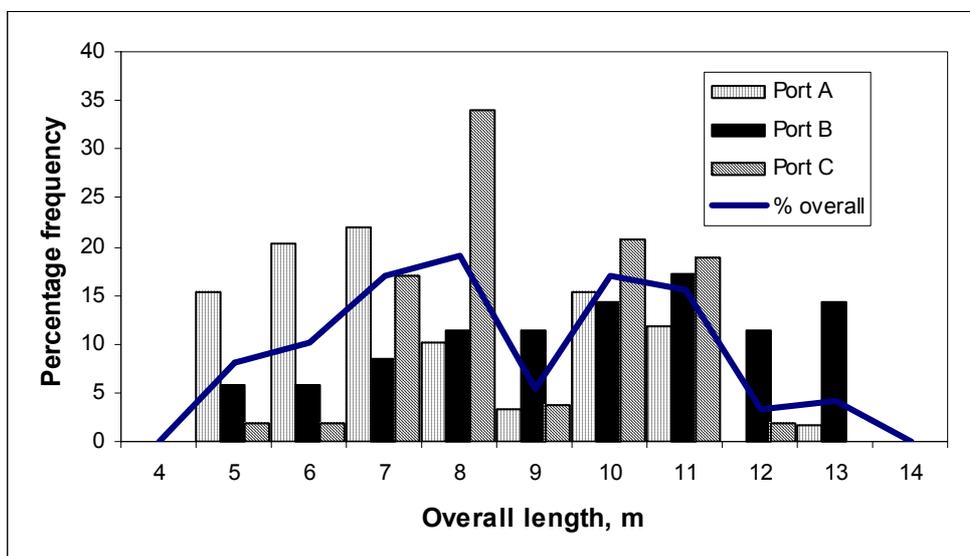
Shellfish dredge: Various types are included in this group.

Nets: Would have included drifting gill nets whose use was permitted in 2006, but discontinued after that; gill nets, might have been made from the same webbing and tangle nets. Appropriate hauling gear mounted on a working vessel was taken as an indication of net usage.

Hook and Line: (H-line): indicated by the presence of jigging rigs.

Otter trawls: indicated by the presence of otter boards.

Pots: Shrimp, large crustacean and *Nephrops* pots were all grouped under this heading. Either pots were visible on the deck, or appropriate hauling gear was installed on working vessels.



**Figure 1.** Estimated OALs for inshore vessels monitored in three ports in 2006-7

## RESULTS

### **The inshore fleet**

A total of 147 vessels (59 at port A, 35 at port B and 53 at port C) were monitored. They ranged in overall length from 5 to 13 m (Figure 1).

### **Registration**

In port A, 20% of vessels monitored carried registration marks, 51% in port B and 37% of boats moored in port C.

### **Boat activity**

The monthly activity of vessels within each port was expressed as

$$\left[ \frac{X}{Y} \right] \times 100$$

Where X was the number of boat absences recorded and Y was the total number of boat-days observed (number of boats\*number of days on which observations were made). The results are shown in Figure 2.

Port A averaged 14% boat absences throughout with a peak of activity in the winter months. Port B averaged 24% activity showing a seasonal influence with greater activity during summer months. Average activity in port C was highest, 42%, and there was relatively little monthly variation throughout the year.

### **Gear use throughout the year**

Gear use was estimated from the formula

$$\left[ \frac{A}{B} \right] \times 100$$

Where A was the number of days on which one of the gear group was recorded on a vessel which was absent from port and B was the total number of gear-days (gears\*the number of daily absences by boats carrying gears). The results are set out in Figure 3. Port A provided evidence only of boats fishing pots.

Port B could be described as having trawling as the most common fishing activity, pots becoming significant in summer and autumn. Some netting took place all the year round and H-line fishing also occurred throughout the year, but on a relatively small scale.

In port C, on the other hand, nets were the most widely used method of fishing. Potting was the next most common activity and after that, dredging and otter trawling were equally significant. There was some, but very little, H-line fishing.

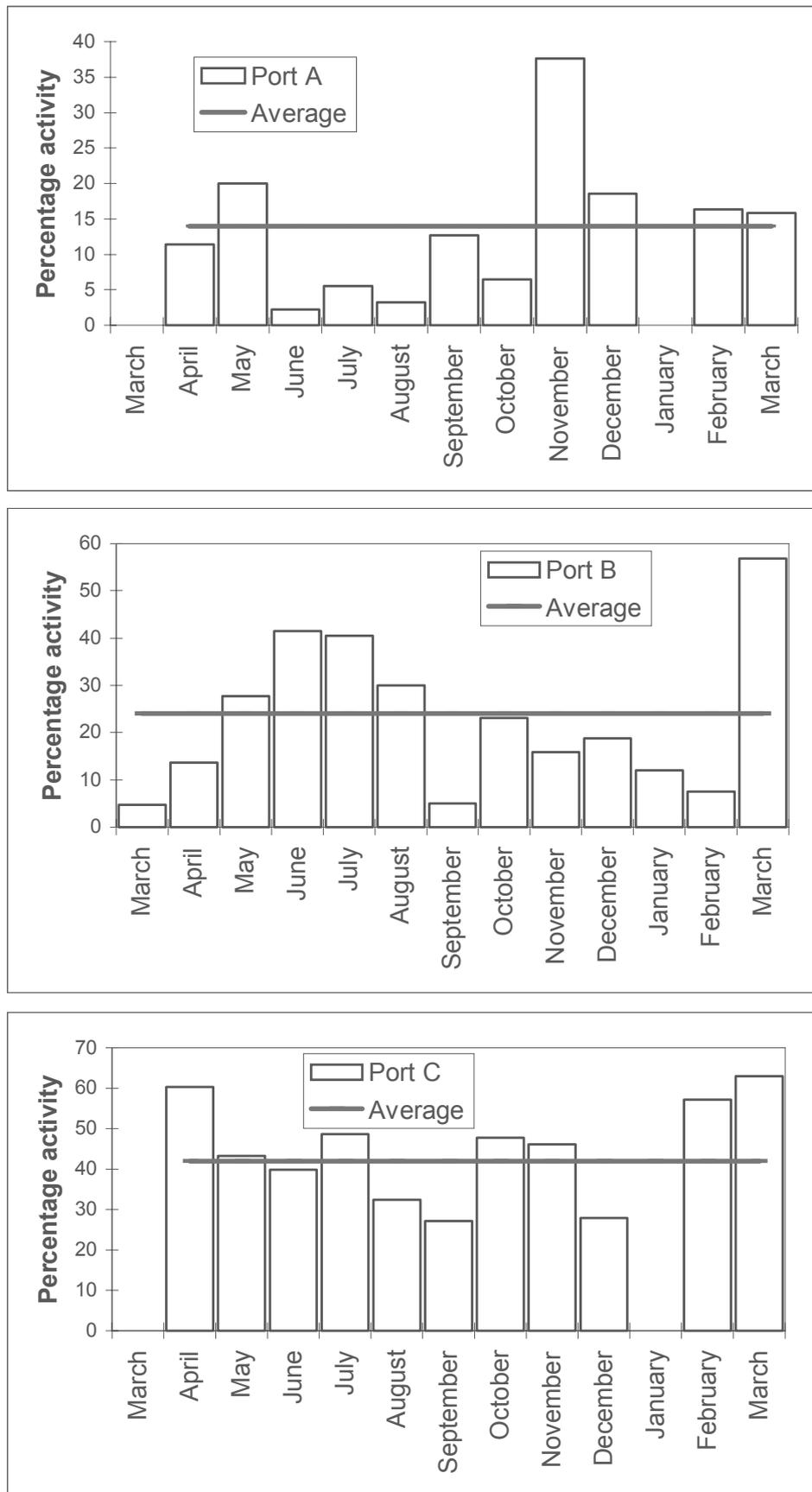


Figure 2. Daily activity patterns of inshore vessels at three ports in 2006-7.

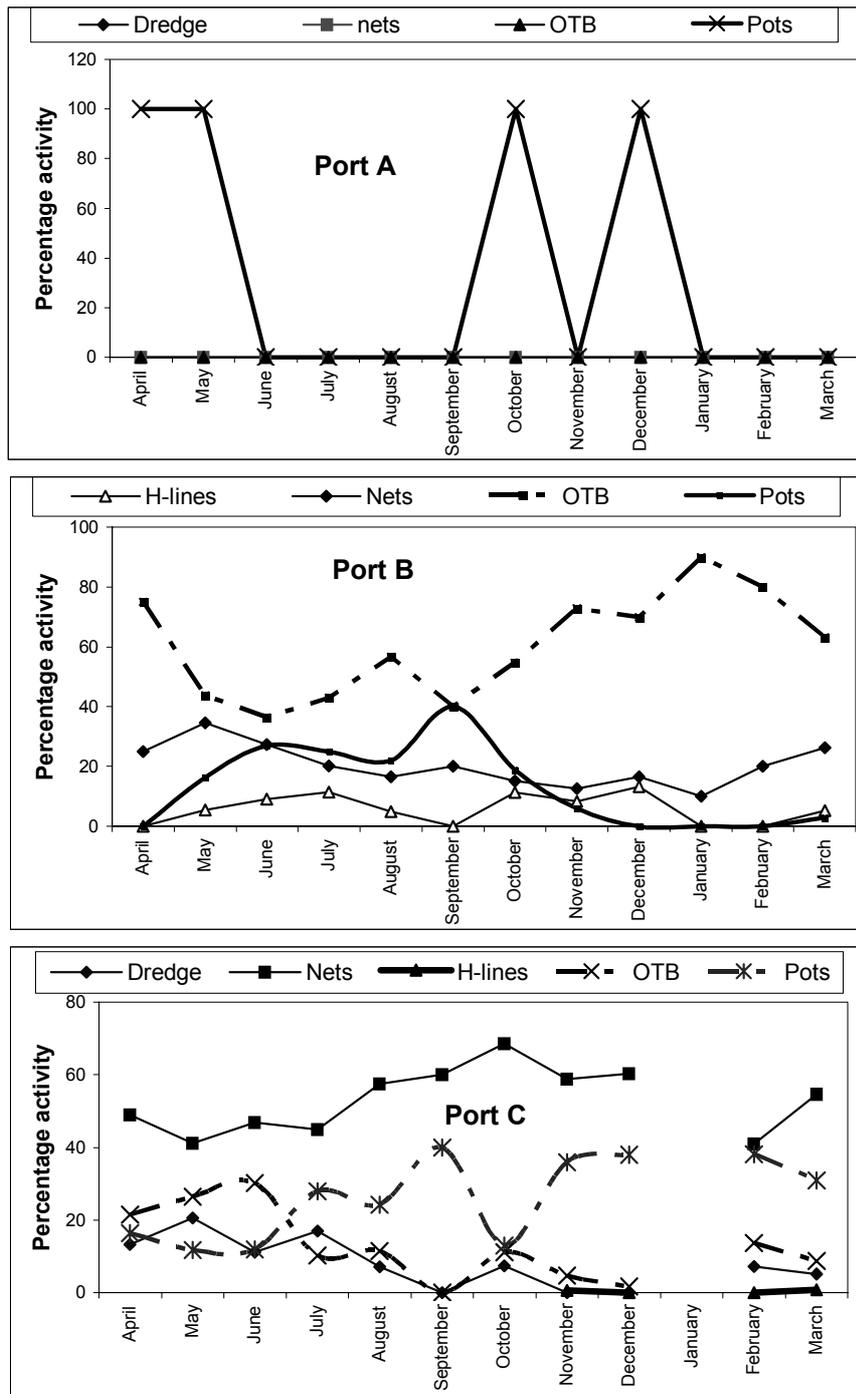


Figure 3. Monthly gear usage by inshore vessels at three ports in 2006-7.

**Polyvalency**

A distinction is made between evidence for boats using a particular métier and having recorded absences and those having such a métier on board without leaving port. Such vessels might have been using port facilities and fishing elsewhere or at other times. Evidence for the use of one or more than one of the gear categories defined above was recorded as follows in the three ports:

	Port A	Port B	Port C	Totals
<b>Number of boats</b>	59	35	53	147
<b>No gear obvious</b>	44	10	20	74
<b>1 gear</b>	14	24	30	68
<b>2 gears</b>	1	1	3	5

## DISCUSSION

The 1999 BIM review of inshore fleet activities accorded 49% of inshore vessels to Counties Cork, Waterford and Galway. That review identified a total of 1,849 boats <15m, a total which is not very different from the number of <12m boats estimated in the introduction to this work. The overall length frequency distribution of the inshore fleet as described by BIM was however significantly smaller than described in this instance (Figure 1) ( $\chi^2 = 6.58$ ,  $N=1$ ,  $P<0.05$ ). The vessels monitored here are therefore a selection of larger inshore vessels which are within the 1999 BIM overall length distribution for that fleet and only slightly exceed the 12m overall length limit, imposed by the Department of Marine and Natural Resources in its 2002 document. The numbers of vessels bearing signs of registration are comparable with data contained in Tully (2002):

	2006-7	Tully, 2002	
<b>Port A</b>	20%	26%	Co. Galway
<b>Port B</b>	51%	50%	"South west"
<b>Port C</b>	37%	31%	Co Waterford

This outcome may not be entirely accurate. Some vessels may be in the course of becoming registered which can take time, but the similarity of the figures, coming from two sources several years apart, is striking.

The incidence of polyvalency is understated in the 2006-7 survey. The five categories of gears embrace others which were separately identified in the 1999 BIM presentation. The difficulty of ascertaining the use to which a particular net is put when it can be rigged and fished in more than one way and the small number of boats observed made it desirable to group all nets (drift, set and tangle) together. The same can be said for shellfish dredges and crustacean pots. For consistency across the three ports these groupings were applied to all. However, observers did report variability within them.

Activity patterns (Figure 2) are considered to have been low, the fleet being active on from 14% to 42% of potential boat-days. It should be noted that days on which observations were made were all between Monday and Friday inclusive, normal working days. Inshore vessels frequently work a six day week. Only port B had a typically inshore pattern: one in which activity is greatest during the summer months when weather conditions are most favourable for smaller vessels. Port C has greatest access to a variety of stocks resulting in greatest overall activity by a succession of métiers.

The 1999 BIM study contained details of gear usage by vessels of different size categories. The use of pots dominated all other methods. The 2006-7 survey demonstrated that local conditions can be crucial in determining what fishing methods are employed. The local availability of a single stock is influential in deciding whether boats in a particular harbour constitute a trawling, netting or potting fleet.

Evidence from other sources maintains the principal contention in BIM (1999) and Tully (2002) that static gears and particularly pots are the principal methods used by smaller vessels exploiting the territorial sea and coastal waters. In the absence of a comprehensive registration scheme for vessels and the introduction of logbooks whose use is monitored and enforced, occasional studies directed at specific fleets and stocks are likely to be the best source of information relevant to stock management. Unfortunately, such studies will not provide a comprehensive account of all activities by inshore boats.

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