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**Predicted impacts of proposed management measures in the Isle of Man  
queen scallop (*Aequipecten opercularis*) fishery to be introduced in the 2015  
fishing season**

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**Report to the Isle of Man Government, Department of Environment, Food and Agriculture**

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## Summary

This report examines the likely impacts on the fishing fleet of management measures proposed for the 2015 queen scallop fishing season. There are currently 135 (as of 15<sup>th</sup> December 2014) vessels licensed to fish queen scallops within Manx territorial waters. If the number of licenses was capped at its present level, current licence holders would not be impacted; however, there would be impacts on vessels wishing to enter the fishery in the future. The introduction of a track record period from 2010 to 2012 would exclude a number of currently licenced vessels from the fishery; the exact number of vessels excluded is dependent on the number of qualifying days stipulated. However, of the 135 currently licenced vessels only 63 of these vessels have recorded landings in the IFISH database during at least one of the last five Isle of Man queen scallop fishing seasons. Track record requirements of 1 or more, 10 or more, 20 or more and 30 or more fishing days would result in the exclusion of 72, 80, 85 and 89 currently licensed vessels respectively. The 2014 queen scallop stock assessment report showed queen scallop stocks to be depleted with the result that the MSC certification for the Isle of Man queen scallop fishery was suspended in June 2014. At present there exists substantial latent fishing capacity and this leaves the fishery vulnerable to over-fishing. The proposed management measures aim to reduce the latent fishing capacity in the fleet, ensure the long term sustainability of the stock and aid the recovery of queen scallop densities to levels which would result in the lifting of the suspension of the MSC certification.

All data used in the current analysis are complete up to 15<sup>th</sup> December 2014.

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## 1. Introduction

The Isle of Man's queen scallop (*Aequipecten opercularis*) fishery has been prosecuted in and around the Isle of Man's territorial sea since the 1950s. The majority of Manx vessels now fish for queen scallops with otter trawls, while UK vessels usually use dredges without toothed bars (Murray, 2013); however, recent years have seen an increase in the number of UK trawlers that prosecute the fishery (Bloor *et al.*, 2014). In 2011 the Isle of Man queen scallop trawl fishery gained Marine Stewardship Council (MSC) accreditation but this was suspended in May 2014 as stock assessment had shown the stock to have become depleted beyond critical thresholds of sustainability (Bloor *et al.*, 2014). The fishery within the territorial sea (0 to 12 nm) is governed by management measures outlined in Table 1. In contrast to the management regime inside the Isle of Man territorial sea there is no effective management of the wider Irish Sea queen scallop stock, aside from a minimum landing size of 40mm.

**Table 1.** Current (2014 fishing season) and additional proposed (2015 fishing season) management measures within the Isle of Man's *Aequipecten opercularis* fishery.

Current (2014)	Additional Proposed (2015)
Qualifying vessels (over 221Kw track record required)	Cap licences at existing levels
Curfew: 18:00 to 06:00 Monday to Friday	Track record period (2010 to 2012)
Curfew: 00:01 Saturday to 00:00 Sunday	
Minimum landing size 55mm	
Total allowable catch: set on an annual basis	
VMS required	
Minimum mesh size 85 mm	
Closed season: 1 <sup>st</sup> April to 31 <sup>st</sup> May	
Multi-rig trawlers prohibited	
Maximum net footrope length of 12 fathoms	
Daily bag limits *	
Temporary spatial closures*	
Completion of additional daily logsheets*	
Requirement to land to Isle of Man ports*	
Carry and operate a GPS logger (provided)*	

\* Additional measures enacted via licence variation in 2014 in response to the state of the stock and the suspension of its MSC certification

### **1.1. Current Isle of Man queen scallop licences**

Bangor University provides independent scientific advice to the Isle of Man Department of Environment, Food and Agriculture (DEFA). Given the definitions of sustainability used by the MSC, Bangor University was unable to recommend a TAC for the 2014 queen scallop fishery as the predicted mean stock biomass was lower than the minimum critical threshold (13,000 tonnes) below which recruitment is thought to be impaired (Bloor *et al.*, 2014). However, considering the economic consequences of a complete closure of the fishery, the Queen Scallop Management Board (QMB) recommended a low Total Allowable Catch (TAC) of 1000 t, split between July and August. The 2014 Isle of Man queen scallop fishery opened on 2<sup>nd</sup> July 2014. As a result of technical measures, imposed by way of licence variation, and low catch per unit effort by some vessels, uptake was significantly slower than expected and the fishery was extended until October 2<sup>nd</sup> 2014 by which time an uptake of 986.4 t had been achieved; the remainder of the 1000 tonne TAC was allocated as bycatch in the king scallop dredge fishery that occurs within the territorial sea.

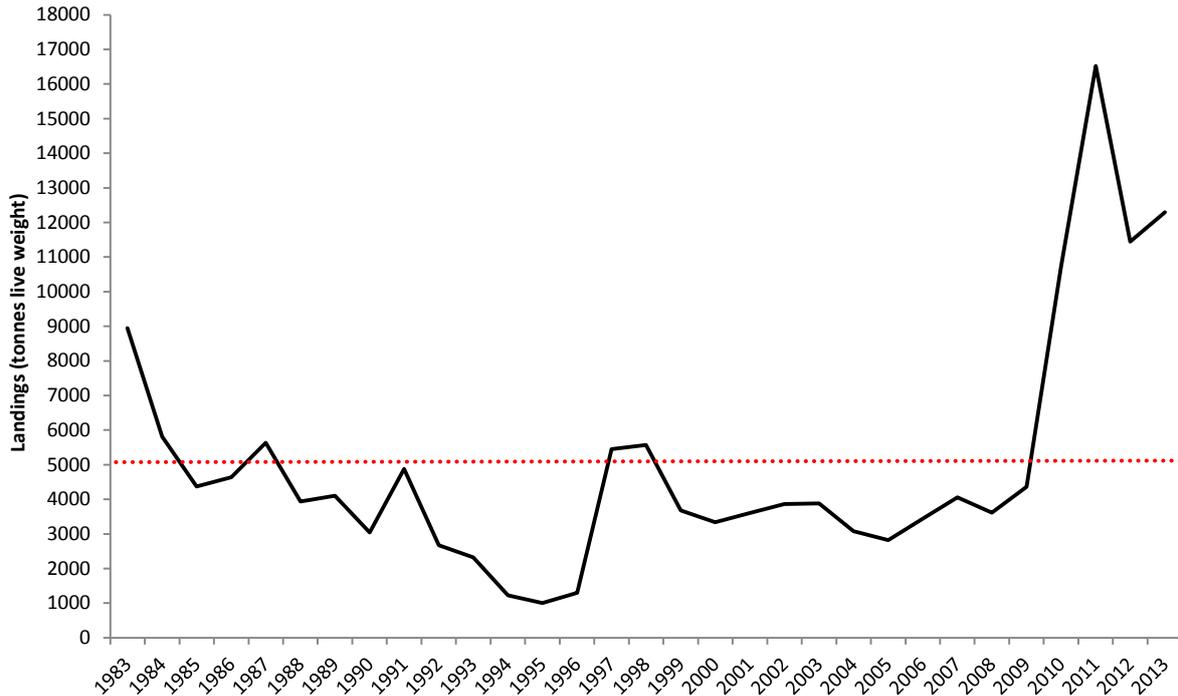
At the end of the season, the QMB agreed that although the new regulatory measures introduced for the 2014 fishing season succeeded in minimising effort and extending the season there remains a significant amount of latent capacity within the queen scallop fishery that poses a threat to the future biological and economic viability of the fishery. For these reasons, the QMB recommended to the Department that it investigate options for additional management measures to reduce fishing effort within the fishery (Table 1). This report examines the likely impacts on the scallop fishing fleet of management measures proposed for the 2015 queen scallop fishing season.

### **1.2. Current Isle of Man queen scallop licences**

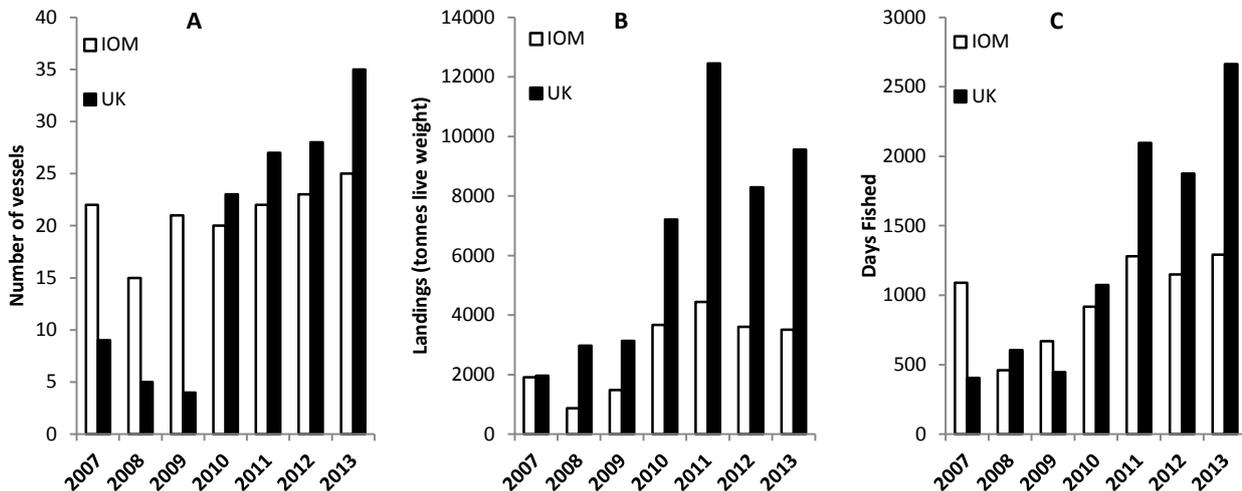
At present any vessel with an engine power less than or equal to 221 kW, or engine power above 221 kW but with sufficient track record of having fished for queen scallops between 2007 and 2010, may obtain a licence to fish for queen scallops within the territorial sea. As of 15<sup>th</sup> December 2014 135 vessels hold licences to fish queen scallops in the Isle of Man territorial sea; 28 are less than 10m LOA, 45 are between 10m and 14.99m LOA and 62 are 15m LOA or more.

### **1.3. Capacity within the fleet**

Historical landings of queen scallops to the UK and the Isle of Man from ICES statistical rectangles 36E5 and 37E5 have been moderate relative to recent years with the long term average landings (1983 – 2013) being 5019 tonnes (Figure 1). Since 2010 increased market demand for queen scallops has led to expanding interest in the fishery with the majority of the additional effort and landings attributable to non-Manx vessels (Figure 2).



**Figure 1.** Landings (live weight) of queen scallops to the UK and Isle of Man. For comparison, the long-term average landings (1983 – 2013) of 5019t is marked on the graph by a dotted red line. Landings are referenced to ICES statistical rectangles 36E5 and 37E5 (as a proxy for territorial sea landings) where possible. However, Isle of Man landings before 1994 are total landings to the Isle of Man, which are likely to be predominantly from these two statistical rectangles. Data are for calendar years (Jan. to Dec.) Data source: Isle of Man Government, DEFA (Figure taken from Bloor *et al.*, 2014).



**Figure 2. A.** Number of vessels reporting landings of queen scallops from ICES statistical rectangles 36 E5, 37 E5 and 38 E5. **B.** Reported landings (tonnes live weight) of queen scallops from ICES statistical rectangles 36 E5, 37 E5 and 38 E5. **C.** Number of days fished by vessels targeting queen scallops in ICES statistical rectangles 36 E5, 37 E5 and 38 E5. Data are for calendar years (Jan. to Dec.) Data sources: IFISH and Isle of Man Government, DEFA.

#### **1.4. Latent capacity within the fleet**

Although 135 vessels are licensed to fish for queen scallops within the territorial sea, the number of vessels that prosecuted the fishery in 2011, 2012, 2013 and 2014 was 42, 53, 51 and 33 respectively, therefore there exists within the licenced fleet a larger proportion of consistent latent fishing capacity. In addition to those vessels that are currently licenced to fish within the territorial sea, any UK vessel with  $\leq 221$  kW engine capacity is eligible to receive a licence provided it has a Vessel Monitoring System (VMS) installed and pays the appropriate licence fee. Consequently, vessels currently involved in other fisheries (e.g. *Nephrops*) could diversify into the queen scallop fishery if their current target stock became depleted or if new regulations which affect their ability to efficiently prosecute other stocks are imposed. Evidence of vessels diversifying into queen scallops may already have been seen with the increase in UK vessels entering the fishery (Figure 2A) The potential for displacement of effort from other fisheries is an issue of increasing concern in the context of new EU regulations on bycatch and discards commencing in 2015.

#### **1.5. Potential consequences of increasing effort**

An increase in the number of vessels entering the fishery could have many potential ecological, environmental and socio-economic impacts. In addition to excessive fishing on traditional fishing grounds the environmental footprint of the fishery could expand as effort intensifies and spreads out to catch a limited quota in a likely diminishing stock. As well as resulting in additional vessels within the fleet, new entrants, being inexperienced in the fishery, could lead to inefficient fishing behaviours such as increased prospecting until they have learnt the specifics of the fishery. Furthermore, habitats that support queen scallops may be damaged by excessive fishing activity. For example, there is a positive relationship between the presence of macroalgae and maerl and the abundance of juvenile scallops (Howarth *et al.*, 2011) and *Aequipecten opercularis* have been found to settle on bryozoans and hydrozoans (Lambert *et al.*, 2011). Additionally, given the lag in landings data becoming available on the IFISH database, an influx of vessels could result in difficulty monitoring TAC uptake and increase the likelihood of exceeding the target TAC.

Expanding the number of interested parties within the fishery would have socio-economic impacts on those currently involved. Vessels which traditionally target queen scallops would lose income in the face of increased competition, adversely affecting the ability of those fishers to run a viable business. Additionally, secondary industries could also be impacted with variable catches of potentially decreasing quality affecting processors, who rely on year round supply of product, ultimately impinging upon their ability to sustain full time employees.

## 1.6. Additional proposed management measures (2015 fishing season)

### 1.6.1. Licence Cap

Under this proposal licences would be capped at the present level (135 as of 15<sup>th</sup> December 2014).

### 1.6.2. Track Record Period

Were this proposal to be adopted a vessel in order to qualify for a licence would have to have reported landings for a specified number of days within the track record period. The track record period of 1<sup>st</sup> June 2010 to 4<sup>th</sup> September 2012 encompasses the entirety of the 2010, 2011 and 2012 Isle of Man queen scallop seasons. It was selected based on the fact that those are the most recent years for which comprehensive landings data are available that have not previously been designated as non-track record years. The 2013 and 2014 seasons were designated as non-track record years and as such have only been included in analysis in order to quantify the impact of the proposed measures on vessels which have prosecuted the fishery in those years.

### 1.6.3. Data Included

The data used in the current analysis are complete up to 15<sup>th</sup> December 2014. Records were taken from the IFISH database, between 1<sup>st</sup> June 2010 and 29<sup>th</sup> November 2013 for ICES squares 36, 37 and 38 E5 which encompass the Isle of Man queen scallop fishery. Records outside of the Isle of Man queen scallop season have been excluded as these could not have come from within the territorial sea. In addition data for the 2014 fishing season, between 2<sup>nd</sup> July 2014 and 2<sup>nd</sup> October 2014, were obtained from daily returns of the DEFA queen scallop log sheets. Records for the 2014 season are resolved to the territorial sea as all vessels fishing within it were required to complete a DEFA queen scallop log sheet. Records included are outlined in Table 2.

**Table 2.** Data included in designation of proposed track record period for the Isle of Man queens scallop fishery (2010, 2011 and 2012) and data included in the quantification of the potential impact of the proposed measures on vessel that prosecuted the fishery in 2013 or 2014.

Season	From	To	Track Record	Source	Resolved to
<b>2010</b>	01/06/2010	31/03/2011	Yes	IFISH	36, 37 and 38 E5
<b>2011</b>	01/06/2011	31/03/2012	Yes	IFISH	36, 37 and 38 E6
<b>2012</b>	01/06/2012	04/09/2012	Yes	IFISH	36, 37 and 38 E7
<b>2013</b>	17/06/2013	29/11/2013	No	IFISH	36, 37 and 38 E8
<b>2014</b>	02/07/2014	02/10/2014	No	DEFA	Territorial Sea

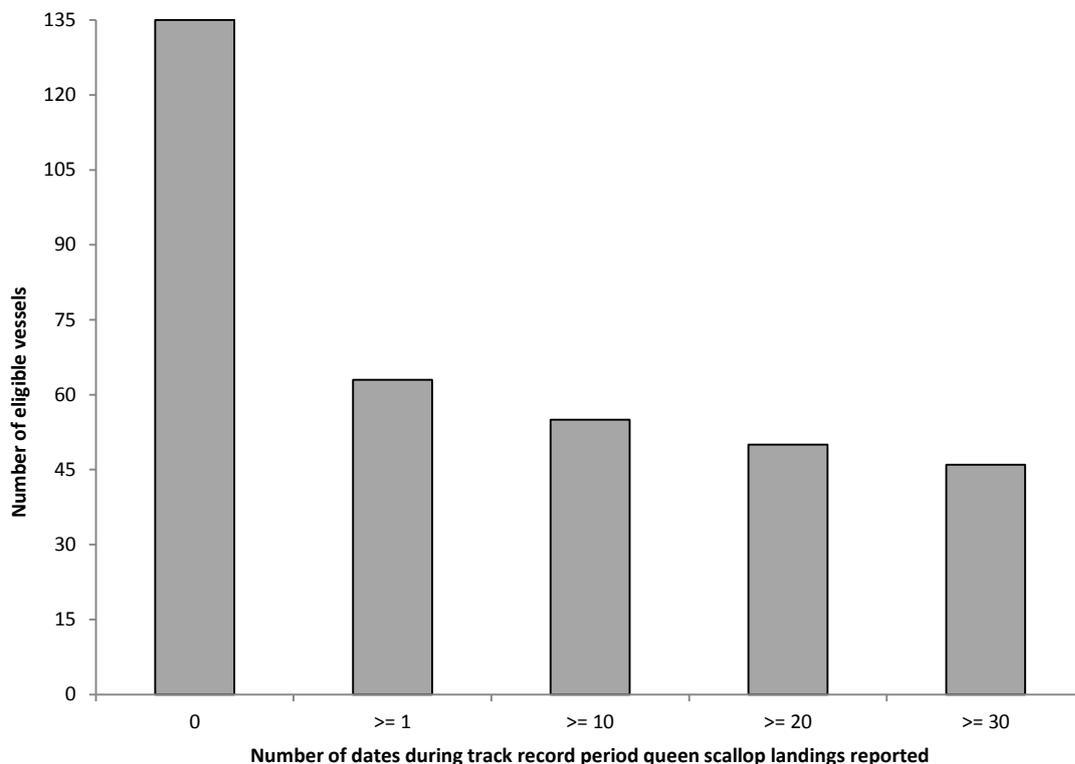
## 2. Impact Assessment

### 2.1. Licence Cap

If licences were capped at the present level vessels that are currently involved in the fishery would not be impacted; however, future entrants to the fishery would not be permitted.

### 2.2. Track Record Period

Of the 135 vessels that are currently licenced to fish for queen scallops within the territorial sea, 63 reported landings of queen scallops from ICES 36, 37 or 38 E5 during the track record period, 55 have landing reports on 10 or more dates, 50 have landing reports on 20 or more dates and 46 have landing reports on 30 or more dates (Figure 3). As the track record is not resolved to the territorial sea some landing records may have come from outside Manx waters. 72 currently licenced vessels did not record landings in ICES statistical rectangles 36, 37 and 38 E5 during any of the periods described in Section 2.1.1 (Table 2). Ten vessels recorded landings exclusively during the 2013 and 2014 fishing seasons which are outside the track record period. Of the 10 vessels that fished exclusively outside of the proposed track record period 6 have fished in excess of 20 days in the last two seasons.



**Figure 3.** The impact on the number of eligible vessels resulting from increasing the required number of days fished within the proposed track record period. Scenarios ranging from no track record requirement (i.e. 0 days) to a requirement to have reported landings on 30 or more dates during the track record period as described in section 1 are presented (n = 135).

### **3. Conclusions**

The number of vessels, time spent fishing and weight of queen scallop landed have been much higher since 2010 than in previous years. From 1983 to 2009 landings averaged 3875t per year; including years 2010 to 2013 this figure has risen to 5019t. Furthermore, this increase occurred quickly, with landings increasing from 4364t in 2009 to 10717t in 2010. This rapid expansion is indicative of the latent capacity that was in the fishery and has resulted in substantial depletion of queen scallop biomass. Existing latent capacity poses a further threat to the target species, the wider ecosystem and the livelihoods of fishers who are dependent on the fishery.

Imposing a track record of one day would reduce the number of potential queen scallop fishing vessels by over half, to 63. This is still in excess of the maximum number of vessels, 60, which have fished in any one year since 2007. There are 10 vessels that prosecuted the fishery in 2013/2014 but not during the previous three fishing seasons that are likely to be affected by the implementation of the proposed track record period. Increasing the track record requirement beyond one day would reduce the number of eligible vessels to 46 if a 30 day minimum track record were required.

#### 4. References

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