

Southern Inshore Fisheries and Conservation Authority

Robert Clark - Chief Executive



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18 August 2020

Dear Member

MEETING OF THE TECHNICAL ADVISORY COMMITTEE – 27 AUGUST 2020

A virtual meeting of the Technical Advisory Committee will be held on Thursday 27 August 2020 at **13:00**, to discuss the business on the under mentioned Agenda.

This meeting will take place via remote access. Login details will be forwarded to Members next week. Members of the public can request a guest telephone dial-in code from enquiries@southern-ifca.gov.uk

Yours sincerely
Debbie Vivian
Finance and Administration

AGENDA

1. Election of Chairman

To elect a Chairman for the year 2020-2021.

2. Election of Vice Chairman

To elect a Vice Chairman for the year 2020-2021.

3. Apologies

To receive apologies for absence.

4. Declaration of Interest

All Members who believe they have a personal or prejudicial interest in any matter to be considered at the meeting must declare their interest and consider whether to leave the meeting whilst the matter is discussed.

5. Minutes – 7 May 2020

To confirm the Minutes of the meeting held on 7 May 2020 (marked A).

6. Progress Report on Outstanding Matters

To consider a progress report on matters outstanding.

- a. MCRS Byelaw.** To receive a verbal update from IFCO Pengelly
- b. Highly Protected Marine Areas (HPMAs).** To receive a verbal update from the Chief Officer.
- c. Spending Review.** To receive a verbal update from the Chief Officer.
- d. Marine Protected Areas.** To receive a verbal update from IFCO Smith.

ITEMS FOR DECISION

7. Temporary Closure of Shellfish Beds Byelaw

To consider the report from DCO Bateman (marked B)

ITEMS FOR INFORMATION

8. Minimum Conservation Reference Size Review

To receive a report from Evidence Specialist Jamie Small (marked C)

9. BCP Council Beach Replenishment

To receive a verbal report from DCO Richardson.

10. Date and time of next meeting – 5 November 2020

**SOUTHERN INSHORE FISHERIES AND CONSERVATION AUTHORITY
TECHNICAL ADVISORY COMMITTEE – 7 MAY 2020**

ITEM A

Minutes of the Technical Advisory Committee held by remote conference at 1300 on Thursday 7 May 2020.

Present

Dr A Jensen (Chairman, MMO Appointee)
Mr R Stride (Vice Chairman, MMO Appointee)

Dr S Cripps	(MMO Appointee)
Prof J Humphreys	(MMO Appointee)
Mr S Kershaw	(MMO Appointee)
Mr T Legg	(MMO Appointee)
Ms L McCallum	(MMO Appointee)
Ms R Irish	(MMO Appointee)
Dr R Morgan	(Natural England)
Dr K Sims	(Environment Agency)

The Chief Officer, Deputy Chief Officer Bateman and Richardson, Finance and Administration Officer and IFCOs Birchenough, Cooper, Pengelly and Smith were also present. Members of the public in attendance were Ms E Rance

Apologies

24. Apologies for absence were received from Mr N Horsman and Mr G Wordsworth

Declarations of interest

25. Members declared the pecuniary interest in the following Minutes: Mr Stride (29), Mr Legg (37), and non-pecuniary interest in the following Minutes: Dr Sims (29), Dr Cripps (31), Dr Morgan (35, 37)

Minutes

26. Members considered the Minutes of the meeting held on 6 February 2020, following correction of a typo the Chairman confirmed the Minutes would be signed in due course.

Progress Report

27. a. **Wrasse Fishery 2020** IFCO Pengelly updated Members on the planned actions since the last meeting and explained the timeline. Members were concerned that fishing effort could increase over 2020 and believed that this could have an impact on the local wrasse population and the marine environment. IFCO Pengelly explained that buyers had provided assurances that they would comply with the Fishery Guidance measures and beyond this, they would control fishing effort to maintain 2018 fishery levels in line with the fisheries Monitoring and Control Plan. Members sought clarification on when the Authority may look at introducing specific wrasse fishing statutory measures. IFCO Pengelly informed Members that a review of wrasse fishery measures was scheduled for January 2021 under the Authority's 5-year legislative forecast.

Resolved

28. That the report be noted.

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Strategic Research & Evidence Plan 2020-21 (includes COVID-19 Contingency Plan)

29. DCO Bateman gave Members details of the background and plan update; concentrating on how the plan would continue to be delivered remotely. Research and evidence would be categorised with influence from government guidance on social distancing, the existing responsibilities of the Authority and the ability of officers to deliver work from a remote location. DCO Bateman detailed the changes to the planned workstreams. She explained that experience had shown officers that one of the best ways to consult stakeholders was face to face interaction and this would be difficult to achieve at this time. Members understood the reasons why some of the workstreams had been put on hold but were concerned that some fisheries could suffer because of the delay. Members agreed the recommendations under general consent.

Recommended

30. a. that the Strategic Research and Evidence Plan 2020-21 be adopted.
- b. that the COVID-19 contingency planning be adopted.

Poole Harbour Several Order 2015 Management Plan (2020 Revision)

31. DCO Bateman thanked Members for their feedback following the working group. The plan was ready for formal consultation following advice from Natural England, a joint risk assessment undertaken with Poole Harbour Commissioners and scrutiny by the legal team. Members had queries regarding permitted species as they were unsure if enough restrictions were in place. DCO Bateman explained that this plan was one part of the policies that supported the Several Order. The Management Plan would have to be considered along with the biosecurity plan and the leaseholders business plans; this included monitoring of water quality and invasive species. Members felt that although water quality was not part of the IFCA remit, inclusion in some of those stakeholders' discussions would reinforce the IFCA position. Members agreed the recommendations under general consent.

Recommended

32. a. that the Management Plan 2020 be agreed.
- b. that the formal consultation process be started.

Tranche 2 Biosecurity Plan

33. DCO Richardson explained for Members the updates that had been made to the report in line with the management developments of aquaculture since the original plan was established. The revised plan would apply to the Tranche 2 leases being considered. Members agreed the recommendations under general consent.

Resolved

34. a. that the Biosecurity Plan be agreed.
- b. that responsibility to approve updates and amendments of the Biosecurity Plan be delegated to the Chairman of the TAC.

Tranche 2 Test of Likely Significant Effect (TLSE)

35. IFCO Birchenough reported that the TLSE was required as part of the Habitats Regulations Assessment for the issue of leases for the 2020-25 under the Poole Harbour

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Fishery Order 2015. She explained the process and findings; highlighting the pressures on the features and habitats. Following formal comment from Natural England lease bed holders will be consulted. The Chairman thanked IFCO Birchenough for the detailed extensive work that had been put in the report. Members agreed the recommendations under general consent.

Resolved

36. a. that the Chairman of the TAC approve the Habitats Regulations Assessment for issue of leases for 2020-25.
- b. that the Chairman of the Authority approve the Habitats Regulation Assessment to be sent to Natural England for formal comment.

Bottom Towed Fishing Gear Assessments

37. IFCO Smith gave Members the background to the report. Since the introduction of the Bottom Towed Fishing Gear Byelaw 2016, the features of the European Marine Sites, particularly reef and seagrass, have been subject to survey and the evidence base has been improved. New assessments had been undertaken using the improved data. IFCO Birchenough reported on the SSSI assessment for bottom towed fishing gear that had been necessary as the SSSI designation had been extended. A site management statement between Natural England and the Authority to outline the management position for the site had been produced. Members agreed the recommendations under general consent.

Resolved

38. a. that the Habitats Regulation Assessments be sent to Natural England for formal comment.
- b. that the SSSI Assessments be sent to Natural England for formal comment.
- c. that the Chairman of the TAC approve updated MCZ assessments for bottom towed fishing.

Date of Next Meeting

39. That the next meeting of the TAC would be held on 27 August 2020 remotely via video conferencing.

Ms Rance left the meeting and did not take part in any of the other items.

Exclusion of the Public

Resolved

40. That under section 100(A)(7) of the Local Government Act 1972, the public be excluded from the meeting for the following items of business on the grounds that it involves the likely disclosure of exempt information as defined in Para 7 part 1 of the Schedule 12 (A) of the said Act.

Poole Lease Tranche 2 Business Plans

41. DCO Richardson reported that as part of the Tranche 2 review leaseholders had been invited to submit an expression of interest. These had been submitted and leaseholders were asked to submit 5 year business plans following a standardised structured covering methodology, financial forecasting and a biosecurity plan. These had

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been received and DCO Richardson explained the amendments that were required for the business plans to meet the criteria stipulated in the Management Plan 2020. Members discussed the use of different species of oyster, the reasons why flexibility may be required. Members discussed the disposal of waste, types of gear, relaying and the size of vessels employed on the lease beds. Members agreed the recommendations under general consent.

Resolved

42. a. that the Chairman of the TAC agree any further amendments with officers.
- b. that the Business Plans be approved following amendments

Poole Harbour Dredge Permit Byelaw – Permit Entitlements

43. IFCO Birchenough explained to Members that one permit holder had not been able to fully comply with Access Policy criteria to submit a minimum number of catch returns as his vessel had been destroyed part way through the 2019-20 season. The Access Policy gave provision for exceptional circumstances to be considered where there was loss of vessel. The fisherman was given the opportunity to provide evidence that the vessel had been lost. He had provided the evidence requested and IFCO Birchenough asked Members to recommend that he be allowed to apply for the forthcoming season. Members agreed the recommendations under general consent.

Resolved

44. that the fisherman not lose his eligibility to apply for a 20-21 Poole Harbour Dredge Permit

Poole Harbour Dredge Permit Fishery 2020-21

45. IFCO Pengelly explained to Members the need to consider the effects of the COVID-19 pandemic on the annual fishery; the likelihood of markets and the economic consequences of not opening the fishery. Members discussed the issues highlighted in the report. The recommendation was agreed under general consent.

Resolved

46. that the Poole Harbour Dredge Permit season open on 25 May 2020.
47. There being no further business the meeting closed at 16:15

Chairman:

Date:

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MANAGEMENT OF THE SOLENT NATIVE OYSTER FISHERY 2020-2021

Report by Deputy Chief Officer Bateman

A. Purpose of the Report

Following approval of the Strategic Research and Evidence Plan: April 2020 to March 2021 (to include COVID-19 Contingency Planning) by Members of the Technical Advisory Committee in May 2020, which, included the recommendation to delay the implementation of the Solent Dredge Permit Byelaw (summary of rationale provided in Annex 1), this paper considers the need for management intervention in the Solent Native oyster (*Ostrea edulis*) fishery under The Temporary Closure of Shellfish Beds Byelaw for the 2020/2021 season.

Due to the constraints associated with the social distancing measures introduced by Government in response to the COVID-19 pandemic, Southern IFCA have been unable to undertake the annual Solent Oyster Stock Assessment.

As such, this paper considers the best available evidence for this fishery, being that gathered during the August 2019 Solent Oyster Stock Assessment.

B. Recommendation(s): Application of the Temporary Closure Byelaw

- 1) For the Members of the TAC to consider the application of the Temporary Closure of Shellfish Beds Byelaw to all oyster beds in the Solent for the harvesting of *Ostrea edulis* from the 1st November 2020 to the 28th February 2021, based on the best available evidence from the Southern IFCA 2019 Solent *Ostrea edulis* Stock Assessment which indicates that all of the *Ostrea edulis* beds in the Solent are '*severely depleted... as to require temporary closure in order to ensure recovery...*'

1. Application of the Temporary Closure Byelaw

- 1.1 On the 1st November 2020 the Oyster season opens in the Solent. Based on the best available evidence, the Authority must consider whether to apply The Temporary Closure of Shellfish Beds ('Temporary Closure Byelaw') Byelaw to any oyster beds in the Solent that are deemed to be depleted;
- 1.2 As a result of the COVID-19 pandemic and associated social distancing measures enforced by the UK Government, the Southern IFCA 2020 Solent Oyster Stock Assessment ('Stock Assessment'), due to be carried out in August 2020 has been cancelled;
- 1.3 As such, **the best available evidence to support and underpin any decision made by the Authority with regard to the 2020 Solent oyster fishery must consider the outcomes of the 2019 Stock Assessment (Table 1);**
- 1.4 The methodology used for the Stock Assessment ensures that the Catch Per Unit Effort (CPUE) data provided can be used to guide the management of the oyster fisheries (focusing on stock levels), providing an evidence base to ascertain whether an oyster

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bed is considered '*...severely depleted as to require temporary closure in order to ensure recovery...*' in accordance with the wording of the Temporary Closure Byelaw;

- 1.5 In addition to CPUE thresholds, the Authority may also consider any other evidence when considering management intervention under the Temporary Closure Byelaw;
- 1.6 The application of the Temporary Closure Byelaw is limited in its scope as a management tool. It provides the Authority the ability to prohibit the removal of oysters from any bed via a temporary closure, based upon either severe depletion or for the protection of juveniles.
- 1.7 Under the Temporary Closure Byelaw, the Authority must make a determination of '*severely depleted*' in order to invoke a closure.

2. Rationale for Recommendations

- 2.1 Best Available Evidence: Outcomes of 2019 Stock assessment: no individual *Ostrea edulis* bed in the Solent demonstrated a CPUE in excess of 15kg/m/hr (Table 1). A threshold of 15kg/m/hr has been used by the Authority in previous years to determine whether an *Ostrea edulis* bed is '*severely depleted*';
- 2.2 Scope of the Temporary Closure Byelaw:
The full wording of the Temporary Closure Byelaw is provided in Section 3 of this paper. The Temporary Closure Byelaw:
 - provides the Authority the ability to close any bed or part of shellfish bed which is deemed to be severely depleted in order to ensure recovery;
 - allows for spatial and temporal closures, or a combination of both;
 - can be applied based upon the determination of either severe depletion or for the protection of juveniles;
- 2.3 Consistency in Southern IFCA management approach: The Authority has used a CPUE threshold of 15kg/m/hr in previous years to determine whether an *Ostrea edulis* bed is severely depleted (see Section 3.0 of this paper).
- 2.4 Consistency in Sussex IFCA management approach: The use of a CPUE threshold of 15kg/m/hr is consistent with the management of the native oyster fishery in Chichester Harbour, as managed by Sussex IFCA who set a closure CPUE of <15kg/m/hr in order to balance the economic benefits of fishing whilst ensuring that target species remain on the seabed in order to breed;
- 2.5 To align with the future governance of this fishery: under the Solent Dredge Permit Byelaw Management Intentions Policy Document (a Policy which was developed in order to support the future management of the bivalve fisheries in the Solent under the pending Solent Dredge Permit Byelaw), it is the intention of the Authority to consider management intervention via closure if CPUE at individual bed resolution is <15kg/m/hr. This Policy document was agreed by Members of the Full Authority at the meeting on the 13th December 2018;
- 2.6 Consideration of a time series comparison of CPUE data: scrutiny of which can demonstrate whether there has been an overall decline in *Ostrea edulis* stocks when compared to baseline average (Table 1).

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3. Determination of 'Severely Depleted' since 2014

- 3.1 The Solent oyster fishery was once the largest native oyster (*Ostrea edulis*) fishery in Europe. However, in recent years it has experienced a decline, observed in vessel numbers, catch rates and oysters on the ground;
- 3.2 Prior to 2014, monitoring of the *Ostrea edulis* population was undertaken by CEFAS via a stock survey;
- 3.3 On an annual basis, since 2014, a Solent *Ostrea edulis* Stock Assessment has been undertaken by Southern IFCA.
- 3.4 In previous years the determination of 'severely depleted' (as required under the Temporary Closure Byelaw) made by the Authority has been based on best available evidence for the level of oyster stocks available. As a result of a low density of *Ostrea edulis* on the seabed, Southern IFCA has applied the Temporary Closure Byelaw to restrict the fishery in order to attempt to stem a further decline in the Solent *Ostrea edulis* stocks;
- 3.5 During the **2019/2020 oyster season** the Authority recommended that the Temporary Closure Byelaw be applied to **all beds in the Solent** (to include Portsmouth Harbour, Langstone Harbour and Southampton Water) for the duration of the 2019/2020 season in order to support the recovery of the stock. No individual *Ostrea edulis* bed in the Solent demonstrated a CPUE in excess of 15kg/m/hr;
- 3.6 During the **2018/2019 oyster season** the Authority recommended that the Temporary Closure Byelaw be applied to the Solent, with the exception of:
- a) Ryde Middle, which remained open following the outcomes of the 2018 Stock Assessment, which suggested that the *Ostrea edulis* stock density could support a commercial fishery, with an individual bed CPUE of 18.4kg/m/hr;
 - b) Portsmouth Harbour, which remained open following the outcomes of the 2018 Stock Assessment, which suggested that the *Ostrea edulis* stock density could support a commercial fishery, with signs of healthy recruitment in the fishery coupled with average CPUE of three individual beds of CPUE 5.4kg/m/hr;
- 3.7 During the **2017/2018 oyster season** the Authority recommended that the Temporary Closure Byelaw be applied to the Solent, with the exception of:
- a) Langstone Harbour, which remained open following consideration of the pending introduction of the Bottom Towed Fishing Byelaw 2016 and its associated closed areas, and with account of the Authorities' duties under the MaCAA 2009, which specifies the need to balance the social and economic benefits of exploiting sea fisheries resources within the district;
 - b) Portsmouth Harbour, which remained open following consideration of the pending introduction of the Bottom Towed Fishing Byelaw 2016 and its associated closed areas, and with account of the Authorities' duties under the MaCAA 2009, which specifies the need to balance the social and economic benefits of exploiting sea fisheries resources within the district. This rationale was coupled with the average CPUE across all three beds in Portsmouth Harbour being 7.7kg/m/hr.

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- 3.8 Based on the current and best available evidence for the Solent *Ostrea edulis* stock, it is proposed that further intervention is required for the 2020/21 season, as per the recommendations above.

4. Best Available Evidence – Policy Context

- 4.1 Under Section 153(2) of the Marine and Coastal Access Act (MaCAA) 2009, IFCA's are responsible for the sustainable management of inshore sea fisheries resources out to six nautical miles and their duties include:

- a) Seeking to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way;
- b) Seeking to balance the social and economic benefits of exploiting sea fisheries resources of the district with the need to protect the marine environment from, or promote its recovery from, the effects of such exploitation;
- c) Take any steps in which in the Authority's opinion are necessary or expedient for the purpose of making a contribution to the achievement of sustainable development
- d) Seeking to balance the different needs of persons engaged in the exploitation of sea fisheries resources in the district;

- 4.2 In accordance with Section 153(3) of MaCAA, in 2011 DEFRA produced a guidance document for IFCA's on evidence-based marine management ¹('Guidance') which outlines best practice principles to include consistency in approach to decision making.

5. The Scope of the 'Temporary Closure of Shellfish Beds' Byelaw

*"Where in the opinion of the Committee, in any fishery, **any bed or part of a bed** of shellfish is so **severely depleted** as to require **temporary closure** in order to ensure recovery, or any bed or part of a bed contains **mainly immature or undersized shellfish**, which in the interests of the protection and development of the fishery ought not to be fished for the time being, or any bed of transplanted shellfish ought not to be fished until it has become established, and where the bed or part thereof has been clearly defined in notices displayed in the vicinity prohibiting the removal of the shellfish, or where the display of notices is not practicable notice has been given by publishing a notice in a weekly newspaper circulating in the District in which that shellfish bed or part of bed is situated. No person shall, while the bed or part thereof is so defined, take away any shellfish without the consent of the Committee. For the purpose of this Byelaw the term "shellfish" means mussels, oysters and clams".*

- 5.1 In accordance with The Sea Fisheries (Shellfish) Act 1967, shellfish beds are defined as 'any bed or ground in which shellfish are usually found'. As such, in line with this definition shellfish beds have been identified to align with locations surveyed under the former CEFAS stock assessments and more recently, the Southern IFCA annual stock assessments, which include; in addition to the historic sites; a number of sampling points which have been added following consultation and advice received from the fishing industry;

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/182346/2011-ifca-guide-marinemanager.pdf

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- 5.2 The Temporary Closure Byelaw provides the Authority the ability to close any bed, or part of shellfish bed which is deemed to be severely depleted in order to ensure recovery;
- 5.3 The Temporary Closure Byelaw allows for the temporary closure of beds;
- 5.4 As such, the application of the Byelaw allows for spatial and temporal closures, or a combination of both;
- 5.5 Closure of beds can be based on either severe depletion or for the protection of juveniles.

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Table 1: CPUE of individual beds and Bivalve Management Areas 2017-2019

		CPUE (kg oysters/per m of dredge/hour)			
Bivalve Management Area*	Individual Beds	2017	2018	Baseline Average (2017-2018)	2019
Area 1: Western Solent	Newtown	4.3	1.8	3.1	0.9
	Pennington	0	1.2	0.6	0.0
	Sowley	0	2.7	1.4	1.5
	Stanswood Bay	1.3	2.8	2.1	1.2
	Yarmouth	1.6	3.1	2.4	2.4
	Lepe	1.2	1.9	1.6	1.5
Area 2: Northern Solent	Bramble	4.6	7	5.8	4.2
	Browndown	6.5	0.8	3.7	4.7
	Chilling	4.5	3.8	4.2	**
	Lee-on-Solent	2.5	1.4	2	**
	North Channel	4.3	6.7	5.5	**
	Stokes Bay	-	0	0	0.0
	Thorn Knoll	0.3	0	0.2	0.4
	Calshot	6.1	1.7	3.9	0.0
Area 3: Eastern Solent	Osbourne Bay	0.7	1.3	1	3.3
	Ryde Middle	14.6	18.4	16.5	6.4
	Spit Sand	0	0.6	0.3	0.8
	Sturbridge	26.8	2.6	14.7	10.4
Area 4: Southampton Water	Ashlett Creek	-	0	0	11
	Itchen	3.6	2.7	3.2	1.9
	Hamble	6.3	4.3	5.3	3.2
	Test	-	0	0	0.0
	Weston	-	0	0	2.1
Area 5: Portsmouth Harbour	Bomb Ketch	13.4	4.2	8.8	3.6
	Fareham	5.5	9.2	7.4	4.2
	Porchester	4.4	2.8	3.6	3.4
Area 6: Langstone Harbour	Langstone	1.9	1	1.5	3.8

Closed under Temporary Closure Byelaw

Temporary Closure Byelaw not applied

*As defined in Schedule 1 of the Solent Dredge Permit Byelaw

**Unable to survey stations as fall within the exclusion zone for the IFA2 cable

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Annex A: Summary of rationale underpinning the delayed implementation of the SDPB

The Solent Dredge Permit Byelaw (SDPB) was made by Southern IFCA in December 2018 and is currently awaiting confirmation by the Secretary of State. Once ratified, the SDPB was intended to come into force on the 1st November 2020.

Following consideration and debate at the TAC in May 2020, it was recommended that, given the current Government Policy with regard to social distancing measures, Southern IFCA should seek to request that the implementation of the SDPB be delayed until November 2021 (NB: it is important here to note the distinction here between implementation and confirmation).

The main considerations underpinning a request to DEFRA to delay the implementation were:

(1) To **support industry during COVID-19:**

As the SDPB has been in development since 2018, in order to introduce the SDPB Byelaw, extensive re-engagement with the fishing community is required in order to:

- inform and educate industry of the new measures under the byelaw;
- to provide an appropriate level of support to applicants – importantly in helping industry to understand how they can apply for a permit following demonstration of a proven track record.
 - The requirement to prove a track record for permit applications may require applicants to approach merchants and the MMO in order to source copies of catch records and/or movement documents. This would be challenging at this time, as in line with current Government restrictions, both the MMO (local offices) and merchants are either closed/operating with restrictions or have may have other priorities. This may disadvantage some fishers who may be eligible for a permit but unable to obtain the evidence to support this.

As such, Members of the TAC agreed that the required level of engagement and support for industry is not possible under the current Government restrictions.

(2) To **maintain business as usual** in the Solent Clam fishery - this will reduce unnecessary burdens and pressures on industry during the COVID-19 pandemic and provide fishers with a much-needed income during these challenging times, thus minimising the impact on fishers at this time.

(3) To ensure the **sustainable management of fisheries** - a delay in implementation will avoid a situation where the SDPB comes into force (which will automatically lead to the revocation of the existing Solent Dredge Byelaw 2016) either mid-season, or at a time when Southern IFCA are unable to meet the time requirements (considerations to include the administration of permits, engagement with industry and resourcing of issuing permits etc).

(4) To take into account **Administration** - It will be extremely challenging to resource and deliver the administration of permits in year one from a remote position.

For these combined reasons Southern IFCA are currently working with DEFRA to delay the implementation of the SDPB until November 2021, following its pending confirmation.

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ITEM C

MINIMUM CONSERVATION REFERENCE SIZE REVIEW

Report by IFCO Jamie Small

A. Purpose of the Report

To consider the format and content of the draft species profile document for edible/brown crab (*Cancer pagurus*) as a resource to help inform decision-making in the upcoming Southern IFCA Minimum Conservation Reference Size review.

B. Recommendation

That Members receive the draft species profile document and provide comment to Officers.

C. Annex

I. Edible/brown crab (*Cancer pagurus*) Species Profile

1. Background

- 1.1 In accordance with its five-year legislative forecast, the Authority have agreed to formally review its minimum size byelaws between 2021 and 2023. In preparation for this review a Research Officer (Jamie Small) has been employed on a fixed-term contract, until April 2021, to evidence this review.
- 1.2 Detailed species profiles will be developed to provide a review of best-available evidence on reproductive biology, species' lifecycle and relevance to the Southern IFCA district in terms of commercial and recreational value.
- 1.3 A comprehensive literature review based upon Size of Sexual Maturity (SOM) will be undertaken to establish, where possible, the size at which 50% of the population of each species reach sexual maturity in the Southern IFCA district. This data will help to inform appropriate MCRSs and identify gaps in our understanding of maturity for specific species. Where data poor species are identified there is the potential to develop primary research into SOM through collaboration with academic institutions.
- 1.4 Primary data collection has begun for the gathering of evidence on SOM for thin-lipped grey mullet (*Liza ramada*) and golden-grey mullet (*Liza aurata*) in collaboration with Plymouth University. Throughout July and August samples of each species have been collected from across the district, and stored in freezers at Southern IFCA office. Samples will be processed by a Masters student at Plymouth University to assess size at maturity and DNA sequencing will be undertaken to confirm species identity.
- 1.5 The attached draft species profile is a template format to base all species reviews upon. Initially 25 species profiles will be produced, prioritising species with the greatest economic and social value in the Southern IFCA district and potential for greatest change.

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LOCAL GOVERNMENT (ACCESS TO INFORMATION) ACT 1985

List of Background Papers

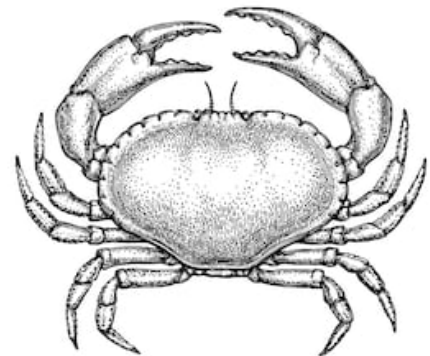
Southern IFCA 5-year Legislative Forecast - Southern IFC Authority Meeting 21st March 2019 <https://secure.toolkitfiles.co.uk/clients/25364/sitedata/files/FAM-Dec-19-Website.pdf>

IFCA Byelaw Guidance - www.association-ifca.org.uk/Upload/About/ifca-byelaw-guidance.pdf

Edible/brown crab (*Cancer pagurus*)

Summary

Size	Max. 300mm carapace width but usually <240mm (FAO, 2015)
Lifespan	>20 years (Neal and Wilson 2008)
Size of maturity in the English Channel (CW₅₀)	Male 90-115mm Female 112-126mm
Fecundity	250,000 - 3 million (Bennet, 1995)
Reproductive frequency	Annual
Capture methods	Parlour pots
Fishing Season	All year round



Description

Cancer pagurus, commonly known as the brown or edible crab, is broadly distributed from the northwest coast of Norway to Morocco (FAO, 2015) and is found along all British and Irish coasts. The species inhabits a wide range of habitats from the intertidal zone to depths of 100m including rocky substrates, coarse sediments, under boulders and sandy or muddy seabeds. Habitat is believed to be gender specific once individuals have reached maturity with mature females favouring sand and gravel and mature males mostly found on rocky ground (Pawson, 1995).

Reproductive Life history

In the English Channel *C. pagurus* mate during late spring (Brown and Bennett, 1980). The male will locate a female before she has moulted and guard her for 3 to 21 days (Edwards, 1966). Once the female has moulted mating by copulation occurs and the male may continue to guard the female for up to 2 days before proceeding to find another mate (Edwards, 1966). The female stores sperm in a special organ called the spermathecae until she is ready to spawn. Oviposition (egg laying) takes place four months after copulation although sperm may remain viable in the spermathecae for over six months (Shields, 1991). Prior to spawning females migrate westwards to various locations throughout the English Channel (Hunter et al., 2013). Individuals are not believed to return to the same spawning grounds each year.

Soft sediment is required to enable the female to dig a hollow in which to retreat into and extrude her fertilised eggs and ensure their attachment to the pleopods (small appendages under the abdomen). *C. pagurus* is a highly fecund species as females can hold between 250,000 to 3 million eggs. Fecundity also increases with carapace width (Bennett, 1995; Haig et al., 2015; Ungfors, 2007).

Eggs are brooded for 7 to 9 months, during this period females are inactive and do not feed thus are less likely to be caught in baited traps (Hunter et al., 2013; Bennett, 1995). Hunter et al. (2013) attached tags to 128 mature female crabs across different locations in the English Channel. They found westerly offshore crabs commenced brooding in late October whilst eastern Channel crabs tended to start brooding slightly later in mid to late November.

Larvae hatch from March onwards with peak sightings recorded in the plankton between May and July (Thompson et al., 1995; Bennett, 1995; Pawson, 1995). The larvae are planktonic for 60-90 days before settling on hard substrates in the intertidal zone (Pawson, 1995; Bennet, 1995). Juveniles remain in shallow, rocky habitat for 3 years until they reach a carapace width (CW) of 60-70 mm, at which point they migrate to subtidal areas (Neal and Wilson, 2008).

C. pagurus grows by shedding its exoskeleton in a process called ecdysis or moulting. Growth rate varies regionally and is dependent on sex, food supply, temperature, depth and frequency of moulting (Bennett, 1995). Moulting frequency is high for small crabs below 100mm CW and declines as size increases ~ 170mm CW (Bakke et al., 2018). Below 100mm CW males and females average moult increments are similar however, beyond this point the average moult increment of the female is less than the male resulting in higher growth rates for males (Bennett, 1974). Moulting is more prevalent between early summer to late autumn (Bakke et al., 2018).

Size of maturity (SOM)

Size of maturity (SOM) is often used to help establish an appropriate Minimum Conservation Reference Size (MCRS) to ensure individuals can reproduce at least once before capture. For crustaceans the SOM is commonly accepted as the carapace width (CW) at which 50% of a population are mature and is referred to as the CW_{50} .

Several definitions can be used to estimate maturity in decapod crustaceans: behavioural maturity; morphometric maturity; functional maturity and physiological maturity (Table 1.). Methods based on morphometric and behavioural maturity criteria are less difficult to determine but they may not always indicate functional maturity (Öndes et al., 2017; Haig et al., 2016).

Table 1. Four definitions of maturity used to infer sexual maturity in crabs (Haig et al., 2016; Öndes et al., 2017)

Maturity term	Description
Behavioural	Individuals show signs of the ability to physically copulate e.g. presence of sperm plugs in females and direct observations of mating behaviour. Doesn't confirm functional maturity.
Morphometric	Crustaceans demonstrate 'allometric growth' where different body parts grow at different rates. Changes in size of secondary sexual characteristics such as female abdomen width and male chelipeds length with growth can be used to estimate onset of maturity. Doesn't always indicate functional maturity.
Functional	Presence of eggs externally attached to a female indicates she is functionally capable of producing offspring. Functional maturity in males is difficult to determine therefore other methods are often used to inform male maturity.
Physiological	Estimated based on microscopic investigation of the gonads or histological observations of ovaries, testes and the vas deferens. Used interchangeably with Functional maturity.

The available published literature suggests that SOM for *C.pagurus* in waters around the British Isles is highly variable and ranges from 59 – 155mm CW₅₀ (Table 2.). All studies reviewed indicate SOM differs between sexes as males become sexually mature at a smaller size than females. The smallest SOM recorded for males was found in the Bridlington population in the North Sea at 59mm (Haig et al., 2016) whereas the smallest CW₅₀ recorded for females was 90mm, also from individuals sampled from the North Sea (Lawler, 2006 unpubl. In Smith, 2010). The largest estimates of size at 50% maturity for *C.pagurus* were recorded as 120-148mm for male populations sampled along the East and West Coast of Scotland (Mesquita et al., 2020) and 150mm for females sampled around the Isle of Man (Öndes et al., 2017).

Two unpublished studies undertaken by Cefas established the SOM for populations of *C.pagurus* located in the English Channel ranged between 90-115mm for males and 112-126mm for female crabs (Lawler, 2006 unpubl. In Smith 2010 and Bennett, 1996 unpubl. In Smith, 2010).

Table 2. Size at maturity estimates (CW_{50}) for *Cancer pagurus* in studies undertaken in the UK and Ireland. Male and female carapace width given in mm. Refer to the Appendix for more information.

Location	Male	Female	Maturity	Reference
England - Selsey	115	125		Cefas, Bennett, 1996; unpubl. In Smith 2010
England - Norfolk	105	110		Cefas, Bennett, 1996; unpubl. In Smith 2010
England - Eastern Channel	105	126	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England - Western Channel	90	112	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England – North Sea	89	90	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England - Bridlington	59	104	Physiological	Haig et al. 2016
Ireland - Galway Bay	106	117	Physiological	Haig et al. 2016
Scotland - Orkney	92	97	Physiological	Haig et al. 2016
Wales - Colwyn Bay	87	103	Physiological	Haig et al. 2016
Isle of Man	85	107	Physiological	Haig et al. 2016
Ireland	110-117	133-138	Functional	ICES, 2004
East & West coast Scotland	120-148	131-142	Morphological	Mesquita et al. 2020
East & West coast Scotland	101-106	127-128	Functional	Mesquita et al. 2020
Isle of Man	89	108	Physiological	Öndes et al. 2017
Isle of Man	107	155	Morphological	Öndes et al. 2017
Scotland – Shetland Islands	126	134	Functional	Tallack, 2007
Scotland – Shetland Islands	-	123	Behavioural	Tallack, 2007

Size at maturity cannot be absolutely compared between studies due to the differences in methods used to establish 50% maturity. However, in general the SOM for the vast majority of populations sampled are below the current Minimum Conservation Reference Size (MCRS) of 140mm CW in the Southern IFCA district suggesting *C.pagurus* will reproduce at least once prior to capture. Only one population of females sampled on the coasts of the Isle of Man identified SOM to be above 140mm at 155mm. All studies undertaken in the English Channel found males and females matured below 140mm CW. Therefore, the literature review suggests that the current MCRS of 140mm is appropriate for *C.pagurus* within the Southern IFCA district.

Southern IFCA Fishery

Fishing activity

C.pagurus is one of the most commercially important species in the UK. In 2018, 28,900 tonnes of crab (mixed species) worth £69.5 million was landed by UK vessels into the UK (MMO, 2018). Of this, 14,500 tonnes, worth £33.1 million, was landed into England.

Historically, *C.pagurus* has been caught across the Southern IFCA district; in the Solent, around the Isle of Wight and along the coast of Dorset. The fishery is most prominent in the west throughout Dorset due to the presence of large areas of rocky benthic habitats. Figure 1. illustrates sightings data of crab and lobster potting activity from 2005-2020 in the district. The brown crab fishery supports more than 250 fishers within the Southern IFCA district based on fishing permits data. Of the 250 permitted pot fishers in the district 227 fish fulltime.

Potting for *C.pagurus* takes place all year round but activity peaks from late winter to spring when meat quality is at its best. The majority of fishers use 'D' creel/parlour pots to target the crabs although some vessels use large rectangular creels. On average vessels will work around 420 pots; however, the number of pots worked can vary greatly, from as few as 50 to as many as 1200, depending on the size of the vessel and frequency of trips. There are 124 vessels under seven metres and 107 vessels between seven and ten metres in length that pot throughout the district. Due to their small size they tend to fish close inshore however, there are approximately 22 ten to twelve-metre vessels that do fish further offshore (>6nm), outside of the district.

Recreational potting does occur in the district but the number of active recreational pot fishers is not known. Greater recreational activity takes place around the Isle of Wight, Swanage, Weymouth, Portland, and Lyme Bay.

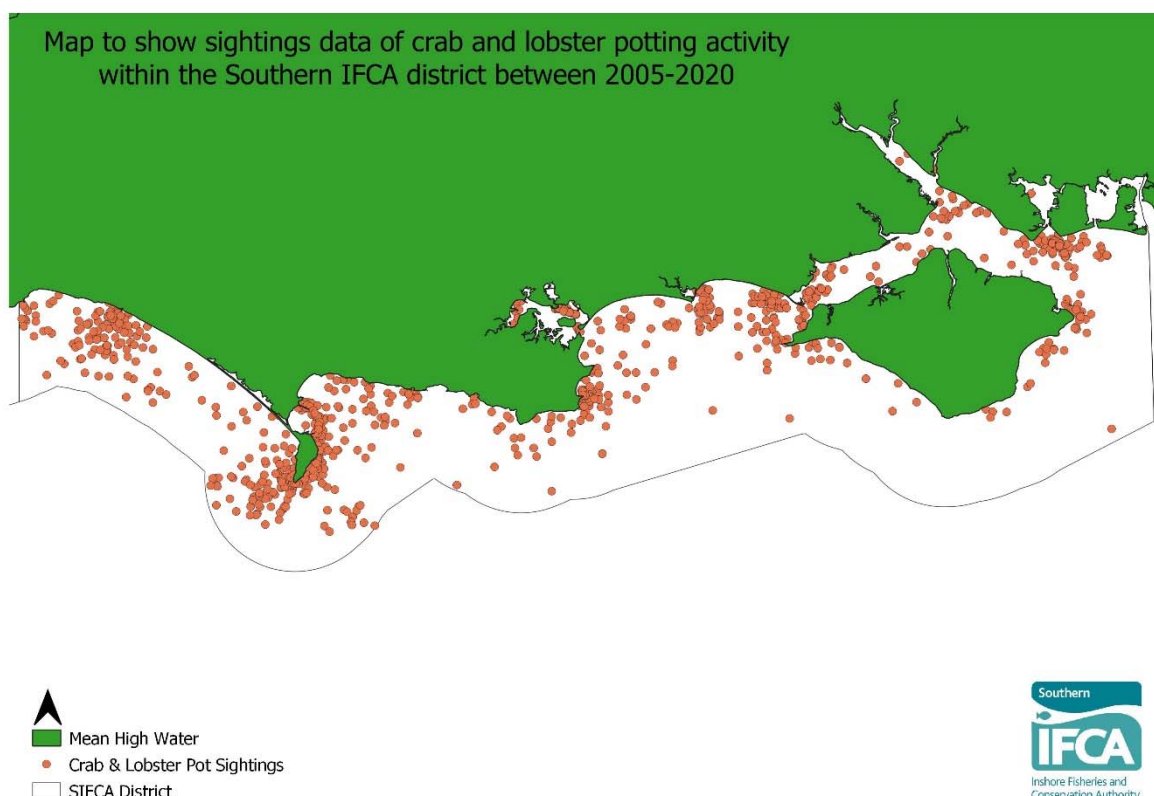


Figure 1. Location of crab and lobster potting activity in the Southern IFCA district based on sightings data from 2005-2020.

Landings & Value of Fishery

Southern IFCA do not currently hold effort or catch data for the *C.pagurus* fishery. However, landings data from the MMO can help indicate the scale of the fishery over time. In 2019 approximately 720* tonnes of *C.pagurus* worth £2,153,330* was landed into ports across the Southern IFCA district (MMO, 2019).

*these figures represent vessels that land into ports in the Southern IFCA district, some of which would have fished outside the district and be >12 metres in length.

Landings remained relatively stable at around 1000 tonnes per year from 2005 to 2017 but have declined slightly over the last two years to below 800 tonnes. A peak of 1,204 tonnes was seen in 2015, with the lowest landings at 720 tonnes in 2019 (Fig.2).

Cefas reported the status of the stock of *C.pagurus* in the Western English Channel to be good with spawning stocks around the level required to produce Maximum Sustainable Yield (Cefas, 2017). Based on the Minimum Landing Sizes (MLS) applied in the region the stock assessment also found that around 96-99% of males and 60-86% of females should be sexually mature.

The value of the recreational pot fishery in the district is not known.

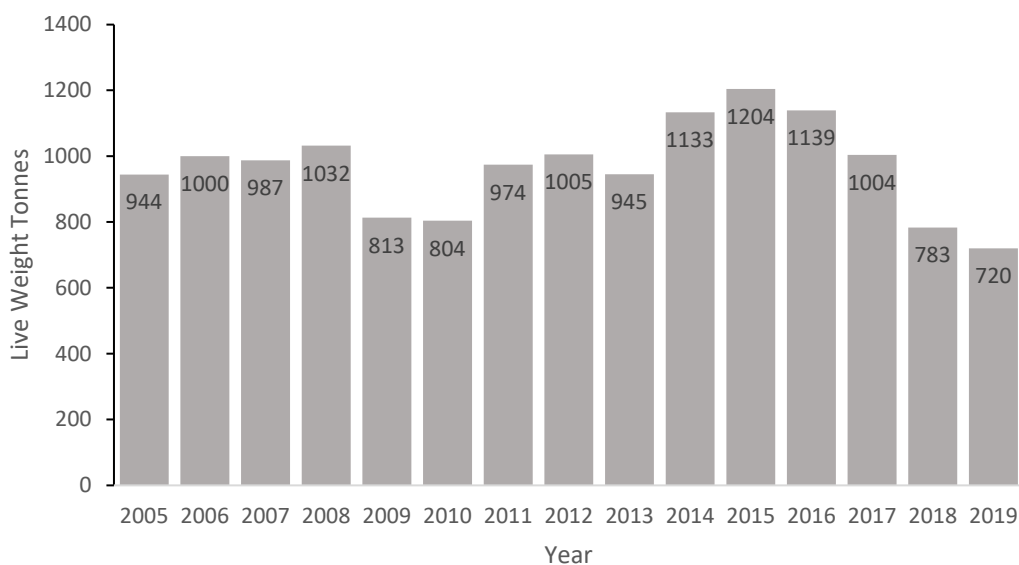


Figure 2. Landings of brown crab (*Cancer pagurus*) into the Southern IFCA district from 2005 to 2018. Data received as a Freedom of Information request from the Marine Management Organisation (MMO).

Associated management

Landings of *C.pagurus* are primarily managed through Minimum Conservation Reference Size (MCRS) restrictions to prevent the landing of sexually immature individuals. This allows individuals to grow and reproduce at least once before harvesting. Current MCRS for *C.pagurus* varies in waters around the UK from 110mm to 160mm carapace width (CW) (Table 3 and 4).

In the Southern IFCA district the MCRS for the commercial fishing of *C.pagurus* is 140mm (CW) through European legislation (Regulation (EU) 2019/1241). The Southern IFCA Minimum Conservation Reference Size Byelaw which is currently in development will apply the MCRS to all fishery participants in the district. The use of escape gaps in crab and lobster pots is promoted on a voluntary basis throughout the district.

Fishing effort is also indirectly managed through the 'Vessels used in fishing 2012' byelaw that prohibits commercial vessels over 12 metres from fishing in the Southern IFCA district. The reduction in vessel size naturally restricts fishing effort as it limits the quantity of static gear that can be worked by each vessel.

Table 3. Minimum Conservation Reference Size (MCRS) for *Cancer pagurus* in waters around the UK (Table adapted from ICES, 2014). All measurements in mm for carapace width (CW). CRH: Crab hens (females and small males), CRC: cocks (large males).

Area	Minimum Conservation Reference Size (MCRS) (mm)
Central North Sea	130 (140 North of 56N)
Southern North Sea	115 and 130
Eastern Channel	130 in Southern Bight and 140
Western Channel	Various/regional 140-150 (CRH) 140-160 (CRC)
Celtic Sea	Various/regional 130-150 (CRH) 130-160 (CRC)
Irish Sea	Various/regional 130-140 (CRH) 130-140 (CRC)

Table 4. Minimum Conservation Reference Sizes (MCRS) for *Cancer pagurus* in Inshore Fisheries and Conservation Authority (IFCA) Districts in England. All measurements in mm for carapace width (CW).

IFCA	Minimum Conservation Reference Size (MCRS) (mm)
Northumberland	130
North Eastern	140
Eastern	115
Kent & Essex	130
Sussex	140
Southern	140
Devon & Severn	150 female (applies to Mobile Fishing, Potting, Netting and Diving permit conditions. 140mm applies for all other removal) 160 male
Cornwall	150 female 160 male
Isles of Scilly	140 female 160 male
North Western	130

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Appendix

Table A. Estimates of size at maturity for *Cancer pagurus* in studies undertaken in the UK and Ireland. Table shows study location, total number of individuals sampled overall, size range sampled, total number of individuals used to assess size at maturity, size of smallest mature individual, size at 50% maturity (CW_{50}), size range of mature individuals and maturity definition used to assess maturity. All sizes based on carapace width (CW) in mm.

Study location	Total No. of individuals surveyed	No. of individuals (n)		Length Data		Total No. of individuals	Size at Maturity Data						Maturity Definition	Reference		
				Size range (mm)			No. of individuals (n)		Size of smallest mature individual (mm)		Size at 50% maturity (CW_{50}) (mm)				Size range of mature individuals (mm)	
		M	F	M	F		M	F	M	F	M	F			M	F
England <i>Selsey</i>	-	-	-	-	-	-	-	-	-	-	115	125	-	-	-	Cefas, Bennett, 1996; unpubl. In Smith 2010
England <i>Norfolk</i>	-	-	-	-	-	-	-	-	-	-	105	110	-	-	-	Cefas, Bennett, 1996; unpubl. In Smith 2010
England <i>Eastern Channel</i>	-	-	-	-	-	-	-	-	-	-	105	126	-	-	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England <i>Western Channel</i>	-	-	-	-	-	-	-	-	-	-	90	112	-	-	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England <i>North Sea</i>	-	-	-	-	-	-	-	-	-	-	89	90	-	-	Physiological	Cefas, Lawler, 2006; unpubl. In Smith, 2010
England <i>Bridlington</i>	247	82	165	71-148	80-153	-	-	-	-	80	59	104	-	-	Physiological	Haig et al., 2016
Ireland <i>Galway Bay</i>	373	154	219	70-171	66-162	-	-	-	96	79	106	117	-	-	Physiological	Haig et al., 2016
Scotland <i>Orkney</i>	296	79	217	72-150	79-150	-	-	-	80	88	92	97	-	-	Physiological	Haig et al., 2016
Wales	435	229	206	30-220	68-182	-	-	-	63	68	87	103	-	-	Physiological	Haig et al., 2016

Isle of Man	274	132	142	67-137	82-152	-	-	-	67	82	85	107	-	-	Physiological	Haig et al., 2016
Ireland <i>Cork, Donegal, Wexford</i>	-	-	-	-	-	925	274	651	102	124	110-117	133-138	-	-	Functional	ICES, 2004
East & West coast of Scotland	1008	-	-	73-211	83-204	-	-	-	-	-	120-148	131-142	-	-	Morphological	Mesquita et al., 2020
East & West coast of Scotland	1008	-	-	73-211	83-204	-	-	-	86	110	101-106	127-128	-	-	Functional	Mesquita et al., 2020
Isle of Man	-	-	-	-	-	297	82	215	-	-	89	108	-	-	Physiological	Öndes et al., 2017
Isle of Man	-	-	-	-	-	309	87	222	-	-	107	155	-	-	Morphological	Öndes et al., 2017
Scotland <i>Shetland Islands</i>	-	-	-	-	-	208	94	114	-	134	126	134	-	-	Functional	Tallack, 2007
Scotland <i>Shetland Islands</i>	-	-	-	-	-	812	-	812	-	-	-	123	-	-	Behavioural	Tallack, 2007