

Taw-Torridge Mussel Stock Assessment 2025



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1. Introduction

1.1 *Mytilus spp.*

Mytilus spp., mussels such as *M. edulis* and *M. galloprovincialis*, are cold-water mussels which can occur in brackish to hypersaline water (Gardner, 1996). They are found on the north Atlantic and north Pacific coast of North America, Europe and in other temperate and polar waters. *Mytilus spp.* can occur intertidally and subtidally, and on a variety of substrates, from rocks to sediments, and in a range of conditions. “Blue mussel beds on sediment” (JNCC, 2011) are a Habitat of Principal Importance for the conservation of biodiversity (formerly a UK BAP Priority Habitat), listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 in England. This includes a range of sediments, such as sand, cobbles, pebbles, muddy sand and mud. The ability of *Mytilus spp.* to occupy such a range of habitats results from its ability to withstand wide variation in salinity, desiccation, temperature and oxygen concentration (Bayne and Worrall, 1980; Seed and Suchanek, 1992; Andrews *et al.*, 2011).

Mytilus spp. beds play an important role in the healthy functioning of marine ecosystems; having a role in coastal sediment dynamics, acting as a food source to wading birds, and providing an enhanced area of biodiversity in an otherwise sediment-dominated environment (JNCC, 2011). Mussel beds support their own diverse communities as the mussel matrix, composed of interconnected mussels and accumulated sediments and debris, provides numerous microhabitats and an organically enriched environment (Seed and Suchanek, 1992; Andrews *et al.*, 2011). *Mytilus spp.* are filter feeders, feeding primarily on micro-algae, suspended debris and zooplankton, and play a vital role in estuaries by removing bacteria and toxins.

The reproductive strategy of *Mytilus spp.* is to deploy a large number of gametes, approximately three million eggs, into the surrounding water where fertilisation takes place (Andrews *et al.*, 2011). Following fertilisation the zygotes, as planktonic larvae, undergo six stages of metamorphosis before settlement. Mussels can adapt their reproductive strategy depending on environmental conditions. For example, the release of gametes can be timed to complement favourable environmental conditions, and the planktonic phase can last between two and four weeks depending on temperature, food supply and availability of a suitable substrate to settle on (Andrews *et al.*, 2011). Depending on temperature and nutrient levels, spawning may occur just once or several times per year (Bayne and Worrall, 1980; Seed and Suchanek, 1992; Handå *et al.*, 2011).

Current threats to *Mytilus spp.* beds include commercial fishing, water quality, coastal developments, anchoring, bait digging, and intensive recreational hand gathering (JNCC, 2011).

1.2 Objectives

The objective of this project is to carry out annual surveys of the public mussel beds on the Taw-Torridge Estuary, to undertake a stock assessment on each of the beds to estimate the density of mussels on the beds and the total stock of mussels, including marketable mussels and those required by overwintering birds of the Taw-Torridge Site of Special Scientific Interest. Results of these surveys can be compared inter-annually. This will help inform future management of the mussel beds on the Taw-Torridge Estuary and the development of shellfisheries in this part of the Devon & Severn IFCA's District.

2. Methodology

2.1 The Taw-Torridge Estuary

The Taw-Torridge estuary is located on the North Devon coast, within the Area of Outstanding Natural Beauty (AONB) and the North Devon UNESCO Biosphere Reserve (Figure 1).

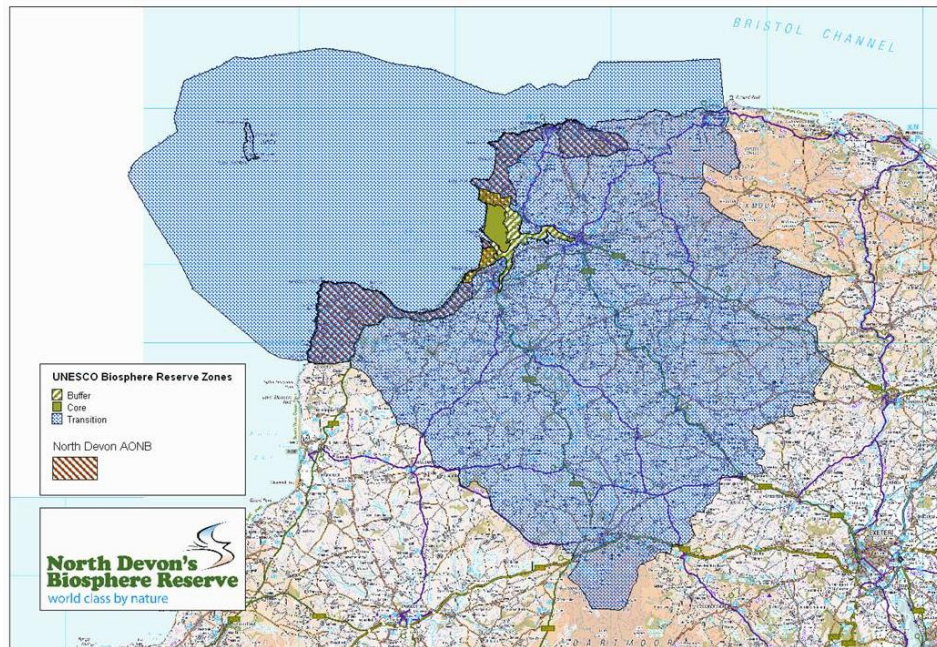


Figure 1 The location of the Taw Torridge Estuary (shown in yellow) within the North Devon Biosphere Reserve and the North Devon Coast AONB. (North Devon AONB and Biosphere Reserve Service, 2010)

The Taw Torridge Estuary is an important site for wildlife and has been designated a Site of Special Scientific Interest (SSSI) (Figure 1) for over-wintering and migratory populations of wading birds, and for the rare plants found on its shores. Upper reaches of the estuary were considered for designation as a Marine Conservation Zone (MCZ) by the Finding Sanctuary Regional Stakeholder Group (RSG) (Figure 3) for six Broad Scale Habitats; subtidal mud, subtidal sand, coastal saltmarshes and saline reed beds, intertidal coarse sediment, intertidal sand and muddy sand, low energy intertidal rock, and one Feature of Conservation Interest (FOCI) species the European eel (*Anguilla anguilla*). However, to date the site has not been designated. Parts of Taw-Torridge Estuary also lie within the Braunton Burrows Special Area of Conservation, also shown in Figure 3.

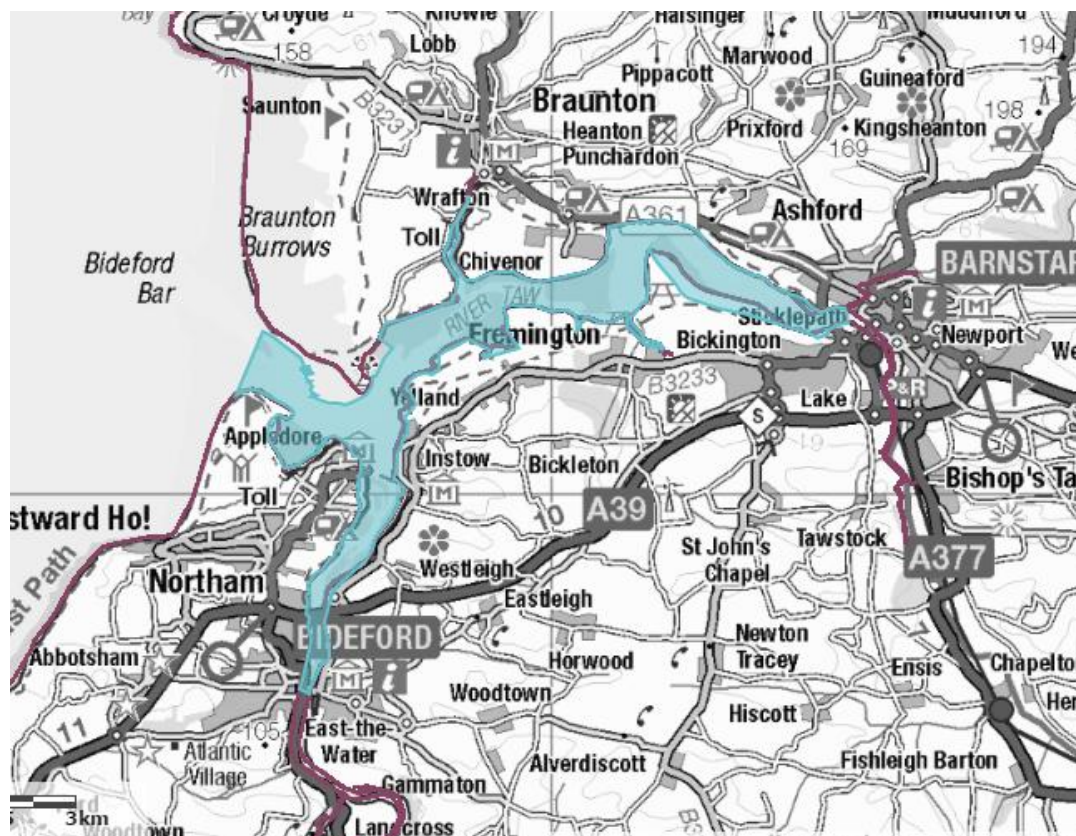


Figure 2 Taw-Torridge Estuary SSSI, shown in blue (Defra, 2020)

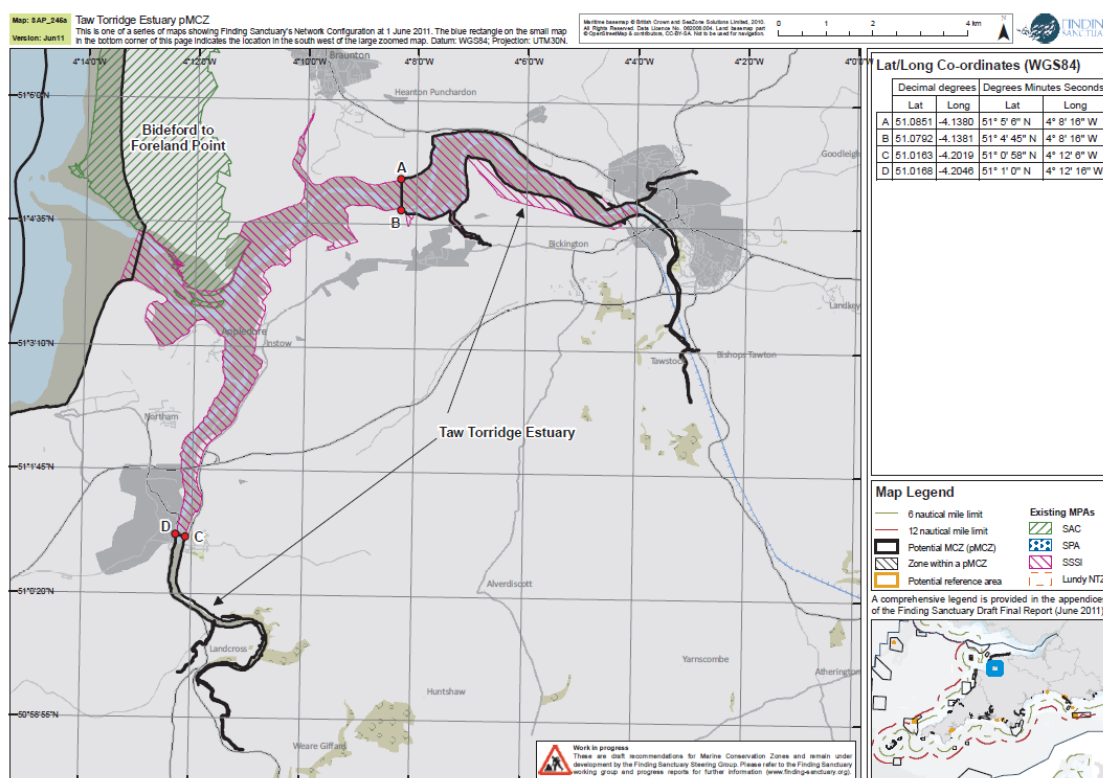


Figure 3 Area of rMCZ, outlined in black. Area of SSSI shown in red hatching, and area of SAC shown by green hatching. (Lieberknecht et al., 2011)

2.2 Survey Methodology

Surveys were conducted annually between 2012–2025 on intertidal beds of the Taw Torridge Estuary. Coolstone, Yelland, Instow and Lifeboat Slip are accessible on foot from land, whereas Pulleys, Sprat Ridge and The Neck are mid-channel and require access by boat.

During the 2025 survey, only Coolstone, Yelland and Instow beds were surveyed. This was due to access issues to the mid-channel beds and very low mussel densities observed at Lifeboat Slip since 2023.

Due to the varying levels of patchiness and density, the area surveyed cannot always be indicative of the size of a true mussel 'bed' and is rather a representation of the area in which live mussels were located. This means that the survey area will not always be purely on mussel bed, but also on areas where mussels occur in small, dispersed patches. The perimeter of the survey areas within the Taw Torridge Estuary were recorded by walking the extent of the live mussel habitat and marking the perimeter with a handheld GPS. Each bed was first visited in 2012, except for the Neck which was first visited in 2020 following consultation with a local fisher, and Instow which was first surveyed in 2023 after officers became aware of the bed during a cockle survey. The perimeters were subsequently mapped in QGIS v3.1

Due to findings of the 2024 surveys at Coolstone which showed discrepancies of the results from two surveys on the same bed on two consecutive days, part of the survey method was changed for the 2025 surveys. Whereas traditionally to determine coverage and mussel density, transects were walked in a zig-zag pattern across the survey area, in 2025 pre-defined survey transects were walked, approximately parallel to the shoreline and each other. The beds at Yelland, Coolstone and Instow were visited before the survey dates so that the perimeter of the beds could be mapped out but walking around the edge of where mussel was present. Transect lines were then created in QGIS five metres apart, running the length of the area previously mapped.

The start and end coordinates of each transect were recorded using a handheld GPS and the pre-determined transect lines were followed using a GPS device as close as possible. Figure 4 shows the transects which were covered during the 2025 survey. A 4 ft bamboo cane with an 11cm ring attached to the end, arranged so that the ring sits flat on the ground when held out to one side, was used to determine the mussel coverage for each transect: Every two paces (one pace consisting of a single step) along each transect the cane was placed out to one side and the presence or absence of live mussels within the ring was recorded. On every third hit (presence) the contents of the ring were taken as a sample, using an 11cm diameter corer. All mussel samples from the same transect were collected together in one bag and kept separate from those of other transects. This methodology is known as the 'Dutch Wand Method'. The method used in 2025 differs from the surveys conducted pre-2025, which recorded a 'hit' or 'miss' every three paces and took a sample on every fifth hit. This change was implemented to increase the sampling frequency to obtain higher resolution data, with a view to increasing the accuracy of subsequent biomass estimates from the survey data.

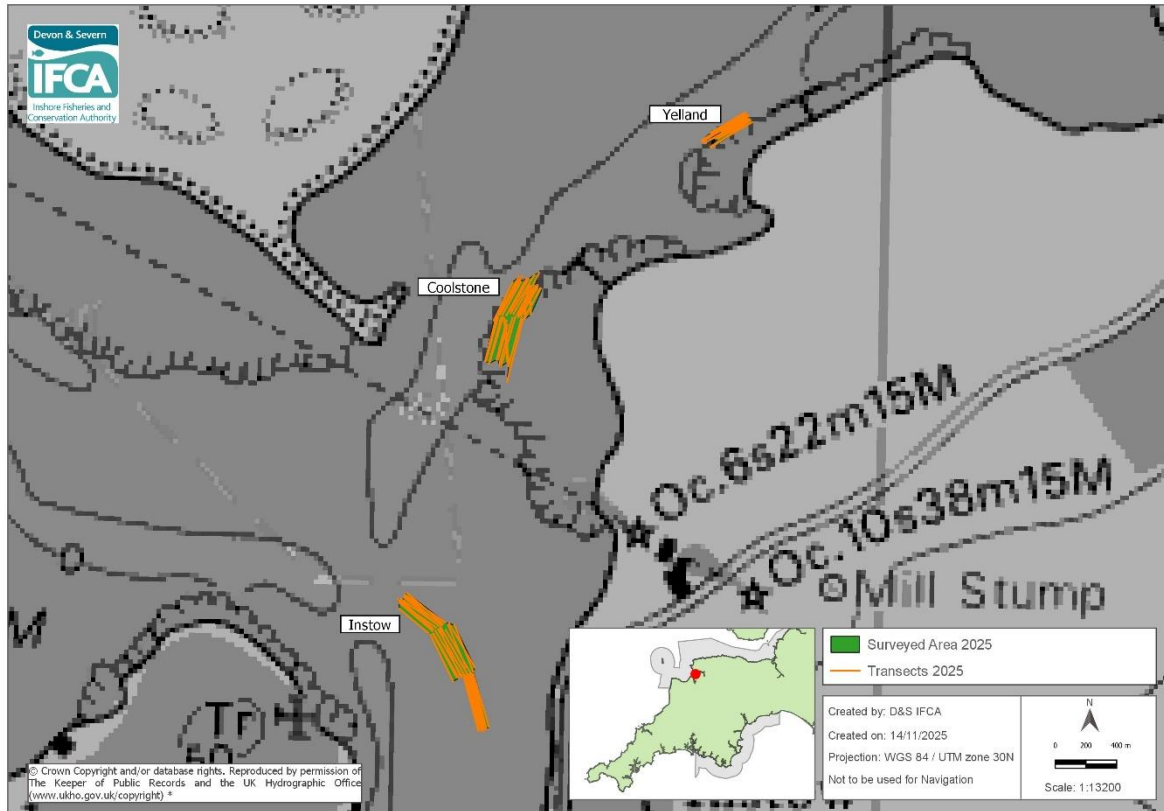


Figure 4 Area of each mussel bed (green) and paths of transects walked in September 2025 (orange). *www.ukho.gov.uk/copyright

Once all transects were complete the mussel samples were sieved and cleaned. For each transect the total number of samples taken was recorded, and all mussels were measured and divided into the following size groups; 1-10mm, 11-20mm, 21-30mm, 31-40mm, 41-50mm, 51-60mm, 61-70mm, 70+mm. The weight in grams of each size group was recorded.

2.3 Data Analysis

The data collected from both the transects and samples were used to calculate the percentage cover (Equation 1), density (Equation 2) and area of the survey area (by generating a minimum convex polygon around the transect lines), which were then used to estimate the mussel tonnage on each site (Equation 3).

Total tonnage and survey area across all sites were calculated based on the weight of mussel in the samples taken and scaled up by the density and the area surveyed across all sites combined was calculated.

As there is a minimum conservation reference size for mussels on the in the Taw-Torridge fishery of 2 inches (~51 mm), the tonnage of mussels available to be removed from the fishery (≥ 51 mm) was also calculated for each bed. A weighted average bed density and percentage cover across all mussel beds was calculated by weighting the values based on the relative total area of the respective beds. Size distribution data were obtained from the length measurements of mussels in the retained samples.

Equation 1: Calculation of the percentage cover of mussel

$$\% \text{ cover} = \frac{\text{no. hits}}{\text{no. hits} + \text{no. misses}}$$

Equation 2: Calculation of the density of mussel cover

$$\text{Density (kg/m}^2\text{)} = \frac{\text{total mussel weight sampled}}{\text{surface area sampled}} \times \% \text{ cover}$$

Equation 3: Calculation of mussel tonnage

$$\text{Tonnage of mussel} = \frac{\text{Density} \times 10,000 \times \text{Area(ha)}}{1000}$$

2.4 Shellfish Ecological Requirement Model

D&S IFCA has recently collaborated with Bournemouth University, Association of IFCA's, Natural England and EAD Ecology on a project funded under the Marine Natural Capital and Ecosystem Assessment programme. The purpose of this project was to assess the shellfish food requirements of oystercatcher (*Haematopus ostralegus*) overwintering in the Taw Torridge Estuary to inform the management of the site and its mussel fishery. The assessment is made using a model, MORPH, which has previously been applied to understand the effect of shellfishing and other factors on survival of waders and wildfowl throughout the UK and internationally. As oystercatchers consume mussels within similar size ranges to those harvested by fishing, the stock assessments of these shellfish made in the Taw Torridge Estuary provided an assessment of the food available to oystercatchers. The model makes predictions for the winters of 2019/20, 2020/21, 2021/22, 2022/23, 2023/24 and 2024/25, and provides outputs applicable to future years, meaning that mussel tonnage estimates derived from D&S IFCA's mussel stock assessments can be compared to the ecological requirements of the bird population in each year, to assess the quantity of mussel potentially available to a fishery. This work is reported in Stillman *et al.* (2025).

D&S IFCA have used the work undertaken by Stillman *et al* (2025) and the previous model supplied by NE to produce a new model which is the most up to date and suitable model for use on the Taw-Torridge.

The mathematical model includes several parameters that may be changed between years to reflect changing conditions on the estuary. For 2025, the tonnage of prey sized mussel was calculated to be 53.54 tonnes on the beds surveyed (based on mussels 31 – 60 mm), and the number of birds feeding on mussels on-site was estimated to be 1228. This estimate was provided by Natural England based on Wetland Bird Survey (WeBS) counts, using the mean five-year count for the overwinter period (September – March, 2020 – 2025).

3. Results

3.1 Coolstone

Coolstone was surveyed on 8th September 2025; 98 samples were collected from 30 transects. Since 2023 the total stock tonnage has decreased by 64% from 78.69 tonnes to 28.26 tonnes in 2025. Bed area has shown an overall decrease since 2023, while density of live mussel has fluctuated (Figure 5a, b), but all values still remain a fraction of values observed in the earlier survey years (e.g. 2012–2014). It is important to note that data are averaged for 2012-14 when the Coolstone beds were separate prior to merging into one continuous bed in 2015. Mussel density and percentage cover estimated in 2025 was the second lowest recorded in the time series, with the lowest bed area and estimated tonnage on the bed (Figure 5). The stock of mussels available to be removed from the fishery ($\geq 51\text{mm}$) in 2025 was estimated to be 10.32 tonnes out a total 28.26 tonnes on the bed, i.e. 36.5% (Figure 5c).

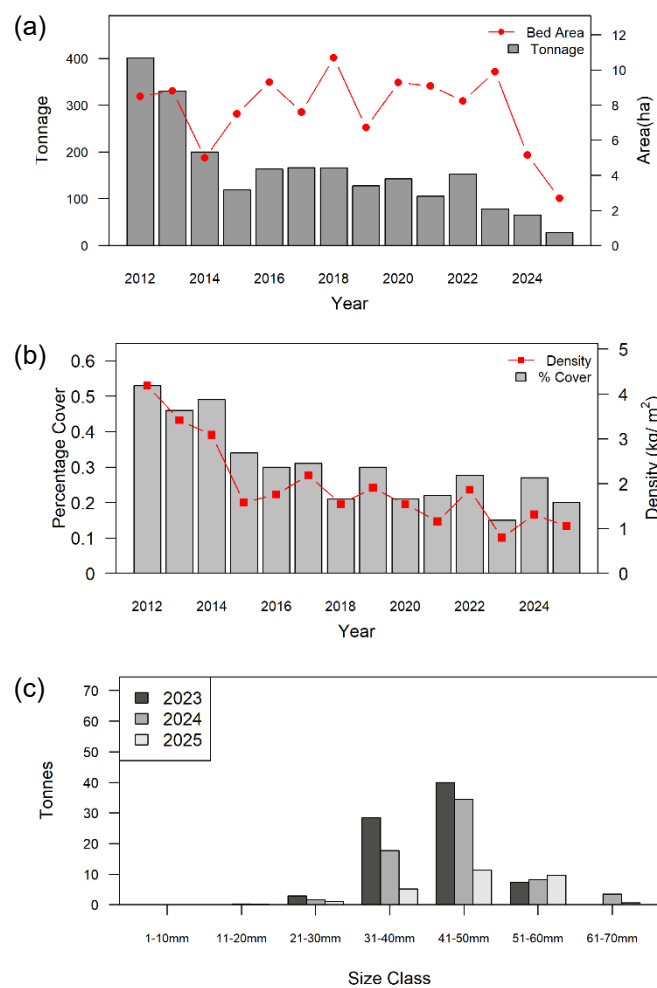


Figure 5 (a) Total area surveyed and tonnage of total stock and (b) average percentage cover and density of mussel between 2012–2025 on the Coolstone mussel bed. (c) Total stock of 10mm size classes for 2023–2025 on the Coolstone bed.

3.2 Yelland

Yelland was surveyed on 9th September 2025; 55 samples were collected from 9 transects. Since 2023 the total stock tonnage has decreased by 28.5% from 17.34 tonnes in 2023 to 12.4 tonnes in 2025 (Figure 6a). This decline began after 2022 when stocks were 49.5 tonnes. Density within the survey area has decreased by 51.5% from 2024 to 2025, this has followed decrease of 77% from 2022-2023 and then an apparent increase from 2023-2024 (Figure 6b). Percentage cover of mussel was stable from 2023-2025 (Figure 6b). The stock of mussels available to be removed from the fishery ($\geq 51\text{mm}$) in 2025 was estimated to be 5.6 tonnes out of a total 12.4 tonnes on the bed, i.e. 45.2% of the total stock (Figure 6c).

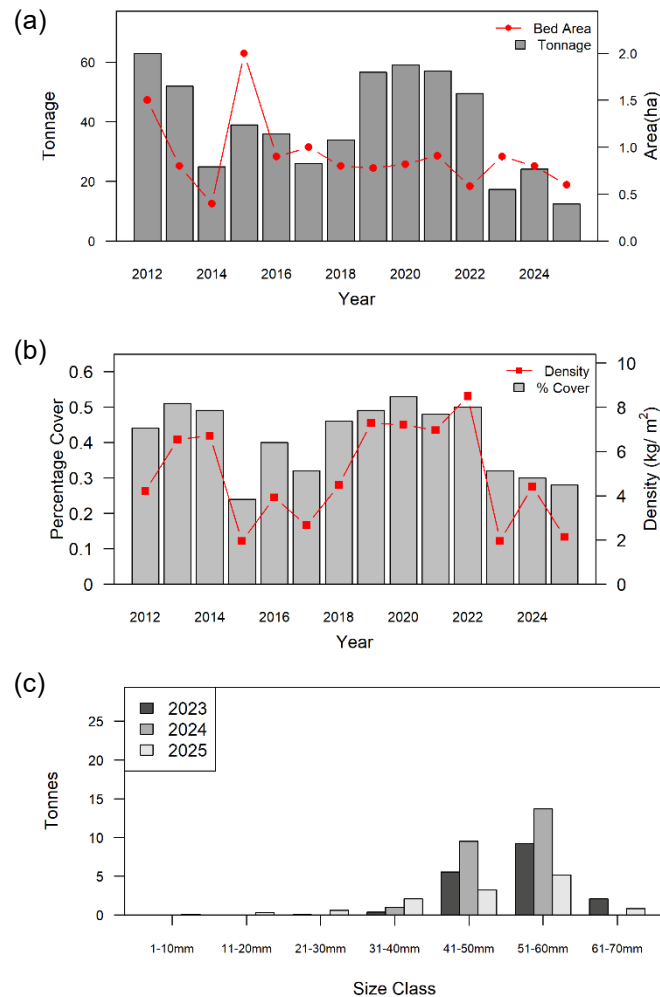


Figure 6 (a) Total area surveyed and tonnage of total stock and (b) average percentage cover and density of mussel between 2012–2025 on the Yelland mussel bed. (c) Total stock of 10mm size classes for 2023–2025 on the Yelland bed.

3.3 Instow

Instow was surveyed on 9th September 2025; 36 samples were collected from 30 transects. This was the third time the Instow bed has been surveyed with the first being in 2023. Between 2023 and 2025 the total stock tonnage has decreased by 86% from 120 tonnes in 2023 to 16.77 tonnes in 2025. This was after an initial apparent increase of 67.5% from 2023 to 2024. Density within the survey area decreased by 81.3% since 2023 and percentage cover of mussel decreased by 84.2% (Figure 7b). The stock of mussels available to be removed from the fishery ($\geq 51\text{mm}$) was estimated to be zero in both 2023 and 2024 however this increased to 4.62 tonnes in 2025 which is 27.5% of the total tonnage of 16.8 (Figure 7c).

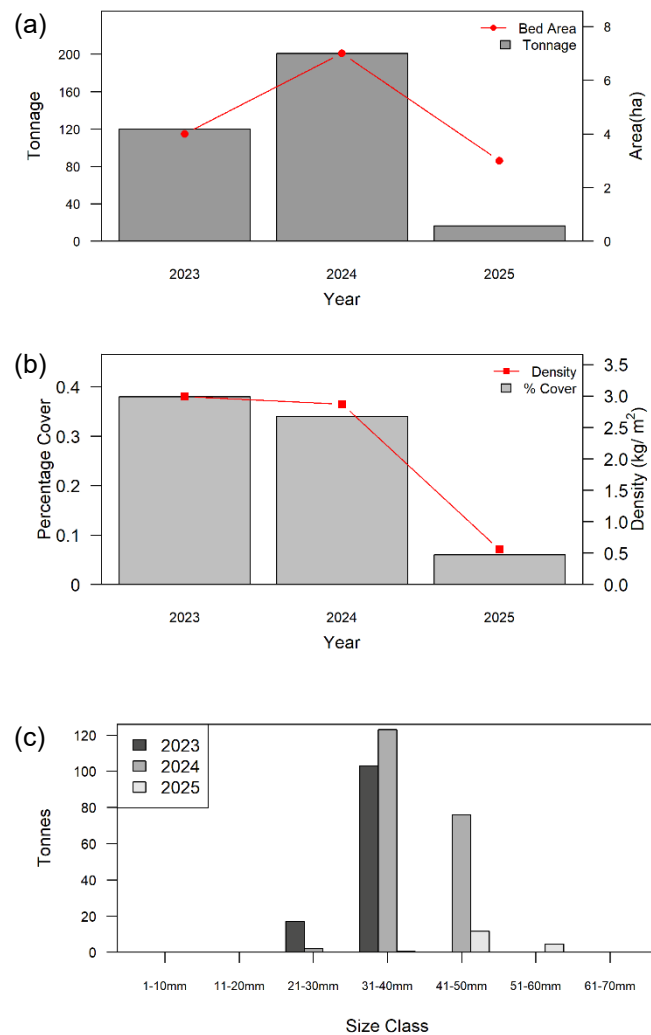


Figure 7 (a) Total area surveyed and tonnage of total stock and (b) average percentage cover and density of mussel between 2023–2025 on the Instow mussel bed. (c) Total stock of 10mm size classes for 2023-2025 on the Instow bed.

3.4 Ecological Requirements

The mathematical model projected that the ecological requirement of the bird population obtained from prey-sized mussels (31 – 60 mm shell length) is 841.5 tonnes. The quantity of prey-sized mussel available from the three mussel beds surveyed in 2025 is 53.5 tonnes leaving a deficit of 788 tonnes. However, the main beds on the TT estuary are Pulleys and Sprat Ridge which could not be surveyed due to logistical reasons.

Using data from the last time Pulleys and Sprat Ridge could be surveyed in 2022 and combining this with 2025 results, the tonnage of prey-sized mussel across the beds is estimated to be 605.70. This would leave a deficit of 235.8 tonnes.

If it was assumed that the Pulleys and Sprat Ridge beds have declined at the same rate as the other beds since 2022, there would be a total of 159.54 tonnes of prey-size mussel across all the beds. This would leave a deficit of 682 tonnes.

4. Discussion

4.1 Analysis of Individual Beds

4.1.1. Coolstone

Between 2016–2018, the tonnage of mussels on the Coolstone bed remained relatively stable, but from 2019 to 2022 there was an apparent decline of between 13–37 % in tonnage across the bed compared to the 2018 levels. During that time, the surveyed bed area fluctuated between around 6 and 11 hectares. Since 2022 this decline in tonnage has continued with an apparent 81.6% decrease in tonnage from 2022 to 2025. The bed area decreased to 2.7 ha in 2025; this decrease in bed area could be due to the change in survey methodology in 2025, which used a set of targeted, pre-defined transects over a known bed area, rather than the previous zig-zag method over a larger area. The density and percentage cover of mussel across the bed have shown an overall trend of decline since surveys began in 2012, and although there was an apparent increase in 2022 of both metrics with a fluctuation year on year to 2025 when there was a slight decline from 2024, this is not dissimilar to fluctuations observed in previous years. The density of the Coolstone bed had been fluctuating between around 1.5 and 1.9 kg/m² since 2015 (Figure 5b), which is when the previously separate beds were first considered to be one merged bed. However, this decreased to 0.8 kg/m² in 2023, and 2024 saw an increase to 1.3 kg/m² then a further decrease to 1.05kg/m² in 2025. Coolstone is a patchy bed due the substrate that mussel is settled on: a mosaic of rock, pebble and gravel. The patchy nature of this bed may explain the fluctuations in the measures seen year-on-year, as the values obtained will depend on whether the transects happen to cross over the denser patches of mussel. However, previous data suggest that the previous zig-zag transect method, which used a relatively small number of transects across a wide survey area, may lead to observation error due to low sampling rates and inconsistencies between surveys in substrates surveyed. A continuation of the new survey methodology with a larger number of pre-defined transects and increased sampling rate may identify if past fluctuations were down to observation error and/or changeable bed dynamics.

4.1.2. Yelland

Over the 2019–2022 period, the area, tonnage, density, and percentage cover of mussels on the Yelland mussel bed remained relatively stable compared to earlier survey years, although the bed area and tonnage recorded in 2022 appeared to show small declines and

the percentage cover may have increased. However, in 2023 the tonnage, density and percentage cover all appeared to decrease with a relative 65%, 77% and 36% decline respectively. Away from the decrease seen in most metrics, the bed area increased by 54% from 2022 to 2023. It may be that in 2023 the surveyed area was larger but included areas of non-mussel bed, leading to apparent declines in density and percentage cover, although the bed area was similar in 2024. There was an increase in the tonnage, density and percentage cover in 2024 but not back to the same levels as in 2022 and earlier. After this slight increase there was a further decrease in tonnage, density and percentage cover in 2025. There was also a decrease in area in 2025, although this may be due to the change in survey method which focused on known areas of mussel bed.

4.1.3. Instow

Unlike the other established beds, the Instow bed surveys only began in 2023. The density and percentage cover on the bed stayed stable across the first two years however there was a large decrease of both metrics in 2025. The tonnage almost doubled from 2023 to 2024 and then there was a substantial decrease of 92% from 2024 to 2025. The area of the bed appears to have fluctuated over the three survey years from 4 ha in 2023 to 7 ha in 2024 to 3 ha in 2025. In previous years there was an additional patch of mussel surveyed as part of the Instow bed, slightly to the northwest of the area surveyed in 2025. However, there was no mussel in this additional area during the 2025 survey, which explains part of the decrease in bed area. Overall, the main area of mussel at Instow also appeared to be smaller in 2025 than in previous years. In 2023 there was only mussel in the 21-30mm and 31-40mm size classes whereas in 2024 there was mussel in those size classes and the 41-50mm size class and in 2025 there was also mussel in the 51-60mm size class. In 2024 there was a decrease in the amount of mussel in the 21-30mm size class which continued in 2025. This bed has seen the most drastic decrease in density, percentage coverage and tonnage from 2023 to 2025. The survey needs to be repeated annually with the new survey methodology to determine if the bed will continue change.

4.2 All Beds

Due to access issues to the mid-estuary beds including Pulleys, Sprat Ridge and The Neck, comparisons across all beds have not been able to be undertaken since the 2022 survey. The Lifeboat Slip bed hasn't been surveyed since 2023; however, this bed is the smallest bed with the most sporadic mussel coverage. Without results from these four beds no conclusions can be drawn on potential changes across the estuary as a whole. Officers continue to explore options for access to mid-channel beds to enable appropriate surveys to take place.

4.3 Ecological Requirements and The Local Fishery

Following the loss of mussels between 2013 and 2014 and an increase in interest from numerous commercial harvesters, Natural England, as the regulatory body for SSSIs, working with D&S IFCA, introduced management measures to ensure that enough mussels would be available to provide an adequate food supply for the birds for which the SSSI is designated. D&S IFCA and Natural England had imposed a limit of 500kg of mussels that could be removed from the SSSI per month. The estimated mussel stock calculated in D&S IFCA's intertidal stock assessments feed into a shellfish ecological requirement model. With progress in modelling food availability for the birds on the estuary, and the observed increases in the intertidal mussel stock in 2022, D&S IFCA and Natural England agreed an increase to the limit for the fishery in 2023, which was set at 750kg per month. However, in

subsequent years D&S IFCA surveys and local fisher observations highlighted a decline in mussel stocks and the fisher agreed to pause harvesting until there were signs of stock recovery and sufficient food supply for the overwintering birds.

Three scenarios of prey-sized mussel tonnage were used for modelling ecological requirements: (1) the tonnage from 2025 survey, (2) the tonnage of 2025 survey combined with Sprat Ridge and Pulleys tonnage from 2022, and (3) 2025 survey combined with Sprat Ridge and Pulleys from 2022 but with the same rate of decline as the other beds. All three scenarios suggest a deficit of mussel available for the oyster catcher population on the Taw-Torridge estuary. These scenarios were based on assumptions of the mussel tonnage on Pulleys and Sprat Ridge and therefore may not reflect what is happening on the beds at this current time.

The stock of mussels across the three surveyed which is larger than the minimum size for the fishery ($\geq 51\text{mm}$) was 20.932 tonnes; of this, 1.51 tonnes of this was larger than 60mm, which is outside the prey-size. However, the bird food model results show there is a deficit of prey size mussel. This means that there is currently no scope for a fishery for prey-sized mussel. Though 1.51 tonnes of the mussel was larger than 60mm shell length, and so above the typical prey size, it would be suitably precautionary to require this mussel resource to be left on the bed to help replenish the stock through reproduction, and to provide an alternative food resource for birds which may not have access to alternative food sources. No mussel was removed by the fishery in 2024 or 2025 due to observed decreases in mussel across the beds by the fishery itself.

4.4 Comparison of Survey Methods

A new method to survey the beds was trialled in the 2025 survey. Although the Dutch Wand method was deployed as previously, the transect type and frequency of samples removed was changed. As previously reported, zig-zag transects were normally undertaken with “hit or miss” recorded every three strides, and samples taken every five hits. The 2025 survey had pre-defined transects parallel to the shore, “hit” or “miss” recorded every two strides and samples taken every three hits. This new method is expected to be more accurate than the previous.

The previous zig-zag method had a risk of missing large sections of the beds and potentially dense areas of mussel. The zig-zags were carried out by picking a spot on the shore to walk towards, however it was difficult to determine the degree of the angle in the field and therefore big gaps could be left. This also changed between surveyors and years. The new method with pre-determined transects spaced evenly apart gave more consistent coverage across the beds, minimising the chance of missing patches of mussel. Using this new method the total length of transect was also larger with 4.5km covered in one survey during 2025 compared to between 1.8-2.5km covered across each of three surveys in 2024.

Another aspect of the new method which could improve accuracy is the number of “hit/misses” recorded compared to the previous method. As an example on the Coolstone bed a similar sized area was covered in 2025 and 2024 (2.7 ha in 2025 and 3ha, 2.5ha and 3.6 ha across three surveys 2024), more hits and misses were sampled in 2025 (1,594 in total) compared to 2024 (458, 638 and 561 across the three 2024 surveys), which means that the total sampled area (total area sampled within the Dutch Wand ring) was much greater using the new method (0.82m^2 in 2025 vs $0.16 - 0.23\text{m}^2$ sampled in 2024). There

were also many more samples taken in 2025 with 98 samples taken, compared to 21 – 27 in 2024. This higher sampling frequency should translate to a better representation of percentage cover, density and mussel size distribution.

4.5 Conclusions

For a third year in a row the Pulleys and Sprat Ridge beds were not surveyed due to continuing access issues and therefore conclusions cannot be drawn on the current state of the mussel stock across the full intertidal area of the Taw Torridge Estuary. Officers continue to explore options for access to mid-channel beds to enable appropriate surveys to take place.

There was a continuation of interannual variation on the mussel beds that were surveyed. Further analysis of existing data and future surveys will help Officers to understand the amount of apparent inter-survey variation that is due to sampling bias versus actual change in the mussel stock. Based on analyses to date, the updated survey method appears highly likely to give a more accurate representation of the available mussel stock than the previous method, and this updated method will be continued in 2026.

After two attempts at surveying with an UAV using visible light sensors in 2023 and 2024 it can be concluded that this method cannot be used as a standalone method to survey the mussel beds on the Taw Torridge. However, Officers are awaiting results from North Western IFCA (NWIFCA) on the use of an UAV with a multispectral camera used to survey the mussel beds in their District. If this proves to be successful, Officers will trial this method on the Taw Torridge.

4.6 Recommendations

It is recommended that the Taw Torridge Estuary mussel stock assessments continue to be carried out on an annual basis, to monitor any future changes to the stock of the beds. This will help to inform any future management D&S IFCA may bring in for the collection of mussels, as part of its review of existing Byelaws and development of a possible Hand Working Byelaw, as well as working with Natural England to ensure the mussel harvesting limit remains suitable to balance the environmental and economic interests in the mussel stocks.

Surveys carried out as part of the review of the ecological requirement model identified that bird numbers were highest on the Pulleys and Sprat Ridge beds, with numbers on the Pulleys bed usually being the highest (Stillman *et al*, 2025). This highlights the importance of these beds, and as they haven't been surveyed since 2022, it is recommended that a solution is found to the access issues to undertake a full stock assessment within the Taw Torridge Estuary.

Officers will continue dialog with NWIFCA on the development of a method using a multispectral camera on an UAV as well as investigating options to get on to the beds to undertake Dutch wand surveys. This full stock assessment will ensure that the bird food availability model produces the most accurate results.

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