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Rock lobster catch and effort data: 1979–80 to 2022–23

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Plain language summary

This report summarises commercial catch and effort statistics for rock lobsters, which are also known in New Zealand as “crayfish” or “kōura”.

The summaries presented in this document cover the rock lobster legal fishing years (1 April–31 March) for April 1979 to March 2023.

There are nine Quota Management Areas (QMAs) that cover all inshore waters of the North Island, the South Island, and the Chatham Islands. There are 43 smaller statistical areas that lie within these nine QMAs. The summaries are ordered by QMA, with each QMA identified by a three-letter code and a number. The rock lobster code is CRA, so the nine QMAs are labelled CRA 1 to CRA 9.

The first three tables for each CRA QMA summarise, by statistical area and fishing year, (1) number of vessels, (2) catch, and (3) effort. The last category is defined as the total number of rock lobster pots lifted within each fishing year and statistical area. The fourth table summarises catch by month and fishing year for the entire QMA, and a fifth table gives the monthly catch by statistical area for just the final fishing year, which is 2022–23 in this document.

The sixth table for each QMA summarises catch-per-unit-effort (CPUE) by statistical area and fishing year. CPUE in this table is defined as the catch (in kilograms) from the second table divided by the number of potlifts in the third table. There is a seventh table providing CPUE that has gone through a mathematical procedure called “standardisation” which attempts to factor out aspects of the CPUE which might change over time. The standardisation procedure has been suspended beginning with 2019–20 because there are comparability issues associated with the changeover from paper forms to electronic reporting.

EXECUTIVE SUMMARY

Starr, P.J.¹ (2024). Rock lobster catch and effort data: 1979–80 to 2022–23.

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Commercial catch and effort data are an important source of information for stock assessments of rock lobster. Summaries of these data are provided for administrative fishing years (1 April to 31 March) 1979–80 to 2022–23. Standardisations of catch-per-unit-effort (CPUE) for each of the nine rock lobster Quota Management Areas (QMAs) have been suspended since Spring-Summer (SS) 2019–20 due to uncertainties engendered in the data as a result of the decision by Fisheries New Zealand to change from paper form reporting to electronic reporting. As well, this change in data reporting procedure has resulted in a cessation of all management procedures because these were based on annual CPUE standardisations using a 1 October–30 September year (“offset year”). The reason for this suspension lies in the concern that data collected electronically are not comparable with the previous data, thus breaking the time series of consistent CPUE indices.

This document presents information on the spatial distribution of landings and effort (potlifts) and the monthly distribution of landings for each fishing year for each of the nine rock lobster QMAs. It also presents information on the number of participating vessels in each Quota Management Area (QMA) by fishing year and statistical area. Unstandardised CPUE estimates by statistical area and fishing year are also presented for each QMA.

The standardisation procedure, when based on the previous paper form data, did not usually result in much change relative to the arithmetic or the unstandardised annual indices of CPUE in a QMA. However, there was a general tendency for the standardisation procedure to adjust the peak CPUE upwards in the late 1990s in most QMAs (and more recently in CRA 3 and CRA 8). This occurred because unstandardised catch rates tended to be lower in winter and these fisheries shifted to winter fishing, when abundance was high.

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1. INTRODUCTION

Commercial catch and effort data, collected through a compulsory programme administered and enforced by Fisheries New Zealand (within the Ministry for Primary Industries and formerly the Ministry of Fisheries), are an important source of information for stock assessments of rock lobster. They are used to provide indices of vulnerable biomass for each stock and to estimate the distribution of catch between seasons and among month/statistical area strata. There have been continuing refinements to the way in which rock lobster catch and effort data are checked and corrected (Booth et al. 1994, Vignaux & Kendrick 1998, Sullivan 2004, Fisheries New Zealand 2022) and the way in which standardised indices of vulnerable biomass are calculated from them (Maunder & Starr 1995, Starr 2012b, Starr et al. 2019, Starr et al. 2020a, Starr et al. 2020b, Starr et al. 2021a, Starr et al. 2021b, Starr et al. 2022). Earlier versions of this report have been published by Starr & Bentley (2005) and Starr (2006, 2007, 2009a, 2009b, 2010, 2011, 2012a, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022).

Although the primary use of catch and effort data in stock assessments has been to estimate indices that were assumed to be proportional to vulnerable biomass abundance, the same data can also be used to examine the spatial and temporal distribution of catch and effort. Such analyses have been used to interpret changes in catch distribution among statistical areas and seasons within a Quota Management Area (QMA) (see Figure 1). They also provide information for monitoring the fishery. For example, the proportions of catch by month and statistical area are used as guidelines for the allocation of observer catch sampling effort.

The 2019–20 fishing year marked the transition of the collection of rock lobster catch and effort data from a paper-based Catch Effort Landing Return (CELR) system to an Electronic Reporting System (ERS) dependent on a “platform” interface operated from tablets or smart phones. This shift was accompanied by a re-definition of the meaning of an “event” in the rock lobster potting (RLP) fishery and the addition of the requirement to report all components of the rock lobster catch instead of only lobsters which were legal to keep. The ERS tablet reporting system is linked to a global positioning system (GPS) which records the position of the first and last pots retrieved in the event, while counting the pots as they are retrieved during the event and calculating an average soak time at the end of the event. The event ends if the distance travelled between the first and most recent potlift exceeds 10 nautical mile (nm) limit or if the event is ended by the operator. This spatial definition of a potting fishing event differs from the previous definition of a potting event, which was defined as fishing within a single statistical area in a single day. In addition to the requirement to report legal discards (coded as “X”) that was introduced in 2009, fishers are now also required to report all sub-legal (“Y”) and berried, soft-shelled, or damaged (“K”) discards. Fishers are also required to report legal lobsters put in holding pots (“P”) and the subsequent removals from those pots (“N”). There are equivalent codes for putting lobsters into holding facilities on land (“LF”) and then removing these to a LFR (“LFL”). But there is no unique code for legal lobsters that are retained on board and sold directly to the LFR, other than “L”, which is trip-based, not event-based, and can be contaminated with lobsters that have been pulled from holding pots (“N”).

Previously under the CELR paper system, rock lobster fishers were asked to estimate their legal catch weight (including legal “X” discards) as a single value within a daily fishing event. Under ERS, the “platform” software calculates the estimated catch weight based on the entries provided by the fisher to each catch category. Analyses of the 2019–20, 2020–21, 2021–22, and 2022–23 data indicated that the estimated catches returned under ERS differed from the equivalent estimates generated by the previous paper forms (see Appendix B of this report, as well as appendix B of Starr (2021, 2022) for analyses which have demonstrated this difference). This conclusion was important because the estimated catches by fishing event are the key information used in the calculation of catch-per-unit-effort (CPUE), with the consequent recommendation that the CPUE estimated by the new ERS is not likely to be comparable with the CPUE estimated under the previous CELR (paper form) system.

Abundance indices generated from the catch and effort data are used to assess and manage eight of the nine QMAs that support active commercial and non-commercial fisheries (CRA 1, Rudd et al. 2021a;

CRA 2, Roberts et al. 2023; CRA 3, Webber et al. 2020; CRA 4, Rudd et al. 2021b; CRA 5, Webber et al. 2021; CRA 6, Webber et al. (in press); CRA 7 & 8, Webber et al. 2022). These index series have previously been used as an input to management procedures (MPs) that set Total Allowable Commercial Catch (TACC) levels (Webber & Starr 2020). Management procedures are formal rules that set proposed catch limits based on changes in the abundance indices. They are tested with an operating model that simulates the population as it responds to the rule-based catch limit changes and evaluates the changes against agreed-upon management targets. Given the conclusion above that “...the CPUE estimated by the new ERS is probably not comparable to the CPUE estimated under the previous paper CELR system”, the Rock Lobster Working Group (RLWG) agreed to temporarily suspend updating CPUE indices beginning with the 2019–20 spring-summer season². This meant that the 2020 CRA 4 and CRA 5 stock assessments did not include CPUE estimates for 2019–20 Spring-Summer (SS) and that all management procedures were suspended, beginning with the 2020–21 fishing year. The CPUE series used in 2021 CRA 7&8 stock assessment also ended with the 2019–20 Autumn-Winter (AW) season and the MP was terminated. As a result of these decisions, there are no updated annual CPUE standardisations based on the compulsory catch/effort data in this report, including both those based on a 1 April–31 March “statutory fishing year” or 1 October–30 September “offset fishing year”. The offset year CPUE standardisations have been dropped from this report, while the earlier statutory fishing year indices remain in the report but have not been updated with data after the 2018–19 fishing year.

In response to the lack of recent CPUE information for the CRA 2 stock assessment, a CPUE series was developed from voluntary logbook data collected by the CRA 2 fleet since 1993 for use in the 2022 CRA 2 stock assessment (Webber & Starr 2022, Rudd et al. 2023). A similar series, also based on logbook data, was developed for the 2023 CRA 6 stock assessment (Webber et al. in press).

In this report, summaries of the spatial and temporal distribution of the catch and standardised indices of vulnerable biomass are presented up to the 2022–23 statutory fishing year. The following information is presented for each QMA (note Appendix A gives definitions of abbreviations used in the report) :

- (a) The number of vessels targeting rock lobster using pots by statistical area and fishing year;
- (b) The percentage and tonnage of landings by statistical area and fishing year;
- (c) The percentage and number of potlifts by statistical area and fishing year;
- (d) The percentage of landings by month and fishing year;
- (e) The percentage of landings by month and statistical area for the 2022–23 fishing year;
- (f) The cumulative monthly landings by fishing year;
- (g) The arithmetic catch per unit effort by statistical area/QMA and fishing year; and
- (h) Arithmetic, unstandardised, and standardised indices of CPUE for each fishing year, up to and including 2018–19.

The standardised indices of CPUE derived from the compulsory Fisheries New Zealand commercial catch and effort data are assumed to reflect changes in vulnerable biomass. The vulnerable biomass is the total weight of lobsters that can be captured by the fishery and legally retained. This definition also includes legal lobsters that are discarded voluntarily for economic reasons (which are reported against destination code “X”). Vulnerable biomass will be affected by changes in the management of the fishery (e.g., changes in the amount of catch taken, changes in the size limit, or changes to the escape gap regulations). However, our perception of the vulnerable biomass changes with shifts in the spatial and seasonal distribution of fishing effort as well as with changes in abundance through time. The standardisation procedure accounts for changes at the scale of statistical area and month but cannot adjust for changes in vulnerable biomass caused by management or regulatory changes, such as size limit or escape gap changes. Therefore, the CPUE indices within each series are not comparable across the entire series if regulation changes have altered the component of the stock that is vulnerable to commercial fishing. For

² The RLWG concluded in October/November 2019 (see Webber & Starr 2021) that, with the exception of CRA 7, there were sufficient paper form data remaining in each of the QMAs such that there was comparability with previous indices for the autumn-winter 2019–20 data.

example, significant management changes were made to the CRA 3 fishery in 1993–94, including a change in the commercial size limit for males in the winter. The resulting CPUE indices will reflect these changes in the definition of the vulnerable biomass caused by this management initiative. Consequently, it is not possible to draw conclusions directly about the status of the stock based solely on the CPUE series presented in this report. The stock assessment model is better able to make these comparisons because it includes additional information such as catch sampling lengths and tagging data as well as using the information in the CPUE indices regarding stock abundance.

2. METHODS

2.1 Data

Catch and effort data from 1 April 1979 to 30 June 1989 were obtained from the FSU (Fisheries Statistics Unit), and equivalent data from 1 July 1989 to 31 March 2023 were obtained from the Enterprise Data Warehouse (EDW), which has incorporated the previous WAREHOU database (Fisheries New Zealand data request ‘replug 15071’, received 22 May 2023). All rock lobster catch and effort data sources have been documented by Bentley et al. (2005). These data were stored and maintained in the CRACE database (Bentley et al. 2005). As indicated in the Introduction, the CPUE standardisations for each rock lobster QMA and administrative year (1 April–31 March) were not updated with post-2018–19 data and are consequently unchanged from those presented by Starr (2020), using data from ‘replug 12557’ received in September 2019.

Total annual landings, TACCs, and Total Allowable Catches (TACs) are reported in Table 1. Catch totals are based on Quota Management Reports (QMRs) from 1 April 1990 to 31 March 2001 and from Monthly Harvest Returns (MHRs) after 1 April 2001; these data sources are considered the best available information for lobster removals for each QMA in any year. These data were obtained as part of ‘replug 15071’.

2.2 Error checking

All records with error ratings greater than “1” were excluded from this analysis. These error designations, including how they were defined and applied, were described by Bentley et al. (2005) and are updated in Appendix C to reflect the error totals in ‘replug 15071’. There are seven error codes used in CRACE for the Fisheries New Zealand catch effort data: two codes apply to the estimated catch information, two codes apply to the potlift and statistical area information, and three codes apply to the landing data (Bentley et al. 2005; see Appendix C).

All records for vessel 4548 (a coded vessel identifier), which fishes exclusively in CRA 2, have been dropped from this analysis because of a high number of outliers from this vessel. Data originating from CRA 9 vessels which had landed less than 1000 kg of CRA in a year (after combining the “L”, “F”, and “X” destination codes – see Appendix A, Appendix B.2, and final paragraph in Section 2.3) were dropped from the CRA 9 CPUE analyses.

2.3 Catch correction

The FSU and CELR data nominally contained records for every event that occurred on a trip, where an event in the previous paper forms was defined as a day of fishing within a single statistical area using the method of rock lobster potting³. In practice, many rock lobster trips consist of a single event because they occur on a single day, with all effort taking place in just one statistical area. This pattern will vary between QMAs, with trips longer than a single day being common in some QMAs (e.g., CRA 8). The FSU data, although designed to report daily catch records, were collected monthly, so many operators reported the effort expended by day of fishing but reported only the monthly total catch (Booth et al. 1994). Because FSU data were considered reliable only on a monthly basis, the daily CELR data have also been analysed

³ This discussion pertains to the previous paper forms, with a RLP fishing “event” now defined as 10 nm (or less) string of pots under ERS.

at this level of stratification, making each record the summary of one vessel fishing for one month in one statistical area. Starr (2012b) compared standardised series based on observer and logbook data which were compiled at different levels of data amalgamation (individual potlifts, daily records, and monthly records) and concluded that the annual trends remained essentially unchanged, regardless of the level of data stratification.

In the past, estimated catches from the top part of the CELR form (which reports the effort) were used to proportionately correct the information from the bottom part of the form (which reports the landings). This was done to account for likely differences in the estimation methodology used between fishers across years, thus standardising all catches relative to the reported greenweight landings. This approach assumed that the landings in the bottom part of the form corresponded to the reported estimated catches and effort on the top part of the form. This assumption was often incorrect because of the practice in rock lobster fisheries of “holding” catch, either on land or in pots with no entry or egress, before final sale, thus breaking the link between effort and landings. The process of amalgamating catch and effort across an entire month reduced this problem to some extent (by averaging over the entire month), but, in the early 2000s, there were many months where a vessel reported effort and estimated catch, but with no corresponding landings.

A procedure (known as B4: described by Bentley et al. 2005 and in Appendix D.1) was developed in 2003 based on the identification of vessel-month-statistical area strata with no landings. The information for such records was subsequently dropped from that stratum as well as for the stratum in the following month for the same vessel operating in the same statistical area. It was hoped that this procedure would result in a data set that eliminated the bulk of misaligned effort and catch. However, this method failed to recognise situations where operators held and landed catch in the same month or in following months without zeroing out landings in any month.

Consequently, a new procedure family was developed (known as F, described in Appendix D.2), which adopted a different approach for correcting estimated catch to landed catch. Rather than calculating monthly correction factors specific to each vessel-month-statistical area stratum, a “vessel correction factor” (*vcf* [Eq. D.6]: the ratio of landed to estimated catch for a single vessel in a fishing year and statistical area) was calculated, using the sum of landings divided by the estimated catches from the entire fishing year for each vessel in the fishery. The *vcf* was then applied to every estimated catch reported by the vessel in the year and statistical area, on the assumption that the *vcf* was an estimate of the estimation process for that vessel in that year. This procedure eliminated the “holding pot problem” because it was based on estimated catches and assumed that holding behaviour would average out when considered across an entire administrative fishing year. Unfortunately, the distribution of *vcf*, when considered across the entire fleet, contained many outliers that suggested data collection or estimation problems. Initially three variants of the F algorithm were investigated (F1, F2, and F3, see Appendix D.2), which differed in how the outlier *vcfs* were handled. The RLWG selected the F2 variant from the three investigated, which dropped out-of-range *vcfs*, reasoning that vessels with *vcfs* outside the agreed bounds were less reliable than vessels with *vcfs* closer to 1.0. Descriptions of the three F algorithms, along with supporting analyses and comparisons with the B4 algorithm were presented in appendix B of Starr (2013).

Most landings are recorded against the destination code “L” (landed to a licensed fish receiver⁴), the route required for all catch that is sold commercially. However, as abundances increased, so has the practice of landing only those lobsters that provide maximum economic return, with the balance of the legal lobsters returned to sea. This practice is allowed for rock lobster through special provisions in the Fisheries Act (1996). From 1 April 2009, operators have been required to report the weight of legal lobsters returned to sea using the destination code “X”. As noted above, for CPUE to be comparable across the entire range of abundance, all vulnerable lobsters must be included in the calculation, including those returned to the sea or those captured for other purposes. Consequently, the RLWG agreed that destination codes “X” and “F” (lobsters taken for personal use under section 111 of the Fisheries Act) should be added to the “L” destination code⁴ landings when scaling estimated catches.

⁴ The definition of “L” codes has been expanded under ERS: Table B.1 shows that codes “LFL”, “LR”, and “QL” also need to be included.

The F2 algorithm, as adopted by the RLWG, truncates the *vcf* distribution at 0.8 (overestimates of landed catch) and 1.2 (underestimates of landed catch) and scales the estimated catches to the combined “L”, “F”, and “X” (“LFX”) destination codes based on each vessel’s annual *vcf*. CPUE series based on the F2_LFX procedure differed noticeably from B4_L series in CRA 1, CRA 5, and CRA 8, with less important differences in the remaining QMAs (see appendix B of Starr 2013 and Appendix D.2). However, the direction of the differences between the two series was consistent with the hypothesis that adding the “F” and “X” destination codes would account for vulnerable biomass not included when scaling only to the “L” destination code. Furthermore, the consistency between the F2_LFX and B4_L series for CRA 2, CRA 3, CRA 4, and CRA 6 indicated that the F2 procedure was not substantially different from the B4 procedure in QMAs where holding pot activity was less prevalent. The RLWG initially agreed to continue with the B4 algorithm for CRA 5 because there was a long period in the 1990s, possibly extending into the early 2000s, when non-legal discards were included in the estimated catch estimates. However, when CRA 5 was re-evaluated in 2015 (Starr & Webber 2016), it was noted that the difference in the CPUE trends calculated by the B4 and F2 algorithms during the 1990s and early 2000s was not great, but that the trends differed in years after 2010. Consequently, the RLWG agreed in 2015 to bring CRA 5 into alignment with the other CRA QMAs with the revised MP evaluated using the F2_LFX algorithm. Similarly, for CRA 4, the MP developed in 2012 was based on B4_L and the replacement MP evaluated in 2016 was based on the F2_LFX algorithm.

An additional data preparation step was required for the CRA 9 CPUE analyses. Preliminary inspection of the data indicated that a number of vessels reported small amounts of destination code “F” (section 111: for personal use) landings without associated commercial landings. Furthermore, the values obtained for kg/potlift from these records appeared to be inconsistent with the other commercial data from the same stratum, leading to the conclusion that these minor catches and associated effort were not being reported accurately. This problem was resolved by dropping all vessels which landed less than 1 t of CRA 9 lobster annually before proceeding with the F2 truncation step (Appendix D.2, Step 2B). A special audit of the CRA 9 catch and effort data was conducted in late 2015 (D. Webber unpublished report) which found that the CRA 9 CPUE trend was sensitive to the criteria used for including/excluding vessels because of the much smaller size of the CRA 9 data set. It also discovered that there was inconsistent reporting of destination code “X” in this QMA. Consequently, the CRA 9 results reported here should be interpreted with caution. Note that the MP based on these data was abandoned.

The above discussion applies to the previous paper form returns (FSU and CELR) which are no longer active under the current ERS reporting scheme. However, the overall structure of the data preparation has been retained under the ERS, with estimated catches, after being matched with landings by vessel and QMA, expanded using the ‘vessel correction factor’ (*vcf*) to correct for possible bias in the estimation procedure (see Appendix B for a description of this procedure). The difficulty is that the generation of estimated catches is now mediated through the operation of ERS ‘platform’ software which calculates the estimated catches based on inputs by the operator, instead of relying on an operator’s calculation at the end of the catching period. While in principle the new electronic procedure should be superior, there is evidence that it is not comparable to the previous procedure and it is likely that the input software (known as the ‘platform’), which relies on a sequence of short-term inputs by the operator to define disposals and partial catches, may result in inconsistent responses on the part of operators. This problem may be exacerbated by the fact that there are two ‘platforms’ functioning in the rock lobster fishery that differ in terms of the sequence of responses required from the operators. The analyses reported in Appendix B indicate that comparability with previous paper forms has been lost and that, in some QMAs, even under ERS, there appears to be within year variation, indicating that reporting has not stabilised even within this reporting system.

2.4 Calculation of number of vessels fishing

The number of vessels that fished within each statistical area was determined for each fishing year using a data set based on vessels that targeted rock lobster using the rock lobster potting method. This data set was prepared using the B4 catch correction algorithm (Appendix D.1), not the F2 algorithm (Appendix D.2), because the latter algorithm drops vessels that did not meet the *vcf* cut-off criteria and will therefore

give a biased vessel count. Because participating vessels are defined on the basis of landed commercial catch, estimated catches were scaled only to the “L⁴” destination code, ignoring legal discards (“X”) and section 111 landings (“F”). The number of vessels fishing in each statistical area beginning in 2019–20 may not be comparable with vessel counts in earlier years, generated from paper form data, because the ERS estimated catches appear to differ from the CELR estimated catches (see analysis presented in Appendix B).

Many vessels report small quantities of rock lobster in a QMA during a fishing year. For example, on the landings part of CELR forms, 67 vessels reported landing rock lobsters in CRA 5 during 2001–02. However, 30 of these vessels each had a total catch for the year of less than 1 t (five had less than 10 kg). These vessels may have caught lobster accidentally as bycatch or mistakenly recorded CRA on returns. A “rock lobster” vessel is arbitrarily defined to be a vessel which reported at least 1 t of CRA “L” landings from any of the statistical areas that make up the QMA within a fishing year.

For some QMAs, there is uncertainty in the estimated number of vessels for the 1989–90 fishing year. This fishing year had two different data sources (FSU and CELR), switching between systems on 1 July 1989. It is possible that, in some instances, each data source may have used different vessel identifiers for the same vessel, causing some duplicate counting. This problem appears to be restricted to the 1989–90 fishing year, and estimates of vessel numbers for that fishing year should be considered less accurate than for other years.

2.5 Annual indices of CPUE

Arithmetic, unstandardised, and standardised indices of annual CPUE were calculated for each QMA. Arithmetic CPUE for a QMA in year y ($\hat{A}_y$), or for statistical area a in year y ($\hat{A}_{a,y}$), were calculated as the total catch for the year divided by the total number of potlifts in the year:

$$\text{Eq. 1} \quad \hat{A}_y = \frac{\sum_{i=1}^{n_y} C_{i,y}}{\sum_{i=1}^{n_y} P_{i,y}} \quad ; \quad \hat{A}_{a,y} = \frac{\sum_{i \in k_{a,y}} C_{i,y}}{\sum_{i \in k_{a,y}} P_{i,y}}$$

where $C_{i,y}$ and $P_{i,y}$ are the catch and potlifts for vessel-month-area record i in year y ;

n_y is the number of vessel-month-area records in year y ;

$k_{a,y}$ is the set of the vessel-month-area records i that are from statistical area a in year y .

Catches ($C_{i,y}$) for Eq. 1 were scaled to the combined “LFX” destination codes and the data set prepared using the F2 algorithm (see Appendix D.2).

Although the RLWG agreed to drop all updates to the standardised CPUE estimates beginning with the SS 2019–20, arithmetic CPUE (Eq. 1) by statistical area and total QMA has been updated in this report. The F2 algorithm was implemented by combining the 2019–20 landings and estimated catches from both data sources (CELR and ERS) for each vessel and then selecting the vessels that fell within the 0.8–1.2 range. These estimated values are reported in the appropriate tables and figures although they are not comparable with the equivalent values estimated for earlier years using data derived from CELR forms (see Appendix B).

Unstandardised CPUE for a QMA in year y ($\hat{G}_y$) is the geometric mean of the ratio of catch to potlifts for each vessel-month-area record:

$$\text{Eq. 2} \quad \hat{G}_y = \exp \left[\frac{\sum_{i=1}^{n_y} \ln \left(\frac{C_{i,y}}{P_{i,y}} \right)}{n_y} \right]$$

where $C_{i,y}$, $P_{i,y}$, and n_y are as defined for Eq. 1.

Unstandardised CPUE assumes the same log-normal error distribution as the standardised CPUE but does not account for changes in the seasonal and spatial distribution of fishing effort. This index is the same as the “year index” calculated by the standardisation procedure before adding additional explanatory variables. Presenting the arithmetic and unstandardised CPUE indices in this report provides measures of how much the standardisation procedure has modified the series obtained from these simpler indices.

Standardised CPUE (Eq. 3) is calculated from a generalised linear model (GLM) (Maunder & Starr 1995) using fishing year, month, and statistical area as explanatory variables:

$$\text{Eq. 3} \quad \ln(I_i) = B + Y_{y_i} + M_{m_i} + T_{t_i} + \varepsilon_i$$

where $I_i = C_i/P_i$, C_i is the summed scaled “L⁴FX” catch prepared using the F2 algorithm (Appendix D.2);

P_i is the summed potlifts for the i^{th} vessel-month-area record;

Y_{y_i} is the year coefficient for the year corresponding to the i^{th} record;

M_{m_i} is the month coefficient for the month corresponding to the i^{th} record;

T_{t_i} is the area coefficient for the statistical area corresponding to the i^{th} record;

B is the intercept and the ε_i error term is assumed to be normally distributed.

Maunder & Starr (1995) examined alternative methods for standardising rock lobster catch and effort data to obtain indices of abundance. They found that vessel effects were small and suggested that a standardisation based on year, month, and area was adequate for these data. The lack of a vessel effect may be because vessels tend to fish in relatively few statistical areas and consequently any difference among vessels has been captured using the area and month explanatory variables. Starr (2012b) examined detailed potlift data from the observer catch sampling and logbook programmes and concluded that vessel was a potentially important explanatory variable in the standardisations.

It became apparent while conducting the 2017 CRA 2 stock assessment that the estimated CPUE series may not be proportional to stock abundance. Improved model fits were obtained by estimating an additional parameter which relaxed the assumption that CPUE was strictly proportional to vulnerable biomass. But this additional parameter became unnecessary when a CPUE series, which included a *vessel* explanatory variable, was used instead of the standardisation model which omitted this variable. Examination of the standardisation model diagnostics showed that the apparent efficiency improvement primarily occurred because vessels with lower catch rates were leaving the fishery while those with higher catch rates remained, leading to an observed increase in CPUE that was independent of a biomass increase (see appendix D of Starr & Webber 2018). The lack of continuity in vessel codes between the FSU and WAREHOU databases was overcome by keeping the two CPUE series separate and estimating a q -scaling parameter for each series. Although the FSU standardisation model did not include a *vessel* variable⁵, the WAREHOU model was constrained to use vessels with at least five years of experience in the fishery, such that the estimation of vessel and year coefficients was not unduly confounded. Two other experience levels were investigated (three and ten years) without much effect on the resulting time series

⁵ This changed with stock assessments from 2020 onward (CRA 4 (Rudd et al. 2021b), CRA 5 (Webber et al. 2021), CRA 7&8 (Webber et al. 2022), and CRA 6 (Webber et al. in press), where a vessel variable was included in the FSU standardisation. However, no filtering was made based on experience, such that all vessels were accepted into the analysis.

sequence: the primary difference among the estimated series being the use or non-use of a *vessel* explanatory variable (see appendices C and D of Starr & Webber 2018).

A similar approach was adopted for the 2018 CRA 6 stock assessment (Starr et al. 2019) with the seasonal CPUE series developed using a *vessel* explanatory variable based on five years of experience. As for the CRA 2 stock assessment, this series was based only on the post-1989 data because of the lack of vessel continuity with the FSU data. Bayesian inference was employed to estimate the seasonal indices, resulting in a series where the median of the posterior distribution generally matched the frequentist series described in this section, but which estimated wider levels of uncertainty and more variable uncertainty through time. This methodology is described by Starr et al. (2019).

The 2019 CRA 1 and CRA 3 stock assessments continued the switch from maximum likelihood to Bayesian inference (see Rudd et al. 2021a and Webber et al. 2020). As well, these analyses continued to follow the practice first developed in 2017 of including a *vessel* explanatory variable, constrained to vessels which had been in the fishery for at least five years, and splitting the series at 1989–90, with separate scaling parameters estimated for the FSU and CELR data. Although the median index values estimated using Bayesian inference are similar to those estimated using maximum likelihood, the estimates of uncertainty are generally much larger, more variable from year to year, and consequently considered more realistic.

The 2020 CRA 4, the 2020 CRA 5, and the 2021 CRA 7&8 stock assessments were conducted using Bayesian inference and a vessel explanatory variable (see Rudd et al. 2021b, Webber et al. 2021, and Webber et al. 2022). Only CELR data from the 2019–20 AW season were used in the standardisation procedure (see footnote 2) because of comparability concerns regarding the new ERS data.

Documentation for each of the standardised CPUE series used in rock lobster stock assessments beginning with the 2017 assessment can be found in the following New Zealand Fisheries Assessment Reports:

Assessment year	QMA	Reference
2017	CRA 2	Starr & Webber 2018
2018	CRA 6	Starr et al. 2019
2019	CRA 1	Starr et al. 2020a
2019	CRA 3	Starr et al. 2020b
2020	CRA 4	Starr et al. 2021a
2020	CRA 5	Starr et al. 2021b
2021	CRA 7&8	Starr et al. 2022
2022	CRA 2	Roberts et al. 2023
2023	CRA 6	Webber et al. in press

Canonical coefficients and standard errors were calculated for each categorical variable (Francis 1999). Standardised analyses typically set one of the coefficients to 1.0 without an error term and estimate the remaining coefficients and the associated error relative to the fixed coefficient, because of parameter confounding. The Francis (1999) procedure rescales all coefficients by forcing the geometric mean of the coefficients to equal 1.0 and also calculates a standard error for each coefficient, including the fixed coefficient. For comparability, the unstandardised indices and the standardised year coefficients were multiplied by the geometric mean of the corresponding arithmetic CPUE index (Eq. 1) so that all three sets of indices were scaled to the same mean. It is important to note that these index series (arithmetic, unstandardised, and standardised) are still relative indices, even though they are expressed in terms of kg/potlift.

2.6 Annual QMA catch and potlift totals by statistical area

Scaled annual catch totals (Eq. 4) for each statistical area a and year y in a QMA ($\hat{Q}_{a,y}$) were obtained by multiplying the estimated proportion from the catch and effort data set by the total QMA catches from the QMR/MHR (see Section 2.1):

$$\text{Eq. 4} \quad \hat{Q}_{a,y} = Q_y \frac{\sum_{i \in k_{a,y}} L_{i,y}}{\sum_{i=1}^{n_y} L_{i,y}}$$

where Q_y is the QMR/MHR annual catch estimate in year y ;

$k_{a,y}$ is as defined for Eq. 1;

$L_{i,y}$ is scaled to the ‘landings’ destination code(s)⁴ because only ‘landings’ contribute to the QMR/MHR totals.

The B4 data preparation procedure has been followed when preparing $L_{i,y}$ because more catch is retained by the B4 than by the F2 procedure. $L_{i,y}$ will be referenced as “landings” in this document from this point forward. The distributional estimates of catch and number potlifts by statistical area beginning with 2019–20 may not be comparable with vessel counts in earlier years, generated from paper form data, because the ERS estimated catches appear to differ from the CELR estimated catches (see analysis presented in Appendix B).

Scaled potlifts for the total QMA ($\hat{P}_y$) and for each statistical area a ($\hat{P}_{a,y}$) were calculated using Eq. 5:

$$\text{Eq. 5} \quad \hat{P}_y = \sum_{i=1}^{n_y} P_{i,y} \frac{Q_y}{\sum_{i=1}^{n_y} L_{i,y}} \quad ; \quad \hat{P}_{a,y} = \sum_{i \in k_{a,y}} P_{i,y} \frac{Q_y}{\sum_{i=1}^{n_y} L_{i,y}}$$

where $P_{i,y}$ and $k_{a,y}$ are as defined for Eq. 1;

Q_y and $L_{i,y}$ are as defined for Eq. 4.

3. RESULTS

3.1 Landed catch and TACC

New Zealand landings of rock lobsters returned to above 2700 t in 2018–19 after dropping to below 2700 t in 2017–18 for the first time since 2009–10. They dropped again to nearly 2500 t in 2019–20, primarily because of complications caused by the surge of COVID-19 at the time of the Chinese New Year (Table 1). Fishers who had been stockpiling lobsters in anticipation of this holiday found themselves with a diminished market. Catches were below the TACC and below the 2018–19 catches in every QMA, with shortfalls from 31 t to 112 t relative to the TACC in CRA 3, CRA 4, CRA 6, and CRA 8 (Table 1). Decreases less than 5 t in landings relative to 2018–19 TACC were observed in CRA 1, CRA 2, CRA 7, and CRA 9. Catches from CRA 5 declined by 14 t relative to 2018–19 and the TACC. Total catches rose to nearly 3000 t in 2020–21 because of a ministerial decision to allow up to 10% ‘carry-forward’ of uncaught Annual Catch Entitlement (ACE) from the 2019–20 fishing year⁶. Consequently the TACC shortfalls were largely recovered in 2020–21 in CRA 2, CRA 5, CRA 6, CRA 7, CRA 8, and CRA 9. Seven tonnes of the 39 t TACC shortfall in CRA 4 remained uncaught in 2020–21 and the CRA 3 TACC was not fully caught in 2020–21 (Table 1). The TACC was fully caught in 2021–22 in eight of the nine

⁶ CRA 1 was excluded from this provision because the TACC had been reduced to 110 t for the 2020–21 fishing year.

CRA QMAs, with the only exception being CRA 3 where landings were 25 t below the 195 t TACC (Table 1). This pattern was repeated in 2022–23, with TACCs for eight of the nine QMAs again being fully caught except for CRA 3, which was 37 t under caught.

The 2019 operation of MPs for the 2020–21 fishing year resulted in TACC increases for CRA 7 and CRA 8 (Table 1). The 2019 CRA 4 MP proposed a TACC increase to 380 t, but this increase was turned down by the Minister. The 2019 CRA 5 MP did not change its TACC. The CRA 1 fishery had its TACC reduced from 131 t to 110 t based on recommendations coming from the 2019 stock assessment, while the 2019 CRA 3 stock assessment resulted in no change to the CRA 3 TACC. However, the 2020 CRA 4 stock assessment resulted in a TACC decrease for the 2021–22 fishing year for that QMA (from 319 t to 280 t) and the CRA 3 TACC was reduced for the 2021–22 fishing year to 195 t. The 2021 CRA 7&8 stock assessment resulted in increases in the CRA 7 TACC (from 106.2 t to 111.5 t) and the CRA 8 TACC (from 1192 t to 1257 t) for the 2022–23 fishing year while the CRA 1 TACC was reduced by 5 t to 105 t for 2022–23 (Table 1).

Five of the nine CRA QMAs showed a drop in the proportion of the QMR/MHR landed catch compared with the landings included when operating the B4 L catch correction procedure (see Appendix D.1) when comparing the mean from the last three complete ERS reporting years (2020–21 to 2022–23) with the mean from the final three complete years under paper form (CELR) reporting (2016–17 to 2018–19) (Table 2A). Part of these drops may be attributable to the problems observed in the reporting of estimated catches under the ERS reporting regime. These shortfalls were due to the B4 data preparation procedure which excludes some landings when there are successive months without appreciable landings and to disparities between ERS reporting and MHR reporting. Overall, the change in the two means was relatively small, from 0.89 to 0.85, which is the unweighted average across the nine QMAs.

The catch included in the F2_LFX procedure (Table 2B) is more difficult to interpret, given the inclusion of the X and F destination codes, which are not reported to the QMR/MHR systems, and the dropping of vessels with a *vcf* less than 0.8 or greater than 1.2. Table 2B reports the ratio of the F2_LFX catch included in the CPUE calculations relative to the total (F0_LFX) catch in the data set, which does not truncate any vessels. This ratio is a measure of the level of catch dropped when truncating the data set to only include vessels with *vcf* values between 0.8 and 1.2. A comparison of the final three years under the ERS data collection regime (2020–21 to 2022–23) with the mean from the final three complete years under paper form (CELR) reporting (2016–17 to 2018–19) shows a drop in this proportion in six of the nine CRA QMAs (Table 2B). There was no change in the CRA 8 ratio between the two means and both CRA 7 and CRA 9 showed an improvement in these ratios. However, the change in ratios was considerable in CRA 1 (from 0.79 to 0.63), CRA 2 (from 0.94 to 0.74), CRA 3 (from 0.86 to 0.70), CRA 4 (from 0.95 to 0.65), CRA 5 (from 0.75 to 0.67), and CRA 6 (from 0.98 to 0.74) (Table 2B). The drops in these ratios observed for CRA 1 to CRA 6 indicate that more vessels were outside the 0.8–1.2 acceptable range for *vcf* under the ERS data collection regime compared with the previous three years because of the problems encountered with the reporting of estimated catches within the ERS (documented in Appendix B).

The number of vessels landing at least 1 t in a QMA during 2019–20 dropped considerably compared with 2018–19 in CRA 4 (from 45 to 39) and CRA 5 (from 32 to 27), while staying relatively constant in the remaining seven QMAs (Table 3). Drops in the number of participating vessels between 2019–20 and 2020–21 occurred in CRA 1 (from 14 to 10 vessels), in CRA 6 (from 38 to 33 vessels), and in CRA 8 (from 67 to 61) while the other QMAs did not change very much. The number of vessels remained relatively unchanged in 2021–22 in all nine QMAs. The vessel count dropped from 2021–22 to 2022–23, in CRA 4 from 36 to 25, while increasing in CRA 6 from 32 to 36 and in CRA 8 from 64 to 67. Overall there have been large drops in the historical number of vessels fishing, with the mean total number of vessels fishing in the three most recent years of the fishery (2020–21 to 2022–23) dropping by 59% relative to the mean number of vessels fishing in the first three years of the fishery once it entered the QMS (1990–91 to 1992–93) (Table 3). In 1989–90, there was inaccurate recording of vessels in some QMAs because of a change-over in the catch reporting system (see Section 2.4).

3.2 CRA 1

The number of vessels reporting landings from CRA 1 varied between 12 and 14 each fishing year from 2006–07 to 2019–20, with 14 reporting in 2019–20 (Table 4). However, the number of reporting vessels dropped to 10, 11, and 11 in 2020–21, 2021–22, and 2022–23, respectively, coincident with the TACC reductions from 130 t to 110 t to 105 t. Fewer than 20 vessels have reported from this QMA since 2000–01, a considerable drop from the 30 or more vessels that reported before the early 1990s.

The proportion of landings from statistical area 901 (Three Kings Islands) increased during the late-1990s, whereas the proportion of landings from statistical areas 902 and 903 dropped (Table 5). This pattern changed in 2003–04, when 47% of the landings were taken in statistical area 902, but the predominance of statistical area 901 returned over the next few years, with over 40% of the landings taken from statistical area 901 between 2005–06 and 2012–13 (Table 5). Statistical area 901 contributed about 30% of the annual landings from 2016–17 to 2019–20, but dropped to below 20% in 2020–21 and below 30% in 2021–22 before recovering to nearly 40% of the catch in 2022–23. The two east coast statistical areas (903 and 904) generally accounted for less than 20% of the landings up to 2020–21, when the percentage of catch in these statistical areas dropped to below 10% (these results are suppressed in Table 5 due to the operation of the three-vessel rule). Catches in 903 dropped below 5% in both 2021–22 and 2022–23 while catches in 904 dropped below 1% in these two years. The percentage of catch in statistical area 939 (west coast) has been more variable but was near to or above 25% from 2015–16 to 2021–22, but then dropped to below 18% in 2022–23. The distribution of landings by statistical area in 2020–21 and 2021–22 showed a shift from 2018–19, with over 40% of the landings in both years occurring in statistical area 902 compared with 20% or less taken in this statistical area from 2005–06 to 2018–19. The distribution of potlifts by statistical area reflected the relative CPUE, with statistical area 901 having proportionately less potlifts than catch, because of the high CPUE in this statistical area. Statistical areas 903 and 904 have low CPUE and consequently carry proportionately more potlifts than catch (Table 6).

Cumulative monthly landings by fishing year were relatively stable in the early 1980s, with most landings taken from late winter to early summer (Table 7). There was a shift towards a winter–spring fishery in the mid-1990s, with July–October accounting for 63–83% of the total annual landings from 1995–96 to 2010–11, up from 25–45% before that fishing year (Figure 2). However, the July–October percentage of landings dropped from 58% in 2011–12, to mid-40% in 2012–13 and 2013–14, then to less than 40% in 2014–15 but has since risen to more than 50% in 2020–21 and 2021–22 (Table 7). There was also a noticeable shift in the accumulation of landings to February–March starting in 2012–13, which was most pronounced in 2012–13 and 2013–14, but this dropped to less than 1% in 2019–20 before increasing to 7%, 6%, and 7% in 2020–21, 2021–22, and 2022–23, respectively (Figure 2). The percentage of landings in the AW season in 2020–21, 2021–22, and 2022–23 were 45%, 52%, and 44%, respectively (Table 7), reflecting a near equal split of catch between the two seasons that has been observed since 2010–11. The statistical areas with proportionately the greatest catch in 2022–23 were 901 (39%), 902 (39%), and 939 (18%), although this detail cannot be shown in Table 8 because of the requirement that at least three vessels are present in the cell.

Arithmetic CPUE (Eq. 1) trajectories vary by statistical area. CPUE in statistical area 901 is the highest in CRA 1, generally exceeding 2 kg/potlift since 1996–97, rising above 3.0 kg/potlift in both 2020–21 and 2021–22, and then above 5 kg/potlift in 2022–23 (Table 9). In statistical area 939, CPUE increased steadily from 2005–06, peaked in 2012–13, and dropped to 2.0 kg/potlift in 2014–15 (Table 9, Figure 3). Although many recent CPUE estimates in statistical area 939 are suppressed because of the Fisheries New Zealand “three vessel rule”, reported CPUE in 2020–21 and 2021–22 are near to or above 2 kg/potlift. Statistical area 902 had high CPUE values in the early 2000s, which then dropped, but are now hovering around 2 kg/potlift, having exceeded this threshold in 2022–23 (Table 9). CPUE in statistical area 904 (East Northland) has consistently been near to or below 0.5 kg/potlift since the late 1980s. These values are similar to those observed in CRA 2 (see Section 3.3 below). Surprisingly, statistical area 903 CPUE rose above 1.0 kg/potlift starting in 2012–13 and was the statistical area with the highest CPUE in 2014–15 (at 2.4 kg/potlift); however, CPUE in statistical area 903 dropped below 1 kg/potlift from 2020–

21 to 2022–23. CPUE under the ERS regime generally increased between 2019–20 and 2022–23 in the three outer statistical areas (901, 902, and 939) while decreasing in 903 and having no qualified operators in 904. CPUE beginning in 2019–20 is not comparable with the CPUE before that fishing year.

Standardised (Eq. 3) CRA 1 CPUE had a broad peak from 1980–81 to 1983–84 followed by a long steady decline to 1992–93 when catch rates were around 0.6 kg/potlift (Table 10, Figure 4). Catch rates increased after that, rising above 1.0 kg/potlift in 1995–96. Catch rates increased steadily from that level to above 1.7 kg/potlift in 2006–07 to 2009–10 and again in 2012–13. Catch rates since then have ranged between 1.2 and 1.5 kg/potlift (Table 10). All three CPUE series show similar trends, although the standardised series currently sits below the geometric series after lying above it in the mid-1990s (Figure 4).

3.3 CRA 2

The number of vessels reporting at least 1 t of landings from CRA 2 fluctuated between 29 and 39 since the late 1990s, except in 2012–13 when the number increased from 35 to 40 vessels in a single year (Table 11). However, the number of vessels reporting at least 1 t of landings dropped to below 20 after the TACC decrease to 80 t in 2018–19, where it has since remained. This is a large decrease from the 70–90 vessels which reported from this fishery through most of the 1980s.

Statistical area 906 (western Bay of Plenty) has been the predominant statistical area in terms of landings in most years, generally accounting for one-third or more of the annual landings since 2002–03 (Table 12). The percentage of landings coming from the eastern Bay of Plenty (combined statistical areas 907 and 908) has remained relatively constant at 40–50% since the mid-1990s and has been near 50% since 2004–05, with the relative contribution between these two statistical areas varying between years. The distribution of landings by statistical area in 2020–21, 2021–22, and 2022–23 has been relatively constant, with 47%, 48%, and 50% of the landings in combined statistical areas 905 and 906. The distribution of potlifts among statistical areas has been similar to that of the catch, with combined statistical areas 905 and 906 accounting for 52%, 47%, and 45% of the potlifts in 2020–21, 2021–22, and 2022–23, respectively (Table 13).

Cumulative monthly landings by fishing year were stable in the early 1980s, with most taken in the spring and summer, apart from high landings in July 1989 (Table 14, Figure 5). There was a gradual shift towards a winter fishery in the mid-1990s, with about 60% of the 1994–95 landings taken from April to September. There was a peak between 1996–97 and 1998–99 with 87–89% of the landings in each of these three fishing years taken between April and September. The shift then reversed, with over 60% of the landings taken from October to March, beginning in 2002–03 and remaining above 60% up to 2017–18 (and exceeding 70% in 2011–12 and 2015–16 to 2017–18) (Table 14). The percentage of the catch in the SS season dropped after 2017–18, sitting near 40% in both 2021–22 and 2022–23. In 2022–23, landings were spread out among all four statistical areas (17% in 905, 33% in 906, 26% in 907, and 24% in 908), with 58% of the landings taken in the AW (Table 15).

Arithmetic CPUE (Eq. 1) increased in all statistical areas from the mid-1990s. In statistical area 907 there was an enormous increase that was corroborated by larger-sized lobsters (see Webber et al. 2018) (Table 16, Figure 6). CPUE dropped back to levels below 0.5 kg/potlift in all statistical areas, even statistical area 907, where CPUE remained above 0.5 kg/potlift until 2014–15 (Table 16). Arithmetic CPUE dropped to below 0.4 kg/potlift in all four QMAs in 2015–16 where it remained up to 2017–18. However, CPUE has risen in all four areas for 2018–19, rising to above 0.4 kg/potlift in statistical areas 905 and 906, 0.6 kg/potlift in statistical area 908, and to above 0.7 kg/potlift in statistical area 907. This increasing trend has continued, with arithmetic CPUE exceeding 0.8 kg/potlift in all four statistical areas in 2020–21, 2021–22, and 2022–23. Arithmetic CPUE for the QMA increased from the early 1990s to a peak in 1997–98 and 1998–99, then declined to below 0.5 kg/potlift from 2002–03 to 2017–18, except for a short excursion to above 0.5 kg/potlift from 2006–07 to 2008–09 (Table 17, Figure 7). Arithmetic CPUE under ERS for all of CRA 2 ranged from 0.85 to 0.89 kg/potlift in 2020–21, 2021–22, and 2022–23. CPUE beginning with 2019–20 is not comparable with the CPUE before that fishing year.

Arithmetic and standardised CPUE were similar, except that the standardised analysis estimated a higher peak for 1997–98 and 1998–99. This was caused by the shift in effort towards the winter months, with lower catch rates for those months adjusted upward by the standardisation procedure. The standardised indices reached minor peaks of 0.56 kg/potlift in 2006–07 and 2007–08, dropped to below 0.3 kg/potlift from 2015–16 to 2017–18, and then rose to 0.47 kg/potlift in 2018–19 (Table 17).

3.4 CRA 3

In CRA 3, vessel numbers decreased from about 80 in the early 1980s (Table 18) to about 30 in the late 1990s. Vessel numbers increased to 38–39 in 2002–03 to 2003–04 but then dropped to fewer than 30 by 2005–06 and are currently in the low- to mid-20s (Table 18). Relatively high numbers of vessels (near 50 or more) continued to report landings in this QMA until the 1993–94 fishing year, when the TACC was cut by 50% and the main fishery shifted to the winter months. Vessel numbers have since dropped to less than one-half the number of vessels operating in the early 1990s, with a drop of three vessels in 2021–22 from 24 in 2020–21 and then a further drop of another vessel in 2022–23 to give a total of 20 vessels operating in 2022–23 (Table 18).

The relative distribution of annual landings remained consistent among the three statistical areas until 2000–01, with statistical area 910 (Gisborne) being the most important, accounting for about 50% of the landings before 2000–01 (Table 19). Statistical area 911 (Mahia Peninsula) had the highest area landings from 2001–02 to 2003–04, possibly because of higher catch rates. The proportion of the landings from statistical area 911 dropped in 2004–05 to about 40% and stayed at this level until 2007–08 when it dropped into the 30–40% range and dropped to below 30% for 2011–12 to 2013–14. The importance of statistical area 911 has been increasing since 2017–18 when the proportion of landings was at 35%, rising to 40% in 2018–19, 58% in 2019–20, 67% in both 2020–21 and 2021–22, and then dropping to 52% in 2022–23 (Table 19). At the same time, statistical areas 909 and 910 have decreased in relative importance as the landings from statistical area 911 increased. The contribution from statistical area 909 has varied between 6 and 21%, was below 10% of the catch in both 2020–21 and 2021–22, but rose to 10.4% in 2022–23. The recent distribution of potlifts reflects lower catch rates in statistical area 910, with 49%, 48%, and 52% of the effort taking 24%, 27%, and 38% of the catch in 2020–21, 2021–22, and 2022–23, respectively (Table 20).

This fishery was primarily a summer fishery until regulations were changed for the 1993–94 fishing year to encourage the development of a winter fishery targeted at males (Figure 8). Regulation changes included: lowering the minimum size limit for males in June to August from 54 to 52 mm tail width (TW), prohibiting the take of females in the same period, closing the fishery in May to provide a buffer between regulatory changes in Minimum Legal Size (MLS), and closing the fishery from the beginning of September to the end of November to provide opportunities for recreational fishing (Fisheries New Zealand 2022). The cumulative monthly landing proportions by fishing year demonstrated the shift to a winter fishery, with 65% of the landings taken by the end of August in 1993–94, rising to over 95% in 1995–96 and remaining above 80% up to 1999–2000 (Table 21, Figure 8). This shift then reversed, with the winter landings (April–August) dropping to 66% in 2000–01 (when the September–November regulatory closure ended) and then fluctuating around 50% until 2007–08. However, there has been a return to a winter fishery, with the April–August landings accounting for 44–86% of the landings during 2010–11 to 2022–23 (44% in 2020–21, 54% in 2021–22, and 46% in 2022–23, Table 21). There were significant landings in November and December from 2002–03 to 2009–10 after these months were reopened to commercial fishing, but these landings reduced considerably from 2010–11 with the voluntary closure described below. Landings resumed in May 2014 after Fisheries New Zealand dropped the May closure regulation on 1 October 2013 (Fisheries New Zealand 2022). June, July, and August have remained important months for landings, especially in statistical areas 910 and 911, with 45% of the total 2022–23 CRA 3 landings coming from these 3 months (Table 22). Since 2008–09, commercial operators have closed, by voluntary agreement, statistical areas 909 and 910 from the beginning of September to mid-January and statistical area 911 from mid-December to mid-January (Fisheries New Zealand 2022). The effect of this voluntary commercial closure can be seen in Table 22, with ~3.3% of the 2022–23

landings reported from statistical areas 909 and 910 (September to December) and another 2.3% from statistical area 911 in December 2022.

Arithmetic CPUE (Eq. 1) increased strongly in all statistical areas beginning in the early 1990s, with statistical area 909 increasing to a higher level than the other two statistical areas (Table 23, Figure 9). The CPUE in all statistical areas peaked in 1997–98 and then declined. Statistical area 909 dropped the least (to about 0.8 kg/potlift in the early 2000s and rising to above 1.0 kg/potlift from 2006–07), whereas statistical areas 910 and 911 dropped to about 0.5–0.6 kg/potlift, except in 2004–05 when statistical area 911 dropped to about 0.4 kg/potlift. All statistical areas (909, 910, and 911) showed increasing arithmetic CPUE after 2006–07 (Table 23), peaking in 2012–13. Arithmetic CPUE has increased considerably in statistical area 911, rising to 2.0 kg/potlift in 2016–17 followed by an increase to over 2.8 kg/potlift in 2018–19 (Figure 9). Recent CPUE under the ERS regime has dropped from 2020–21 to 2022–23 in all three statistical areas, with 911 remaining the highest (and above 1.0 kg/potlift), 909 dropping below 1.0 kg/potlift and 910 below 0.7 kg/potlift in both 2021–22 and 2022–23. CPUE beginning with 2019–20 is not comparable with the CPUE before that fishing year.

Standardised CPUE for the QMA increased from the early 1990s to a peak in 1997–98, followed by a decline to a level somewhat higher than was observed in the early 1990s (Table 24, Figure 10). The arithmetic, unstandardised, and standardised CPUE trends were all similar, except that the standardised analysis estimated a higher peak for 1997–98 than the unstandardised series (Table 24, Figure 10) because of the shift in effort towards winter months which reduced the average CPUE in the unstandardised series. All three sets of indices increased from below 0.6 kg/potlift in 2007–08 to a peak of 2.38 kg/potlift in 2012–13, which is the second highest of the series and only slightly below the 1997–98 peak of 2.41 kg/potlift (Table 24, Figure 10). Since that year, the standardised CPUE index has dropped nearly 40% to 1.47 kg/potlift in 2018–19.

3.5 CRA 4

The relative decrease in the number of vessels reporting at least 1 t of landings per fishing year in CRA 4 since the 1979–80 fishing year has been less than that observed for CRA 1, CRA 2, and CRA 3, with the number of vessels remaining at 80 or above up to the mid-1990s before dropping to below 70 (Table 25, see also Table 3). Vessel numbers dropped to the mid-60s up to 2006–07, then dropped to 42 and 43 in 2008–09 and 2009–10, respectively, but rose to near to or above 50 for the six years from 2010–11 to 2015–16, before dropping to 45 in 2016–17, then 39 in 2017–18 and rising again to 45 in 2018–19. Estimated vessel numbers dropped to 38 in 2019–20, one of only two QMAs which dropped five or more vessels between these two years (Table 3). This low vessel count was corroborated in 2020–21 and 2021–22 with a further drop to 35 in both years, followed by a large drop to only 26 vessels in 2022–23 (a drop of 26% in one year). The single count of 131 vessels in 1989 is probably an artefact of the changeover from the FSU to CELR systems where vessels may have been double-counted because vessel codes were not properly transferred between the systems (see Section 2.4).

The relative importance of the five statistical areas in terms of annual landings in this QMA has been reasonably consistent over time, with statistical area 914 (South Wairarapa) being the most important in terms of total landings, generally accounting for around 35–40% of the annual catch up to 2009–10 (Table 26). The importance of this southern statistical area increased after 2010–11, with statistical area 914 nearing 60% of the CRA 4 catch in 2013–14 and 2014–15, but then dropping to below 50% after 2014–15 and ending at 47% in 2021–22, 52% in 2021–22, and 50% in 2022–23. Statistical area 915 (Palliser) has been more variable, with less than 10% of the landings in 2012–13 and 2013–14, rising to 18% and 16% in 2014–15 and 2015–16, respectively, but then dropping to below 15% after 2015–16 until 2019–20 when its proportion of the landings increased to 22% and remaining near 20% up to 2022–23. The increases in statistical areas 914 and 915 catches came with commensurate decreases in statistical area 912 (Hawke's Bay) and statistical area 913 (North Wairarapa), varying between 15% and 32% between 2011–12 and 2022–23, and with statistical areas 912 and 913 accounting for 11% and 16% of landings in 2022–23, respectively. The distribution of effort was similar to the distribution of catch in

both 2021–22 and 2022–23, with the proportion of potlifts in the four principal CRA 4 statistical areas similar to the distribution of catches in both years (Table 27).

Before 1993–94, most fishing took place in the spring and summer months, with only about 25–30% of the landings taken from April to August (Table 28, Figure 11). From 1994–95, the period from April to August accounted for over 50% of the total landings and these five months continued to account for over 50% of the landings up to 2002–03, peaking at 85% in 1997–98 (Table 28, Figure 11). This trend then reversed, with only 43% of the landings taken by the end of August in 2004–05 and 36% in 2005–06, followed by a drop to below 20% for these same five months during 2006–07 to 2008–09. However, the trend reversed again, starting in 2009–10, with over 40% of the landings taken from April to August in 2010–11 and 2011–12, respectively. Landings after 2013–14 showed a sharp drop in the relative importance of the winter months, with the April–August percentage dropping to below 20% in 2016–17 and 2017–18, then rising to 25% to 31% from 2018–19 to 2022–23, respectively. The November–March percentage of landings rose to 67% in 2015–16 and has since remained high, dropping only to 52% and 51% of the landings in 2020–21 and 2021–22, respectively. However, the November–March percentage of landings dropped to 43% in 2022–23, possibly reflecting the improvement in CPUE in this fishing year. Fifty-one percent of the total landings in 2022–23 were taken between April and September (AW) in statistical areas 912, 913, 914, and 915, whereas these statistical areas made up 33% of the landings between December 2022 and March 2023 (Table 29). Landings in statistical area 934 accounted for less than 5% of the total CRA 4 landings in 2022–23.

Arithmetic CPUE (Eq. 1) increased in most statistical areas (the data for statistical area 934 are too sparse to draw a conclusion), beginning from 1992–93 (Table 30, Figure 12). The increase in CPUE for statistical area 914 stabilised after the 1996–97 fishing year, well below the peak catch rates observed in the two more northerly areas, and remained slightly above 1.0 kg/potlift whereas statistical areas 912 and 913 increased to much higher levels (Table 30, Figure 12). The CPUE in the four main statistical areas declined to about the same mean catch per potlift by 2001–02, all near 1.0 kg/potlift except for statistical area 915, which dropped to below 1.0 kg/potlift (Table 30). The CPUE in these statistical areas dropped to below 1.0 kg/potlift in 2005–06 for all statistical areas, but then rose to near to or above 1.5 kg/potlift, peaking in 2012–13. Notably, statistical area 912 CPUE has not responded similarly, with CPUE in this statistical area remaining below 1.0 kg/potlift. This pattern is dissimilar to the equivalent pattern for statistical area 911 (immediately to the north, Figure 9) and statistical area 913 (immediately to the south, Figure 12) and may be due to extensive local damage to the coast from storms which hit in April 2011 (D. Sykes, NZRLIC, pers. comm.). The high catch rate in statistical area 915 dropped sharply in 2015–16 and then again in 2016–17. Catch rates dropped in both statistical area 913 and statistical area 914 in 2016–17, whereas catch rates seem to be recovering in statistical area 912 to levels similar to those in the areas further south (Table 30). The patterns of increased catches and the mean catch rate peak in the 1990s in statistical areas 912 and 913 resemble the patterns observed in the CRA 2 and CRA 3 statistical areas (compare Figure 6 and Figure 9 with Figure 12). Statistical areas 914 and 915 did not show peaks in the 1990s, but these statistical areas share the recent increase in CPUE observed in the early 2010s, which is also seen in the three CRA 3 statistical areas. Arithmetic CPUE increased in 2017–18 relative to 2016–17 in all four of the major CRA 4 statistical areas and has stayed at these levels in 2018–19. CPUE under ERS (from 2019–20 to 2022–23) has had mixed responses by statistical area, with 915 increasing from 1.2 to 1.7 kg/potlift 2020–21, dropping to 1.5 kg/potlift in 2021–22, and then returning to 1.6 kg/potlift in 2022–23. Statistical area 914 increased from 0.9 kg/potlift to 2.0 kg/potlift over the same four years. The CPUE beginning with 2019–20 is not comparable with the CPUE before that fishing year.

The pattern in the CPUE indices for all of CRA 4 was similar to that for CRA 3, showing a steady increase from the early 1990s to a peak in 1998–99, one year later than in CRA 3 (Table 31, Figure 13). The CPUE trends for the standardised and unstandardised series for CRA 4 were similar, except that the standardised analysis estimated a higher peak for 1998–99 (Table 31, Figure 13), because of the shift in effort towards winter months which caused a reduction in average CPUE in the arithmetic and unstandardised series. The standardised CPUE index for CRA 4 most recently peaked at 1.41 kg/potlift in 2012–13, dropped to 0.65 kg/potlift in 2016–17 (-54% from 2012–13), then increased to 0.83 kg/potlift in 2017–18 and to 0.90 kg/potlift in 2018–19 (Figure 13).

3.6 CRA 5

The number of vessels reporting at least 1 t of CRA 5 landings declined considerably after the 1986–87 fishing year, with fewer than 40 vessels reporting in this QMA after 1998–99, compared with 80 to 90 vessels during the 1980s (Table 32). The number of vessels continued to decline, dropping to below 30 in 2006–07 and then fluctuating between 25 and 32 up to 2019–20, when the vessel count dropped to 25 and then again to 23 in 2020–21 where it remained in 2021–22 and 2022–23 (Table 32).

There are six statistical areas in this QMA, but over 60% of landings have been reported from statistical area 917 (Kaikōura-Motunau), beginning in 2013–14 (Table 33). The percentage of catch coming from statistical area 916 (Cape Campbell) declined steadily from the early 2000s, when it accounted for over 40% of the catch, but declined considerably after the 2016 Kaikōura earthquake, largely due to a lack of access to this part of the coast. The balance of the CRA 5 catch comes from statistical area 918 (Banks Peninsula) and statistical area 933 (Marlborough Sounds) (Table 33). The relative proportion of landings between these statistical areas has changed, with statistical area 916 rising in importance in the early 2000s, peaking at 48% of the total annual landings in 2003–04. Since then, this statistical area has declined in relative importance to less than 10% of the total annual landings beginning in 2020–21 (Table 33). This large drop in the statistical area 916 catch is partially attributable to the loss of the main access point to this piece of coast after the November 2016 earthquake. This access was only restored in mid-2020 but the reduction in the contribution of this statistical area has continued to decline. There has been a corresponding increase in the importance of statistical area 917, which has exceeded 60% of the total landings since 2013–14 (Table 33). The two remaining statistical areas accounted for 30% of the 2021–22 and 2022–23 landings, with over 20% in statistical area 918 and the remaining 8–10% in statistical area 933. Note that statistical area 918 has risen considerably in importance, accounting for less than 5% of landings in 2014–15 and rising to 23% of the landings in 2022–23. The distribution of effort is different, with 40–47% of the potlifts taking over 60% of the landings in statistical area 917 from 2010–11 to 2016–17, and with the potlifts exceeding the landings percentage in statistical area 916 for the same years (Table 34). The fishing efficiency of statistical area 917 dropped beginning with 2017–18, with 55–68% of the effort taking 61–73% of the landings from 2017–18 to 2022–23. Statistical area 933 was much less efficient, using over 20% of the effort to take less than 10% of the landings over the last five fishing years. Statistical area 918 stands out in these comparisons, with over 20% of the catch taken by less than 5–6% of the effort in 2021–22 and 2022–23.

This fishery remained predominantly a summer fishery for longer than any of the North Island QMAs, not shifting to a winter fishery until 1996–97, when the proportion of the annual landings taken in April to September first exceeded 50% (Table 35, Figure 14). Also, unlike the more northerly QMAs, the relative proportion of the landings taken in the winter months has continued to stay relatively high, exceeding 80% in the AW (April–September) up to 2003–04. Since then, the AW has accounted for 52% to 76% of the annual landings, with the AW percentage at 52%, 55% and 56% in 2020–21, 2021–22 and 2022–23, respectively (Table 35). Forty-one percent of landings were taken between April and July in statistical areas 916, 917, and 918 in 2022–23, with the peak landings month being May in statistical area 916, statistical area 917, and statistical area 918 when over 17% of the annual catch was taken, followed closely by June 2022 when over 16% of the annual catch was taken (Table 36). Historically, May has been a strong landings month in this QMA, accounting for 14–37% of the annual landings since 1996–97 (Table 35).

Arithmetic CPUE (Eq. 1) trajectories showed similar trends in each of the statistical areas up to 1998–99. At that time, CPUE increased in all areas, especially in statistical area 916 (Table 37, Figure 15). CPUE in statistical area 916 increased to much higher levels and more quickly than in the other CRA 5 statistical areas, peaking at 3.0 kg/potlift in 2000–01. The arithmetic catch rate for statistical area 916 dropped to below 2.0 kg/potlift in 2006–07 and has since ranged between 1.05 and 2.06 kg/potlift up to 2018–19 (the last complete year using paper forms). Arithmetic CPUE was strong in all CRA 5 statistical areas in 2018–19, except for statistical area 933 (Marlborough Sounds), where CPUE was less than 0.5 kg/potlift for the second successive year. CPUE in statistical areas 916 and 917 increased during 2020–21 to 2022–23. Arithmetic CPUE in statistical area 918 exceeded 8 kg/potlift in 2021–22 and 9 kg/potlift in 2022–23.

and has been rising since 2016–17. The 2020 CRA 5 stock assessment documented that the lobsters from this statistical area tended to be much larger than in the other CRA 5 statistical areas (see figures C.7 and C.8 of Starr et al. 2021b). The CPUE beginning with 2019–20 is not comparable with the CPUE before that fishing year.

Standardised CPUE for CRA 5 increased until 2003–04, then dropped over three successive fishing years before rising to another peak in 2009–10 (Table 38, Figure 16). The unstandardised and standardised CPUE trends were nearly identical throughout the period, whereas the arithmetic CPUE lay below both of these series from the early 2000s (Table 38, Figure 16). The CRA 5 2018–19 standardised CPUE index was 1.72 kg/potlift, an 11% decrease relative to 2017–18 and 18% below the 2009–10 peak.

3.7 CRA 6

The number of vessels fishing in CRA 6 fluctuated between 39 and 59 during the 1980s and most of the 1990s. By 1999–2000, vessel numbers dropped to 34 and have since fluctuated near 35, until 2017–18 when the number was 40, dropping to 39 in 2018–19 and 38 in 2019–20 (Table 39). However, the number of vessels dropped by 5 to 33 in 2020–21, to 32 in 2021–22, but increased to 36 in 2022–23. The relative decline in vessel numbers has been less in CRA 6 than for the other CRA QMAs.

There are four statistical areas in this Chatham Islands QMA, with statistical area 942 (southeast Chatham Islands) generally having about 40–50% of the total landings for the QMA from 1990–91 to 2019–20, but rising to 60% in 2020–21 and 2021–22, before dropping back to 56% in 2022–23 (Table 40). The proportion of the total CRA 6 landings in statistical area 942 dropped to below 40% in 2006–07, 2010–11, and 2011–12 with most of these landings shifting to statistical area 940 and some to statistical area 943. The percentage of landings in statistical area 941 was near to or just below 20% from 2007–08 to 2018–19, before the percentage dropped to 16% in 2019–20 and below 15% from 2020–21 (Table 40). The two northern statistical areas (940 and 941) accounted for around 40% of the annual landings in most years up to 2018–19 at 42% of the total landings. Since then, this percentage has dropped to closer to 30%, with 2021–12 at 27% and 2022–23 at 32%. Statistical area 943 (southwest corner) typically comprises less than 15% of the landings, having only exceeded 20% in one year (2011–12), and in 2022–23 accounted for 12% of the landings. The distribution of potlifts by statistical area is similar to the distribution of catch, reflecting similar catch rates in all four statistical areas (Table 41).

This fishery has been predominantly a spring-summer fishery for its entire history, with the AW percentage at around one-third of the catch and showing little tendency to shift to a winter fishery as in the North Island and South Island fisheries (Table 42, Figure 17). Surprisingly, Figure 17 shows a shift to a slightly earlier fishery in 2016–17 and 2017–18, but this shift disappeared in later years. Table 42 corroborates this observation, with 30%, 36%, and 28% of the catch taken in the September–October period of 2016–17, 2017–18, and 2018–19, respectively, compared with 12% for the same months in 2015–16. The average percentage of landed catch taken from May to September (April is closed by regulation) was 27% and has ranged from 14 to 38% over the 44 years of available data. In 2022–23, 75% of the landings were taken between October and February, with 43% of the annual landings coming from statistical area 942 during these months (Table 43). The fishery is closed by regulation from 01 March to 30 April in each year (Fisheries New Zealand 2022), accounting for the lack of data in these months (Table 42).

Arithmetic CPUE (Eq. 1) declined in the early to mid-1980s for all statistical areas, except for statistical area 941, which historically never had the high catch rates seen in the other three statistical areas (Table 44, Figure 18). Statistical area 942 consistently had the highest mean catch rate beginning in the mid-1980s, which most likely accounts for the high proportion of catches from this area (Table 44). Mean catch rates in all four statistical areas, although variable, stabilised during the mid to late 1990s and appeared to be increasing at a slow rate in all statistical areas, with some variability between years. In a reversal of previous observations, statistical area 942 had the lowest arithmetic CPUE of the four CRA 6 statistical areas from 2012–13 to 2015–16, although the difference among the statistical areas was small. The differences in CPUE among the CRA 6 statistical areas have now largely disappeared under ERS,

but the CPUE in statistical area 942 remains somewhat higher than the other three statistical areas (Table 44, Figure 18). The CPUE beginning with 2019–20 is not comparable with the CPUE before that fishing year.

Standardised CPUE for CRA 6 dropped in the early 1980s and was relatively stable near 1.0 kg/potlift during the 1990s (Table 45, Figure 19). This CPUE then increased to over 1.7 kg/potlift in 2006–07, dropped to a recent low of 1.41 kg/potlift in 2014–15, but has since risen to the highest values, in 2016–17 to 2018–19, seen since 1981–82.

3.8 CRA 7

The number of vessels reporting in CRA 7 dropped very quickly at the beginning of the period of record, with 79 to 90 vessels participating in the first three years compared with 38 to 58 by the end of the 1980s (the 1989–90 count should not be trusted—see Section 2.4 and Table 46). The number of vessels dropped to 25 in 2000–01 and then ranged between 14 and 22 vessels between 2001–02 and 2010–11. Numbers dropped to 9 vessels in 2011–12, coinciding with a drop in total annual landings to 46 t, the third lowest annual total catch since 1990–91 (see Table 1). Vessel numbers have remained low since that year, ranging from 9 to 12 vessels (with 9 vessels reporting in 2020–21 and 10 in 2021–22 and 2022–23). The number of participating vessels in this QMA has shown more year-to-year variation than in the other 8 QMAs.

There are only two statistical areas in this QMA, with statistical area 920 contributing 45–78% of the annual CRA 7 landings between 1979–80 and 2022–23 (Table 47). The percentage of landings contributed by statistical area 921 has been variable but has never exceeded 55% and is usually less than 40% of the landings (32 of 44 years, Table 47). The distribution of potlifts has tended to be more skewed towards statistical area 920 than that for landings, implying lower catch rates in this statistical area (Table 48).

The seasonal distribution of landings in this fishery has been strongly affected by the regulations which control the taking of lobsters at the “concession MLS” (set at 127 mm tail length, equivalent to 47 mm TW for males and 49 mm TW for females), a much smaller size at capture than is used in other parts of New Zealand. These regulations restricted this period from 01 June (the beginning of the season was shifted from 20 June to 01 June starting with the 2010–11 fishing year, Ministry of Fisheries 2010a) to 19 November and have been in place from the first fishing year in the data set (1979–80, Table 49, Figure 20). Before 1993–94, commercial fishing was allowed outside this period using standard New Zealand MLS regulations (54 mm TW for males and 58 or 60 mm TW for females, depending on the year). Beginning with 1993–94, the commercial fishery was closed outside the “concession period” (June to mid-November). This fishery closure was dropped from 1 October 2013, allowing fishing throughout the year under the lower tail length regulation MLS of 127 mm (Fisheries New Zealand 2022). The effect of these regulation changes can be seen in Table 49 and Figure 20. There are almost no landings in April or May from 1980 to 2013 and post-November landings begin in December 2013. The accumulation of landings from June onward was dependent on the annual abundance, with years of high abundance (such as 2004–05 to 2006–07) showing high percentages of landings in July and August and very low contributions in October and November. Conversely, low abundance years (e.g., 2009–10 and 2010–11) have high proportions of landings occurring in October and November. The distribution of landings in 2022–23 reflects the revised regulations, with a much broader distribution of landings extending from April to March. For this fishing year, just over 1% of landings occurred in April to May (the previously closed period) and 11% of landings occurred from December to March (also a period that was previously closed, Table 50).

Arithmetic CPUE (Eq. 1) declined in the early 1980s and then was variable, declining to only 0.21 kg/potlift in 1999–2000 (Table 51, Figure 21). Statistical area 921 consistently had higher mean absolute catch rates, but they also tended to be more variable. Notably, the arithmetic CPUE in statistical area 920 matched or exceeded the statistical area 921 CPUE in 2011–12 and 2013–14 but was again lower than statistical area 921 after 2014–15. Both statistical areas have similar CPUE trends, with each showing an

increasing trend from a nadir in 2012–13 to the end of the series (Figure 21). CPUE estimated over the four years under the ERS data collection regime continue the increasing trend in both statistical areas (apart from a drop in 921 to 5.16 kg/potlift in 2022–23 from 5.9 kg/potlift in 2021–22). CPUE beginning with 2019–20 may not be comparable with the CPUE before that fishing year although the RLWG noted that, of the nine CRA QMAs, CRA 7 appeared to be the closest in maintaining continuity with the paper forms (see Figure B.7).

The standardised analysis interprets the rise in CPUE after 2012–13 as being much stronger than in the earlier peak (Table 52, Figure 22) with index values above 2 kg/potlift starting in 2013–14. The 2018–19 index value of 2.96 kg/potlift is the highest value in the series and 66% higher than the previous 2008–09 peak. The index values reported in Table 52 are lower than the equivalent index values reported by Starr (2016). The CRA 7 standardised series was corrected after the publication of Starr (2016) when it was noted that the estimated month effects for December to May after 1 October 2013 were not equivalent to the month effects estimated before 1992–93 due to the differences in the applicable size limits in the two periods (see above). This change in the MLS regulations between the two periods violates the stationary assumption made by the model defined in Eq. 3 and this was corrected by dropping the December to May data after 1 October 2013.

3.9 CRA 8

Historically, CRA 8 had more vessels fishing than any other QMA (Table 53, see Table 3) and the proportional decline in the number of vessels was almost as great as in CRA 7 (see Table 3). The number of qualifying vessels stabilised in the low to mid-60s from about 2003–04, with the total number of vessels fishing in CRA 8 in 2020–21 at 61, in 2021–22 at 64, and in 2022–23 at 67 (Table 53). Viewed retrospectively, these numbers are consistent with vessel numbers back to 2002–03 when vessel numbers dropped below 70 (Table 53). However, the data also indicate that there were 10, 13, 14, and 12 vessels fishing in statistical area 923 in 2019–20 to 2022–23, respectively, values well out of line with the number of vessels that have used this statistical area since 1999–2000. Examination of the data for each of these years indicated that these numbers reflected the data correctly. Given the small amount of catch associated with this statistical area in these four years (1.6 t, 4.5 t, 2.7 t, 3.6 t; Table 54), it seems anomalous that so many vessels would have been fishing in this area and it is possible that the use of GPS in ERS reporting may have resulted in the recording of vessel presence for reasons other than fishing or that catches from adjacent statistical areas have been muddled. This result demonstrates how comparability issues can arise from the change in the data collection procedures.

Seven statistical areas make up this QMA, with 73–87% of the landings reported from the combined statistical areas 926 to 928 (Fiordland) from the mid-1990s (84% in 2020–21, 83% in 2021–22, 80% in 2022–23, Table 54). Statistical area 926 (Puysegur) increased in relative importance among the other Fiordland statistical areas, accounting for 41% to 51% of the total CRA 8 landings from 2000–01 to 2006–07. This proportion declined to less than 30% of total landings by 2008–09 and 2009–10, but has since increased to about one-third (or more) of the annual landings (35% in 2020–21, 35% in 2021–22, 32% in 2022–23)(Table 54). With the drop in the importance of statistical area 926, there were increases in the proportion of the landings in statistical areas 927 and 928. Statistical area 924 (Stewart Island) contributed between 12% and 23% of the annual landings, with levels near to or below 15% from 2001–02 (11% in 2019–20, 15% in 2021–22, 17% in 2022–23; Table 54). The distribution of potlifts by statistical area is very similar to the distribution of landings (Table 55), with similar proportions for catch and effort in recent years (for instance, in 2020–21, statistical area 926 had 36% of the catch and 35% of the effort).

The seasonal distribution of landings for this fishery remained relatively consistent from year to year up to 2005–06, with about 60–80% of catch taken in every year from August to November (Table 56, Figure 23) and up to 16% in January, probably reflecting poor landings during years of low abundance (Table 56). Starting in 2003–04, the seasonal distribution of landings began to shift, with an increasing percentage of the landings coming from the winter months of June–August. This shift towards a winter fishery was similar to the seasonal shift observed in the east coast QMAs, resulting from increased

abundance. Landings in these three winter months accounted for over 40% of the annual landings in 2003–04, peaked at 47% in 2006–07, dropped to 12% in 2015–16 and 2016–17, then rose to 18–20% from 2017–18 to 2021–22, followed by a strong increase in 2022–23 to 27% (Table 56). Another important seasonal shift in landing distribution began in 2006–07, with an increase in the percentage of landings in April. Before 2005–06, less than 1% of landings came from April. This percentage increased to 3% in April 2005 and ranged from 9% in 2014–15 to 16% in 2019–20. Only 5% of the 2020–21 catch was taken in April 2020, reflecting the poor market conditions that existed at that time due to the COVID-19 pandemic but this percentage increased 21% in April 2021. This early season fishery apparently consists of a higher proportion of smaller males, reducing the discard issues that have been associated with high abundance in CRA 8. Surprisingly, the April 2022 percentage of landings dropped to 3%, a value even lower than the COVID-19-affected value in April 2020. Finally, there has been an increase in the percentage of landings coming from February and March, the final two months of the fishing year, with 25% of the landings attributed to these months in 2015–16, dropping to 17% in 2016–17, to 13% in 2017–18 and 2018–19, but only 3%, 6%, and 6% in 2019–20, 2020–21, and 2021–22 (Table 56). The percentage in February–March 2023 rose to 11%. The net effect of these shifts in the temporal distribution of landings has resulted in a recent, near-uniform accumulation of landings, as can be seen in the final panel of Figure 23. Twenty-three percent of the total 2022–23 landings for CRA 8 were taken from statistical areas 926 to 928 (Fiordland) between April and July and 36% of landings in August and November 2021 from the same statistical areas (Table 57). Area 924 (Stewart Island) accounted for 3% of the April–July landings and 10% of the August–November landings (Table 57).

Arithmetic CPUE (Eq. 1) by statistical area showed a gradual decline during the 1980s and early 1990s (Table 58, Figure 24). The CPUE was then stable up to the early 2000s, with statistical areas 924 and 926 having the highest mean catch rates among the statistical areas with appreciable total catch (Table 58). Catch rates improved quickly from the early 2000s, with increases in all statistical areas up to 2008–09 or 2009–10, depending on the statistical area (Table 58). The CPUE has remained strong in all seven statistical areas since then, with all contributing statistical areas showing comparable upward trends (Figure 24). CPUE estimated under the ERS data collection regime shows an increasing trend in all statistical areas. The CPUE beginning with 2019–20 may not be comparable with the CPUE before that fishing year.

The CPUE series for total CRA 8 dropped from the early 1980s to the early 1990s, and then was stable. A rising trend began in 1999–2000, with a strong increase in 2003–04 and successive rises from 2005–06 to 2008–09 (Table 59, Figure 25). The CPUE peaked for all three series (arithmetic [Eq. 1], unstandardised [Eq. 2], and standardised [Eq. 3]) in 2008–09 and only dropped marginally for 2009–10. The lowest CPUE value was recorded in 1992–93 and 1997–98 was nearly as low (Table 59). The three CPUE series all show similar trajectories, with the standardised index rising the most steeply of the three (Table 59, Figure 25). Standardised CPUE has varied around a geometric mean of 3.72 kg/potlift after 2009–10, with the 2018–19 index showing a 35% rise from 3.81 kg/potlift in 2015–16 to 5.16 kg/potlift. The CRA 8 fishery has the highest CPUE values among the nine New Zealand CRA QMAs.

3.10 CRA 9

The number of vessels reporting lobster landings in CRA 9 has reduced considerably, from greater than 20 in the early 1980s to fewer than 10 after 2002–03. By 2012–13, only four vessels reported at least 1 t of catch, but the number of operating vessels increased after 2014–15 when the CRA 9 TACC increased from 47 t to 61 t (Table 60). The number of vessels operating in both 2018–19 and 2019–20 was 8, the highest number since 2005–06 but vessel numbers dropped to 7 in 2020–21, then to 6 in 2021–22, and to 5 in 2022–23. Many of the statistical area-month cells in this QMA have no vessels reporting landings or had fewer than the Fisheries New Zealand criterion of at least three vessels reporting before summary data can be presented. Therefore, the summary tables for this QMA are missing a considerable amount of information.

There are seven statistical areas in CRA 9, with 70–90% of the total CRA 9 landings coming from statistical areas 931 and 935, beginning in 2004–05 (except 2012–13: Table 61). Low proportions of

landings have come from the remaining CRA 9 statistical areas (statistical areas 929, 930, 936, and 937), except in 2012–13 when 41% of the CRA 9 landings came from Statistical Area 930 and in 2018–19 and 2019–20 when statistical area 929 contributed 14% and 12% of the total landings. This contribution dropped to 2% in 2020–21 and no fishing was reported in 929 in 2021–22 or 2022–23. This degree of variation demonstrates the variability inherent in the catch and effort information from this QMA. The proportions of annual landings among statistical areas have fluctuated widely, but statistical area 935 generally had the highest proportion of landings up to 2007–08, possibly reflecting the distribution of effort rather than underlying differences in relative abundance between statistical areas (Table 61). However, statistical area 931 began to predominate in 2008–09 and, in 2012–13, there was another shift with the percentage of landings coming from statistical area 930 increasing substantially (to over 40% of the annual catch) from the previous year (at less than 10%). Table 60 shows that the number of contributing vessels in statistical area 930 only increased from 1 to 2, demonstrating the volatility of these calculations. The shift to statistical area 930 reversed from 2013–14, with landings once again concentrated in statistical areas 931 and 935. The distribution of effort is similar to the distribution of catch, except for 2012–13, when the number of declared potlifts in statistical area 935 showed a strong drop compared with the preceding years (Table 62). The proportion of potlifts in statistical area 931 exceeded the proportion of landings from 2012–13 to 2015–16, signalling a drop in relative CPUE in statistical area 931. But this situation reversed after 2016–17, with the percentage of effort less than or matching the catch percentage.

Landings in this fishery shifted away from the summer to the late winter in the mid-1990s, with the cumulative landings to the end of September increasing past 50% in 1995–96 (Table 63, Figure 26). This shift was particularly strong from 2004–05, with over 80% of the annual landings taken by the end of September in that year, increasing to 95–97% between 2005–06 and 2007–08 (Table 63). This trend has since dropped, but with the total percentage of landings taken from April to September remaining high, ranging from 55% to 87% after 2008–09. The April–September percentage was 64% in 2020–21, 67% in 2021–22, and 78% in 2022–23. Seventy-three percent of total annual landings were taken in statistical areas 931 and 935 from April to September 2022, while no fishing was reported in that period in statistical areas 929, 930, 937, or 938 (Table 64). Only two of the cells in the Table 64 data for 2022–23 satisfy the Fisheries New Zealand criterion of at least three vessels reporting.

Arithmetic CPUE (Eq. 1) trajectories by statistical area from 1979–80 to 2022–23 are difficult to interpret because many of the year-statistical area combinations cannot be reported because of Fisheries New Zealand reporting restrictions (Table 65, Figure 27). Statistical area 931 has shown the highest catch rates in most years, exceeding 2 kg/potlift in all years beginning with 2004–05 (Table 65). Statistical area 935 had very high catch rates from 2012–13 to 2015–16 when there was an exceptionally strong increase in the arithmetic CPUE associated with an apparent drop in effort in this statistical area (Table 62). Arithmetic catch rates from 2019–20 to 2022–23 increased in statistical areas 935 and 936, but remained high and steady in statistical area 931 under the ERS regime. CPUE beginning with 2019–20 is not comparable to the CPUE before that fishing year.

Standardised CPUE for this QMA increased from below 1.0 kg/potlift in 1999–2000 to over 2.0 kg/potlift in 2004–05. CPUE stayed at this level to 2006–07 and then dropped to 1.3 kg/potlift over the next two years (Table 66, Figure 28). All three series (arithmetic, unstandardised, and standardised) show an overall increasing trend from 2009–10 to 2012–13, although there is divergence between the three series due to the effect of standardisation, which was accentuated by the sudden shifts in the distribution of catch and effort described above. The arithmetic series increased from 2011–12 to 2013–14 and then dropped slightly in 2014–15 whereas the unstandardised series (Eq. 2) peaked in 2014–15, rising nearly 0.7 kg/potlift between 2013–14 and 2014–15. The standardised series peaked in 2012–13 and has since fluctuated between 1.95 and 2.32 kg/potlift, with the 2018–19 standardised index at 1.96 kg/potlift. Although vessels reporting less than 1 t of CRA 9 landings in a year have been dropped before calculating these CPUE indices (see final paragraph in Section 2.3), these series must be interpreted cautiously, recognising that they are generated from small amounts of data and are consequently subject to considerable uncertainty and variability.

4. FULFILLMENT OF BROADER OUTCOMES

Whakapapa links all people back to the land, sea, and sky, and our obligations to respect the physical world. This research aims to ensure the long-term sustainability of red rock lobster stocks, for the good of the wider community (including stakeholders and the public) and the marine ecosystems that lobsters inhabit. This project supports both Māori and regional businesses, and our research is linked to the moana from the work it carries out and the tangata whenua it supports.

To support the wider fisheries science community and enable more value to be extracted from the limited resources (time and money) available for fisheries research, we make as much code as possible open source (i.e., publicly available). Furthermore, this project has built capacity and capability in fisheries science and stock assessment by employing researchers with a range of experience so that those with a long history of working in fisheries science can pass on their knowledge. This approach has meant that rock lobster stock assessments have consisted of a team with some members that have been involved for many years and some newer team members. This approach further mitigates risk associated with team members not being able to participate any longer.

5. ACKNOWLEDGEMENTS

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7. TABLES

Table 1: Reported commercial landings, TACC, and TAC (tonnes) of *Jasus edwardsii* by QMA for each fishing year since the species was included in the QMS on 1 April 1990. –: TAC not set. NA: current (incomplete) fishing year (sources: QMR for 1990–91 to 2000–01 and MHR for 2001–02 to 2022–23). (Continued on next page)

Fishing year	CRA 1			CRA 2			CRA 3			CRA 4		
	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC	TAC
1990–91	131.1	160.1	–	237.6	249.5	–	324.1	437.1	–	523.2	576.3	–
1991–92	128.3	157.0	–	229.7	241.3	–	268.8	411.9	–	530.5	545.7	–
1992–93	110.5	138.0	–	190.3	216.6	–	191.5	330.9	–	495.7	506.7	–
1993–94	127.4	130.5	–	214.9	214.6	–	179.5	163.9	–	492.0	495.7	–
1994–95	130.0	130.5	–	212.8	214.6	–	160.7	163.9	–	490.4	495.7	–
1995–96	126.7	130.5	–	212.5	214.6	–	156.9	163.9	–	487.2	495.7	–
1996–97	129.4	130.5	–	213.2	214.6	–	203.5	204.9	–	493.6	495.7	–
1997–98	129.3	130.5	–	234.4	236.1	452.6	223.4	224.9	379.4	490.4	495.7	–
1998–99	128.7	130.5	–	232.3	236.1	452.6	325.7	327.0	453.0	493.3	495.7	–
1999–00	125.7	131.1	–	235.1	236.1	452.6	326.1	327.0	453.0	576.5	577.0	771.0
2000–01	130.9	131.1	–	235.4	236.1	452.6	328.1	327.0	453.0	573.8	577.0	771.0
2001–02	130.6	131.1	–	225.0	236.1	452.6	289.9	327.0	453.0	574.1	577.0	771.0
2002–03	130.8	131.1	–	205.7	236.1	452.6	291.3	327.0	453.0	575.7	577.0	771.0
2003–04	128.7	131.1	–	196.0	236.1	452.6	215.9	327.0	453.0	575.7	577.0	771.0
2004–05	130.8	131.1	–	197.3	236.1	452.6	162.0	327.0	453.0	569.9	577.0	771.0
2005–06	130.5	131.1	–	225.2	236.1	452.6	170.1	190.0	319.0	504.1	577.0	771.0
2006–07	130.8	131.1	–	226.5	236.1	452.6	178.7	190.0	319.0	444.6	577.0	771.0
2007–08	129.8	131.1	–	229.7	236.1	452.6	172.4	190.0	319.0	315.2	577.0	771.0
2008–09	131.0	131.1	–	232.3	236.1	452.6	189.8	190.0	319.0	249.4	577.0	771.0
2009–10	130.9	131.1	–	235.2	236.1	452.6	164.0	164.0	293.0	262.2	266.0	461.0
2010–11	130.8	131.1	–	224.8	236.1	452.6	163.7	164.0	293.0	414.8	415.6	610.6
2011–12	130.4	131.1	–	229.0	236.1	452.6	163.9	164.0	293.0	466.2	466.9	661.9
2012–13	130.9	131.1	–	234.3	236.1	452.6	193.3	193.3	322.3	466.3	466.9	661.9
2013–14	130.3	131.1	–	235.7	236.1	452.6	225.5	225.5	354.5	499.4	499.7	694.7
2014–15	130.2	131.1	–	198.6	200.0	416.5	260.4	261.0	390.0	465.5	467.0	662.0
2015–16	129.4	131.1	273.1	174.7	200.0	416.5	260.8	261.0	390.0	438.1	467.0	662.0
2016–17	130.6	131.1	273.1	142.5	200.0	416.5	260.9	261.0	390.0	382.9	397.0	592.0
2017–18	124.3	131.1	273.1	142.8	200.0	416.5	237.7	237.9	366.9	289.0	289.0	484.0
2018–19	130.6	131.1	273.1	80.0	80.0	173.0	238.1	237.9	366.9	318.4	318.8	513.8
2019–20	126.9	131.1	273.1	76.0	80.0	173.0	189.0	222.9	351.9	280.3	318.8	513.8
2020–21	110.0	110.0	203.0	83.9	80.0	173.0	215.4	222.9	351.9	350.5	318.8	513.8
2021–22	109.7	110.0	203.0	80.0	80.0	173.0	170.0	195.0	302.0	279.7	280.0	388.0
2022–23	104.9	105.0	193.0	80.0	80.0	173.0	157.7	195.0	302.0	279.2	280.0	388.0
2023–24	NA	89.0	172.0	NA	80.0	173.0	NA	195.0	302.0	NA	280.0	388.0

Table 1 [Continued]:

Fishing year ¹	CRA 5			CRA 6			CRA 7			CRA 8		
	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC	TAC
1990–91	308.6	465.2	–	369.7	503.0	–	133.4	179.4	–	834.5	1 152.4	–
1991–92	287.4	433.7	–	388.3	539.6	–	177.7	166.8	–	962.7	1 077.0	–
1992–93	258.8	337.7	–	329.4	539.6	–	131.6	154.5	–	876.5	993.7	–
1993–94	311.0	303.7	–	341.8	530.6	–	138.1	138.9	–	896.1	888.1	–
1994–95	293.9	303.7	–	312.5	530.6	–	120.3	138.9	–	855.6	888.1	–
1995–96	297.6	303.7	–	315.3	530.6	–	81.3	138.9	–	825.6	888.1	–
1996–97	300.3	303.2	–	378.3	530.6	–	62.9	138.7	–	862.4	888.1	–
1997–98	299.6	303.2	–	338.7	400.0	480.0	36.0	138.7	–	785.6	888.1	–
1998–99	298.2	303.2	–	334.2	360.0	370.0	58.6	138.7	–	808.1	888.1	–
1999–00	349.5	350.0	467.0	322.4	360.0	370.0	56.5	111.0	131.0	709.8	711.0	798.0
2000–01	347.4	350.0	467.0	342.7	360.0	370.0	87.2	111.0	131.0	703.4	711.0	798.0
2001–02	349.1	350.0	467.0	328.7	360.0	370.0	76.9	89.0	109.0	572.1	568.0	655.0
2002–03	348.7	350.0	467.0	336.3	360.0	370.0	88.6	89.0	109.0	567.1	568.0	655.0
2003–04	349.9	350.0	467.0	290.4	360.0	370.0	81.4	89.0	109.0	567.6	568.0	655.0
2004–05	345.1	350.0	467.0	323.0	360.0	370.0	94.2	94.9	114.9	603.0	603.4	690.4
2005–06	349.5	350.0	467.0	351.7	360.0	370.0	95.0	94.9	114.9	603.2	603.4	690.4
2006–07	349.8	350.0	467.0	352.1	360.0	370.0	120.2	120.2	140.2	754.9	755.2	842.2
2007–08	349.8	350.0	467.0	356.0	360.0	370.0	120.1	120.2	140.2	752.4	755.2	842.2
2008–09	349.7	350.0	467.0	355.3	360.0	370.0	120.3	123.9	143.9	966.0	966.0	1 053.0
2009–10	349.9	350.0	467.0	345.2	360.0	370.0	136.5	189.0	209.0	1 018.3	1 019.0	1 110.0
2010–11	350.0	350.0	467.0	357.4	360.0	370.0	74.8	84.5	104.5	1 018.3	1 019.0	1 110.0
2011–12	350.0	350.0	467.0	359.7	360.0	370.0	45.7	75.7	95.7	961.2	962.0	1 053.0
2012–13	350.0	350.0	467.0	355.9	360.0	370.0	53.8	63.9	83.9	960.8	962.0	1 053.0
2013–14	350.0	350.0	467.0	343.6	360.0	370.0	44.0	44.0	64.0	964.6	962.0	1 053.0
2014–15	349.2	350.0	467.0	334.5	360.0	370.0	66.0	66.0	86.0	962.0	962.0	1 053.0
2015–16	350.1	350.0	467.0	353.3	360.0	370.0	97.6	97.7	117.7	961.8	962.0	1 053.0
2016–17	350.0	350.0	514.0	359.5	360.0	370.0	97.6	97.7	117.7	962.0	962.0	1 053.0
2017–18	350.0	350.0	514.0	359.1	360.0	370.0	112.7	112.5	132.5	961.9	962.0	1 053.0
2018–19	349.9	350.0	514.0	359.9	360.0	370.0	97.0	97.0	117.0	1 070.6	1 070.7	1 161.7
2019–20	336.2	350.0	514.0	328.7	360.0	370.0	94.5	97.0	117.0	1 017.5	1 129.6	1 220.6
2020–21	363.7	350.0	514.0	390.9	360.0	370.0	107.8	106.2	126.2	1 301.8	1 191.7	1 282.7
2021–22	350.0	350.0	514.0	359.9	360.0	370.0	106.3	106.2	126.2	1 191.1	1 191.7	1 282.7
2022–23	350.0	350.0	514.0	359.1	360.0	370.0	111.7	111.5	134.5	1 251.6	1 251.0	1 453.0
2023–24	NA	350.0	514.0	NA	360.0	370.0	NA	111.5	134.5	NA	1 251.0	1 453.0

Fishing year	CRA 9			Total		
	Catch	TACC	TAC	Catch ¹	TACC ²	TAC ³
1990–91	45.3	54.7	–	2 907.4	3 777.8	–
1991–92	47.5	51.5	–	3 020.9	3 624.5	–
1992–93	45.7	47.1	–	2 629.9	3 264.9	–
1993–94	45.5	47.0	–	2 746.2	2 913.0	–
1994–95	45.2	47.0	–	2 621.5	2 913.0	–
1995–96	45.4	47.0	–	2 548.6	2 913.0	–
1996–97	46.9	47.0	–	2 690.5	2 953.3	–
1997–98	46.7	47.0	–	2 584.2	2 864.1	1 312.0
1998–99	46.9	47.0	–	2 726.0	2 926.2	1 275.6
1999–00	47.0	47.0	–	2 748.5	2 850.2	3 442.6
2000–01	47.0	47.0	–	2 795.9	2 850.2	3 442.6
2001–02	46.8	47.0	–	2 593.0	2 685.2	3 277.6
2002–03	47.0	47.0	–	2 591.1	2 685.2	3 277.6
2003–04	45.9	47.0	–	2 451.5	2 685.2	3 277.6
2004–05	47.0	47.0	–	2 472.3	2 726.4	3 318.8
2005–06	46.6	47.0	–	2 475.8	2 589.4	3 184.8
2006–07	47.0	47.0	–	2 604.6	2 766.6	3 362.0
2007–08	47.0	47.0	–	2 472.5	2 766.6	3 362.0
2008–09	47.0	47.0	–	2 640.7	2 981.0	3 576.5
2009–10	46.6	47.0	–	2 688.8	2 762.2	3 362.6
2010–11	47.0	47.0	–	2 781.7	2 807.3	3 407.7
2011–12	47.0	47.0	–	2 753.0	2 792.8	3 393.2
2012–13	47.0	47.0	–	2 792.2	2 810.3	3 410.7
2013–14	47.1	47.0	–	2 840.1	2 855.4	3 455.8
2014–15	60.8	60.8	115.8	2 827.2	2 857.8	3 560.3
2015–16	60.6	60.8	115.8	2 826.5	2 889.5	3 865.0
2016–17	60.8	60.8	115.8	2 746.7	2 819.5	3 842.0
2017–18	60.7	60.8	115.8	2 638.1	2 703.2	3 725.7
2018–19	60.8	60.8	115.8	2 705.2	2 706.2	3 605.2
2019–20	58.4	60.8	115.8	2 507.4	2 750.2	3 649.2
2020–21	63.1	60.8	115.8	2 987.2	2 800.4	3 650.4
2021–22	60.8	60.8	115.8	2 707.9	2 733.7	3 474.7
2022–23	60.8	60.8	115.8	2 754.9	2 793.3	3 643.3
2023–24	NA	60.8	115.8	NA	2 777.3	3 622.3

¹ Catch totals exclude CRA 10 and ET catches (outside EEZ).² TACC totals exclude CRA 10 (TACC=0.1 t).³ There is no TAC for CRA 10.

Table 2A: Ratio of the sum of annual landed catch from the bottom portion of the CELR forms or the ERS landings returns to the reported QMR/MHR catch for each QMA and fishing year. All landings based on records with error ratings less than or equal to one and records not excluded by the B4 algorithm (Appendix D.1), scaled to the “L” destination code (CELR) or the combined “(L+LFL+LR+QL)” destination codes (ERS returns).

Fishing year	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 6	CRA 7	CRA 8	CRA 9
1990–91	0.96	0.86	1.00	0.99	0.94	0.81	0.89	0.85	1.03
1991–92	1.12	0.91	0.99	0.99	1.00	0.84	0.94	0.93	1.02
1992–93	1.10	0.99	1.01	1.01	0.99	0.83	1.00	0.93	1.05
1993–94	1.07	1.00	1.04	1.02	0.98	0.86	0.98	0.90	1.17
1994–95	1.00	0.96	1.00	1.03	0.97	0.93	1.01	0.91	1.37
1995–96	0.94	0.94	1.03	0.99	0.95	0.94	0.98	0.89	1.28
1996–97	1.01	0.89	0.93	0.94	0.94	0.88	0.92	0.85	1.84
1997–98	0.84	0.87	0.91	0.95	0.94	0.86	0.92	0.85	1.55
1998–99	0.87	0.90	0.87	0.93	0.92	0.82	0.86	0.85	1.45
1999–00	0.98	0.86	0.97	0.94	0.90	0.75	0.58	0.83	1.74
2000–01	0.91	0.93	0.96	0.96	0.87	0.82	0.95	0.87	1.02
2001–02	0.95	0.93	0.94	0.96	0.87	0.85	0.97	0.85	0.93
2002–03	0.96	0.93	0.91	0.98	0.86	0.82	0.95	0.78	0.94
2003–04	0.96	0.94	0.91	0.92	0.93	0.83	1.00	0.83	0.91
2004–05	0.94	0.92	0.88	0.92	0.99	0.86	0.91	0.82	0.89
2005–06	0.90	0.94	0.95	0.87	0.97	0.85	0.94	0.90	1.01
2006–07	0.92	0.98	0.95	0.91	0.97	0.89	0.95	0.89	0.94
2007–08	0.93	0.91	0.95	0.87	0.91	0.88	0.95	0.88	0.89
2008–09	0.94	0.91	0.93	0.87	0.93	0.85	0.90	0.88	0.83
2009–10	0.89	0.92	0.90	0.80	0.91	0.86	0.95	0.84	0.88
2010–11	0.93	0.94	0.94	0.90	0.94	0.86	0.94	0.89	0.86
2011–12	0.88	0.93	0.97	0.89	0.87	0.89	0.88	0.88	0.81
2012–13	0.81	0.94	0.97	0.86	0.97	0.87	0.88	0.87	0.63
2013–14	0.89	0.91	1.00	0.88	0.95	0.91	0.94	0.89	0.73
2014–15	0.75	0.93	0.94	0.93	0.94	0.88	0.93	0.90	0.72
2015–16	0.91	0.94	0.95	0.92	0.99	0.85	0.86	0.86	0.76
2016–17	0.89	0.99	0.98	0.88	0.96	0.88	0.91	0.84	0.72
2017–18	0.88	0.93	1.01	0.91	0.89	0.87	0.92	0.83	0.79
2018–19	0.82	0.88	0.96	0.95	0.88	0.88	0.88	0.91	0.86
2019–20	0.69	0.88	0.86	0.86	0.77	0.77	0.96	0.83	1.01
2020–21	0.68	0.99	0.88	0.87	0.70	0.72	0.93	0.84	0.96
2021–22	0.87	0.96	0.96	0.84	0.82	0.72	0.98	0.84	0.79
2022–23	0.82	0.93	0.78	0.73	0.81	0.77	0.94	0.91	0.98
Mean (1990–2022)	0.91	0.93	0.95	0.92	0.92	0.85	0.92	0.87	1.01
Mean (2016–2018)	0.86	0.93	0.99	0.91	0.91	0.88	0.90	0.86	0.79
Mean (2020–2022)	0.79	0.96	0.87	0.81	0.78	0.74	0.95	0.86	0.91

Table 2B: Annual ratio of the sum of landed catch used to estimate CPUE relative to the sum of the total landed catch by QMA. Landed catches used to estimate CPUE include only records with error ratings less than or equal to one and records not excluded by the F2 algorithm (Appendix D.2), scaled to the combined “LFX” destination codes and only accepting vessels with a *vcf* lying between 0.8 and 1.2. The total landed catch is determined by the F0 algorithm applied to records with error ratings less than or equal to one, where all vessels are accepted, regardless of the *vcf* value, scaled to the combined “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Cells with ratios less than 0.5 are shaded grey.

Fishing Year	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 6	CRA 7	CRA 8	CRA 9
1990–91	0.89	0.90	0.96	0.98	0.89	0.94	0.86	0.85	0.96
1991–92	0.86	0.86	0.94	0.98	0.61	0.93	0.94	0.83	1.00
1992–93	0.82	0.84	0.92	0.98	0.45	0.92	0.89	0.81	0.96
1993–94	0.98	0.81	0.98	1.00	0.42	0.93	0.87	0.84	0.87
1994–95	0.99	0.84	0.95	0.98	0.48	0.95	0.90	0.84	0.60
1995–96	0.81	0.83	0.95	0.96	0.43	0.94	0.85	0.80	0.92
1996–97	0.59	0.79	0.88	0.85	0.49	0.88	0.77	0.78	0.85
1997–98	0.56	0.91	0.93	0.88	0.63	0.97	0.97	0.84	1.00
1998–99	0.71	0.90	0.93	0.91	0.54	0.84	0.78	0.69	0.80
1999–00	0.72	0.87	0.93	0.77	0.63	0.83	0.68	0.83	0.89
2000–01	0.97	0.91	0.86	0.90	0.66	0.95	0.79	0.92	1.00
2001–02	0.99	0.95	0.88	0.89	0.64	0.84	0.95	0.85	0.95
2002–03	0.93	0.92	0.80	0.93	0.59	0.80	0.97	0.88	0.94
2003–04	0.93	0.97	0.82	0.94	0.85	0.91	1.00	0.97	0.93
2004–05	0.78	0.80	0.87	0.92	0.76	0.90	0.92	0.93	0.93
2005–06	0.91	0.84	0.91	0.84	0.85	0.98	0.87	0.90	0.92
2006–07	0.95	0.92	0.96	0.92	0.96	0.90	1.00	0.91	0.95
2007–08	0.89	0.95	0.86	0.89	0.99	0.97	0.92	0.95	0.92
2008–09	0.85	0.93	0.89	0.90	0.99	1.00	0.75	0.88	1.00
2009–10	0.99	0.99	0.94	0.91	0.88	0.95	0.90	0.82	1.00
2010–11	0.93	0.97	0.97	0.94	0.93	0.94	0.86	0.82	0.99
2011–12	0.96	0.98	1.00	0.94	0.96	0.98	0.91	0.84	0.70
2012–13	0.99	0.96	0.88	0.96	0.79	0.92	0.93	0.83	0.62
2013–14	0.87	0.97	0.82	0.84	0.80	0.97	0.75	0.73	0.66
2014–15	0.82	0.92	0.95	0.84	0.77	0.98	0.62	0.72	0.58
2015–16	0.81	0.91	1.00	0.91	0.79	0.97	0.54	0.85	0.54
2016–17	0.76	0.98	0.97	0.95	0.68	0.99	0.84	0.78	0.59
2017–18	0.78	0.92	0.88	0.97	0.77	0.97	0.72	0.65	0.67
2018–19	0.83	0.93	0.74	0.93	0.81	0.99	0.72	0.67	0.46
2019–20	0.73	0.82	0.72	0.61	0.61	0.64	0.95	0.62	0.56
2020–21	0.55	0.76	0.60	0.67	0.55	0.67	0.94	0.77	0.86
2021–22	0.71	0.66	0.75	0.62	0.76	0.83	1.00	0.74	0.80
2022–23	0.62	0.81	0.76	0.67	0.70	0.73	0.83	0.82	0.83
Mean (1990–2022)	0.83	0.89	0.89	0.88	0.72	0.91	0.85	0.82	0.83
Mean (2016–2018)	0.79	0.94	0.86	0.95	0.75	0.98	0.76	0.70	0.57
Mean (2020–2022)	0.63	0.74	0.70	0.65	0.67	0.74	0.92	0.78	0.83

Table 3: Summary table showing the number of vessels by QMA reporting at least 1 t landings in that QMA and for all of New Zealand, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for a QMA were excluded (along with vessel=4548). The problem fishing year with overlapping vessel codes from the previous FSU and the current CELR catch reporting systems is in bold and shaded grey. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	CRA1	CRA2	CRA3	CRA4	CRA5	CRA6	CRA7	CRA8	CRA9	All QMAs
1979–80	34	80	70	86	88	39	90	271	23	768
1980–81	34	89	85	86	86	42	86	253	23	778
1981–82	33	88	77	88	85	45	79	221	20	728
1982–83	33	82	85	89	93	54	42	214	19	708
1983–84	31	75	84	89	93	50	40	208	22	690
1984–85	30	73	86	90	95	53	59	212	21	715
1985–86	34	78	83	88	92	57	66	208	20	721
1986–87	35	70	76	88	91	48	58	187	20	663
1987–88	30	59	72	85	84	47	51	173	19	618
1988–89	26	55	58	87	71	42	38	135	10	518
1989–90	27	17	77	131	66	55	17	178	18	577
1990–91	27	57	58	85	62	40	37	134	12	503
1991–92	33	51	65	88	68	45	46	143	13	542
1992–93	31	48	54	96	61	50	35	144	13	525
1993–94	27	47	48	100	59	55	37	144	12	522
1994–95	23	47	41	89	51	59	33	122	16	476
1995–96	23	44	34	80	49	52	28	112	14	431
1996–97	26	40	32	74	47	50	22	111	18	410
1997–98	21	42	30	72	45	50	7	107	19	386
1998–99	19	35	30	65	41	42	18	104	16	361
1999–00	20	34	32	70	39	34	17	91	17	347
2000–01	18	39	33	61	36	33	25	87	9	336
2001–02	18	36	33	62	34	32	22	74	11	316
2002–03	17	37	38	65	34	32	20	69	10	316
2003–04	16	34	39	65	34	35	17	66	9	312
2004–05	15	31	33	61	32	34	14	62	8	284
2005–06	15	36	29	54	31	35	14	60	8	276
2006–07	13	35	28	66	28	36	14	57	7	281
2007–08	13	32	28	53	27	35	20	59	7	269
2008–09	13	32	26	42	26	35	15	64	6	258
2009–10	13	32	24	43	25	35	19	62	6	258
2010–11	14	34	26	51	27	36	16	64	6	272
2011–12	13	35	25	51	25	35	9	62	5	259
2012–13	14	40	23	49	27	37	12	64	4	268
2013–14	14	36	26	47	27	34	10	63	4	259
2014–15	14	33	25	49	29	35	9	64	4	260
2015–16	13	33	27	47	30	35	11	64	7	263
2016–17	13	29	25	45	32	36	11	66	6	261
2017–18	12	29	25	39	27	40	12	65	5	251
2018–19	13	18	25	45	31	39	11	65	8	253
2019–20	14	17	24	38	25	38	9	67	8	236
2020–21	10	19	24	35	23	33	9	61	7	216
2021–22	11	17	21	35	23	32	10	64	6	218
2022–23	11	16	20	26	23	36	10	67	5	211
Mean: 1979–1983	33.0	82.8	80.2	87.6	89.0	46.0	67.4	233.4	21.4	734.4
Mean: 2018–2022	11.8	17.4	22.8	35.8	25.0	35.6	9.8	64.8	6.8	226.8
Percent drop	-64%	-79%	-72%	-59%	-72%	-23%	-85%	-72%	-68%	-69%
Mean: 1990–1992	30.3	52.0	59.0	89.7	63.7	45.0	39.3	140.3	12.7	523.3
Mean: 2020–2022	10.7	17.3	21.7	32.0	23.0	33.7	9.7	64.0	6.0	215.0
Percent drop	-65%	-67%	-63%	-64%	-64%	-25%	-75%	-54%	-53%	-59%

Table 4: Number of vessels by statistical area from CRA 1, 1979–80 to 2022–23. Vessels landing less than 1 t in a year for the QMA were excluded. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	901	902	903	904	939	CRA 1
1979–80	5	9	8	7	10	34
1980–81	3	9	10	11	9	34
1981–82	3	8	10	9	8	33
1982–83	3	10	8	9	9	33
1983–84	5	14	6	8	7	31
1984–85	5	14	4	8	7	30
1985–86	5	10	8	10	8	34
1986–87	5	11	12	9	9	35
1987–88	4	10	13	8	9	30
1988–89	5	6	8	6	8	26
1989–90	7	7	5	8	9	27
1990–91	12	10	7	7	8	27
1991–92	8	16	13	12	8	33
1992–93	3	11	7	10	8	31
1993–94	6	8	6	9	6	27
1994–95	4	6	5	10	4	23
1995–96	4	6	5	9	5	23
1996–97	3	3	8	11	5	26
1997–98	2	3	4	7	6	21
1998–99	2	3	3	6	6	19
1999–00	5	3	3	6	6	20
2000–01	4	3	3	6	5	18
2001–02	4	4	3	5	5	18
2002–03	6	6	3	3	6	17
2003–04	2	6	3	3	6	16
2004–05	3	5	4	2	5	15
2005–06	3	5	3	2	5	15
2006–07	5	2	3	2	3	13
2007–08	5	4	4	2	3	13
2008–09	6	3	3	2	3	13
2009–10	5	3	2	2	3	13
2010–11	5	6	2	2	3	14
2011–12	5	3	2	2	3	13
2012–13	5	5	2	3	3	14
2013–14	4	4	2	3	3	14
2014–15	4	2	3	3	3	14
2015–16	4	2	2	2	3	13
2016–17	4	3	2	2	3	13
2017–18	3	3	2	2	3	12
2018–19	4	4	3	2	4	13
2019–20	5	4	2	2	4	14
2020–21	3	4	1	0	4	10
2021–22	5	5	2	0	4	11
2022–23	4	5	1	0	2	11

Table 5: Distribution and annual landings by statistical area from CRA 1, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels reporting in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)					Annual catch (t)					
	901	902	903	904	939	901	902	903	904	939	CRA 1
1979–80	16.9	23.6	19.8	15.3	24.4	19.4	27.2	22.8	17.6	28.0	115.0
1980–81	12.5	31.0	13.4	17.8	25.2	22.4	55.8	24.1	32.1	45.4	179.8
1981–82	11.1	35.4	20.6	12.1	20.8	20.4	65.0	37.8	22.1	38.1	183.3
1982–83	18.3	32.4	12.1	14.1	23.1	40.8	72.3	26.9	31.4	51.4	222.9
1983–84	21.3	31.7	7.9	14.3	24.7	49.4	73.5	18.4	33.2	57.2	231.7
1984–85	16.4	39.6	7.4	14.7	21.9	34.8	83.7	15.8	31.0	46.3	211.6
1985–86	17.4	31.1	8.6	19.2	23.7	38.0	68.0	18.8	42.1	51.9	218.8
1986–87	11.0	25.0	19.5	22.2	22.2	23.3	52.9	41.2	47.0	47.0	211.4
1987–88	18.3	23.9	15.7	18.3	23.8	34.3	44.8	29.5	34.4	44.7	187.7
1988–89	20.1	25.2	12.0	19.6	23.1	35.9	45.0	21.4	35.0	41.2	178.6
1989–90	28.3	20.4	11.3	19.7	20.4	49.2	35.5	19.6	34.2	35.5	174.0
1990–91	27.2	27.9	10.0	14.0	20.9	35.7	36.5	13.0	18.4	27.4	131.1
1991–92	7.9	30.7	16.7	18.4	26.3	10.2	39.3	21.4	23.5	33.8	128.3
1992–93	15.3	28.6	13.9	20.2	22.0	16.9	31.6	15.4	22.3	24.3	110.5
1993–94	26.8	27.8	11.7	16.8	16.8	34.1	35.5	14.9	21.4	21.4	127.4
1994–95	24.9	20.8	13.5	24.6	16.2	32.3	27.0	17.6	32.0	21.1	130.0
1995–96	15.1	16.4	16.9	32.1	19.4	19.1	20.8	21.5	40.7	24.6	126.7
1996–97	16.3	16.1	19.1	30.6	18.0	21.1	20.9	24.7	39.5	23.3	129.4
1997–98	13.8	17.5	16.5	23.4	28.7	17.9	22.7	21.3	30.3	37.2	129.3
1998–99	x	18.5	12.0	15.7	30.6	x	23.8	15.4	20.2	39.4	128.7
1999–00	45.2	8.3	5.3	10.3	30.9	56.8	10.4	6.7	13.0	38.8	125.7
2000–01	51.5	10.9	8.0	10.2	19.4	67.4	14.3	10.5	13.4	25.4	130.9
2001–02	49.2	9.5	8.5	8.6	24.1	64.3	12.5	11.1	11.2	31.5	130.6
2002–03	36.8	21.1	7.0	6.9	28.2	48.1	27.6	9.2	9.0	36.9	130.8
2003–04	x	47.0	6.1	10.2	21.4	x	60.5	7.9	13.1	27.6	128.7
2004–05	27.6	30.5	7.9	9.5	24.4	36.1	39.9	10.4	12.4	32.0	130.8
2005–06	40.8	18.0	8.9	x	21.5	53.3	23.5	11.7	x	28.0	130.5
2006–07	44.8	x	13.9	x	15.7	58.6	x	18.2	x	20.6	130.8
2007–08	51.5	15.8	11.0	9.3	12.4	66.9	20.5	14.3	12.0	16.1	129.8
2008–09	45.0	16.2	11.1	x	16.5	58.9	21.2	14.6	x	21.6	131.0
2009–10	42.2	16.3	10.3	x	21.0	55.3	21.4	13.5	x	27.5	130.9
2010–11	43.1	18.2	10.6	8.4	19.7	56.3	23.8	13.9	11.0	25.8	130.8
2011–12	44.3	19.1	6.3	9.1	21.2	57.8	25.0	8.2	11.8	27.6	130.4
2012–13	41.5	22.2	8.8	7.4	20.1	54.3	29.1	11.5	9.6	26.4	130.9
2013–14	30.9	23.0	7.0	12.3	26.9	40.3	29.9	9.1	16.0	35.0	130.3
2014–15	31.7	x	11.2	12.6	18.9	41.3	x	14.6	16.4	24.6	130.2
2015–16	38.6	x	10.3	x	25.4	49.9	x	13.4	x	32.9	129.4
2016–17	31.4	22.1	10.0	7.8	28.6	41.1	28.8	13.1	10.2	37.4	130.6
2017–18	31.4	20.7	7.2	8.1	32.6	39.0	25.7	9.0	10.0	40.5	124.3
2018–19	32.5	24.9	8.7	8.9	25.1	42.5	32.5	11.3	11.6	32.8	130.6
2019–20	34.4	20.6	x	9.2	26.5	43.7	26.1	x	11.7	33.6	126.9
2020–21	16.1	44.0	x	x	33.5	17.7	48.4	x	x	36.9	110.0
2021–22	26.4	42.6	x	x	25.7	29.0	46.7	x	x	28.2	109.7
2022–23	38.8	39.2	x	x	x	40.6	41.1	x	x	x	104.9

Table 6: Distribution and annual potlifts by statistical area from CRA 1, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)					Annual potlifts (000s)					
	901	902	903	904	939	901	902	903	904	939	CRA 1
1979–80	6.5	12.3	21.0	21.8	38.5	10.2	19.2	32.8	34.0	60.2	156.5
1980–81	6.2	17.5	19.3	23.8	33.2	11.0	31.0	34.3	42.2	58.9	177.2
1981–82	6.0	21.7	24.8	18.3	29.1	10.1	36.5	41.8	30.9	49.1	168.4
1982–83	7.1	17.6	23.3	21.8	30.2	14.2	35.1	46.4	43.4	60.2	199.4
1983–84	12.6	23.9	14.7	24.3	24.6	26.2	49.9	30.5	50.6	51.2	208.4
1984–85	9.4	27.7	11.3	24.4	27.3	20.7	61.0	24.8	53.7	60.1	220.2
1985–86	13.3	21.3	11.5	27.5	26.4	32.7	52.3	28.2	67.7	64.9	245.8
1986–87	6.1	19.3	19.7	31.4	23.5	17.3	54.4	55.7	88.7	66.3	282.4
1987–88	8.6	18.9	18.2	26.6	27.8	21.7	47.7	46.1	67.2	70.2	252.9
1988–89	10.0	20.8	20.6	23.3	25.3	22.1	46.1	45.8	51.6	56.2	221.9
1989–90	14.1	13.4	16.7	30.1	25.6	32.9	31.3	39.0	70.0	59.7	232.8
1990–91	16.7	27.7	11.9	19.9	23.7	32.4	53.7	23.0	38.7	46.0	193.8
1991–92	3.3	22.7	22.7	26.8	24.5	7.0	48.4	48.5	57.2	52.3	213.3
1992–93	4.7	23.0	15.6	33.1	23.5	9.7	47.6	32.2	68.4	48.6	206.5
1993–94	9.3	17.5	18.3	33.2	21.7	18.1	34.0	35.4	64.3	41.9	193.7
1994–95	11.0	13.3	17.0	39.9	18.8	18.2	22.1	28.2	66.3	31.2	166.1
1995–96	7.8	12.0	17.7	44.7	17.7	10.5	16.0	23.6	59.6	23.6	133.2
1996–97	6.3	14.8	21.6	43.7	13.6	8.7	20.3	29.6	59.8	18.6	137.0
1997–98	5.8	13.9	19.3	38.9	22.1	8.7	20.8	29.0	58.5	33.3	150.2
1998–99	x	16.4	15.6	30.3	29.5	x	20.2	19.3	37.4	36.4	123.2
1999–00	17.4	8.1	12.3	33.2	29.1	20.0	9.3	14.1	38.2	33.4	114.9
2000–01	21.4	10.4	13.1	29.7	25.3	23.9	11.7	14.7	33.3	28.4	112.0
2001–02	22.0	4.5	14.5	22.4	36.6	22.0	4.5	14.5	22.5	36.6	100.1
2002–03	21.5	8.3	11.7	23.1	35.3	23.5	9.1	12.7	25.2	38.5	109.0
2003–04	x	17.4	9.5	34.1	32.4	x	18.4	10.0	36.2	34.3	106.0
2004–05	10.0	18.8	8.8	19.7	42.6	10.8	20.3	9.5	21.3	46.0	108.0
2005–06	14.4	9.9	12.4	x	42.6	16.7	11.6	14.4	x	49.4	116.2
2006–07	20.5	x	15.7	x	26.4	20.3	x	15.6	x	26.2	99.4
2007–08	26.3	12.9	15.8	26.5	18.4	21.3	10.4	12.8	21.5	14.9	81.0
2008–09	19.6	13.7	16.1	x	19.3	16.4	11.4	13.4	x	16.1	83.4
2009–10	20.2	13.3	19.3	x	19.2	16.2	10.7	15.4	x	15.3	80.1
2010–11	23.5	16.7	18.1	24.9	16.9	21.9	15.6	16.9	23.3	15.9	93.6
2011–12	25.7	19.8	11.9	28.4	14.2	24.4	18.8	11.3	27.0	13.5	95.1
2012–13	26.2	26.7	11.0	24.3	11.8	21.1	21.5	8.9	19.6	9.5	80.6
2013–14	23.6	16.3	7.9	37.5	14.7	22.0	15.1	7.4	34.9	13.7	93.1
2014–15	18.6	x	16.4	39.8	10.3	20.0	x	17.7	42.9	11.2	107.9
2015–16	26.7	x	16.2	x	18.8	23.5	x	14.3	x	16.5	87.8
2016–17	18.4	16.3	15.1	30.7	19.5	17.1	15.2	14.1	28.6	18.2	93.1
2017–18	23.7	15.5	14.0	28.7	18.0	19.5	12.7	11.5	23.6	14.7	82.0
2018–19	20.0	18.9	13.2	32.6	15.4	15.3	14.5	10.1	25.0	11.8	76.7
2019–20	17.9	18.7	x	31.8	17.0	14.8	15.6	x	26.4	14.2	83.1
2020–21	7.7	41.3	x	x	33.4	4.2	22.5	x	x	18.2	54.6
2021–22	21.3	42.8	x	x	19.4	10.9	21.9	x	x	9.9	51.2
2022–23	24.7	46.7	x	x	x	13.0	24.6	x	x	x	52.6

Table 7: Percentage of annual landings by month from CRA 1, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.9	x	0.1	4.4	9.4	7.3	10.1	16.5	15.8	14.9	16.4	4.2
1980–81	2.1	0.3	0.7	3.7	6.8	4.4	11.9	10.0	19.1	23.9	11.1	5.9
1981–82	1.2	x	x	2.6	6.4	7.1	11.1	13.4	22.1	22.3	8.9	4.6
1982–83	0.2	0.4	0.4	2.8	6.3	9.6	9.7	16.1	19.6	15.1	12.5	7.2
1983–84	2.0	x	0.3	5.5	9.0	7.8	15.8	14.8	14.2	15.1	10.6	4.9
1984–85	1.8	0.7	0.6	4.0	5.1	11.1	13.5	15.4	16.0	14.5	10.1	7.2
1985–86	1.4	0.8	1.1	6.3	8.2	6.6	10.4	13.9	15.0	17.6	12.8	5.7
1986–87	1.7	0.6	1.0	6.1	10.1	10.3	14.5	14.3	13.1	11.4	11.9	5.1
1987–88	1.1	0.4	0.6	3.7	9.1	6.6	14.7	14.2	13.9	17.3	12.0	6.4
1988–89	2.4	1.4	1.0	1.8	7.2	2.4	12.8	18.3	20.7	15.4	9.0	7.6
1989–90	1.1	0.4	0.5	4.0	5.3	8.9	5.9	18.6	20.9	16.9	12.2	5.2
1990–91	0.1	0.2	0.7	4.3	14.9	12.0	14.3	14.8	15.9	11.3	7.1	4.5
1991–92	0.2	0.4	1.1	8.0	9.5	10.3	10.3	9.8	19.7	16.8	9.9	3.9
1992–93	0.1	1.1	1.9	6.5	9.6	8.4	13.9	13.8	14.1	14.7	11.1	4.8
1993–94	0.1	0.3	1.8	7.1	9.3	7.2	18.6	14.7	17.6	12.8	8.0	2.5
1994–95	x	0.5	2.5	9.3	15.1	7.6	10.9	17.4	17.3	8.9	7.6	3.0
1995–96	1.1	2.1	2.8	11.9	19.1	19.1	16.8	10.6	6.7	2.4	3.4	4.0
1996–97	1.2	5.0	3.9	18.5	13.9	18.9	15.7	12.2	5.9	2.3	1.7	1.0
1997–98	5.4	6.9	5.3	18.8	20.6	18.9	12.5	4.1	2.5	0.5	0.4	4.1
1998–99	4.8	6.3	7.7	21.1	17.3	20.7	10.9	4.3	3.3	2.9	0.3	0.4
1999–00	3.1	4.4	5.0	19.5	25.6	20.1	13.1	4.7	2.6	0.7	x	0.9
2000–01	2.3	2.2	4.9	13.4	23.6	23.3	22.6	4.8	0.9	1.0	0.6	0.5
2001–02	3.3	4.1	5.6	14.8	20.5	26.8	11.4	7.5	3.9	1.3	x	0.4
2002–03	4.1	5.0	2.5	15.5	19.0	16.9	21.0	8.4	4.0	3.0	x	0.4
2003–04	3.0	0.7	0.5	19.6	15.7	10.3	24.2	8.6	9.9	4.2	2.3	1.0
2004–05	2.0	2.9	3.8	17.5	14.7	13.2	21.9	7.9	2.8	4.5	7.3	1.4
2005–06	x	1.0	1.6	10.0	17.9	17.9	21.4	13.7	8.6	3.9	0.9	0.6
2006–07	1.4	2.5	2.2	20.6	19.9	14.6	14.1	8.8	4.6	5.7	4.5	1.0
2007–08	3.6	4.2	2.7	14.9	15.9	19.1	12.0	10.2	6.5	6.3	2.8	1.9
2008–09	7.1	4.5	1.2	12.3	16.9	24.9	17.2	6.5	5.8	3.7	–	–
2009–10	8.3	1.5	2.0	14.7	17.3	20.3	20.3	7.6	1.6	2.8	3.3	x
2010–11	6.7	3.0	3.3	14.1	17.2	11.4	22.7	6.6	4.7	5.1	3.1	2.0
2011–12	7.5	3.0	2.2	4.0	20.4	11.6	21.9	14.3	5.6	5.9	2.6	1.1
2012–13	11.1	x	x	4.8	11.3	13.4	16.4	13.3	11.5	7.3	4.6	5.3
2013–14	12.1	5.5	1.1	10.5	9.6	12.1	16.3	10.0	5.8	7.1	4.9	5.0
2014–15	15.9	5.5	3.0	4.3	9.0	8.1	17.3	8.6	10.7	8.2	5.4	3.9
2015–16	10.9	6.3	0.7	5.0	11.0	16.4	15.7	12.9	8.7	4.7	3.6	4.2
2016–17	12.2	3.4	x	4.3	10.9	15.8	14.5	12.4	9.9	5.5	4.1	6.3
2017–18	8.1	6.1	x	1.8	7.0	18.5	18.0	11.1	10.0	8.2	3.6	6.7
2018–19	11.2	3.2	0.9	6.4	11.6	11.5	25.4	10.4	10.6	5.2	1.2	2.4
2019–20	21.1	7.6	1.2	7.6	12.5	14.1	10.1	13.8	7.5	3.9	x	x
2020–21	5.6	9.3	x	7.0	7.7	15.2	29.4	6.0	6.5	5.9	4.4	x
2021–22	11.3	6.5	2.5	5.7	12.3	13.3	21.2	9.1	5.7	6.3	2.1	4.0
2022–23	6.6	3.9	x	4.2	14.3	15.4	18.1	16.4	9.8	4.7	2.5	2.2

Table 8: Percentage of landings from CRA 1 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (22 instances representing 31% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	901	902	903	904	939
Apr	x	–	–	–	x
May	x	–	–	–	x
Jun	x	–	–	–	–
Jul	x	x	–	–	–
Aug	8.6	5.6	–	x	–
Sep	5.2	5.3	x	x	x
Oct	7.4	6.1	x	x	x
Nov	7.9	7.3	x	x	–
Dec	2.1	7.1	x	–	–
Jan	–	4.1	x	–	–
Feb	–	2.1	x	–	–
Mar	x	x	x	–	–

Table 9: Arithmetic CPUE (kg/potlift) for CRA 1 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels in the year/statistical area cell. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	901	902	903	904	939	CRA 1
1979–80	1.91	1.42	0.70	0.52	0.47	0.74
1980–81	2.05	1.80	0.71	0.76	0.77	1.01
1981–82	2.01	1.78	0.90	0.72	0.78	1.09
1982–83	2.87	2.06	0.58	0.72	0.86	1.12
1983–84	1.89	1.47	0.60	0.66	1.12	1.11
1984–85	1.68	1.37	0.64	0.58	0.77	0.96
1985–86	1.16	1.30	0.67	0.62	0.80	0.89
1986–87	1.34	0.97	0.74	0.53	0.71	0.75
1987–88	1.58	0.94	0.64	0.51	0.64	0.74
1988–89	1.62	0.98	0.47	0.68	0.73	0.81
1989–90	1.77	1.16	0.50	0.63	0.58	0.78
1990–91	1.16	0.84	0.54	0.48	0.60	0.70
1991–92	1.42	1.24	0.42	0.41	0.65	0.62
1992–93	1.59	1.27	0.47	0.31	0.51	0.59
1993–94	1.86	1.43	0.43	0.33	0.51	0.71
1994–95	1.76	1.54	0.63	0.50	0.70	0.83
1995–96	1.74	1.36	0.90	0.61	1.04	0.96
1996–97	x	x	0.77	0.53	x	0.82
1997–98	x	x	0.74	0.45	x	0.75
1998–99	x	x	0.77	0.43	0.86	0.90
1999–00	2.37	x	0.56	0.30	0.89	0.95
2000–01	2.88	x	0.75	0.40	0.89	1.21
2001–02	2.96	2.77	0.82	0.45	0.87	1.28
2002–03	2.06	3.01	0.77	0.36	0.97	1.23
2003–04	2.79	3.16	x	0.36	0.82	1.18
2004–05	3.29	1.95	x	x	1.24	1.50
2005–06	3.07	2.06	0.90	x	0.90	1.42
2006–07	2.92	x	1.17	x	0.83	1.37
2007–08	3.04	2.04	1.22	0.57	1.08	1.55
2008–09	3.51	1.96	0.95	x	1.29	1.57
2009–10	3.51	1.99	1.06	x	1.77	1.74
2010–11	2.67	1.61	0.87	x	1.51	1.42
2011–12	2.55	1.38	0.75	0.46	1.92	1.37
2012–13	2.63	1.48	1.31	0.55	3.02	1.65
2013–14	1.90	1.78	1.09	0.50	2.47	1.38
2014–15	2.16	x	2.41	0.40	2.08	1.31
2015–16	2.13	x	0.98	x	x	1.34
2016–17	2.41	x	x	0.35	x	1.29
2017–18	2.10	x	x	0.43	x	1.45
2018–19	2.77	2.37	1.13	x	x	1.75
2019–20	2.93	x	x	x	x	1.33
2020–21	3.69	x	x	—	1.72	1.66
2021–22	3.46	1.92	x	—	2.22	2.14
2022–23	x	2.35	x	—	x	2.18

Table 10: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 1 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated since 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.74	0.76	0.83	0.037
1980–81	1.01	0.88	0.99	0.039
1981–82	1.09	0.89	0.93	0.042
1982–83	1.12	0.93	1.00	0.040
1983–84	1.11	0.97	0.96	0.040
1984–85	0.96	0.91	0.89	0.039
1985–86	0.89	0.82	0.83	0.038
1986–87	0.75	0.78	0.81	0.038
1987–88	0.74	0.73	0.75	0.038
1988–89	0.80	0.67	0.66	0.044
1989–90	0.79	0.74	0.70	0.047
1990–91	0.70	0.67	0.60	0.044
1991–92	0.62	0.64	0.69	0.042
1992–93	0.58	0.57	0.60	0.047
1993–94	0.69	0.64	0.67	0.043
1994–95	0.81	0.83	0.86	0.045
1995–96	0.94	1.03	1.18	0.054
1996–97	0.82	0.82	1.01	0.059
1997–98	0.83	0.77	0.99	0.065
1998–99	0.89	0.84	1.07	0.063
1999–00	0.95	0.79	0.90	0.065
2000–01	1.21	1.05	1.16	0.058
2001–02	1.28	1.14	1.20	0.059
2002–03	1.23	1.21	1.13	0.058
2003–04	1.18	1.03	1.06	0.060
2004–05	1.53	1.53	1.34	0.069
2005–06	1.44	1.50	1.37	0.064
2006–07	1.37	1.79	1.72	0.061
2007–08	1.66	1.97	1.79	0.058
2008–09	1.57	1.94	1.73	0.067
2009–10	1.74	1.92	1.73	0.062
2010–11	1.42	1.76	1.53	0.060
2011–12	1.39	1.59	1.51	0.057
2012–13	1.65	1.86	1.71	0.056
2013–14	1.38	1.54	1.49	0.058
2014–15	1.31	1.53	1.35	0.062
2015–16	1.34	1.52	1.36	0.063
2016–17	1.29	1.32	1.20	0.073
2017–18	1.45	1.55	1.37	0.069
2018–19	1.76	1.62	1.49	0.071

Table 11: Number of vessels by statistical area from CRA 2, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	905	906	907	908	CRA 2
1979–80	12	31	14	27	80
1980–81	12	41	17	25	89
1981–82	16	38	15	26	88
1982–83	16	34	13	24	82
1983–84	14	29	15	20	75
1984–85	10	29	14	24	73
1985–86	14	30	15	23	78
1986–87	12	29	13	18	70
1987–88	6	25	15	18	59
1988–89	8	27	16	11	55
1989–90	14	3	1	1	17
1990–91	13	29	16	20	57
1991–92	12	27	15	17	51
1992–93	9	20	7	18	47
1993–94	9	24	11	15	47
1994–95	9	22	9	14	47
1995–96	9	23	8	15	44
1996–97	8	17	7	13	40
1997–98	12	16	8	10	42
1998–99	10	12	5	10	35
1999–00	8	14	7	9	34
2000–01	11	16	7	12	39
2001–02	11	14	7	10	36
2002–03	9	15	10	9	37
2003–04	8	13	7	9	34
2004–05	5	13	8	11	31
2005–06	12	13	9	9	36
2006–07	9	16	5	11	35
2007–08	9	12	6	10	32
2008–09	10	13	4	10	32
2009–10	9	13	5	7	32
2010–11	15	11	4	8	34
2011–12	12	14	4	10	35
2012–13	12	16	6	10	40
2013–14	11	15	4	9	36
2014–15	9	15	5	8	33
2015–16	12	14	4	9	33
2016–17	9	14	5	8	29
2017–18	9	11	4	8	29
2018–19	6	7	3	5	18
2019–20	5	7	3	4	17
2020–21	4	7	3	6	19
2021–22	4	6	3	5	17
2022–23	4	5	3	5	16

Table 12: Distribution and annual landings by statistical area from CRA 2, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)				Annual catch (t)				
	905	906	907	908	905	906	907	908	CRA 2
1979–80	10.6	31.4	25.0	32.9	31.0	92.1	73.4	96.5	292.9
1980–81	9.8	38.6	24.0	27.6	43.5	172.3	106.9	123.2	446.0
1981–82	12.0	40.0	18.6	29.4	47.0	156.3	72.7	115.0	391.0
1982–83	14.0	42.9	18.9	24.3	45.6	140.1	61.7	79.2	326.6
1983–84	13.8	41.5	18.7	26.0	37.9	114.0	51.4	71.3	274.6
1984–85	11.0	38.8	18.2	31.9	29.8	104.9	49.2	86.3	270.3
1985–86	11.2	38.4	25.1	25.3	37.9	129.5	84.8	85.5	337.7
1986–87	9.8	44.1	19.6	26.5	27.0	121.1	53.8	72.9	274.9
1987–88	8.2	50.2	17.3	24.3	20.8	127.7	44.0	61.9	254.4
1988–89	10.5	49.8	18.3	21.4	23.2	110.7	40.6	47.6	222.2
1989–90	12.7	45.7	17.8	23.8	32.1	115.6	45.0	60.1	252.7
1990–91	14.9	41.7	17.3	26.1	35.4	99.0	41.1	62.1	237.6
1991–92	11.1	44.7	19.3	24.9	25.6	102.7	44.2	57.1	229.7
1992–93	14.6	43.9	11.7	29.8	27.8	83.6	22.2	56.7	190.3
1993–94	15.1	45.1	14.3	25.5	32.4	97.0	30.7	54.8	214.9
1994–95	14.7	46.1	17.8	21.3	31.3	98.2	38.0	45.3	212.8
1995–96	13.8	47.6	14.8	23.8	29.2	101.2	31.4	50.6	212.5
1996–97	15.7	48.9	14.7	20.6	33.5	104.3	31.4	44.0	213.2
1997–98	15.0	45.9	21.4	17.7	35.1	107.7	50.2	41.5	234.4
1998–99	19.2	39.9	21.6	19.4	44.5	92.7	50.2	45.0	232.3
1999–00	15.6	41.7	25.3	17.4	36.7	98.1	59.4	40.9	235.1
2000–01	16.3	42.3	23.0	18.4	38.4	99.6	54.1	43.4	235.4
2001–02	15.9	41.7	21.2	21.2	35.8	93.7	47.8	47.7	225.0
2002–03	14.6	34.8	21.6	29.0	30.0	71.5	44.4	59.7	205.7
2003–04	17.2	35.6	24.5	22.7	33.7	69.7	48.1	44.6	196.0
2004–05	10.8	38.5	23.5	27.3	21.3	75.9	46.4	53.8	197.3
2005–06	16.7	37.7	24.1	21.6	37.5	84.8	54.2	48.6	225.2
2006–07	14.8	38.4	21.6	25.1	33.6	87.1	48.9	57.0	226.5
2007–08	15.6	39.8	21.3	23.3	35.9	91.3	48.8	53.6	229.7
2008–09	14.9	36.5	23.5	25.1	34.5	84.9	54.5	58.4	232.3
2009–10	17.4	31.4	26.8	24.4	41.0	73.7	63.1	57.3	235.2
2010–11	19.5	28.0	26.3	26.2	43.8	63.0	59.1	58.9	224.8
2011–12	16.0	33.7	23.0	27.3	36.6	77.2	52.7	62.4	229.0
2012–13	17.0	35.8	22.8	24.4	39.9	83.9	53.4	57.2	234.3
2013–14	18.1	35.1	23.9	22.8	42.8	82.8	56.4	53.8	235.7
2014–15	17.8	34.9	23.8	23.5	35.4	69.3	47.2	46.7	198.6
2015–16	20.1	29.0	21.6	29.4	35.1	50.6	37.7	51.3	174.7
2016–17	19.7	33.4	22.9	23.9	28.1	47.7	32.7	34.1	142.5
2017–18	16.5	32.9	27.1	23.6	23.5	47.0	38.7	33.6	142.8
2018–19	16.6	36.4	28.6	18.4	13.3	29.1	22.8	14.7	80.0
2019–20	13.1	37.1	28.6	21.2	9.9	28.2	21.8	16.1	76.0
2020–21	13.2	33.5	25.7	27.6	11.1	28.1	21.6	23.1	83.9
2021–22	14.0	33.8	27.7	24.5	11.2	27.0	22.2	19.6	80.0
2022–23	16.7	33.3	25.7	24.3	13.4	26.7	20.5	19.4	80.0

Table 13: Distribution and annual potlifts by statistical area from CRA 2, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)				Annual potlifts (000s)				
	905	906	907	908	905	906	907	908	CRA 2
1979–80	8.1	41.3	19.0	31.6	45.7	232.2	106.7	178.0	562.6
1980–81	8.1	42.6	18.6	30.7	59.2	311.4	136.1	224.9	731.5
1981–82	11.8	42.0	15.3	30.9	83.3	297.1	108.6	219.0	708.0
1982–83	11.8	44.2	16.3	27.7	86.1	322.5	119.2	202.1	729.9
1983–84	11.2	45.4	16.5	27.0	79.2	322.4	117.2	191.5	710.4
1984–85	9.5	44.4	16.3	29.8	69.0	323.2	118.5	216.6	727.2
1985–86	10.5	42.2	20.8	26.5	82.2	331.8	163.5	208.0	785.5
1986–87	8.4	46.1	17.8	27.7	61.6	339.9	131.1	204.4	737.0
1987–88	7.0	49.3	16.9	26.9	51.8	363.4	124.3	198.1	737.7
1988–89	10.2	48.8	19.9	21.1	62.7	300.3	122.1	129.8	614.9
1989–90	12.4	46.5	18.5	22.5	83.4	311.8	124.3	151.2	670.8
1990–91	14.7	44.1	17.2	24.0	71.3	214.6	83.6	116.6	486.1
1991–92	9.8	44.6	18.3	27.2	52.7	239.7	98.3	146.3	537.0
1992–93	11.9	44.3	13.0	30.9	55.6	207.0	60.8	144.4	467.9
1993–94	14.0	44.3	11.3	30.3	67.1	211.6	54.1	144.8	477.6
1994–95	17.0	45.6	10.9	26.6	65.0	174.5	41.6	101.7	382.8
1995–96	12.9	47.4	8.0	31.7	39.2	143.7	24.3	96.1	303.3
1996–97	14.4	52.7	6.4	26.5	37.1	135.6	16.4	68.0	257.2
1997–98	14.5	48.8	8.5	28.2	39.9	134.0	23.2	77.3	274.4
1998–99	18.3	43.8	8.9	29.0	46.9	112.0	22.9	74.1	255.9
1999–00	15.0	43.8	15.1	26.1	49.7	145.5	50.3	86.7	332.1
2000–01	16.2	46.5	18.4	18.9	53.6	153.2	60.7	62.2	329.7
2001–02	15.0	49.1	18.3	17.7	60.8	198.8	74.1	71.6	405.3
2002–03	14.6	42.4	19.2	23.8	68.9	200.3	90.8	112.5	472.5
2003–04	13.9	42.1	22.7	21.2	63.5	192.7	104.0	97.1	457.4
2004–05	8.7	43.0	21.7	26.6	39.9	196.7	99.3	122.0	457.8
2005–06	15.2	37.2	24.0	23.7	73.4	180.0	116.2	114.5	484.1
2006–07	13.9	40.7	20.9	24.5	58.0	170.3	87.7	102.8	418.8
2007–08	14.4	38.3	18.7	28.6	62.6	166.6	81.5	124.2	434.8
2008–09	13.2	44.0	15.3	27.5	57.5	191.3	66.7	119.4	434.9
2009–10	16.0	38.3	19.1	26.6	76.6	183.1	91.0	126.9	477.5
2010–11	21.0	31.5	19.3	28.1	105.8	158.9	97.5	141.7	503.9
2011–12	18.6	39.2	17.6	24.6	98.5	207.4	93.0	130.0	528.9
2012–13	17.0	40.3	19.3	23.4	93.4	221.1	105.9	128.6	549.0
2013–14	18.7	41.1	17.9	22.3	115.0	252.6	110.1	137.2	614.9
2014–15	15.5	41.7	19.5	23.3	83.7	224.6	105.1	125.9	539.3
2015–16	20.0	34.1	19.1	26.8	112.8	192.3	108.1	151.4	564.6
2016–17	18.8	36.1	21.2	23.9	86.2	165.7	97.0	109.7	458.7
2017–18	18.5	39.3	19.9	22.2	80.1	170.1	86.1	96.0	432.3
2018–19	24.8	38.5	19.1	17.6	40.1	62.3	30.8	28.4	161.6
2019–20	23.8	40.2	21.8	14.2	27.3	46.2	25.1	16.3	114.9
2020–21	19.5	32.5	25.3	22.6	19.2	31.9	24.8	22.2	98.1
2021–22	16.5	30.8	31.6	21.1	14.6	27.2	27.9	18.7	88.3
2022–23	15.1	29.9	27.5	27.5	15.3	30.2	27.7	27.8	101.0

Table 14: Percentage of annual landings by month from CRA 2, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.6	0.2	0.3	5.8	11.1	11.6	14.0	15.9	14.4	13.0	8.3	4.9
1980–81	1.1	0.8	2.3	9.8	13.6	10.4	17.0	10.1	13.1	12.1	6.6	3.1
1981–82	1.5	0.7	1.3	7.4	10.1	9.7	16.1	15.4	14.9	11.5	6.4	4.8
1982–83	1.7	0.2	1.2	7.8	11.5	11.1	15.2	15.1	14.9	10.3	6.9	4.1
1983–84	1.4	0.2	1.6	9.7	8.7	9.1	16.8	15.9	12.3	12.4	8.2	3.8
1984–85	1.5	0.3	1.0	7.7	8.9	14.6	18.0	13.1	13.9	11.7	6.0	3.2
1985–86	0.6	0.2	0.5	6.4	9.4	9.2	18.1	15.8	14.0	13.4	8.5	4.0
1986–87	1.0	0.2	0.5	6.4	10.2	11.6	17.5	15.5	15.9	11.3	6.1	3.6
1987–88	0.6	0.1	0.6	9.5	10.8	10.3	16.7	16.9	14.3	11.5	6.1	2.6
1988–89	1.2	0.1	0.9	8.2	13.9	13.1	16.5	11.4	13.3	10.1	6.9	4.2
1989–90	2.2	0.7	2.6	24.3	9.3	10.4	8.9	17.7	10.1	11.1	2.3	0.4
1990–91	x	0.1	0.5	7.9	16.7	14.7	16.3	14.6	12.4	8.3	5.8	2.6
1991–92	0.5	0.8	1.4	11.5	12.9	12.8	19.0	15.0	10.3	7.7	5.4	2.5
1992–93	0.4	0.5	2.6	9.9	10.3	11.5	16.8	13.2	13.6	9.2	7.1	5.0
1993–94	0.3	0.1	2.8	13.3	15.7	15.3	18.4	10.8	9.4	8.2	3.7	1.9
1994–95	0.3	0.3	5.1	18.2	18.5	16.2	20.9	10.5	5.0	2.6	1.6	0.8
1995–96	0.4	0.9	7.1	22.4	24.8	19.6	16.7	3.4	1.8	0.6	0.9	1.3
1996–97	3.2	5.8	7.0	35.2	19.5	16.0	6.8	1.8	1.1	1.4	1.1	0.9
1997–98	5.3	3.8	9.3	32.0	18.9	19.8	9.1	0.4	1.0	–	x	x
1998–99	1.7	4.3	8.0	21.9	21.6	29.8	5.6	2.5	0.6	0.1	2.2	1.6
1999–00	2.1	4.4	3.7	21.2	20.3	23.0	19.1	2.0	0.6	1.2	1.0	1.3
2000–01	4.7	1.8	1.2	10.6	18.8	19.1	24.2	7.7	2.9	1.4	3.2	4.6
2001–02	3.8	2.5	1.6	13.9	14.3	16.9	23.6	9.1	3.9	2.6	3.8	4.1
2002–03	2.8	1.2	1.2	10.3	10.5	9.0	23.5	13.4	9.7	6.1	6.8	5.5
2003–04	2.0	0.6	1.1	7.8	10.7	12.6	19.9	12.6	9.3	12.1	6.5	4.9
2004–05	2.0	1.5	2.2	12.7	9.8	10.0	16.7	14.4	7.4	9.5	7.6	6.2
2005–06	1.8	0.9	0.5	7.5	11.1	14.1	16.2	12.5	11.1	10.2	9.4	4.8
2006–07	1.6	0.5	1.2	10.3	11.2	14.2	18.2	11.6	10.7	10.0	5.9	4.5
2007–08	1.4	0.6	1.1	8.8	11.4	14.0	14.5	15.9	10.2	10.4	7.4	4.3
2008–09	2.3	0.7	0.8	8.3	12.4	13.5	18.3	15.9	10.2	8.6	4.7	4.4
2009–10	0.9	0.6	1.7	11.4	9.2	11.6	19.7	13.7	12.2	10.2	6.3	2.5
2010–11	0.7	0.4	1.9	9.4	10.3	9.5	18.6	17.5	11.4	10.0	6.5	3.9
2011–12	0.1	x	1.1	6.7	8.0	11.6	20.0	15.2	15.2	13.0	6.3	2.8
2012–13	0.3	0.2	1.8	10.1	10.2	15.4	18.7	16.2	13.0	8.8	3.8	1.5
2013–14	0.6	0.9	1.5	9.9	9.0	13.2	20.1	17.8	10.6	8.9	4.5	3.1
2014–15	0.4	x	1.1	10.0	7.4	11.6	22.0	15.8	15.1	10.1	4.1	2.2
2015–16	0.5	0.5	1.1	7.2	10.7	6.9	14.6	18.4	16.9	13.0	6.8	3.4
2016–17	0.6	0.3	0.7	5.4	8.7	11.8	20.0	16.9	16.3	12.4	5.0	1.7
2017–18	0.6	0.1	0.9	6.2	7.3	14.0	18.0	18.4	16.8	12.0	4.5	1.2
2018–19	x	x	0.3	9.6	13.4	20.8	24.8	14.0	5.6	5.4	3.9	2.0
2019–20	5.8	3.7	x	12.2	12.9	23.0	14.7	9.8	5.9	10.9	x	x
2020–21	2.0	2.6	x	10.2	11.1	19.3	26.3	19.9	7.3	x	x	x
2021–22	15.7	6.5	1.6	x	6.2	26.4	12.8	9.8	3.2	11.5	1.1	0.7
2022–23	6.4	1.7	x	2.0	22.8	25.5	19.2	9.0	5.3	6.6	0.6	0.7

Table 15: Percentage of landings from CRA 2 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (19 instances representing 31% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	905	906	907	908
Apr	–	2.6	x	–
May	–	x	x	–
Jun	–	–	x	–
Jul	x	–	x	–
Aug	5.9	8.2	5.2	3.4
Sep	3.3	7.4	8.0	6.7
Oct	x	5.9	x	4.7
Nov	x	x	x	4.5
Dec	–	x	–	3.4
Jan	x	x	–	x
Feb	–	x	–	x
Mar	–	x	–	x

Table 16: Arithmetic CPUE (kg/potlift) for CRA 2 by fishing year and statistical area, 1979–80 to 2022–23. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	Statistical Area				CRA 2	Fishing year	Statistical Area				CRA 2
	905	906	907	908			905	906	907	908	
1979–80	0.68	0.40	0.69	0.54	0.52	2012–13	0.43	0.38	0.51	0.45	0.43
1980–81	0.74	0.55	0.79	0.55	0.61	2013–14	0.39	0.32	0.52	0.40	0.38
1981–82	0.57	0.53	0.67	0.53	0.55	2014–15	0.41	0.30	0.45	0.37	0.36
1982–83	0.53	0.43	0.52	0.39	0.45	2015–16	0.31	0.27	0.34	0.33	0.31
1983–84	0.48	0.35	0.44	0.37	0.39	2016–17	0.32	0.29	0.34	0.32	0.31
1984–85	0.43	0.33	0.42	0.40	0.37	2017–18	0.26	0.28	0.45	0.33	0.32
1985–86	0.46	0.39	0.52	0.41	0.43	2018–19	0.40	0.46	0.75	0.58	0.54
1986–87	0.44	0.36	0.41	0.36	0.37	2019–20	0.58	0.61	0.86	0.73	0.69
1987–88	0.40	0.35	0.35	0.31	0.35	2020–21	x	0.85	0.91	1.04	0.89
1988–89	0.37	0.37	0.33	0.37	0.36	2021–22	x	0.92	0.84	x	0.88
1989–90	0.54	0.25	0.22	0.31	0.36	2022–23	0.90	0.88	x	0.81	0.85
1990–91	0.48	0.46	0.49	0.51	0.48						
1991–92	0.46	0.43	0.44	0.41	0.43						
1992–93	0.47	0.40	0.33	0.37	0.39						
1993–94	0.50	0.46	0.51	0.31	0.43						
1994–95	0.51	0.56	0.86	0.36	0.53						
1995–96	0.73	0.69	1.33	0.45	0.67						
1996–97	0.84	0.74	1.96	0.67	0.82						
1997–98	0.93	0.80	1.88	0.64	0.88						
1998–99	0.94	0.83	1.85	0.63	0.91						
1999–00	0.76	0.67	1.12	0.49	0.70						
2000–01	0.63	0.65	0.90	0.68	0.69						
2001–02	0.58	0.47	0.64	0.67	0.55						
2002–03	0.44	0.36	0.54	0.52	0.44						
2003–04	0.55	0.36	0.46	0.44	0.42						
2004–05	0.67	0.39	0.44	0.43	0.44						
2005–06	0.54	0.48	0.44	0.41	0.46						
2006–07	0.55	0.51	0.52	0.56	0.53						
2007–08	0.57	0.54	0.64	0.43	0.53						
2008–09	0.60	0.45	0.82	0.49	0.55						
2009–10	0.52	0.40	0.70	0.45	0.49						
2010–11	0.41	0.39	0.61	0.42	0.45						
2011–12	0.38	0.37	0.57	0.49	0.44						

Table 17: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 2 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.52	0.54	0.52	0.022
1980–81	0.61	0.63	0.63	0.021
1981–82	0.55	0.53	0.52	0.021
1982–83	0.45	0.44	0.44	0.021
1983–84	0.39	0.36	0.36	0.022
1984–85	0.37	0.35	0.35	0.022
1985–86	0.43	0.41	0.40	0.022
1986–87	0.37	0.37	0.36	0.023
1987–88	0.34	0.32	0.32	0.024
1988–89	0.36	0.35	0.34	0.026
1989–90	0.36	0.33	0.35	0.046
1990–91	0.48	0.49	0.48	0.029
1991–92	0.43	0.43	0.42	0.029
1992–93	0.38	0.40	0.39	0.033
1993–94	0.42	0.43	0.43	0.033
1994–95	0.52	0.52	0.52	0.036
1995–96	0.66	0.69	0.74	0.040
1996–97	0.82	0.84	0.95	0.046
1997–98	0.88	1.00	1.10	0.044
1998–99	0.91	1.03	1.11	0.043
1999–00	0.70	0.80	0.86	0.043
2000–01	0.69	0.74	0.76	0.038
2001–02	0.55	0.55	0.55	0.035
2002–03	0.44	0.44	0.43	0.034
2003–04	0.42	0.45	0.44	0.034
2004–05	0.44	0.51	0.52	0.037
2005–06	0.46	0.49	0.48	0.035
2006–07	0.53	0.56	0.56	0.034
2007–08	0.53	0.56	0.56	0.035
2008–09	0.55	0.52	0.52	0.038
2009–10	0.49	0.46	0.45	0.034
2010–11	0.45	0.41	0.40	0.035
2011–12	0.44	0.40	0.38	0.035
2012–13	0.43	0.43	0.41	0.035
2013–14	0.38	0.37	0.37	0.034
2014–15	0.36	0.34	0.33	0.037
2015–16	0.31	0.28	0.283	0.036
2016–17	0.31	0.31	0.297	0.038
2017–18	0.32	0.29	0.278	0.037
2018–19	0.54	0.48	0.47	0.055

Table 18: Number of vessels by statistical area from CRA 3, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	909	910	911	CRA 3
1979–80	8	45	30	70
1980–81	11	46	36	85
1981–82	15	39	28	77
1982–83	16	44	29	85
1983–84	14	47	32	84
1984–85	14	49	33	86
1985–86	14	43	33	83
1986–87	12	38	29	76
1987–88	11	42	25	72
1988–89	11	30	22	58
1989–90	10	46	24	77
1990–91	9	30	23	58
1991–92	8	32	35	65
1992–93	6	24	32	54
1993–94	7	24	20	48
1994–95	7	21	16	41
1995–96	4	18	12	34
1996–97	4	18	11	32
1997–98	6	17	9	30
1998–99	7	16	9	30
1999–00	6	17	10	32
2000–01	5	17	12	33
2001–02	5	16	13	33
2002–03	5	20	14	38
2003–04	5	19	16	39
2004–05	4	15	16	33
2005–06	4	15	11	29
2006–07	4	13	12	28
2007–08	3	13	12	28
2008–09	4	13	9	26
2009–10	3	13	9	24
2010–11	3	15	9	26
2011–12	3	14	9	25
2012–13	3	14	7	23
2013–14	3	15	9	26
2014–15	3	15	11	25
2015–16	4	14	11	27
2016–17	4	14	9	25
2017–18	4	12	10	25
2018–19	4	13	9	25
2019–20	3	16	10	24
2020–21	5	16	11	24
2021–22	5	13	9	21
2022–23	5	12	8	20

Table 19: Distribution and annual landings by statistical area from CRA 3, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)			Annual catch (t)			
	909	910	911	909	910	911	CRA3
1979–80	12.3	53.0	34.7	59.1	254.6	166.5	480.3
1980–81	16.1	44.8	39.1	97.5	271.7	237.2	606.3
1981–82	19.2	48.3	32.5	110.3	277.4	186.4	574.1
1982–83	16.8	51.9	31.3	123.6	380.7	229.7	733.9
1983–84	11.7	52.9	35.4	89.3	404.1	270.3	763.7
1984–85	16.7	41.7	41.7	118.1	295.5	295.4	708.9
1985–86	15.4	41.8	42.8	100.6	273.3	280.1	654.1
1986–87	13.2	51.1	35.7	75.3	291.2	203.5	570.0
1987–88	19.8	47.6	32.6	70.5	169.2	115.8	355.4
1988–89	14.9	42.0	43.1	42.1	118.4	121.3	281.8
1989–90	11.8	52.8	35.4	45.4	203.7	136.8	385.9
1990–91	11.0	49.8	39.3	35.6	161.2	127.2	324.1
1991–92	11.8	41.1	47.1	31.7	110.5	126.6	268.8
1992–93	11.9	40.0	48.0	22.9	76.7	91.9	191.5
1993–94	18.0	46.1	35.9	32.4	82.7	64.4	179.5
1994–95	16.7	47.8	35.5	26.8	76.8	57.0	160.7
1995–96	13.5	54.8	31.7	21.2	85.9	49.8	156.9
1996–97	14.9	55.6	29.5	30.3	113.1	60.1	203.5
1997–98	17.2	54.9	27.9	38.4	122.6	62.4	223.4
1998–99	17.3	59.2	23.5	56.4	192.8	76.5	325.7
1999–00	17.2	54.6	28.1	56.2	178.1	91.7	326.1
2000–01	15.2	45.8	39.0	49.8	150.3	128.0	328.1
2001–02	15.5	35.5	49.1	44.8	102.8	142.2	289.9
2002–03	12.0	36.3	51.8	34.8	105.7	150.8	291.3
2003–04	13.9	36.1	50.0	30.0	77.9	108.0	215.9
2004–05	18.5	41.0	40.4	30.1	66.4	65.5	162.0
2005–06	13.5	45.7	40.9	22.9	77.7	69.5	170.1
2006–07	15.3	41.2	43.5	27.3	73.6	77.8	178.7
2007–08	16.0	45.8	38.2	27.6	78.9	66.0	172.4
2008–09	20.9	44.9	34.2	39.6	85.2	65.0	189.8
2009–10	15.9	51.3	32.8	26.0	84.1	53.9	164.0
2010–11	12.1	52.5	35.4	19.8	85.9	58.0	163.7
2011–12	16.3	56.6	27.2	26.6	92.7	44.6	163.9
2012–13	15.2	57.0	27.7	29.4	110.3	53.6	193.3
2013–14	13.9	56.6	29.5	31.4	127.5	66.5	225.5
2014–15	14.2	51.3	34.5	36.9	133.7	89.8	260.4
2015–16	11.7	55.2	33.1	30.5	144.0	86.4	260.8
2016–17	14.5	49.5	36.0	37.8	129.0	94.0	260.9
2017–18	15.0	49.7	35.2	35.7	118.2	83.8	237.7
2018–19	12.7	47.0	40.3	30.3	111.9	95.8	238.1
2019–20	10.8	30.8	58.4	20.4	58.2	110.4	189.0
2020–21	9.0	23.5	67.5	19.4	50.6	145.3	215.4
2021–22	6.2	27.2	66.6	10.6	46.3	113.2	170.0
2022–23	10.4	37.9	51.7	16.4	59.8	81.5	157.7

Table 20: Distribution and annual potlifts by statistical area from CRA 3, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)			Annual potlifts (000s)			
	909	910	911	909	910	911	CRA 3
1979–80	11.2	50.8	38.0	58.8	267.1	199.5	525.4
1980–81	12.5	49.4	38.1	81.5	322.9	248.8	653.2
1981–82	13.5	50.4	36.1	83.3	311.6	223.1	618.0
1982–83	16.9	53.5	29.6	129.1	408.6	226.5	764.3
1983–84	12.6	55.9	31.6	111.4	494.4	279.2	885.0
1984–85	16.4	49.2	34.4	154.3	462.4	322.8	939.6
1985–86	17.0	48.0	35.0	152.5	430.4	313.6	896.5
1986–87	12.9	53.0	34.1	109.2	448.7	288.4	846.3
1987–88	17.7	53.7	28.7	143.5	435.9	232.7	812.1
1988–89	14.3	53.3	32.4	90.0	334.9	203.3	628.3
1989–90	10.8	62.7	26.5	81.3	474.1	200.4	755.9
1990–91	10.8	53.7	35.6	77.6	387.0	256.3	720.9
1991–92	12.1	47.6	40.4	99.9	393.0	333.5	826.3
1992–93	9.8	41.7	48.5	66.8	283.2	329.5	679.5
1993–94	14.6	48.2	37.2	54.0	178.8	137.8	370.6
1994–95	14.1	49.4	36.5	25.7	90.3	66.6	182.6
1995–96	14.2	45.0	40.8	17.1	54.1	49.1	120.3
1996–97	13.0	52.4	34.6	15.0	60.6	40.0	115.6
1997–98	14.3	56.9	28.8	14.7	58.4	29.5	102.6
1998–99	14.6	61.7	23.7	29.1	123.2	47.4	199.7
1999–00	15.9	56.9	27.3	33.2	118.9	57.0	209.1
2000–01	12.3	58.3	29.3	34.4	162.4	81.7	278.5
2001–02	14.6	47.5	38.0	44.7	145.6	116.4	306.6
2002–03	10.8	48.5	40.7	43.1	193.7	162.7	399.5
2003–04	9.8	37.8	52.4	34.0	130.5	181.0	345.5
2004–05	11.8	38.7	49.5	36.8	120.5	154.4	311.7
2005–06	10.2	47.9	42.0	27.9	131.2	115.1	274.2
2006–07	8.9	50.1	41.0	27.5	154.9	126.5	308.9
2007–08	9.4	45.5	45.1	27.0	130.8	129.5	287.3
2008–09	13.9	44.2	42.0	37.3	118.8	112.9	269.0
2009–10	11.4	49.0	39.6	22.1	95.1	76.9	194.1
2010–11	11.2	50.2	38.6	17.4	77.9	59.8	155.0
2011–12	15.6	56.9	27.5	16.9	61.7	29.8	108.5
2012–13	12.8	58.9	28.2	12.6	58.1	27.8	98.5
2013–14	11.1	62.2	26.7	13.4	75.3	32.4	121.1
2014–15	12.8	59.7	27.5	20.3	94.4	43.4	158.2
2015–16	13.3	62.6	24.1	25.6	120.3	46.4	192.3
2016–17	17.5	56.7	25.7	33.8	109.4	49.6	192.8
2017–18	16.7	59.1	24.1	27.4	96.8	39.5	163.8
2018–19	13.1	66.5	20.4	25.0	126.3	38.8	190.0
2019–20	13.5	54.4	32.2	18.5	74.7	44.2	137.4
2020–21	14.0	48.8	37.2	23.0	80.2	61.0	164.2
2021–22	9.4	48.4	42.2	16.2	83.3	72.6	172.1
2022–23	11.1	52.2	36.7	20.5	97.0	68.2	185.7

Table 21: Percentage of annual landings by month from CRA 3, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	1.4	0.3	5.3	7.2	3.1	4.8	14.8	26.6	16.7	12.1	4.8	2.9
1980–81	2.4	0.5	3.3	8.1	6.5	4.8	11.6	18.5	18.0	14.7	6.4	5.2
1981–82	2.6	0.3	4.7	9.5	4.4	5.3	8.4	12.3	23.4	16.1	5.7	7.3
1982–83	1.6	0.5	4.7	7.6	7.0	3.8	8.7	24.4	17.7	11.4	6.2	6.4
1983–84	2.4	1.2	9.1	7.4	7.0	5.2	11.2	19.6	13.9	12.2	5.3	5.5
1984–85	1.5	0.4	11.2	6.8	3.7	3.7	17.1	21.5	15.7	11.0	5.7	1.5
1985–86	1.8	0.2	6.1	8.1	4.0	3.4	12.8	20.2	17.5	13.1	8.9	3.8
1986–87	1.4	0.1	4.9	5.3	2.7	3.8	18.1	26.0	20.1	11.5	4.5	1.5
1987–88	1.2	0.9	7.7	4.7	5.2	4.4	22.5	15.6	19.4	10.8	4.7	2.8
1988–89	1.1	0.4	4.4	4.1	2.3	8.3	22.3	17.4	16.9	9.1	5.0	8.7
1989–90	1.9	1.1	3.6	4.1	1.7	6.4	10.1	21.8	23.1	14.8	5.9	5.4
1990–91	2.0	1.1	4.0	7.3	3.8	6.5	19.0	22.3	16.7	8.3	6.2	2.8
1991–92	3.7	0.5	2.4	7.9	5.2	4.2	14.4	21.2	20.6	11.2	5.0	3.7
1992–93	1.5	0.8	6.4	6.3	4.8	2.0	7.4	19.2	22.3	17.6	5.9	5.9
1993–94	3.1	2.8	27.3	23.3	8.4	x	x	x	x	x	29.3	4.1
1994–95	7.4	–	42.9	23.9	15.0	x	x	x	x	x	7.6	1.7
1995–96	6.0	x	38.6	37.7	13.6	x	x	x	x	–	2.6	0.6
1996–97	9.3	–	37.5	35.4	15.2	0.5	x	x	–	–	x	0.7
1997–98	7.2	–	32.3	42.9	16.2	x	–	–	–	–	x	0.6
1998–99	14.4	–	27.9	24.4	21.8	x	x	–	x	–	8.5	0.9
1999–00	4.6	x	32.1	31.5	18.3	x	x	–	–	–	8.9	3.0
2000–01	8.5	–	24.4	20.2	13.5	10.9	x	–	–	x	14.7	7.8
2001–02	9.1	x	25.7	16.9	11.7	x	x	–	–	x	17.3	18.6
2002–03	2.2	–	24.8	16.9	8.4	5.8	8.0	6.6	3.7	5.9	11.1	6.7
2003–04	1.1	–	28.6	15.7	5.2	5.1	8.0	14.4	7.2	4.5	4.9	5.3
2004–05	1.7	–	30.8	13.1	8.2	1.2	4.4	11.3	5.8	9.0	8.5	6.0
2005–06	0.3	–	21.2	21.2	7.9	3.1	9.2	14.3	8.1	4.5	7.1	3.0
2006–07	1.8	–	16.3	16.2	13.1	2.6	7.5	15.5	5.0	7.5	6.3	8.3
2007–08	0.6	–	15.7	23.8	10.0	2.6	6.0	15.5	5.5	4.8	7.5	8.0
2008–09	2.7	–	21.6	21.1	11.3	1.4	3.8	6.1	4.7	12.2	12.3	2.7
2009–10	–	–	11.8	29.7	20.1	2.8	1.6	3.5	4.4	17.1	8.7	0.3
2010–11	x	–	29.5	31.4	18.9	4.0	4.3	x	–	5.3	4.8	0.8
2011–12	3.9	–	23.2	39.9	18.7	5.1	0.8	–	x	6.3	1.8	x
2012–13	5.2	x	19.0	21.8	24.5	5.0	1.7	x	1.3	13.3	3.4	2.7
2013–14	17.1	–	10.1	30.8	14.9	5.2	2.3	0.4	x	7.6	7.2	4.3
2014–15	20.5	2.7	5.2	17.8	17.4	4.9	x	x	4.1	9.0	11.2	5.2
2015–16	18.3	4.5	14.1	22.4	12.6	2.5	1.3	1.0	1.2	8.5	10.2	3.5
2016–17	20.6	5.8	16.5	14.3	8.7	5.9	1.1	1.7	x	15.4	5.3	4.0
2017–18	11.9	2.6	14.5	19.3	10.5	9.0	2.3	2.0	2.4	13.8	8.1	3.7
2018–19	17.7	1.6	12.1	19.9	15.3	3.7	1.7	x	x	12.6	6.7	8.0
2019–20	13.3	2.2	13.7	16.7	12.5	14.2	5.1	10.0	–	4.0	1.8	6.5
2020–21	4.4	2.1	11.1	19.0	7.0	7.0	10.0	3.9	2.9	11.1	12.3	9.3
2021–22	4.8	1.0	16.2	17.4	14.9	6.6	7.3	6.4	2.3	7.5	12.8	2.9
2022–23	0.9	x	15.0	17.3	12.8	4.7	8.9	14.6	3.8	5.5	5.7	10.3

Table 22: Percentage of landings from CRA 3 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (14 instances representing 11% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	909	910	911
Apr	x	x	x
May	–	–	x
Jun	x	12.5	0.8
Jul	x	10.3	4
Aug	x	4.7	7.5
Sep	x	–	4.4
Oct	x	–	8.2
Nov	x	x	13.8
Dec	x	x	2.3
Jan	0.6	2.4	2.5
Feb	0.4	2.9	2.4
Mar	x	3.8	5.2

Table 23: Arithmetic CPUE (kg/potlift) for CRA 3 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels in the year/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	909	910	911	CRA 3
1979–80	1.01	0.95	0.84	0.91
1980–81	1.20	0.84	0.95	0.93
1981–82	1.32	0.89	0.84	0.93
1982–83	0.96	0.93	1.01	0.96
1983–84	0.80	0.82	0.97	0.86
1984–85	0.77	0.64	0.92	0.76
1985–86	0.66	0.64	0.89	0.73
1986–87	0.69	0.65	0.71	0.67
1987–88	0.49	0.39	0.50	0.44
1988–89	0.47	0.35	0.60	0.45
1989–90	0.54	0.43	0.70	0.51
1990–91	0.48	0.43	0.51	0.46
1991–92	0.33	0.28	0.38	0.33
1992–93	0.36	0.27	0.28	0.28
1993–94	0.66	0.47	0.47	0.49
1994–95	1.59	0.86	0.85	0.92
1995–96	2.24	1.58	1.04	1.40
1996–97	2.53	1.82	1.51	1.77
1997–98	2.79	1.99	2.12	2.13
1998–99	1.95	1.62	1.81	1.70
1999–00	2.34	1.53	1.66	1.64
2000–01	x	0.93	1.49	1.14
2001–02	0.95	0.71	1.24	0.93
2002–03	0.87	0.54	0.92	0.70
2003–04	0.82	0.60	0.62	0.64
2004–05	0.82	0.56	0.41	0.51
2005–06	0.86	0.57	0.58	0.60
2006–07	x	0.48	0.62	0.57
2007–08	1.04	0.60	0.48	0.61
2008–09	1.14	0.76	0.58	0.72
2009–10	1.13	0.95	0.73	0.87
2010–11	1.26	1.14	0.99	1.10
2011–12	1.54	1.54	1.58	1.55
2012–13	x	1.88	2.33	2.05
2013–14	2.38	1.69	2.14	1.89
2014–15	1.83	1.47	2.18	1.72
2015–16	1.77	1.23	1.90	1.46
2016–17	1.61	1.16	1.97	1.45
2017–18	1.43	1.27	2.30	1.52
2018–19	1.39	0.85	2.80	1.31
2019–20	1.12	0.70	2.58	1.47
2020–21	1.00	0.90	2.42	1.37
2021–22	0.82	0.69	1.71	1.12
2022–23	x	0.68	1.34	0.94

Table 24: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 3 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.91	0.83	0.77	0.022
1980–81	0.93	0.90	0.85	0.021
1981–82	0.93	0.89	0.84	0.021
1982–83	0.96	0.95	0.91	0.020
1983–84	0.86	0.86	0.83	0.020
1984–85	0.75	0.70	0.67	0.019
1985–86	0.73	0.68	0.64	0.020
1986–87	0.67	0.59	0.56	0.022
1987–88	0.44	0.41	0.40	0.021
1988–89	0.45	0.43	0.41	0.025
1989–90	0.51	0.45	0.44	0.023
1990–91	0.46	0.43	0.42	0.024
1991–92	0.33	0.30	0.28	0.023
1992–93	0.28	0.25	0.24	0.023
1993–94	0.48	0.44	0.49	0.033
1994–95	0.91	0.92	0.96	0.046
1995–96	1.36	1.48	1.52	0.049
1996–97	1.77	1.85	1.91	0.054
1997–98	2.13	2.32	2.41	0.054
1998–99	1.70	1.89	2.04	0.050
1999–00	1.64	1.77	1.92	0.049
2000–01	1.14	1.19	1.33	0.042
2001–02	0.92	0.95	1.02	0.042
2002–03	0.70	0.67	0.67	0.034
2003–04	0.64	0.59	0.55	0.035
2004–05	0.51	0.47	0.44	0.036
2005–06	0.60	0.58	0.55	0.036
2006–07	0.57	0.58	0.55	0.034
2007–08	0.60	0.61	0.57	0.038
2008–09	0.72	0.69	0.65	0.043
2009–10	0.87	0.91	0.86	0.045
2010–11	1.10	1.20	1.18	0.047
2011–12	1.55	1.68	1.70	0.048
2012–13	2.05	2.31	2.38	0.050
2013–14	1.89	2.08	2.23	0.050
2014–15	1.73	1.90	2.03	0.041
2015–16	1.46	1.63	1.78	0.040
2016–17	1.46	1.65	1.76	0.040
2017–18	1.51	1.56	1.66	0.043
2018–19	1.31	1.37	1.47	0.044

Table 25: Number of vessels by statistical area from CRA 4, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. A ‘–’ indicates no fishing in the statistical area/fishing year cell and ‘0’ indicates that only vessels with <1 t fished in the cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	912	913	914	915	934	CRA4
1979–80	25	32	31	17	0	86
1980–81	26	20	30	19	0	86
1981–82	30	25	27	17	0	88
1982–83	28	22	29	18	0	89
1983–84	26	23	32	17	1	89
1984–85	25	24	32	19	1	90
1985–86	27	21	39	17	1	88
1986–87	25	23	35	17	2	88
1987–88	24	19	35	17	0	85
1988–89	22	24	42	16	0	87
1989–90	33	40	57	19	0	131
1990–91	26	25	32	18	0	85
1991–92	25	33	35	13	1	88
1992–93	32	29	33	12	1	96
1993–94	32	33	38	13	2	100
1994–95	23	29	41	14	4	89
1995–96	19	21	36	14	2	80
1996–97	19	15	35	16	1	74
1997–98	18	15	35	9	–	72
1998–99	22	15	32	11	–	65
1999–00	18	15	33	12	1	70
2000–01	21	13	25	11	1	61
2001–02	22	18	25	13	2	62
2002–03	16	16	25	13	1	65
2003–04	15	16	27	13	–	65
2004–05	16	16	27	10	2	61
2005–06	12	12	25	12	2	54
2006–07	14	15	33	11	4	66
2007–08	10	11	24	11	6	53
2008–09	10	13	18	7	1	42
2009–10	10	12	16	10	1	43
2010–11	12	12	21	12	1	51
2011–12	10	15	24	9	2	51
2012–13	10	15	24	8	1	49
2013–14	9	13	23	8	1	47
2014–15	9	15	26	13	1	49
2015–16	9	11	25	12	2	47
2016–17	10	13	23	7	2	45
2017–18	6	12	18	6	2	39
2018–19	6	13	22	11	1	45
2019–20	8	11	19	8	2	38
2020–21	6	9	17	9	3	35
2021–22	6	10	16	8	1	35
2022–23	5	9	11	6	2	26

Table 26: Distribution and annual landings by statistical area from CRA 4, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)					Annual catch (t)					
	912	913	914	915	934	912	913	914	915	934	CRA 4
1979–80	21.4	30.2	38.2	10.1	x	107.6	152.3	192.3	50.9	x	503.7
1980–81	32.4	21.7	33.5	12.2	0.2	197.1	131.6	203.6	74.4	1.0	607.7
1981–82	35.6	22.6	29.3	12.4	x	218.9	138.9	180.1	76.4	x	614.2
1982–83	25.7	21.8	37.6	14.8	x	219.6	186.1	321.1	125.9	x	853.5
1983–84	19.8	27.8	40.0	12.2	x	185.9	261.7	376.5	115.0	x	940.4
1984–85	25.1	25.7	37.1	11.6	x	216.6	222.1	320.0	100.5	x	863.3
1985–86	27.0	21.2	36.7	14.7	0.4	228.9	180.1	310.9	124.3	3.8	848.0
1986–87	21.9	29.3	37.4	11.2	x	207.3	277.8	354.0	106.0	x	947.5
1987–88	19.3	25.0	44.3	11.4	x	179.2	232.5	411.3	106.2	x	929.3
1988–89	17.6	27.0	45.5	9.9	x	134.7	206.7	347.9	76.1	x	765.3
1989–90	23.0	35.2	33.9	8.0	x	174.2	266.9	256.9	60.3	x	758.4
1990–91	28.3	29.5	31.7	10.5	x	147.9	154.2	165.7	54.8	x	523.2
1991–92	31.6	29.3	30.0	8.8	x	167.5	155.3	159.3	46.9	x	530.5
1992–93	30.1	26.3	32.6	10.7	0.4	149.5	130.2	161.4	52.8	1.8	495.7
1993–94	23.9	28.7	36.6	10.0	x	117.5	141.3	180.1	49.0	x	492.0
1994–95	22.2	24.4	41.5	9.6	2.2	108.9	119.7	203.6	47.3	10.9	490.4
1995–96	23.0	23.0	46.8	6.3	0.9	112.0	112.1	228.1	30.5	4.5	487.2
1996–97	24.7	19.6	46.0	9.1	x	121.8	96.6	226.9	45.1	x	493.6
1997–98	25.6	22.0	44.8	7.6	–	125.8	108.1	219.5	37.1	–	490.4
1998–99	31.1	22.0	38.3	8.5	–	153.5	108.6	188.9	42.2	–	493.3
1999–00	26.5	22.4	39.7	10.5	0.8	153.0	129.2	228.7	60.8	4.8	576.5
2000–01	27.0	23.4	37.8	10.9	0.9	154.8	134.0	217.1	62.7	5.2	573.8
2001–02	22.2	21.6	42.2	12.8	1.3	127.4	123.8	242.5	73.3	7.2	574.1
2002–03	23.4	27.0	36.5	12.5	x	134.8	155.6	210.0	72.0	x	575.7
2003–04	19.2	32.0	40.8	8.0	–	110.8	184.0	234.8	46.1	–	575.7
2004–05	15.6	28.4	48.8	6.3	x	88.7	162.0	278.0	35.8	x	569.9
2005–06	9.7	21.0	55.0	12.9	x	49.0	106.1	277.4	65.2	x	504.1
2006–07	12.1	23.3	43.9	16.9	3.9	53.6	103.4	195.2	75.0	17.4	444.6
2007–08	16.0	21.0	38.2	21.2	3.6	50.3	66.3	120.4	66.8	11.4	315.2
2008–09	18.8	28.8	35.6	14.5	x	46.8	71.9	88.9	36.2	x	249.4
2009–10	17.1	25.8	33.3	22.4	x	44.9	67.8	87.4	58.7	x	262.2
2010–11	14.1	22.0	45.3	17.1	x	58.6	91.2	187.9	70.9	x	414.8
2011–12	9.7	29.4	49.1	11.2	x	45.2	137.1	228.7	52.1	x	466.2
2012–13	10.0	31.9	48.2	9.4	x	46.4	148.6	224.8	43.6	x	466.3
2013–14	8.7	27.3	57.2	6.6	x	43.4	136.5	285.9	32.8	x	499.4
2014–15	7.4	16.2	58.5	17.8	x	34.2	75.6	272.3	82.8	x	465.5
2015–16	11.6	23.2	46.7	16.4	x	50.9	101.8	204.4	71.7	x	438.1
2016–17	13.6	28.8	43.6	10.5	x	52.0	110.3	166.8	40.3	x	382.9
2017–18	9.1	31.7	45.3	12.1	x	26.4	91.6	130.8	34.9	x	289.0
2018–19	8.5	31.2	44.3	14.5	x	27.0	99.4	141.1	46.3	x	318.4
2019–20	12.3	15.1	48.8	22.1	x	34.4	42.3	136.8	61.9	x	280.3
2020–21	10.5	20.4	47.3	21.3	0.5	36.8	71.6	165.7	74.8	1.8	350.5
2021–22	9.7	17.7	52.7	19.7	x	27.1	49.4	147.5	55.0	x	279.7
2022–23	10.5	15.5	50.3	21.0	x	29.4	43.3	140.3	58.6	x	279.2

Table 27: Distribution and annual potlifts by statistical area from CRA 4, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)					Annual potlifts (000s)					
	912	913	914	915	934	912	913	914	915	934	CRA4
1979–80	20.1	27.0	37.1	15.8	x	116.1	155.9	214.1	91.1	x	577.6
1980–81	25.5	23.2	33.6	17.5	0.1	187.1	170.2	246.3	128.0	1.1	732.7
1981–82	27.0	22.6	33.0	17.4	x	200.3	168.1	244.9	128.9	x	742.4
1982–83	26.3	21.2	31.8	20.6	x	244.8	197.7	297.0	192.1	x	932.6
1983–84	23.2	24.7	34.3	17.4	x	241.3	257.2	357.1	180.4	x	1039.5
1984–85	22.6	23.8	36.9	16.3	x	252.4	265.5	412.0	182.1	x	1116.5
1985–86	24.7	20.0	37.1	17.7	0.4	288.6	232.8	433.2	206.6	5.0	1166.3
1986–87	21.6	26.8	35.8	15.5	x	243.8	302.5	403.2	174.2	x	1127.0
1987–88	21.6	23.3	40.8	14.2	x	275.0	297.2	520.5	181.4	x	1274.3
1988–89	21.4	26.4	40.7	11.6	x	264.7	327.3	503.7	143.1	x	1238.9
1989–90	21.1	28.0	39.4	11.5	x	270.9	358.6	504.5	146.7	x	1281.5
1990–91	18.7	27.9	40.0	13.3	x	197.2	293.9	421.9	140.1	x	1054.0
1991–92	21.3	27.3	39.6	11.6	x	226.2	289.7	419.7	122.8	x	1061.2
1992–93	24.8	27.0	35.8	12.0	0.4	233.9	254.2	336.8	112.7	3.9	941.5
1993–94	25.1	25.7	34.3	14.1	x	209.0	214.5	286.2	117.4	x	834.4
1994–95	19.3	24.5	37.9	14.7	3.6	134.3	170.2	263.3	102.2	24.8	694.8
1995–96	20.7	24.1	44.0	9.1	2.1	116.3	135.3	246.8	51.1	12.0	561.5
1996–97	20.9	19.4	45.8	12.7	x	100.6	93.5	220.5	61.3	x	481.3
1997–98	18.5	18.2	52.2	11.1	–	73.6	72.5	208.0	44.2	–	398.3
1998–99	23.9	11.5	49.1	15.5	–	90.2	43.2	185.3	58.5	–	377.2
1999–00	24.3	15.8	47.8	10.8	1.3	110.8	71.9	217.7	49.2	5.8	455.4
2000–01	29.1	15.5	41.9	12.3	1.2	133.1	70.8	191.1	56.2	5.5	456.6
2001–02	25.2	19.5	41.4	12.2	1.6	136.7	105.8	223.9	66.2	8.9	541.5
2002–03	23.6	24.9	39.1	11.3	x	124.8	131.5	206.7	59.5	x	528.1
2003–04	20.0	26.8	43.1	10.1	–	100.6	135.1	217.0	51.1	–	503.8
2004–05	20.3	23.7	46.2	9.0	x	115.5	134.7	263.0	51.4	x	569.5
2005–06	14.1	19.7	51.5	14.0	x	81.5	113.6	297.1	81.0	x	576.6
2006–07	13.4	19.7	49.6	15.7	1.6	92.0	135.8	341.4	107.9	11.2	688.3
2007–08	14.4	17.8	49.2	16.0	2.6	76.4	94.2	261.3	84.6	14.1	530.6
2008–09	18.7	24.0	43.7	12.4	x	66.1	84.8	154.3	43.7	x	352.8
2009–10	22.3	25.2	33.0	18.8	x	57.4	64.9	84.9	48.5	x	257.7
2010–11	18.9	19.0	42.7	18.4	x	79.8	80.0	180.0	77.5	x	421.4
2011–12	14.8	24.2	48.6	11.9	x	53.6	87.7	176.4	43.0	x	362.8
2012–13	18.9	23.0	47.1	10.4	x	58.6	71.2	145.6	32.2	x	309.2
2013–14	15.8	25.9	51.8	6.3	x	57.7	94.3	189.0	22.9	x	364.7
2014–15	13.3	18.9	56.6	11.1	x	56.3	80.3	239.8	47.2	x	423.8
2015–16	11.9	19.0	55.1	13.1	x	67.6	108.5	314.4	74.4	x	570.2
2016–17	12.7	23.3	50.2	11.9	x	69.6	128.0	275.6	65.5	x	548.6
2017–18	9.3	26.4	49.3	13.7	x	32.2	91.3	170.5	47.3	x	346.1
2018–19	6.9	28.9	49.2	14.2	x	25.6	107.3	182.6	52.8	x	371.1
2019–20	9.7	17.0	53.7	18.4	x	29.0	51.0	161.1	55.1	x	299.8
2020–21	11.1	21.4	49.6	17.0	0.8	33.8	64.9	150.3	51.7	2.6	303.2
2021–22	10.0	17.4	52.6	19.9	x	21.4	37.1	112.4	42.4	x	213.5
2022–23	12.2	18.2	44.7	22.9	x	21.7	32.4	79.4	40.6	x	177.5

Table 28: Percentage of annual landings by month from CRA 4, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.3	0.5	9.4	9.8	4.6	7.1	13.5	23.4	13.1	10.8	5.3	2.1
1980–81	0.8	3.3	8.6	8.3	7.1	8.8	14.3	13.4	12.8	13.5	6.8	2.4
1981–82	1.4	3.2	7.4	9.6	5.8	10.0	11.8	10.0	13.5	14.9	9.0	3.6
1982–83	0.4	5.4	6.6	8.5	8.2	6.9	11.7	13.8	15.3	12.9	8.2	2.3
1983–84	0.4	3.3	13.1	8.4	8.7	5.8	12.5	16.4	11.5	11.8	5.7	2.6
1984–85	0.2	6.3	13.8	7.1	4.3	7.8	15.4	16.1	13.4	9.9	4.6	1.1
1985–86	0.4	1.4	11.4	8.3	5.3	5.3	12.9	14.8	17.5	14.6	6.5	1.6
1986–87	0.3	3.4	10.7	4.9	2.8	6.6	17.8	17.3	17.0	14.0	4.3	1.1
1987–88	0.5	4.4	10.2	3.7	6.4	4.8	22.7	18.2	14.4	9.3	4.0	1.5
1988–89	0.5	5.1	8.9	4.4	3.4	9.3	16.9	21.5	14.4	8.5	4.3	2.6
1989–90	1.4	3.3	8.0	6.7	2.1	9.0	11.7	19.5	15.1	14.5	6.0	2.6
1990–91	0.3	2.7	8.1	6.4	2.7	11.4	19.2	18.3	13.6	8.6	7.0	1.6
1991–92	1.6	4.3	5.7	11.7	4.7	4.7	17.0	17.9	15.2	11.6	3.8	1.7
1992–93	0.9	2.5	17.0	8.8	3.8	4.2	11.7	17.2	16.1	10.6	4.7	2.5
1993–94	1.1	14.1	17.2	9.4	3.8	2.0	15.4	15.2	14.5	4.6	2.2	0.6
1994–95	3.2	17.5	13.2	10.1	6.6	4.4	13.0	17.2	8.5	4.3	0.8	1.2
1995–96	3.9	24.9	12.2	11.9	6.1	12.0	13.2	7.3	3.0	1.6	1.7	2.1
1996–97	9.3	30.2	18.8	11.1	11.1	10.7	4.3	2.1	0.8	0.5	x	1.1
1997–98	7.3	30.4	19.2	18.4	10.0	8.4	3.2	0.2	0.5	1.5	0.3	0.5
1998–99	4.3	21.6	13.3	19.3	18.3	14.0	4.6	1.4	0.5	0.8	1.5	0.5
1999–00	2.4	19.7	20.4	19.9	11.5	19.4	2.1	0.6	2.9	0.5	0.3	0.4
2000–01	5.5	24.4	24.3	16.6	6.2	10.8	6.4	2.9	0.7	0.4	0.8	1.1
2001–02	5.9	14.2	25.2	11.9	9.2	16.9	5.3	4.6	2.0	2.4	1.1	1.3
2002–03	5.6	11.9	22.9	13.6	9.1	13.8	2.7	5.5	2.9	6.2	4.2	1.5
2003–04	4.6	9.1	17.8	15.4	6.2	10.9	11.6	7.3	2.9	6.7	2.4	5.1
2004–05	3.5	9.9	18.1	7.8	3.2	3.3	13.3	7.7	6.2	17.5	7.7	1.8
2005–06	1.4	10.8	10.0	8.5	4.9	3.7	10.3	8.0	17.8	12.2	8.4	3.9
2006–07	0.8	3.0	6.1	5.6	4.1	5.4	11.9	16.8	13.3	18.5	8.9	5.6
2007–08	–	2.8	3.9	6.2	3.9	6.8	10.6	19.4	13.7	15.6	11.7	5.5
2008–09	0.1	x	7.4	6.8	5.5	7.7	14.1	15.4	18.5	19.8	4.3	0.3
2009–10	0.9	0.6	7.3	12.1	16.2	9.0	2.7	4.6	10.9	21.6	12.5	1.6
2010–11	2.8	9.3	13.1	9.9	8.4	6.3	8.9	6.9	4.3	15.6	11.9	2.6
2011–12	1.4	20.9	11.2	9.4	8.1	8.2	4.9	4.0	11.0	16.5	4.1	0.4
2012–13	2.3	19.3	9.0	6.6	3.1	8.9	4.3	8.9	10.9	21.3	4.9	0.6
2013–14	8.1	16.9	11.3	6.3	3.0	4.4	6.0	3.5	5.7	22.7	10.2	2.0
2014–15	2.8	8.1	14.5	5.2	5.4	6.3	7.8	7.5	14.4	16.3	8.5	3.2
2015–16	0.5	1.2	7.8	9.0	3.1	3.2	8.3	15.0	16.0	18.5	13.9	3.6
2016–17	0.2	1.5	6.7	2.8	2.2	5.5	16.8	18.7	16.6	16.5	8.4	4.1
2017–18	0.1	2.7	6.7	4.3	2.3	5.0	13.3	17.9	15.0	22.5	8.8	1.5
2018–19	1.0	1.3	8.0	9.6	5.1	4.3	7.4	7.8	18.4	19.2	13.8	4.2
2019–20	2.2	5.0	8.4	6.0	4.7	4.5	8.9	14.2	15.3	19.7	4.8	6.3
2020–21	0.8	3.6	8.1	6.5	6.2	7.9	14.9	16.1	16.8	11.4	6.5	1.1
2021–22	3.6	3.7	12.1	7.4	5.0	8.0	8.9	9.1	5.8	24.1	9.3	2.9
2022–23	2.1	4.7	13.2	10.7	7.6	12.3	6.7	9.4	9.7	12.8	6.1	4.8

Table 29: Percentage of landings from CRA 4 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (16 instances representing 11% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	912	913	914	915	934
Apr	0.9	–	x	–	–
May	0.6	0.7	3.5	–	–
Jun	0.7	0.9	8.5	2.9	x
Jul	0.5	1.8	4.7	3.2	x
Aug	0.9	1.2	1.8	2.8	x
Sep	0.8	x	4.8	5.3	x
Oct	2.8	x	2.2	1.5	–
Nov	2.1	1.8	4.4	x	–
Dec	x	2.2	6.0	x	–
Jan	x	3.1	7.5	x	–
Feb	x	2.2	3.0	x	–
Mar	x	1.1	2.6	x	–

Table 30: Arithmetic CPUE (kg/potlift) for CRA 4 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the year/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	912	913	914	915	934	CRA 4
1979–80	0.93	0.98	0.90	0.56	x	0.87
1980–81	1.05	0.77	0.83	0.58	0.93	0.83
1981–82	1.09	0.83	0.74	0.59	x	0.83
1982–83	0.90	0.94	1.08	0.66	x	0.92
1983–84	0.77	1.02	1.05	0.64	x	0.91
1984–85	0.86	0.84	0.78	0.55	x	0.77
1985–86	0.79	0.77	0.72	0.60	0.75	0.73
1986–87	0.85	0.92	0.88	0.61	x	0.84
1987–88	0.65	0.78	0.79	0.59	x	0.73
1988–89	0.51	0.63	0.69	0.53	x	0.62
1989–90	0.63	0.75	0.52	0.42	–	0.60
1990–91	0.75	0.52	0.43	0.40	x	0.52
1991–92	0.74	0.54	0.41	0.39	x	0.52
1992–93	0.64	0.52	0.48	0.51	x	0.54
1993–94	0.56	0.66	0.63	0.43	x	0.59
1994–95	0.83	0.70	0.77	0.49	x	0.72
1995–96	0.98	0.88	0.92	0.67	x	0.90
1996–97	1.34	1.05	0.98	0.67	x	1.03
1997–98	1.83	1.47	1.07	0.83	–	1.25
1998–99	1.81	2.65	1.01	0.73	–	1.34
1999–00	1.54	1.97	1.11	0.76	x	1.32
2000–01	1.29	2.05	1.14	0.91	x	1.27
2001–02	1.06	1.30	1.13	0.79	x	1.09
2002–03	1.12	1.28	1.02	0.75	x	1.08
2003–04	1.10	1.41	1.11	0.78	–	1.16
2004–05	0.77	1.25	1.02	0.72	–	1.00
2005–06	0.61	0.94	0.93	0.68	–	0.85
2006–07	0.59	0.77	0.60	0.74	1.59	0.67
2007–08	0.66	0.77	0.45	0.82	0.84	0.60
2008–09	0.71	0.86	0.56	0.84	x	0.72
2009–10	0.76	1.10	1.02	1.25	x	1.03
2010–11	0.74	1.21	1.06	0.93	x	1.01
2011–12	0.85	1.57	1.30	1.30	1.67	1.31
2012–13	0.89	1.92	1.58	1.40	x	1.55
2013–14	0.67	1.47	1.52	1.53	x	1.38
2014–15	0.61	0.94	1.09	1.78	x	1.09
2015–16	0.76	0.92	0.66	0.97	x	0.77
2016–17	0.78	0.86	0.61	0.67	x	0.71
2017–18	0.83	0.97	0.78	0.77	x	0.84
2018–19	1.02	0.90	0.78	0.92	x	0.85
2019–20	x	0.90	0.87	1.19	x	1.00
2020–21	0.85	1.03	1.09	1.69	0.81	1.20
2021–22	1.00	1.47	1.51	1.50	x	1.46
2022–23	1.33	1.38	2.01	1.63	x	1.71

Table 31: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 4 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.87	0.86	0.83	0.020
1980–81	0.83	0.82	0.80	0.019
1981–82	0.83	0.86	0.86	0.020
1982–83	0.92	0.94	0.92	0.019
1983–84	0.90	0.86	0.84	0.019
1984–85	0.77	0.78	0.76	0.019
1985–86	0.73	0.74	0.73	0.019
1986–87	0.84	0.79	0.77	0.019
1987–88	0.73	0.69	0.68	0.020
1988–89	0.62	0.58	0.57	0.020
1989–90	0.60	0.58	0.56	0.020
1990–91	0.52	0.53	0.52	0.020
1991–92	0.52	0.53	0.52	0.020
1992–93	0.53	0.51	0.50	0.019
1993–94	0.58	0.56	0.55	0.020
1994–95	0.71	0.69	0.70	0.022
1995–96	0.89	0.89	0.92	0.025
1996–97	1.03	1.11	1.23	0.030
1997–98	1.25	1.29	1.44	0.032
1998–99	1.34	1.46	1.64	0.031
1999–00	1.32	1.34	1.48	0.032
2000–01	1.27	1.28	1.38	0.031
2001–02	1.09	1.10	1.18	0.029
2002–03	1.08	1.16	1.22	0.027
2003–04	1.16	1.21	1.25	0.026
2004–05	1.00	0.95	0.95	0.025
2005–06	0.85	0.82	0.82	0.026
2006–07	0.67	0.70	0.67	0.024
2007–08	0.60	0.61	0.59	0.027
2008–09	0.72	0.78	0.74	0.031
2009–10	1.03	1.04	1.04	0.031
2010–11	1.01	1.03	1.03	0.027
2011–12	1.31	1.28	1.25	0.028
2012–13	1.55	1.44	1.41	0.029
2013–14	1.39	1.20	1.20	0.030
2014–15	1.09	1.05	1.05	0.028
2015–16	0.77	0.78	0.75	0.027
2016–17	0.71	0.68	0.65	0.027
2017–18	0.84	0.87	0.83	0.030
2018–19	0.83	0.92	0.90	0.030

Table 32: Number of vessels by statistical area from CRA 5, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. A ‘–’ indicates no fishing in the statistical area/fishing year cell and ‘0’ indicates that only vessels with <1 t fished in the cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	916	917	918	919	932	933	CRA 5
1979–80	21	51	13	3	1	9	88
1980–81	19	50	12	1	1	11	86
1981–82	15	51	12	0	2	11	85
1982–83	19	60	13	3	1	13	93
1983–84	16	59	11	1	–	13	93
1984–85	16	60	10	2	0	14	95
1985–86	13	56	11	2	2	15	92
1986–87	11	55	11	4	5	11	91
1987–88	11	51	10	3	2	12	84
1988–89	7	44	9	3	1	9	71
1989–90	15	44	10	0	0	7	66
1990–91	11	40	10	1	3	11	62
1991–92	11	37	21	1	1	11	68
1992–93	12	32	14	0	–	11	61
1993–94	9	35	12	–	0	13	59
1994–95	9	27	8	–	0	11	51
1995–96	12	25	6	1	2	12	49
1996–97	10	22	9	2	1	12	47
1997–98	8	21	7	1	1	12	45
1998–99	6	18	5	–	1	13	41
1999–00	7	20	7	1	1	12	39
2000–01	8	18	6	–	–	10	36
2001–02	10	17	2	–	0	8	34
2002–03	10	16	2	–	–	9	34
2003–04	12	14	2	–	–	11	34
2004–05	12	13	1	–	2	9	32
2005–06	11	14	2	–	0	8	31
2006–07	10	14	2	–	–	8	28
2007–08	8	14	2	–	0	7	27
2008–09	6	12	5	1	–	7	26
2009–10	6	11	1	–	–	8	25
2010–11	8	12	2	–	0	8	27
2011–12	6	11	2	–	–	7	25
2012–13	7	12	1	–	–	7	27
2013–14	7	12	2	–	–	7	27
2014–15	7	15	2	–	–	7	29
2015–16	8	15	5	–	–	8	30
2016–17	7	17	3	–	–	5	32
2017–18	7	14	3	–	–	5	27
2018–19	7	19	5	–	–	5	31
2019–20	6	16	3	–	–	3	25
2020–21	5	15	3	–	–	3	23
2021–22	3	14	5	2	–	3	23
2022–23	3	13	5	–	–	4	23

Table 33: Distribution and annual landings by statistical area from CRA 5, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)						Annual catch (t)						
	916	917	918	919	932	933	916	917	918	919	932	933	CRA 5
1979–80	26.7	47.9	12.8	1.1	x	10.4	107.4	192.6	51.5	4.5	x	41.9	402.0
1980–81	29.3	50.2	6.3	0.4	x	13.5	147.9	253.5	31.7	1.9	x	68.3	505.1
1981–82	23.0	52.0	7.3	x	x	16.1	109.6	247.5	34.6	x	x	76.6	476.0
1982–83	19.9	57.3	4.0	0.7	x	18.0	124.4	358.3	25.1	4.2	x	112.5	625.5
1983–84	19.2	57.5	5.6	0.3	–	17.4	114.8	344.8	33.5	1.6	–	104.4	599.1
1984–85	19.5	61.4	4.7	0.7	x	13.6	140.6	443.5	33.8	5.2	x	98.2	721.9
1985–86	19.4	62.1	6.7	0.7	0.3	10.8	140.2	450.1	48.6	5.2	2.5	78.0	724.6
1986–87	15.9	65.3	7.3	1.9	1.6	8.0	99.8	408.9	45.8	11.7	9.8	50.1	626.1
1987–88	22.4	58.0	6.3	3.2	x	9.4	111.2	288.1	31.4	15.8	x	46.5	496.5
1988–89	19.3	58.6	8.2	3.2	x	10.0	68.0	206.3	29.0	11.1	x	35.0	351.7
1989–90	28.7	56.1	9.5	x	x	5.6	89.6	175.1	29.7	x	x	17.4	312.4
1990–91	28.4	57.6	4.9	x	0.6	8.4	87.6	177.8	15.3	x	1.9	26.0	308.6
1991–92	29.9	46.2	10.9	x	0.1	13.0	85.9	132.7	31.2	x	0.2	37.3	287.4
1992–93	24.7	58.4	7.1	x	–	9.7	63.9	151.1	18.3	x	–	25.0	258.8
1993–94	23.4	54.2	8.1	–	x	14.1	72.9	168.7	25.2	–	x	43.9	311.0
1994–95	27.6	50.8	4.4	–	x	17.1	81.2	149.2	13.0	–	x	50.4	293.9
1995–96	27.3	43.8	3.3	x	x	24.3	81.1	130.4	9.7	x	x	72.4	297.6
1996–97	24.2	45.1	4.8	x	x	23.8	72.8	135.4	14.3	x	x	71.4	300.3
1997–98	23.8	42.4	4.4	x	x	27.0	71.3	127.1	13.2	x	x	80.9	299.6
1998–99	23.3	41.8	5.8	–	x	25.7	69.4	124.6	17.4	–	x	76.5	298.2
1999–00	29.6	41.7	4.0	x	x	24.7	103.4	145.8	14.1	x	x	86.2	349.5
2000–01	31.0	40.1	2.8	–	–	26.1	107.9	139.3	9.7	–	–	90.5	347.4
2001–02	42.8	39.2	1.5	–	x	16.4	149.3	136.9	5.3	–	x	57.1	349.1
2002–03	45.8	35.6	1.0	–	–	17.6	159.7	124.0	3.5	–	–	61.5	348.7
2003–04	47.6	32.5	0.9	–	–	18.9	166.6	113.9	3.3	–	–	66.1	349.9
2004–05	42.8	40.1	0.9	–	x	16.1	147.6	138.4	3.1	–	x	55.7	345.1
2005–06	44.4	40.8	1.4	–	x	13.4	155.2	142.6	5.1	–	x	46.7	349.5
2006–07	41.3	45.5	x	–	–	12.4	144.4	159.3	x	–	–	43.3	349.8
2007–08	36.6	45.8	x	–	x	16.4	128.0	160.3	x	–	x	57.3	349.8
2008–09	30.5	48.6	3.6	x	–	17.3	106.7	169.9	12.6	x	–	60.4	349.7
2009–10	29.1	50.6	x	–	–	18.8	101.9	177.1	x	–	–	65.9	349.9
2010–11	31.9	53.9	x	–	x	12.4	111.6	188.7	x	–	x	43.4	350.0
2011–12	25.2	56.5	x	–	–	15.9	88.4	197.8	x	–	–	55.8	350.0
2012–13	27.2	56.7	x	–	–	14.6	95.3	198.4	x	–	–	51.1	350.0
2013–14	18.4	65.1	x	–	–	14.2	64.6	227.8	x	–	–	49.8	350.0
2014–15	21.9	62.3	x	–	–	12.7	76.3	217.7	x	–	–	44.3	349.2
2015–16	13.8	67.0	7.0	–	–	12.3	48.3	234.5	24.4	–	–	43.0	350.1
2016–17	12.5	69.6	7.2	–	–	10.7	43.6	243.5	25.2	–	–	37.6	350.0
2017–18	13.3	72.9	7.1	–	–	6.7	46.5	255.0	24.9	–	–	23.5	350.0
2018–19	14.6	69.0	8.9	–	–	7.5	51.0	241.6	31.2	–	–	26.1	349.9
2019–20	10.8	70.2	10.3	–	–	8.7	36.2	236.1	34.7	–	–	29.2	336.2
2020–21	9.2	64.7	15.1	–	–	11.0	33.6	235.2	54.8	–	–	40.2	363.7
2021–22	6.6	61.2	21.3	x	–	9.8	23.2	214.1	74.6	x	–	34.2	350.0
2022–23	5.5	63.2	23.3	–	–	8.0	19.2	221.2	81.7	–	–	27.9	350.0

Table 34: Distribution and annual potlifts by statistical area from CRA 5, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)						Annual potlifts (000s)							
	916	917	918	919	932	933	916	917	918	919	932	933	CRA 5	
1979–80	24.2	53.5	8.8	0.9	x	10.7	128.9	284.7	46.9	4.8	x	57.1	532.2	
1980–81	26.6	52.1	6.6	0.3	x	13.6	148.5	291.3	37.2	1.6	x	76.2	559.1	
1981–82	28.5	48.1	7.1	x	x	15.7	171.3	289.6	42.4	x	x	94.5	601.7	
1982–83	25.1	51.3	5.5	0.8	x	16.8	186.6	381.8	41.0	6.3	x	125.3	744.7	
1983–84	22.5	53.7	5.8	0.5	–	17.5	180.5	430.3	46.1	4.0	–	140.4	801.3	
1984–85	19.7	57.7	5.1	1.3	x	16.0	187.4	547.8	48.1	12.1	x	151.7	949.0	
1985–86	17.0	60.2	6.1	1.1	0.5	15.1	181.4	641.8	64.7	11.7	5.5	160.6	1065.8	
1986–87	16.3	60.9	5.7	2.0	1.2	13.9	162.7	607.5	57.3	19.9	11.7	139.0	998.1	
1987–88	17.9	61.4	4.2	2.6	x	13.1	188.1	645.1	44.2	27.7	x	138.1	1051.4	
1988–89	15.8	62.3	4.6	3.9	x	13.1	141.1	555.7	40.7	34.9	x	116.4	892.1	
1989–90	21.6	62.8	6.9	x	x	8.2	159.5	464.3	50.9	x	x	61.0	739.9	
1990–91	27.4	58.8	4.5	x	0.5	8.8	197.8	424.3	32.2	x	3.5	63.4	721.3	
1991–92	25.0	54.8	7.3	x	0.1	12.8	195.7	428.9	56.8	x	1.0	100.5	783.1	
1992–93	23.7	59.9	5.4	x	–	10.9	171.8	434.3	39.3	x	–	79.1	725.1	
1993–94	21.3	58.1	6.4	–	x	14.0	167.9	458.7	50.3	–	x	110.6	788.9	
1994–95	20.9	60.2	4.8	–	x	14.0	144.7	417.3	33.6	–	x	96.9	693.3	
1995–96	20.8	55.2	3.8	x	x	19.2	126.9	337.0	23.3	x	x	117.2	610.9	
1996–97	19.9	54.2	4.1	x	x	20.1	107.0	291.6	22.1	x	x	108.4	538.5	
1997–98	17.9	50.7	5.6	x	x	22.2	68.8	194.4	21.6	x	x	85.1	383.2	
1998–99	18.5	49.4	5.9	–	x	22.0	62.1	166.2	19.8	–	x	74.1	336.2	
1999–00	13.8	54.4	4.6	x	x	27.1	48.4	190.6	16.1	x	x	94.8	350.2	
2000–01	10.4	56.1	2.3	–	–	31.2	31.0	167.7	6.9	–	–	93.3	299.0	
2001–02	19.1	59.9	1.2	–	x	19.7	52.5	164.7	3.2	–	x	54.2	275.0	
2002–03	25.7	48.0	1.0	–	–	25.3	71.1	132.8	2.7	–	–	70.1	276.7	
2003–04	28.1	40.6	0.9	–	–	30.4	71.1	102.8	2.4	–	–	77.0	253.3	
2004–05	24.8	51.2	0.8	–	x	23.2	68.5	141.6	2.3	–	x	64.1	276.8	
2005–06	27.4	49.3	1.0	–	x	22.4	81.6	146.7	2.9	–	x	66.6	297.9	
2006–07	29.0	49.2	x	–	–	21.3	86.1	146.2	x	–	–	63.3	297.1	
2007–08	25.8	45.2	x	–	x	28.2	76.5	134.2	x	–	x	83.9	297.1	
2008–09	19.6	45.7	3.0	x	–	31.6	53.4	124.4	8.3	x	–	86.2	272.3	
2009–10	22.6	39.3	x	–	–	36.8	55.1	95.8	x	–	–	89.7	243.7	
2010–11	25.8	44.9	x	–	x	26.9	58.2	101.2	x	–	x	60.8	225.6	
2011–12	21.1	39.6	x	–	–	36.3	46.2	87.0	x	–	–	79.8	219.6	
2012–13	29.2	38.7	x	–	–	30.0	70.0	92.9	x	–	–	72.0	240.1	
2013–14	21.1	43.0	x	–	–	34.5	53.0	108.1	x	–	–	86.6	251.3	
2014–15	25.6	40.4	x	–	–	31.9	60.7	95.6	x	–	–	75.4	236.7	
2015–16	22.7	40.3	2.4	–	–	34.5	55.1	97.8	5.9	–	–	83.6	242.3	
2016–17	21.8	47.0	3.4	–	–	27.8	50.8	109.5	7.9	–	–	64.7	232.9	
2017–18	15.3	60.6	3.2	–	–	20.9	31.3	124.1	6.5	–	–	42.7	204.7	
2018–19	18.6	55.0	4.2	–	–	22.3	39.1	115.6	8.8	–	–	46.8	210.3	
2019–20	16.9	62.4	3.5	–	–	17.2	36.6	134.9	7.6	–	–	37.1	216.1	
2020–21	16.2	61.3	3.4	–	–	19.1	35.6	134.9	7.5	–	–	42.0	220.0	
2021–22	10.8	64.8	5.8	x	–	18.3	20.9	125.7	11.3	x	–	35.4	193.8	
2022–23	8.4	67.8	5.9	–	–	17.9	15.0	120.8	10.4	–	–	31.9	178.2	

Table 35: Percentage of annual landings by month from CRA 5, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.7	7.0	6.4	6.2	4.6	7.5	11.6	17.9	13.5	15.6	7.6	1.5
1980–81	1.2	9.0	2.6	3.2	4.5	6.6	13.2	20.4	14.6	16.1	7.6	1.1
1981–82	0.9	6.2	2.6	3.4	2.4	4.8	12.1	18.7	21.2	16.4	8.2	3.1
1982–83	1.3	6.7	3.1	2.9	4.3	5.0	10.5	20.1	20.3	16.0	7.7	2.1
1983–84	1.2	4.8	5.0	4.3	5.5	5.4	8.5	8.8	17.1	23.6	11.8	4.0
1984–85	1.9	8.2	6.0	4.3	2.7	3.8	8.5	19.9	20.0	16.5	6.1	2.0
1985–86	2.7	4.7	2.1	2.8	3.6	4.4	12.4	14.8	21.0	20.8	8.0	2.7
1986–87	3.1	7.7	3.6	2.4	2.0	4.6	9.8	22.3	21.4	16.9	5.2	0.9
1987–88	2.3	4.4	5.1	2.8	4.7	4.2	13.6	18.6	22.2	15.7	4.9	1.3
1988–89	1.5	4.9	3.5	2.7	3.6	6.4	7.9	20.6	20.6	21.6	4.6	2.1
1989–90	2.2	5.1	2.4	2.4	2.0	4.0	6.9	15.8	20.8	25.4	10.4	2.5
1990–91	2.7	3.8	1.6	2.8	2.1	3.9	13.4	24.8	22.8	14.7	6.2	1.3
1991–92	0.4	3.4	1.9	3.8	3.6	4.0	10.8	19.9	19.0	22.1	8.9	2.1
1992–93	0.9	2.5	5.7	3.7	3.7	2.4	8.2	12.0	20.9	24.7	12.2	3.1
1993–94	0.7	6.8	7.4	7.6	5.6	3.8	10.0	12.9	19.9	15.3	7.8	2.2
1994–95	1.8	9.9	4.5	5.2	5.8	5.1	7.0	18.9	17.0	13.4	7.8	3.6
1995–96	1.8	11.1	5.2	5.6	5.0	6.1	10.4	13.9	15.4	10.8	8.3	6.5
1996–97	8.3	20.7	7.4	5.9	7.8	9.0	10.8	8.8	10.3	6.1	3.2	1.6
1997–98	15.3	24.2	10.9	7.6	7.3	7.4	7.5	5.6	5.1	4.5	3.2	1.4
1998–99	7.7	18.0	14.1	11.5	12.8	12.3	9.3	4.0	3.7	2.0	2.2	2.2
1999–00	11.1	19.0	11.7	13.3	12.1	11.6	8.2	2.8	3.1	2.8	2.1	2.1
2000–01	7.6	24.1	16.7	13.9	10.6	10.7	9.1	2.2	1.5	2.5	0.2	1.1
2001–02	9.0	21.3	13.1	17.2	17.2	12.4	4.6	2.3	0.5	0.6	0.9	0.9
2002–03	9.1	21.7	15.9	13.4	15.8	10.1	3.3	2.3	1.0	2.8	2.3	2.3
2003–04	1.4	14.3	19.4	18.8	12.8	14.0	7.8	2.0	2.0	3.9	1.8	1.7
2004–05	3.5	22.2	13.2	13.9	7.2	6.8	7.1	8.0	4.2	10.3	2.0	1.7
2005–06	3.1	28.4	12.9	10.5	8.3	5.6	8.7	7.3	6.2	6.6	1.4	1.0
2006–07	8.6	25.9	11.3	5.9	5.1	4.1	5.5	11.6	7.8	10.7	3.1	0.4
2007–08	10.1	26.1	8.5	6.3	4.3	6.1	7.0	4.9	7.6	13.9	4.0	1.1
2008–09	10.9	24.0	15.8	7.0	3.2	6.8	8.5	4.6	3.5	14.5	0.9	0.3
2009–10	8.5	19.1	13.1	18.7	6.7	7.0	3.8	4.5	2.6	9.7	5.8	0.6
2010–11	10.9	31.0	8.5	5.8	13.8	6.1	3.5	3.2	2.9	10.6	3.3	0.5
2011–12	5.9	37.3	4.4	3.6	4.1	14.3	7.2	4.7	4.0	12.2	1.8	0.5
2012–13	8.6	27.1	8.2	6.1	6.7	13.0	4.8	3.5	5.8	12.8	2.7	x
2013–14	6.9	28.6	14.0	12.1	4.9	4.6	4.9	2.9	5.2	13.5	2.0	0.3
2014–15	3.2	34.8	13.7	2.0	3.7	8.1	5.6	4.7	8.0	12.4	2.8	0.9
2015–16	3.4	32.0	16.3	7.4	2.6	3.7	5.6	6.5	8.0	12.0	1.9	0.5
2016–17	7.1	30.0	13.7	3.5	2.9	7.7	7.3	7.8	4.6	12.5	2.2	0.7
2017–18	4.8	29.8	9.1	2.9	3.5	7.3	6.6	10.7	7.2	13.6	2.7	1.6
2018–19	7.6	24.2	11.1	5.1	2.9	6.5	5.9	6.8	11.6	15.6	1.8	0.8
2019–20	7.7	32.4	9.2	4.0	4.0	6.2	4.7	13.5	6.6	10.7	x	0.3
2020–21	1.7	21.7	9.3	5.0	6.3	7.9	13.7	15.7	8.8	7.9	1.7	0.3
2021–22	6.7	23.5	6.5	5.2	4.2	8.4	6.8	14.5	6.6	15.8	1.7	0.2
2022–23	0.6	17.8	16.9	7.1	5.4	8.5	10.7	15.8	6.1	9.7	1.0	0.5

Table 36: Percentage of landings from CRA 5 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (25 instances representing 19% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	916	917	918	919	932	933
Apr	x	0.5	–	–	–	–
May	2.4	12.5	2.6	–	–	0.2
Jun	x	9.0	6.8	–	–	x
Jul	–	2.3	4.1	–	–	0.7
Aug	x	2.8	2.2	–	–	x
Sep	x	5.9	x	–	–	x
Oct	x	8.2	–	–	–	x
Nov	x	10.1	x	–	–	x
Dec	x	2.8	x	–	–	x
Jan	x	8.3	x	–	–	x
Feb	–	x	x	–	–	x
Mar	x	x	–	–	–	x

Table 37: Arithmetic CPUE (kg/potlift) for CRA 5 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the year/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	916	917	918	919	932	933	CRA 5
1979–80	0.83	0.68	1.10	0.95	x	0.73	0.76
1980–81	1.00	0.87	0.85	1.22	x	0.90	0.90
1981–82	0.64	0.86	0.82	x	x	0.81	0.79
1982–83	0.67	0.94	0.61	0.67	x	0.90	0.84
1983–84	0.64	0.80	0.73	0.40	–	0.74	0.75
1984–85	0.75	0.81	0.70	0.43	x	0.65	0.76
1985–86	0.77	0.70	0.75	0.44	0.45	0.49	0.68
1986–87	0.61	0.67	0.80	0.59	0.84	0.36	0.63
1987–88	0.59	0.45	0.71	0.57	x	0.34	0.47
1988–89	0.48	0.37	0.71	0.32	x	0.30	0.39
1989–90	0.56	0.37	0.55	x	–	0.26	0.42
1990–91	0.43	0.43	0.46	x	0.48	0.37	0.43
1991–92	0.42	0.31	0.48	–	0.21	0.37	0.37
1992–93	0.42	0.33	0.48	–	–	0.31	0.35
1993–94	0.35	0.34	0.40	–	x	0.33	0.34
1994–95	0.59	0.35	0.39	–	x	0.62	0.42
1995–96	0.69	0.37	0.34	x	x	0.58	0.44
1996–97	0.88	0.41	0.62	x	–	0.59	0.50
1997–98	0.88	0.59	0.54	x	–	0.81	0.68
1998–99	0.82	0.71	0.72	–	–	0.76	0.74
1999–00	1.59	0.79	0.79	x	x	0.84	0.91
2000–01	3.03	0.79	1.37	–	–	1.10	1.10
2001–02	2.77	0.74	x	–	–	1.04	1.17
2002–03	2.76	0.89	1.31	–	–	0.97	1.30
2003–04	2.60	1.03	1.39	–	–	0.88	1.36
2004–05	2.29	0.96	x	–	x	0.89	1.18
2005–06	2.07	0.97	1.73	–	–	0.67	1.11
2006–07	1.71	1.10	x	–	–	0.71	1.21
2007–08	1.70	1.21	x	–	–	0.71	1.21
2008–09	1.97	1.38	1.66	x	–	0.73	1.32
2009–10	1.97	1.97	–	x	–	0.72	1.54
2010–11	2.06	2.13	x	x	–	0.78	1.66
2011–12	2.02	2.62	x	–	–	0.71	1.75
2012–13	1.34	2.32	x	–	–	0.72	1.48
2013–14	1.37	2.14	x	–	–	0.63	1.46
2014–15	1.52	2.21	x	–	–	0.61	1.52
2015–16	1.05	2.69	6.03	–	–	0.55	1.62
2016–17	1.07	2.31	x	–	–	0.50	1.52
2017–18	1.92	2.20	x	–	–	0.45	1.78
2018–19	1.47	2.27	4.61	–	–	0.46	1.82
2019–20	x	2.47	x	–	–	x	2.51
2020–21	1.03	2.00	7.59	x	–	0.93	1.88
2021–22	1.36	2.22	8.78	x	–	0.86	2.19
2022–23	x	2.14	9.72	–	–	x	2.29

Table 38: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 5 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.76	0.65	0.60	0.024
1980–81	0.90	0.77	0.73	0.026
1981–82	0.79	0.70	0.65	0.027
1982–83	0.84	0.74	0.72	0.025
1983–84	0.75	0.66	0.64	0.025
1984–85	0.76	0.67	0.65	0.026
1985–86	0.68	0.55	0.53	0.026
1986–87	0.63	0.49	0.47	0.026
1987–88	0.47	0.41	0.39	0.027
1988–89	0.39	0.36	0.34	0.029
1989–90	0.42	0.38	0.35	0.034
1990–91	0.43	0.38	0.35	0.031
1991–92	0.37	0.32	0.29	0.032
1992–93	0.35	0.30	0.29	0.036
1993–94	0.34	0.34	0.33	0.037
1994–95	0.41	0.36	0.36	0.039
1995–96	0.44	0.40	0.40	0.045
1996–97	0.50	0.50	0.52	0.044
1997–98	0.68	0.70	0.73	0.045
1998–99	0.74	0.83	0.86	0.050
1999–00	0.91	0.91	0.93	0.047
2000–01	1.10	1.11	1.20	0.055
2001–02	1.17	1.25	1.40	0.061
2002–03	1.30	1.49	1.57	0.059
2003–04	1.37	1.59	1.76	0.054
2004–05	1.21	1.29	1.35	0.051
2005–06	1.11	1.33	1.36	0.048
2006–07	1.21	1.39	1.40	0.046
2007–08	1.22	1.43	1.44	0.046
2008–09	1.32	1.63	1.66	0.047
2009–10	1.54	2.01	2.10	0.050
2010–11	1.66	1.97	2.05	0.049
2011–12	1.75	1.88	1.90	0.052
2012–13	1.48	1.73	1.78	0.055
2013–14	1.46	1.58	1.64	0.053
2014–15	1.52	1.74	1.80	0.054
2015–16	1.62	1.51	1.57	0.054
2016–17	1.52	1.73	1.74	0.057
2017–18	1.78	1.89	1.93	0.057
2018–19	1.82	1.69	1.72	0.057

Table 39: Number of vessels by statistical area from CRA 6, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	940	941	942	943	CRA 6
1979–80	11	13	17	8	39
1980–81	13	12	15	11	42
1981–82	11	16	21	19	45
1982–83	18	17	27	15	54
1983–84	12	16	24	9	50
1984–85	18	18	26	9	53
1985–86	14	19	26	17	57
1986–87	20	14	22	12	48
1987–88	15	17	24	12	47
1988–89	12	13	18	8	42
1989–90	18	18	20	9	55
1990–91	15	14	20	5	40
1991–92	15	19	28	5	45
1992–93	14	20	25	6	50
1993–94	16	21	28	9	55
1994–95	19	15	31	15	59
1995–96	17	15	24	13	52
1996–97	21	14	23	10	50
1997–98	20	11	23	8	50
1998–99	16	11	17	8	42
1999–00	12	9	16	4	34
2000–01	14	8	17	5	33
2001–02	11	10	14	6	32
2002–03	11	8	15	5	32
2003–04	12	12	15	6	35
2004–05	11	10	15	3	34
2005–06	13	10	19	6	35
2006–07	11	13	16	9	36
2007–08	10	11	12	7	35
2008–09	15	10	15	5	35
2009–10	10	10	15	7	35
2010–11	9	10	16	7	36
2011–12	13	7	20	7	35
2012–13	11	7	20	7	37
2013–14	8	7	18	7	34
2014–15	10	6	18	7	35
2015–16	12	7	18	7	35
2016–17	12	9	20	7	36
2017–18	8	8	20	7	40
2018–19	12	8	19	8	39
2019–20	12	8	22	10	38
2020–21	9	9	20	10	33
2021–22	7	4	19	11	32
2022–23	10	4	22	13	36

Table 40: Distribution and annual landings by statistical area from CRA 6, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)				Annual catch (t)				
	940	941	942	943	940	941	942	943	CRA 6
1979–80	21.5	24.6	38.4	15.5	86.0	98.5	153.8	62.0	400.3
1980–81	28.5	21.3	31.2	19.0	101.5	75.8	110.9	67.7	355.9
1981–82	19.6	29.0	34.8	16.6	91.4	134.8	162.1	77.1	465.4
1982–83	24.6	19.2	40.1	16.1	116.2	90.3	189.3	75.8	471.7
1983–84	21.8	24.2	38.9	15.1	119.3	132.8	213.2	82.4	547.7
1984–85	25.6	25.1	36.7	12.6	126.2	123.4	180.5	61.9	492.0
1985–86	28.4	22.1	33.1	16.5	171.5	133.2	199.6	99.3	603.6
1986–87	29.0	15.6	37.1	18.3	168.3	90.3	215.5	106.2	580.3
1987–88	24.0	19.2	41.1	15.7	107.7	86.1	184.5	70.3	448.5
1988–89	20.4	13.9	50.0	15.6	92.0	62.5	225.3	70.4	450.2
1989–90	30.0	21.9	38.7	9.4	95.5	69.6	123.3	30.0	318.3
1990–91	23.4	19.2	50.5	6.9	86.6	71.0	186.6	25.5	369.7
1991–92	21.0	22.0	52.4	4.6	81.5	85.4	203.6	17.7	388.3
1992–93	23.1	21.1	47.7	8.2	75.9	69.6	157.0	26.9	329.4
1993–94	25.0	20.4	45.1	9.5	85.6	69.6	154.1	32.5	341.8
1994–95	22.5	19.6	49.0	8.8	70.5	61.3	153.3	27.5	312.5
1995–96	28.0	14.3	46.5	11.2	88.3	45.1	146.6	35.4	315.3
1996–97	27.1	18.2	43.0	11.7	102.4	68.8	162.8	44.3	378.3
1997–98	28.8	20.0	43.7	7.5	97.4	67.9	148.0	25.4	338.7
1998–99	28.8	19.4	43.6	8.2	96.2	64.7	145.9	27.4	334.2
1999–00	24.2	21.6	47.1	7.2	78.0	69.5	151.7	23.2	322.4
2000–01	24.2	17.2	52.0	6.6	82.9	58.8	178.3	22.7	342.7
2001–02	24.2	18.5	48.2	9.1	79.7	60.8	158.5	29.8	328.7
2002–03	19.5	24.2	43.0	13.2	65.7	81.6	144.7	44.3	336.3
2003–04	23.5	21.4	45.6	9.5	68.1	62.2	132.3	27.7	290.4
2004–05	20.3	23.7	50.5	5.5	65.5	76.5	163.2	17.7	323.0
2005–06	22.1	20.6	47.9	9.5	77.7	72.3	168.4	33.3	351.7
2006–07	28.3	20.9	39.7	11.2	99.5	73.6	139.7	39.3	352.1
2007–08	26.5	19.2	41.3	13.1	94.2	68.4	147.0	46.5	356.0
2008–09	24.3	18.1	43.8	13.9	86.3	64.2	155.5	49.3	355.3
2009–10	23.1	15.4	42.1	19.4	79.7	53.2	145.5	66.8	345.2
2010–11	24.8	17.7	39.5	18.0	88.7	63.3	141.0	64.4	357.4
2011–12	23.4	16.4	39.9	20.3	84.2	59.1	143.3	73.0	359.7
2012–13	19.9	16.0	48.7	15.5	70.7	56.9	173.3	55.1	355.9
2013–14	20.1	18.4	48.2	13.4	69.0	63.1	165.7	45.9	343.6
2014–15	22.8	20.7	44.7	11.9	76.4	69.1	149.4	39.6	334.5
2015–16	22.0	21.3	41.8	14.9	77.7	75.4	147.7	52.5	353.3
2016–17	21.0	19.1	44.3	15.6	75.6	68.7	159.2	56.1	359.5
2017–18	19.0	19.5	47.6	13.9	68.1	70.0	171.1	49.9	359.1
2018–19	18.4	23.2	44.7	13.7	66.3	83.5	160.7	49.4	359.9
2019–20	21.0	15.9	51.3	11.8	69.1	52.2	168.7	38.7	328.7
2020–21	17.3	13.0	59.8	10.0	67.6	50.8	233.6	38.9	390.9
2021–22	17.4	10.0	59.9	12.7	62.7	35.9	215.7	45.6	359.9
2022–23	18.9	13.2	55.9	12.1	67.8	47.3	200.6	43.5	359.1

Table 41: Distribution and annual potlifts by statistical area from CRA 6, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)				Annual potlifts (000s)				
	940	941	942	943	940	941	942	943	CRA 6
1979–80	24.5	40.0	24.3	11.2	42.2	68.9	41.9	19.2	172.2
1980–81	24.0	33.6	27.8	14.7	39.2	54.9	45.4	24.0	163.5
1981–82	15.9	45.2	24.6	14.4	33.7	96.1	52.3	30.6	212.6
1982–83	20.2	35.3	32.0	12.6	53.6	93.6	84.8	33.3	265.3
1983–84	16.1	32.8	37.3	13.8	51.0	103.9	118.2	43.8	317.0
1984–85	22.5	31.5	34.8	11.2	82.0	115.1	127.3	41.0	365.4
1985–86	23.4	27.4	32.9	16.3	100.2	117.4	140.7	69.7	428.0
1986–87	31.6	19.5	30.8	18.1	110.8	68.5	108.0	63.4	350.6
1987–88	23.5	26.2	34.2	16.1	71.0	79.2	103.4	48.6	302.2
1988–89	23.4	17.8	43.3	15.6	75.2	57.2	139.2	50.0	321.7
1989–90	27.4	26.9	34.7	11.0	65.0	64.0	82.5	26.1	237.5
1990–91	23.8	28.7	37.4	10.1	63.7	76.9	100.1	27.2	267.9
1991–92	22.1	32.9	38.0	7.0	66.8	99.1	114.5	21.1	301.5
1992–93	28.0	30.3	31.4	10.3	80.3	87.0	90.1	29.5	286.9
1993–94	27.6	24.6	35.1	12.7	86.6	77.3	110.4	39.9	314.1
1994–95	22.1	28.4	36.2	13.3	63.7	81.6	104.2	38.4	287.8
1995–96	30.2	19.9	35.2	14.8	87.1	57.4	101.5	42.8	288.8
1996–97	31.3	22.2	33.9	12.6	116.5	82.5	125.9	46.8	371.7
1997–98	35.2	22.8	35.1	6.9	137.0	88.7	136.8	27.0	389.5
1998–99	37.4	21.7	33.2	7.7	107.1	62.1	95.2	22.1	286.5
1999–00	29.4	27.5	32.9	10.3	80.2	75.1	89.8	28.1	273.1
2000–01	30.1	21.9	38.8	9.1	89.9	65.5	116.1	27.3	298.9
2001–02	28.5	24.8	37.8	9.0	81.5	70.9	108.1	25.8	286.2
2002–03	20.3	28.4	38.3	13.0	58.9	82.2	111.1	37.6	289.8
2003–04	22.4	30.9	36.0	10.7	59.1	81.6	95.2	28.1	264.1
2004–05	21.6	32.2	39.8	6.4	57.6	85.8	106.3	17.1	266.8
2005–06	22.8	30.3	38.4	8.4	59.6	79.1	100.2	22.0	261.0
2006–07	32.6	29.2	29.9	8.2	79.7	71.3	73.1	20.1	244.2
2007–08	29.2	25.5	31.1	14.2	68.1	59.4	72.5	33.2	233.3
2008–09	27.0	20.2	38.9	13.9	64.2	48.2	92.7	33.0	238.0
2009–10	28.6	17.2	33.5	20.7	72.7	43.6	85.0	52.5	253.7
2010–11	26.2	17.5	39.6	16.7	66.5	44.5	100.8	42.6	254.4
2011–12	25.9	18.5	36.8	18.7	61.0	43.6	86.6	43.9	235.0
2012–13	19.7	16.7	50.5	13.1	43.5	36.8	111.5	28.9	220.6
2013–14	19.6	19.5	49.6	11.4	43.9	43.6	111.1	25.5	224.1
2014–15	21.2	20.5	47.2	11.1	50.6	48.9	112.7	26.4	238.7
2015–16	20.0	20.7	45.3	14.0	50.0	51.7	113.2	34.9	249.9
2016–17	19.7	19.5	45.8	15.0	40.0	39.7	93.0	30.4	203.1
2017–18	18.9	21.7	46.2	13.2	36.2	41.4	88.4	25.2	191.2
2018–19	19.7	25.8	42.1	12.4	36.6	47.7	78.0	23.0	185.4
2019–20	26.3	18.2	42.4	13.1	43.4	30.0	69.8	21.5	164.8
2020–21	21.8	17.0	48.9	12.3	36.3	28.2	81.2	20.4	166.1
2021–22	22.0	15.4	49.5	13.1	35.4	24.7	79.7	21.1	160.8
2022–23	20.4	14.5	48.4	16.7	31.2	22.3	74.2	25.6	153.3

Table 42: Percentage of annual landings by month from CRA 6, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	–	7.2	8.1	6.1	3.5	3.5	12.1	14.5	15.1	18.5	11.3	–
1980–81	–	2.2	8.5	9.2	2.1	1.7	8.2	14.1	16.8	25.6	11.7	–
1981–82	–	4.8	6.6	4.8	2.9	3.5	18.4	14.6	14.2	15.2	14.8	–
1982–83	–	2.5	10.3	9.1	3.9	3.1	7.6	10.9	11.8	23.1	17.8	–
1983–84	–	1.4	7.0	7.9	6.5	2.6	7.0	17.6	15.9	18.7	15.4	–
1984–85	–	4.1	6.0	5.0	3.2	2.0	12.3	13.7	19.1	20.8	13.8	x
1985–86	–	4.1	5.9	3.4	1.8	6.3	12.2	13.0	19.1	14.8	19.2	–
1986–87	–	2.1	4.0	3.3	3.1	2.9	10.7	16.9	20.4	19.9	16.8	–
1987–88	–	1.1	4.6	4.4	4.8	1.3	9.7	15.6	21.3	18.1	15.7	3.3
1988–89	–	3.1	7.2	4.7	2.8	1.4	8.7	14.4	16.9	22.3	18.5	–
1989–90	–	3.6	5.4	5.7	3.3	1.6	9.9	10.4	19.2	21.4	19.5	x
1990–91	–	1.9	5.5	3.4	1.6	1.5	16.0	15.0	16.7	17.0	21.3	x
1991–92	–	1.4	5.9	4.0	1.8	2.2	10.7	9.6	17.4	30.7	13.5	2.8
1992–93	–	1.3	8.1	7.5	6.0	3.4	2.4	10.1	16.0	20.8	17.8	6.6
1993–94	–	1.6	8.7	8.1	4.8	3.2	8.8	15.6	13.3	14.1	21.8	–
1994–95	x	4.4	6.3	5.0	4.4	2.7	8.6	16.2	14.7	20.9	16.8	–
1995–96	–	4.2	6.7	3.9	5.9	6.9	23.7	11.9	10.0	12.2	14.3	0.3
1996–97	–	5.3	8.3	5.7	5.1	8.7	20.2	11.1	13.0	12.5	10.1	x
1997–98	x	8.1	9.4	8.2	5.4	6.7	11.4	11.5	14.9	11.8	12.5	x
1998–99	–	6.6	7.1	5.6	5.2	6.5	16.5	18.8	11.8	9.3	12.6	–
1999–00	–	6.6	6.9	6.3	5.7	8.4	17.7	12.8	11.3	12.2	12.0	x
2000–01	–	5.2	6.8	6.7	4.8	9.6	17.8	16.1	10.2	10.8	11.9	x
2001–02	–	2.9	7.9	6.3	4.1	4.3	15.1	14.3	13.2	17.0	14.8	x
2002–03	–	2.2	6.3	9.5	5.9	5.7	8.0	15.9	11.0	18.4	17.1	x
2003–04	–	1.7	5.3	6.6	8.6	6.3	16.0	12.8	12.4	18.9	11.3	x
2004–05	–	3.9	7.1	10.1	3.9	4.8	10.3	15.1	12.4	17.0	14.9	0.6
2005–06	–	3.6	6.4	7.2	5.5	5.5	10.3	14.1	18.1	16.9	12.4	–
2006–07	–	3.3	8.1	9.6	6.7	6.7	15.7	11.3	12.7	11.6	13.6	x
2007–08	–	1.4	4.9	9.7	8.7	6.5	5.7	17.2	13.5	20.4	11.8	x
2008–09	–	2.5	6.9	6.7	5.8	7.0	15.9	16.6	10.1	17.9	10.6	–
2009–10	–	1.6	2.5	6.9	6.9	5.1	5.2	12.1	19.6	19.3	20.8	–
2010–11	–	4.9	8.3	6.4	3.5	6.6	16.1	15.2	9.1	15.0	14.9	–
2011–12	–	2.6	4.3	5.8	4.1	5.5	14.2	15.2	17.1	14.9	15.8	x
2012–13	–	1.0	3.2	6.0	4.0	4.1	10.0	16.6	15.2	20.6	19.1	x
2013–14	–	1.6	4.1	5.6	3.8	7.9	17.5	16.7	10.9	17.9	14.1	–
2014–15	–	1.3	5.1	5.7	4.9	8.1	11.7	10.5	17.0	17.0	18.6	–
2015–16	–	0.8	3.8	6.5	6.5	6.7	5.6	15.1	13.8	19.0	22.0	x
2016–17	–	2.2	6.5	6.6	5.2	11.4	18.3	16.9	13.5	11.8	7.6	–
2017–18	–	2.5	5.5	5.4	7.1	14.5	21.1	11.4	10.8	11.5	10.3	–
2018–19	–	2.0	6.6	6.7	6.9	13.2	15.2	13.5	12.0	15.7	8.2	–
2019–20	–	2.4	8.6	8.9	7.7	7.7	11.2	17.7	13.3	15.8	6.7	–
2020–21	–	1.8	6.5	6.1	7.5	8.4	15.0	16.4	17.0	12.2	8.8	x
2021–22	–	1.4	6.3	7.3	6.4	7.9	13.0	18.6	11.9	18.3	8.9	x
2022–23	–	0.8	4.6	5.3	5.9	8.6	15.9	19.0	9.5	20.2	10.2	–

Table 43: Percentage of landings from CRA 6 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (1 instance representing less than 0.1% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	940	941	942	943
Apr	–	–	–	–
May	0.2	0.2	0.4	x
Jun	1.4	0.5	2.0	0.7
Jul	1.2	0.7	2.4	1.0
Aug	1.6	1.0	2.9	0.4
Sep	1.5	1.0	5.5	0.6
Oct	2.5	1.3	10.1	2.0
Nov	2.8	1.5	12.3	2.5
Dec	1.6	1.7	5.2	1.0
Jan	3.5	3.7	10.9	2.2
Feb	2.6	1.7	4.3	1.6
Mar	–	–	–	–

Table 44: Arithmetic CPUE (kg/potlift) for CRA 6 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	940	941	942	943	CRA 6
1979–80	2.04	1.43	3.67	3.22	2.33
1980–81	2.59	1.38	2.44	2.82	2.18
1981–82	2.71	1.40	3.10	2.52	2.19
1982–83	2.17	0.97	2.23	2.28	1.78
1983–84	2.34	1.28	1.80	1.88	1.73
1984–85	1.54	1.07	1.42	1.51	1.35
1985–86	1.71	1.14	1.42	1.42	1.41
1986–87	1.52	1.32	2.00	1.68	1.66
1987–88	1.52	1.09	1.78	1.45	1.48
1988–89	1.22	1.09	1.62	1.41	1.40
1989–90	1.46	1.07	1.49	0.94	1.30
1990–91	1.36	0.92	1.84	0.94	1.36
1991–92	1.21	0.86	1.80	0.84	1.27
1992–93	0.97	0.90	1.74	0.89	1.21
1993–94	0.97	0.91	1.39	0.80	1.09
1994–95	1.11	0.72	1.47	0.71	1.08
1995–96	0.94	0.74	1.46	0.80	1.07
1996–97	0.90	0.83	1.28	1.07	1.03
1997–98	0.72	0.75	1.08	0.94	0.87
1998–99	0.95	1.03	1.47	1.20	1.15
1999–00	0.92	0.99	1.61	0.80	1.21
2000–01	0.93	0.91	1.58	0.84	1.16
2001–02	1.00	0.85	1.61	1.21	1.17
2002–03	1.13	1.00	1.54	1.12	1.22
2003–04	1.12	0.76	1.55	0.99	1.14
2004–05	1.18	0.89	1.83	1.02	1.29
2005–06	1.28	0.92	1.80	1.50	1.36
2006–07	1.29	1.01	2.06	1.91	1.52
2007–08	1.36	1.14	1.99	1.35	1.48
2008–09	1.43	1.39	1.71	1.57	1.55
2009–10	1.15	1.28	1.81	1.31	1.44
2010–11	1.41	1.38	1.39	1.50	1.41
2011–12	1.36	1.41	1.69	1.58	1.53
2012–13	1.78	1.67	1.59	2.04	1.70
2013–14	1.57	1.54	1.49	1.85	1.55
2014–15	1.59	1.46	1.39	1.51	1.46
2015–16	1.58	1.55	1.41	1.55	1.49
2016–17	1.96	1.85	1.80	1.87	1.85
2017–18	1.87	1.76	1.94	1.97	1.89
2018–19	1.92	1.85	2.24	2.22	2.07
2019–20	2.07	1.69	2.35	1.82	2.10
2020–21	1.69	1.55	2.99	1.98	2.42
2021–22	2.04	x	2.74	2.09	2.44
2022–23	2.23	2.08	2.88	1.98	2.54

Table 45: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 6 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	2.33	2.11	2.18	0.032
1980–81	2.18	2.04	2.01	0.033
1981–82	2.19	2.29	2.29	0.030
1982–83	1.78	1.62	1.66	0.027
1983–84	1.73	1.64	1.63	0.028
1984–85	1.35	1.30	1.30	0.028
1985–86	1.41	1.38	1.37	0.028
1986–87	1.66	1.52	1.50	0.029
1987–88	1.48	1.35	1.32	0.029
1988–89	1.40	1.28	1.27	0.032
1989–90	1.30	1.18	1.13	0.032
1990–91	1.36	1.19	1.18	0.033
1991–92	1.28	1.24	1.23	0.029
1992–93	1.19	1.16	1.13	0.029
1993–94	1.08	1.03	1.03	0.027
1994–95	1.06	1.01	1.01	0.026
1995–96	1.06	1.03	1.05	0.026
1996–97	1.03	1.07	1.08	0.028
1997–98	0.87	1.02	1.04	0.028
1998–99	1.15	1.22	1.28	0.034
1999–00	1.22	1.27	1.28	0.036
2000–01	1.17	1.19	1.22	0.033
2001–02	1.17	1.15	1.20	0.035
2002–03	1.22	1.27	1.30	0.037
2003–04	1.14	1.23	1.26	0.035
2004–05	1.29	1.42	1.44	0.034
2005–06	1.37	1.47	1.50	0.031
2006–07	1.52	1.70	1.75	0.034
2007–08	1.48	1.50	1.54	0.033
2008–09	1.55	1.66	1.68	0.032
2009–10	1.44	1.50	1.48	0.034
2010–11	1.41	1.54	1.55	0.034
2011–12	1.53	1.55	1.53	0.032
2012–13	1.70	1.61	1.54	0.033
2013–14	1.55	1.57	1.49	0.033
2014–15	1.46	1.45	1.41	0.032
2015–16	1.49	1.49	1.45	0.032
2016–17	1.85	1.92	1.88	0.032
2017–18	1.89	1.97	1.96	0.032
2018–19	2.10	2.20	2.20	0.031

Table 46: Number of vessels by statistical area from CRA 7, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the entire QMA were excluded. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	920	921	CRA 7
1979–80	64	35	90
1980–81	58	35	86
1981–82	50	35	79
1982–83	24	22	42
1983–84	23	22	40
1984–85	39	24	59
1985–86	47	26	66
1986–87	40	25	58
1987–88	41	16	51
1988–89	28	15	38
1989–90	12	7	17
1990–91	28	12	37
1991–92	34	15	46
1992–93	29	11	35
1993–94	32	10	37
1994–95	26	9	33
1995–96	23	17	28
1996–97	16	8	22
1997–98	7	4	7
1998–99	13	9	18
1999–00	13	6	17
2000–01	18	12	25
2001–02	17	9	22
2002–03	18	6	20
2003–04	16	3	17
2004–05	12	4	14
2005–06	10	5	14
2006–07	9	7	14
2007–08	15	8	20
2008–09	11	5	15
2009–10	15	7	19
2010–11	11	8	16
2011–12	6	5	9
2012–13	9	4	12
2013–14	9	3	10
2014–15	7	3	9
2015–16	10	5	11
2016–17	10	6	11
2017–18	10	5	12
2018–19	9	4	11
2019–20	7	3	9
2020–21	8	3	9
2021–22	8	3	10
2022–23	8	4	10

Table 47: Distribution and annual landings by statistical area from CRA 7, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)		Annual catch (t)		
	920	921	920	921	CRA 7
1979–80	61.3	38.7	247.3	156.1	403.4
1980–81	62.0	38.0	184.7	113.0	297.8
1981–82	60.5	39.5	161.7	105.4	267.0
1982–83	53.6	46.4	69.3	60.1	129.4
1983–84	52.3	47.7	57.1	52.1	109.1
1984–85	63.5	36.5	121.6	70.0	191.7
1985–86	74.5	25.5	238.4	81.5	319.9
1986–87	72.6	27.4	237.5	89.6	327.1
1987–88	78.5	21.5	232.1	63.7	295.8
1988–89	70.1	29.9	150.0	63.9	213.9
1989–90	63.9	36.1	64.8	36.6	101.4
1990–91	66.5	33.5	88.7	44.6	133.4
1991–92	71.9	28.1	127.8	49.9	177.7
1992–93	70.0	30.0	92.2	39.4	131.6
1993–94	67.6	32.4	93.3	44.7	138.1
1994–95	65.2	34.8	78.5	41.8	120.3
1995–96	57.6	42.4	46.8	34.5	81.3
1996–97	62.9	37.1	39.6	23.3	62.9
1997–98	51.6	48.4	18.6	17.4	36.0
1998–99	48.3	51.7	28.3	30.3	58.6
1999–00	74.0	26.0	41.8	14.7	56.5
2000–01	50.8	49.2	44.3	42.9	87.2
2001–02	72.7	27.3	55.9	21.0	76.9
2002–03	76.5	23.5	67.8	20.8	88.6
2003–04	70.5	29.5	57.4	24.0	81.4
2004–05	58.4	41.6	55.1	39.1	94.2
2005–06	52.0	48.0	49.4	45.6	95.0
2006–07	51.4	48.6	61.7	58.5	120.2
2007–08	64.5	35.5	77.5	42.6	120.1
2008–09	64.7	35.3	77.8	42.5	120.3
2009–10	56.8	43.2	77.6	58.9	136.5
2010–11	45.0	55.0	33.7	41.1	74.8
2011–12	63.3	36.7	28.9	16.8	45.7
2012–13	64.5	35.5	34.7	19.1	53.8
2013–14	77.9	22.1	34.3	9.7	44.0
2014–15	77.7	22.3	51.2	14.7	66.0
2015–16	73.5	26.5	71.7	25.9	97.6
2016–17	63.0	37.0	61.4	36.1	97.6
2017–18	61.9	38.1	69.8	42.9	112.7
2018–19	73.3	26.7	71.1	25.9	97.0
2019–20	65.5	34.5	61.9	32.6	94.5
2020–21	67.4	32.6	72.7	35.1	107.8
2021–22	64.0	36.0	68.1	38.2	106.3
2022–23	57.8	42.2	64.6	47.1	111.7

Table 48: Distribution and annual potlifts by statistical area from CRA 7, 1979–80 to 2022–23. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)		Annual potlifts (000s)		
	920	921	920	921	CRA 7
1979–80	70.6	29.4	271.0	112.7	383.7
1980–81	73.5	26.5	245.5	88.7	334.2
1981–82	71.9	28.1	244.2	95.5	339.7
1982–83	67.5	32.5	173.3	83.6	256.9
1983–84	63.7	36.3	172.1	98.2	270.3
1984–85	71.5	28.5	232.4	92.7	325.1
1985–86	77.5	22.5	330.0	95.6	425.5
1986–87	79.4	20.6	321.6	83.3	404.9
1987–88	81.4	18.6	332.3	75.7	408.0
1988–89	78.0	22.0	373.7	105.4	479.0
1989–90	81.0	19.0	228.0	53.6	281.6
1990–91	81.3	18.7	262.5	60.4	322.9
1991–92	77.2	22.8	166.0	49.0	215.0
1992–93	84.1	15.9	270.4	51.0	321.4
1993–94	82.5	17.5	180.1	38.3	218.3
1994–95	84.0	16.0	203.0	38.6	241.6
1995–96	73.1	26.9	187.2	69.0	256.2
1996–97	78.5	21.5	194.3	53.2	247.5
1997–98	68.6	31.4	105.0	48.1	153.0
1998–99	59.3	40.7	115.5	79.3	194.7
1999–00	81.4	18.6	205.6	46.9	252.6
2000–01	65.2	34.8	164.0	87.4	251.4
2001–02	75.1	24.9	125.7	41.6	167.3
2002–03	88.6	11.4	151.6	19.4	171.0
2003–04	90.9	9.1	128.2	12.8	141.0
2004–05	80.6	19.4	100.9	24.3	125.2
2005–06	70.3	29.7	59.8	25.2	85.0
2006–07	62.9	37.1	48.6	28.7	77.2
2007–08	74.3	25.7	67.9	23.5	91.4
2008–09	70.9	29.1	50.6	20.7	71.3
2009–10	74.0	26.0	99.3	35.0	134.2
2010–11	59.6	40.4	61.6	41.7	103.3
2011–12	62.7	37.3	46.2	27.5	73.7
2012–13	68.7	31.3	66.9	30.5	97.4
2013–14	74.5	25.5	27.1	9.3	36.3
2014–15	84.1	15.9	50.0	9.4	59.4
2015–16	80.6	19.4	66.6	16.0	82.7
2016–17	75.5	24.5	58.2	18.8	77.1
2017–18	67.3	32.7	69.6	33.7	103.3
2018–19	77.1	22.9	66.4	19.7	86.0
2019–20	78.7	21.3	64.5	17.5	81.9
2020–21	81.4	18.6	63.6	14.5	78.2
2021–22	82.1	17.9	73.5	16.1	89.5
2022–23	76.2	23.8	56.3	17.6	73.9

Table 49: Percentage of annual landings by month from CRA 7, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	1.7	x	5.7	18.1	26.8	22.6	13.4	6.5	3.4	1.1	0.6	0.3
1980–81	0.0	0.2	8.6	19.9	33.4	15.4	12.3	5.4	2.1	1.2	0.9	0.6
1981–82	0.1	0.0	8.5	27.5	25.0	19.9	9.3	5.5	1.9	1.6	0.7	0.0
1982–83	x	x	5.7	25.8	24.3	15.3	11.6	10.0	5.0	1.8	0.3	x
1983–84	–	–	5.8	19.0	24.9	19.9	15.4	6.6	5.3	2.0	0.8	0.2
1984–85	x	x	15.8	30.5	16.6	12.6	11.7	7.6	3.1	1.5	0.5	0.1
1985–86	x	x	10.9	28.1	25.5	12.9	10.6	5.4	3.8	1.5	1.1	0.1
1986–87	–	0.0	5.6	17.5	19.9	24.9	14.3	8.9	5.7	2.2	0.9	0.1
1987–88	0.0	x	7.1	24.7	27.4	16.0	12.0	7.0	2.8	1.6	0.9	0.5
1988–89	x	–	4.3	18.6	28.1	14.8	18.3	11.5	1.8	1.5	1.0	x
1989–90	–	x	2.6	6.0	18.0	27.2	16.5	11.7	8.6	6.5	2.7	0.2
1990–91	x	–	7.0	25.0	20.0	19.6	9.1	5.9	6.8	4.2	1.9	0.2
1991–92	x	x	21.9	34.6	32.7	9.6	0.9	0.2	0.1	–	0.0	–
1992–93	–	–	5.8	18.6	19.7	24.3	17.8	8.0	4.9	0.4	x	x
1993–94	x	–	15.8	40.0	24.7	11.5	7.7	0.1	x	x	–	–
1994–95	–	x	9.4	27.9	34.1	19.6	7.5	1.3	–	–	x	–
1995–96	–	x	5.8	38.4	26.6	20.3	8.0	1.0	–	–	–	–
1996–97	–	–	4.8	19.4	32.1	19.1	19.2	5.4	–	–	–	–
1997–98	–	–	2.4	17.9	22.9	21.3	13.5	22.0	–	–	–	–
1998–99	–	–	6.0	30.1	21.0	9.1	12.5	20.2	x	–	–	–
1999–00	–	–	7.3	20.4	27.5	17.4	14.0	13.5	–	–	–	–
2000–01	–	–	6.6	22.2	28.7	15.6	17.7	9.1	–	x	–	–
2001–02	–	–	9.0	27.1	25.7	18.6	12.6	6.9	–	–	x	–
2002–03	–	x	10.2	21.2	30.5	20.6	15.8	1.8	–	–	–	–
2003–04	–	x	7.1	29.1	25.5	15.2	18.4	4.8	–	–	–	–
2004–05	x	–	11.5	36.2	30.8	12.8	5.9	2.9	–	–	–	–
2005–06	–	–	9.0	45.7	32.1	10.9	2.0	x	–	–	–	–
2006–07	–	–	11.1	33.3	33.3	17.6	4.4	x	–	–	–	–
2007–08	–	x	3.3	26.5	34.4	24.3	10.6	0.6	–	–	–	–
2008–09	–	–	3.7	9.2	36.2	32.0	18.9	x	–	–	–	–
2009–10	–	–	1.6	7.6	17.5	30.3	23.0	20.0	–	–	–	–
2010–11	–	–	11.0	13.3	13.8	23.7	13.6	24.7	–	–	–	–
2011–12	–	–	6.8	24.1	30.4	18.6	13.7	6.3	–	x	–	–
2012–13	–	–	7.8	16.7	21.0	23.9	17.3	13.5	–	–	–	–
2013–14	–	x	14.7	41.6	19.1	21.0	x	x	x	x	x	x
2014–15	0.2	1.5	5.1	9.5	29.2	26.0	13.1	6.7	2.5	2.4	2.8	0.8
2015–16	4.2	3.0	6.3	13.6	20.1	21.4	16.2	4.9	3.0	2.8	3.7	0.7
2016–17	1.5	1.0	3.6	6.5	26.3	24.0	14.2	9.3	3.7	5.2	2.4	2.4
2017–18	2.0	2.2	1.5	7.0	20.0	19.3	13.9	10.8	5.8	9.4	6.1	2.0
2018–19	x	1.2	2.3	9.9	23.6	23.0	20.7	5.8	5.7	5.1	1.3	x
2019–20	1.8	1.6	2.7	10.6	22.9	22.3	11.1	10.4	3.5	11.2	x	x
2020–21	x	2.0	2.2	8.3	9.0	32.1	16.9	14.0	8.5	4.8	x	x
2021–22	3.6	4.0	5.4	14.8	18.2	29.3	6.7	9.6	0.8	4.7	2.4	x
2022–23	x	1.2	7.7	10.8	21.1	31.9	8.1	7.7	2.8	7.7	x	0.6

Table 50: Percentage of landings from CRA 7 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels (14 instances representing 29% of the annual catch), and a ‘–’ indicates no fishing in the month/ statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the combined “(L+LFL+LR+QL)” destination codes.

Month	920	921
Apr	x	–
May	1.2	x
Jun	4.3	x
Jul	7.4	x
Aug	13.7	x
Sep	15.4	16.5
Oct	6.5	1.6
Nov	4.4	x
Dec	x	x
Jan	x	x
Feb	x	x
Mar	x	x

Table 51: Arithmetic CPUE (kg/potlift) for CRA 7 by fishing year and statistical area, 1979–80 to 2022–23. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Values in the cells shaded yellow differ from the equivalent values in Table 52 because December–May data have been included in this CPUE calculation. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	920	921	CRA 7
1979–80	0.91	1.39	1.05
1980–81	0.75	1.27	0.89
1981–82	0.66	1.10	0.79
1982–83	0.40	0.72	0.50
1983–84	0.33	0.53	0.40
1984–85	0.52	0.76	0.59
1985–86	0.72	0.85	0.75
1986–87	0.74	1.08	0.81
1987–88	0.70	0.84	0.73
1988–89	0.40	0.61	0.45
1989–90	0.29	0.61	0.34
1990–91	0.33	0.74	0.40
1991–92	0.77	0.99	0.81
1992–93	0.34	0.87	0.40
1993–94	0.52	1.34	0.62
1994–95	0.39	1.16	0.49
1995–96	0.26	0.54	0.32
1996–97	0.22	0.45	0.25
1997–98	0.18	0.41	0.25
1998–99	0.23	0.40	0.29
1999–00	0.20	0.30	0.21
2000–01	0.27	0.52	0.33
2001–02	0.46	0.55	0.48
2002–03	0.45	1.09	0.51
2003–04	0.45	1.86	0.58
2004–05	0.55	1.63	0.77
2005–06	0.82	1.84	1.12
2006–07	1.27	2.03	1.55
2007–08	1.18	2.04	1.39
2008–09	2.26	2.62	2.38
2009–10	1.00	1.79	1.23
2010–11	0.68	1.10	0.83
2011–12	0.74	0.66	0.71
2012–13	0.62	0.62	0.62
2013–14	1.84	1.05	1.58
2014–15	1.73	2.26	1.86
2015–16	1.64	2.51	1.90
2016–17	2.27	3.18	2.50
2017–18	1.83	1.96	1.88
2018–19	2.68	3.26	2.83
2019–20	2.46	4.50	2.98
2020–21	2.70	5.68	3.26
2021–22	2.89	5.90	3.44
2022–23	2.87	5.16	3.44

Table 52: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 7 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. Values in the cells shaded yellow differ from the equivalent values in Table 51 because December–May data have been excluded in this CPUE calculation. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.05	0.96	0.96	0.031
1980–81	0.89	0.84	0.84	0.033
1981–82	0.79	0.72	0.72	0.033
1982–83	0.50	0.47	0.46	0.037
1983–84	0.40	0.40	0.40	0.038
1984–85	0.59	0.54	0.54	0.037
1985–86	0.75	0.71	0.71	0.036
1986–87	0.81	0.81	0.82	0.038
1987–88	0.73	0.67	0.69	0.040
1988–89	0.45	0.41	0.40	0.046
1989–90	0.33	0.31	0.33	0.047
1990–91	0.40	0.40	0.42	0.042
1991–92	0.81	0.97	0.97	0.054
1992–93	0.39	0.36	0.39	0.048
1993–94	0.63	0.60	0.62	0.058
1994–95	0.48	0.44	0.45	0.055
1995–96	0.32	0.29	0.29	0.056
1996–97	0.25	0.23	0.24	0.065
1997–98	0.24	0.18	0.18	0.064
1998–99	0.29	0.26	0.26	0.065
1999–00	0.21	0.22	0.22	0.071
2000–01	0.33	0.34	0.34	0.063
2001–02	0.48	0.51	0.50	0.066
2002–03	0.51	0.58	0.60	0.069
2003–04	0.58	0.56	0.59	0.076
2004–05	0.77	0.89	0.88	0.094
2005–06	1.12	1.33	1.28	0.110
2006–07	1.55	1.87	1.75	0.092
2007–08	1.39	1.61	1.55	0.084
2008–09	2.38	1.87	1.78	0.107
2009–10	1.23	1.12	1.08	0.075
2010–11	0.83	0.81	0.80	0.084
2011–12	0.71	0.74	0.69	0.081
2012–13	0.62	0.70	0.68	0.092
2013–14	1.57	2.14	2.05	0.130
2014–15	1.85	2.10	2.09	0.126
2015–16	1.80	2.07	2.05	0.118
2016–17	2.68	2.78	2.77	0.102
2017–18	1.92	2.16	2.10	0.106
2018–19	2.87	2.87	2.96	0.114

Table 53: Number of vessels by statistical area from CRA 8, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. A ‘–’ indicates no fishing in the statistical area/fishing year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

Fishing year	922	923	924	925	926	927	928	CRA 8
1979–80	6	48	76	5	67	69	67	271
1980–81	6	50	85	4	63	59	50	253
1981–82	8	39	76	5	68	40	34	221
1982–83	6	32	67	6	71	46	33	214
1983–84	6	41	56	7	73	47	34	208
1984–85	8	33	59	7	70	57	36	212
1985–86	3	38	54	5	63	58	40	208
1986–87	3	28	51	5	56	42	36	187
1987–88	5	24	53	1	57	38	28	173
1988–89	4	29	38	5	43	23	22	135
1989–90	7	36	40	11	78	42	27	178
1990–91	3	15	35	14	65	38	25	134
1991–92	5	19	34	4	71	43	34	143
1992–93	4	16	32	7	52	33	37	144
1993–94	3	20	33	8	52	34	34	144
1994–95	2	10	32	16	42	29	34	122
1995–96	3	10	18	10	36	27	30	112
1996–97	3	11	21	9	36	25	31	111
1997–98	2	12	18	8	36	23	35	107
1998–99	1	11	17	9	34	20	37	104
1999–00	2	13	16	7	29	21	21	91
2000–01	1	8	14	4	32	24	18	87
2001–02	2	6	13	3	34	15	18	74
2002–03	1	2	12	2	33	12	15	69
2003–04	1	5	11	4	29	11	14	66
2004–05	2	6	10	4	29	9	13	62
2005–06	1	6	8	1	28	10	14	60
2006–07	2	4	7	–	25	11	13	57
2007–08	2	5	12	3	22	13	16	59
2008–09	2	4	14	2	21	13	17	64
2009–10	3	2	12	1	23	16	18	62
2010–11	2	2	12	2	28	14	20	64
2011–12	1	1	12	1	28	11	19	62
2012–13	1	2	15	4	29	15	17	64
2013–14	–	2	13	1	25	15	18	63
2014–15	1	4	14	3	27	14	15	64
2015–16	1	5	14	3	32	16	11	64
2016–17	1	5	18	1	38	17	10	66
2017–18	–	1	18	2	31	14	11	65
2018–19	–	1	16	3	32	15	12	65
2019–20	–	10	20	3	33	16	15	67
2020–21	–	13	18	–	28	13	14	61
2021–22	–	14	19	–	30	14	13	64
2022–23	–	12	16	–	30	16	17	67

Table 54: Distribution and annual landings by statistical area from CRA 8, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)							Annual catch (t)							
	922	923	924	925	926	927	928	922	923	924	925	926	927	928	CRA 8
1979–80	1.9	12.7	25.6	0.4	22.4	19.5	17.6	32.5	218.9	442.0	7.2	385.7	335.8	303.5	1 725.6
1980–81	1.2	11.3	30.5	1.3	24.1	17.1	14.5	17.4	165.8	446.1	18.5	353.1	250.3	212.2	1 463.4
1981–82	1.5	11.9	27.5	1.9	32.4	13.8	11.0	20.8	166.1	383.8	26.2	452.1	192.7	153.9	1 395.7
1982–83	1.4	9.9	24.9	1.0	33.2	18.8	10.8	21.4	148.4	374.3	14.7	498.8	283.1	161.6	1 502.4
1983–84	1.1	10.2	22.3	1.5	35.8	17.3	11.9	16.1	154.9	339.8	22.5	546.6	263.0	182.0	1 524.9
1984–85	1.3	9.4	22.0	0.8	30.5	24.9	11.2	20.1	145.5	341.4	11.9	472.0	385.2	173.2	1 549.3
1985–86	0.7	10.5	21.3	1.0	29.5	24.2	12.9	12.2	196.2	397.0	18.7	549.6	452.1	239.7	1 865.6
1986–87	1.1	9.9	27.8	0.4	30.2	16.2	14.3	18.1	159.0	444.3	6.6	483.8	259.0	229.3	1 600.1
1987–88	1.3	12.5	27.8	x	32.0	15.5	10.8	21.5	207.6	462.5	x	532.9	258.6	179.6	1 665.3
1988–89	1.7	16.2	23.8	1.0	32.8	11.5	12.9	18.3	169.8	249.8	10.6	343.4	120.9	134.8	1 047.7
1989–90	1.1	8.9	23.1	0.5	36.4	19.2	10.8	14.4	111.1	288.6	6.0	455.3	239.9	134.9	1 250.2
1990–91	0.9	6.8	22.9	1.3	38.1	18.9	11.3	7.2	56.3	190.8	10.5	317.6	157.9	94.1	834.5
1991–92	1.0	6.0	19.7	1.3	32.3	23.0	16.6	9.9	58.1	189.3	12.7	311.1	221.5	160.3	962.7
1992–93	0.8	5.6	19.6	1.4	33.0	18.5	21.2	7.0	49.2	171.5	12.1	289.2	161.9	185.5	876.5
1993–94	1.5	6.4	22.7	1.7	30.3	17.4	19.9	13.9	57.1	203.6	15.5	271.4	156.4	178.2	896.1
1994–95	1.0	3.9	24.1	4.0	27.9	18.8	20.3	8.3	33.5	205.9	34.1	239.1	160.6	174.1	855.6
1995–96	0.8	5.1	17.0	3.6	30.4	21.1	22.0	6.8	41.8	140.7	29.9	250.8	174.4	181.3	825.6
1996–97	0.8	5.6	16.0	2.7	33.2	21.8	20.0	6.7	48.2	138.0	23.3	286.4	187.8	172.1	862.4
1997–98	0.3	4.4	16.6	1.2	32.7	19.1	25.7	2.7	34.9	130.5	9.2	256.6	150.1	201.6	785.6
1998–99	x	6.0	11.6	1.3	34.9	20.1	25.8	x	48.3	93.7	10.6	281.9	162.1	208.6	808.1
1999–00	x	6.6	13.7	3.1	36.3	23.0	16.8	x	46.7	97.5	22.1	258.0	163.0	119.4	709.8
2000–01	x	3.6	15.5	2.1	40.7	25.3	12.2	x	25.3	109.0	14.8	286.6	178.2	85.6	703.4
2001–02	x	3.3	14.9	0.3	42.8	22.9	15.0	x	19.1	85.0	1.7	244.9	131.1	85.8	572.1
2002–03	x	x	15.5	x	48.3	18.3	13.9	x	x	88.1	x	274.1	103.8	79.1	567.1
2003–04	x	3.9	12.8	0.3	51.3	16.9	14.2	x	22.3	72.9	1.5	291.4	95.8	80.4	567.6
2004–05	x	3.8	12.1	1.2	50.0	16.7	15.6	x	22.7	72.7	7.2	301.2	100.6	93.8	603.0
2005–06	x	2.9	12.4	x	45.8	19.8	18.0	x	17.6	74.9	x	276.2	119.4	108.5	603.2
2006–07	x	3.2	13.5	–	41.2	22.9	18.1	x	24.1	101.7	–	310.9	173.0	136.8	754.9
2007–08	x	2.5	13.3	0.8	35.3	21.4	25.7	x	18.8	100.4	6.2	265.9	160.9	193.6	752.4
2008–09	x	0.4	15.2	x	28.8	22.5	32.3	x	4.3	146.4	x	278.6	217.1	312.0	966.0
2009–10	0.7	x	14.1	x	27.3	21.3	35.4	6.6	x	143.8	x	278.1	217.1	360.7	1 018.3
2010–11	x	0.1	12.6	x	33.8	24.6	28.4	x	0.9	128.0	x	344.0	250.2	289.6	1 018.3
2011–12	x	x	12.2	x	38.8	25.2	23.4	x	x	117.1	x	372.7	242.4	224.6	961.2
2012–13	x	x	14.2	0.5	37.2	21.4	26.2	x	x	136.9	4.6	357.1	206.0	251.3	960.8
2013–14	–	0.2	12.6	x	37.3	25.0	24.9	–	1.5	121.1	x	360.0	241.3	240.5	964.6
2014–15	x	2.3	11.3	0.2	36.5	26.0	23.7	x	21.8	108.7	2.2	351.2	249.9	228.1	962.0
2015–16	x	1.2	11.2	0.7	39.4	29.8	17.4	x	12.0	107.7	7.2	379.1	286.3	167.4	961.8
2016–17	x	0.9	14.5	x	41.3	26.6	16.2	x	8.6	139.7	x	397.0	255.8	155.9	961.9
2017–18	–	x	15.6	x	40.3	25.7	16.9	–	x	150.2	x	387.2	247.0	162.6	961.9
2018–19	–	x	12.8	2.8	36.5	25.4	21.7	–	x	137.1	30.2	390.4	271.8	231.9	1 070.6
2019–20	–	1.6	13.8	1.7	34.9	24.9	23.1	–	16.5	140.6	17.6	354.6	253.5	234.7	1 017.5
2020–21	–	4.5	11.4	–	35.3	25.1	23.7	–	58.1	148.7	–	459.8	326.8	308.5	1 301.8
2021–22	–	2.7	14.8	–	34.5	23.5	24.5	–	31.8	176.0	–	411.2	280.6	292.1	1 191.6
2022–23	–	3.6	16.5	–	32.1	27.1	20.7	–	44.9	206.5	–	402.1	339.1	259.1	1 251.6

Table 55: Distribution and annual potlifts by statistical area from CRA 8, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)							Annual potlifts (000s)							CRA 8
	922	923	924	925	926	927	928	922	923	924	925	926	927	928	
1979–80	1.7	10.2	24.2	0.1	21.7	22.9	19.2	16.3	98.2	233.7	1.4	209.7	220.9	185.7	966.0
1980–81	1.5	10.3	26.2	0.3	21.2	22.2	18.2	13.1	87.4	222.8	2.3	180.2	188.5	154.8	849.2
1981–82	1.8	11.8	25.9	0.3	27.0	17.1	16.1	13.7	92.0	202.3	2.5	210.9	133.2	125.9	780.5
1982–83	2.0	8.6	22.6	0.3	26.3	24.3	15.8	19.4	81.8	216.2	3.3	251.0	232.2	150.5	954.4
1983–84	1.6	10.7	22.5	0.4	29.3	21.8	13.7	19.9	130.9	275.2	5.1	357.9	266.4	167.3	1 222.8
1984–85	1.8	9.2	20.2	0.3	28.7	25.5	14.3	23.4	116.8	256.4	3.2	363.2	323.3	181.1	1 267.3
1985–86	0.9	9.6	17.4	0.1	26.4	28.8	16.8	13.0	131.8	239.7	1.4	363.0	396.4	231.5	1 376.8
1986–87	1.2	9.8	18.9	0.2	28.1	23.6	18.2	16.4	136.1	263.2	3.1	392.0	328.6	253.1	1 392.7
1987–88	1.6	10.7	20.0	x	29.4	23.5	14.8	21.3	143.1	268.6	x	393.9	314.2	198.0	1 339.6
1988–89	3.0	14.0	20.6	0.6	29.2	15.2	17.4	34.0	159.1	233.3	6.7	331.3	172.7	196.9	1 133.9
1989–90	1.3	9.0	16.1	0.7	35.8	23.7	13.4	17.8	127.2	227.4	9.9	506.4	334.9	189.9	1 413.5
1990–91	1.2	6.3	16.3	0.9	35.1	22.9	17.3	11.9	60.7	156.9	8.4	336.8	219.9	166.0	960.6
1991–92	2.0	5.7	14.3	0.5	31.7	25.6	20.1	23.5	67.5	168.6	6.3	372.0	300.7	236.7	1 175.3
1992–93	1.1	4.9	12.5	1.0	31.8	23.3	25.3	14.5	61.6	158.1	13.0	403.4	295.5	320.7	1 266.7
1993–94	1.2	4.4	12.9	0.9	29.6	22.8	28.1	11.4	42.6	123.8	8.7	284.0	219.3	269.9	959.6
1994–95	1.1	3.9	17.5	2.7	27.3	22.0	25.4	11.0	37.2	167.0	26.0	261.1	210.8	243.4	956.4
1995–96	0.8	6.0	14.0	2.6	25.5	22.3	28.7	7.3	54.2	127.5	23.9	231.5	202.9	261.0	908.2
1996–97	0.9	6.4	14.6	1.9	29.0	22.9	24.3	8.5	64.0	145.7	19.3	288.0	227.6	241.6	994.7
1997–98	0.4	4.9	13.4	0.9	30.3	20.3	29.9	4.2	52.7	145.4	9.7	329.1	220.1	324.2	1 085.5
1998–99	x	6.5	13.0	1.2	27.5	18.5	33.0	x	65.9	132.4	12.1	280.5	188.4	336.8	1 020.2
1999–00	x	7.3	13.1	3.2	26.9	21.7	27.4	x	62.0	110.6	26.8	228.0	184.0	232.4	847.0
2000–01	x	2.9	12.1	1.3	31.4	30.2	21.5	x	21.1	87.1	9.5	225.5	217.2	154.3	718.1
2001–02	x	2.1	10.3	0.5	38.2	26.8	21.5	x	13.3	64.1	2.8	236.6	166.3	133.5	620.0
2002–03	x	x	12.8	x	41.4	21.8	20.9	x	x	66.7	x	215.3	113.1	108.4	519.4
2003–04	x	2.4	9.2	0.3	44.6	17.9	25.3	x	8.1	31.4	1.0	152.8	61.4	86.4	342.3
2004–05	x	2.4	9.9	1.6	45.3	18.4	21.7	x	9.3	37.9	6.3	172.9	70.1	82.8	381.8
2005–06	x	1.2	7.0	x	41.7	28.6	21.0	x	4.1	24.2	x	144.3	98.9	72.5	346.0
2006–07	x	3.5	7.5	–	37.4	32.2	18.5	x	11.9	26.1	–	129.2	111.2	64.1	345.8
2007–08	x	1.6	11.8	0.7	44.0	23.9	15.9	x	4.9	36.2	2.1	134.5	73.2	48.7	306.1
2008–09	x	0.4	14.7	x	36.3	24.6	22.0	x	1.2	44.3	x	109.7	74.2	66.4	301.9
2009–10	1.8	x	11.0	x	35.0	20.5	31.1	5.8	x	36.3	x	115.3	67.5	102.4	329.2
2010–11	x	0.3	10.4	x	34.0	28.7	25.6	x	1.5	46.5	x	151.5	127.8	113.8	445.0
2011–12	x	x	9.2	x	35.2	32.5	22.4	x	x	37.8	x	145.4	134.3	92.6	412.9
2012–13	x	x	11.7	0.5	41.2	23.7	22.4	x	x	45.1	1.8	159.1	91.4	86.7	386.1
2013–14	–	0.2	10.6	x	37.8	24.7	26.6	–	0.8	37.1	x	132.5	86.8	93.4	350.6
2014–15	x	1.7	8.4	0.2	35.8	27.6	26.3	x	5.7	28.3	0.6	120.0	92.3	88.0	335.1
2015–16	x	1.1	8.2	0.6	37.8	29.7	22.4	x	3.9	29.3	2.2	135.4	106.3	80.0	357.7
2016–17	x	1.2	12.6	x	39.3	26.5	20.0	x	4.1	43.1	x	134.7	91.0	68.8	343.2
2017–18	–	x	15.2	x	40.1	23.9	19.4	–	x	44.7	x	118.1	70.4	57.2	294.2
2018–19	–	x	12.2	1.7	34.7	25.9	24.0	–	x	35.5	5.0	100.6	75.1	69.7	290.2
2019–20	–	1.7	11.7	1.5	34.0	25.2	25.9	–	4.3	30.3	3.8	88.2	65.4	67.2	259.3
2020–21	–	3.8	10.1	–	34.7	25.6	25.8	–	10.5	27.9	–	95.5	70.4	70.9	275.3
2021–22	–	4.2	14.4	–	34.8	21.7	24.9	–	9.2	31.7	–	76.4	47.6	54.7	219.6
2022–23	–	6.2	17.2	–	27.6	25.7	23.3	–	11.6	32.0	–	51.4	47.9	43.4	186.4

Table 56: Percentage of annual landings by month from CRA 8, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.2	0.3	2.2	4.0	8.4	16.5	25.0	18.9	9.3	8.9	5.0	1.2
1980–81	0.2	0.3	2.4	5.4	7.0	14.4	25.3	21.2	12.6	7.4	3.1	0.8
1981–82	0.1	0.3	1.9	2.7	10.7	22.2	26.0	18.6	9.1	5.2	2.1	1.1
1982–83	0.3	0.2	3.4	3.3	7.2	20.3	29.2	10.5	10.5	8.3	5.5	1.2
1983–84	0.4	0.2	2.1	3.3	5.3	13.2	18.8	22.4	15.5	11.7	5.8	1.4
1984–85	0.2	0.3	1.3	2.4	9.6	24.8	24.8	14.8	10.6	5.6	3.5	2.0
1985–86	0.3	0.7	3.1	3.6	18.5	21.2	21.1	14.3	8.7	4.2	2.9	1.5
1986–87	0.6	0.6	1.4	2.1	9.5	19.1	20.1	20.1	11.7	7.8	4.5	2.6
1987–88	0.4	0.2	0.7	2.2	8.9	19.7	20.2	19.0	12.7	8.0	6.0	1.9
1988–89	0.7	0.7	2.9	3.2	5.7	12.1	17.0	17.9	14.0	16.0	7.3	2.6
1989–90	0.6	0.3	0.8	1.6	11.2	22.9	13.9	19.2	12.4	9.1	6.0	2.0
1990–91	0.3	x	0.9	2.5	8.4	17.5	17.2	19.7	10.5	11.8	7.0	4.2
1991–92	0.3	0.4	2.9	3.5	7.0	14.7	18.2	16.1	14.7	13.0	7.2	2.1
1992–93	0.5	0.2	2.2	4.0	8.3	17.5	15.8	15.7	15.0	8.6	8.5	3.8
1993–94	0.1	0.2	1.0	4.5	19.2	27.4	19.7	12.1	7.1	3.4	3.0	2.4
1994–95	0.1	0.4	3.5	5.1	11.5	25.4	18.5	11.4	10.5	9.0	3.3	1.3
1995–96	0.2	0.2	3.0	4.2	12.0	20.5	19.9	18.7	8.2	7.2	4.3	1.9
1996–97	0.2	0.3	2.2	4.1	10.1	19.2	22.3	19.1	11.1	8.0	2.5	0.9
1997–98	0.2	0.3	3.0	4.7	8.1	21.1	21.7	15.8	11.1	9.6	3.6	0.9
1998–99	0.1	0.3	1.4	2.4	7.7	17.5	16.6	22.3	13.2	10.4	6.3	1.8
1999–00	x	0.1	0.6	2.1	15.9	24.9	22.5	14.1	8.7	7.8	2.1	1.1
2000–01	0.1	x	0.4	2.6	14.9	37.6	15.3	13.0	6.5	4.9	3.7	1.0
2001–02	x	0.6	1.2	5.8	14.3	33.2	21.5	14.5	3.6	3.8	1.1	0.2
2002–03	0.8	0.8	0.7	5.3	20.7	31.5	19.2	8.8	3.5	5.0	1.0	2.7
2003–04	0.5	0.8	1.4	10.5	29.7	39.0	10.6	2.1	0.3	3.3	1.1	0.7
2004–05	0.7	2.0	2.8	14.0	22.2	40.6	6.6	2.4	0.7	3.7	2.8	1.4
2005–06	2.6	3.0	7.6	13.5	23.6	37.1	5.7	0.7	0.5	4.2	0.6	0.9
2006–07	10.8	7.3	11.5	11.1	24.8	24.6	3.5	0.2	0.1	0.6	3.3	2.0
2007–08	12.5	8.5	12.4	11.6	17.2	20.9	3.6	1.0	0.4	8.2	3.2	0.3
2008–09	14.7	12.5	7.1	14.4	19.6	22.6	4.2	0.5	x	4.2	–	0.1
2009–10	13.6	9.8	9.5	6.4	9.3	23.6	8.8	2.1	1.6	7.1	7.5	0.6
2010–11	10.6	13.3	13.2	14.1	9.5	15.8	11.3	3.2	0.3	3.6	2.9	2.3
2011–12	10.6	6.9	11.7	7.5	11.9	19.8	9.8	6.1	1.0	9.4	4.1	1.3
2012–13	11.9	10.2	10.6	7.0	7.0	14.8	8.1	7.5	3.2	12.1	6.0	1.7
2013–14	12.1	9.5	7.8	4.2	7.6	25.5	4.6	4.9	0.3	14.2	5.7	3.4
2014–15	9.3	4.5	5.5	3.3	7.8	21.0	8.7	2.5	4.3	13.5	15.2	4.4
2015–16	11.0	5.9	5.7	2.2	4.2	15.6	10.2	7.0	2.1	11.2	13.6	11.3
2016–17	9.8	8.1	5.3	1.9	5.3	19.9	10.6	8.7	2.0	11.4	7.4	9.6
2017–18	12.4	15.6	7.7	7.0	5.7	18.0	11.5	4.2	1.3	4.1	10.4	2.1
2018–19	15.2	8.0	10.9	3.6	5.8	16.7	12.8	4.4	1.5	8.4	8.5	4.2
2019–20	16.0	15.1	12.4	2.0	5.2	21.3	7.0	8.7	0.3	9.1	0.3	2.5
2020–21	5.3	14.3	8.0	4.5	5.9	16.5	15.6	12.4	7.1	4.2	5.7	0.6
2021–22	20.6	13.7	8.7	6.1	3.2	15.0	8.8	4.5	1.1	12.0	5.4	1.0
2022–23	3.0	8.1	8.8	6.0	12.3	21.0	7.7	7.1	3.1	11.5	8.6	2.6

Table 57: Percentage of landings from CRA 8 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (4 instances representing less than 0.5% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “(L+LFL+LR+QL)” destination codes.

Month	922	923	924	925	926	927	928
Apr	–	–	–	–	1.5	1.0	0.5
May	–	–	0.7	–	2.8	2.7	2.0
Jun	–	x	0.9	–	4.0	2.2	1.7
Jul	–	x	0.9	–	1.7	1.9	1.3
Aug	–	0.3	1.9	–	5.4	2.8	2.0
Sep	–	0.9	5.1	–	5.6	5.4	4.0
Oct	–	0.3	1.9	–	1.5	2.4	1.7
Nov	–	0.6	1.6	–	2.2	1.9	0.8
Dec	–	0.5	0.9	–	0.4	0.7	0.7
Jan	–	0.3	1.4	–	3.5	3.7	2.5
Feb	–	0.5	1.0	–	2.9	2.0	2.2
Mar	–	x	x	–	0.6	0.5	1.4

Table 58: Arithmetic CPUE (kg/potlift) for CRA 8 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	922	923	924	925	926	927	928	CRA 8
1979–80	1.99	2.23	1.89	5.01	1.84	1.52	1.63	1.79
1980–81	1.32	1.90	2.00	7.95	1.96	1.33	1.37	1.72
1981–82	1.52	1.81	1.90	10.43	2.14	1.45	1.22	1.79
1982–83	1.10	1.82	1.73	4.44	1.99	1.22	1.07	1.57
1983–84	0.81	1.18	1.23	4.46	1.53	0.99	1.09	1.25
1984–85	0.86	1.25	1.33	3.67	1.30	1.19	0.96	1.22
1985–86	0.94	1.49	1.66	13.46	1.51	1.14	1.04	1.36
1986–87	1.10	1.17	1.69	2.11	1.23	0.79	0.91	1.15
1987–88	1.01	1.45	1.72	x	1.35	0.82	0.91	1.24
1988–89	0.54	1.07	1.07	1.58	1.04	0.70	0.69	0.92
1989–90	0.62	0.97	1.33	0.46	1.00	0.72	0.73	0.94
1990–91	0.59	1.02	1.29	1.22	0.96	0.76	0.60	0.91
1991–92	0.42	0.86	1.20	2.09	0.86	0.74	0.68	0.84
1992–93	0.50	0.84	1.11	0.87	0.70	0.53	0.59	0.69
1993–94	0.93	1.35	1.72	1.72	0.92	0.69	0.70	0.94
1994–95	0.42	0.85	1.30	1.32	0.91	0.75	0.66	0.88
1995–96	x	0.76	1.22	1.37	1.08	0.84	0.68	0.92
1996–97	x	0.66	1.04	1.16	0.94	0.79	0.68	0.84
1997–98	x	0.65	1.00	0.90	0.72	0.66	0.64	0.71
1998–99	–	0.78	0.73	0.73	0.89	0.78	0.58	0.73
1999–00	x	0.74	1.10	1.19	1.05	0.80	0.53	0.85
2000–01	–	1.13	1.27	2.18	1.23	0.75	0.66	0.99
2001–02	x	1.58	1.32	1.62	1.10	0.79	0.66	0.97
2002–03	x	x	1.28	x	1.26	0.88	0.75	1.08
2003–04	x	2.30	2.30	0.57	1.85	1.31	0.99	1.61
2004–05	x	2.38	2.34	1.81	1.71	1.44	1.15	1.62
2005–06	x	3.20	3.53	x	1.87	1.22	1.51	1.80
2006–07	x	1.57	4.12	–	2.32	1.63	2.13	2.18
2007–08	x	2.63	3.11	4.15	2.22	2.15	3.85	2.58
2008–09	x	3.38	3.32	x	2.64	2.97	5.22	3.41
2009–10	x	x	3.82	x	2.60	3.29	4.47	3.47
2010–11	x	x	3.35	x	2.51	1.90	3.21	2.61
2011–12	–	–	3.45	x	3.01	2.00	3.44	2.85
2012–13	–	x	3.34	2.69	2.90	2.77	4.05	3.19
2013–14	–	2.39	3.13	x	3.56	3.11	3.73	3.43
2014–15	x	4.48	3.83	x	3.43	3.04	3.85	3.50
2015–16	–	3.43	4.26	3.63	3.37	3.46	3.01	3.42
2016–17	–	x	4.49	–	4.06	3.40	3.04	3.68
2017–18	–	–	3.78	x	4.56	4.56	3.96	4.36
2018–19	–	x	3.70	6.08	5.23	4.85	4.10	4.60
2019–20	–	4.17	5.83	–	5.73	3.75	5.28	5.32
2020–21	–	6.83	6.67	–	6.59	5.28	6.64	6.26
2021–22	–	4.69	6.90	–	7.54	7.79	7.52	7.40
2022–23	–	6.56	8.72	–	10.39	9.63	8.53	9.37

Table 59: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 8 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.79	2.01	1.95	0.019
1980–81	1.72	1.78	1.69	0.020
1981–82	1.79	1.77	1.63	0.021
1982–83	1.57	1.48	1.40	0.020
1983–84	1.25	1.13	1.05	0.020
1984–85	1.22	1.09	1.02	0.020
1985–86	1.36	1.25	1.20	0.020
1986–87	1.15	1.11	1.07	0.020
1987–88	1.24	1.18	1.12	0.022
1988–89	0.92	0.90	0.84	0.025
1989–90	0.94	0.91	0.83	0.026
1990–91	0.91	0.88	0.80	0.026
1991–92	0.84	0.82	0.79	0.024
1992–93	0.68	0.69	0.67	0.024
1993–94	0.93	0.91	0.89	0.026
1994–95	0.87	0.82	0.79	0.026
1995–96	0.91	0.88	0.85	0.029
1996–97	0.84	0.83	0.80	0.029
1997–98	0.71	0.69	0.68	0.027
1998–99	0.73	0.70	0.69	0.030
1999–00	0.85	0.78	0.75	0.032
2000–01	0.99	0.94	0.90	0.034
2001–02	0.97	1.00	0.98	0.041
2002–03	1.08	1.12	1.15	0.038
2003–04	1.62	1.68	1.71	0.042
2004–05	1.62	1.82	1.88	0.041
2005–06	1.79	2.10	2.30	0.045
2006–07	2.18	2.45	2.78	0.045
2007–08	2.59	2.81	3.05	0.042
2008–09	3.43	3.57	4.09	0.044
2009–10	3.48	3.62	3.92	0.040
2010–11	2.63	2.87	3.22	0.041
2011–12	2.87	2.99	3.17	0.038
2012–13	3.20	3.09	3.30	0.037
2013–14	3.43	3.18	3.40	0.041
2014–15	3.50	3.12	3.24	0.041
2015–16	3.42	3.45	3.48	0.038
2016–17	3.68	3.65	3.81	0.041
2017–18	4.44	4.83	5.03	0.046
2018–19	4.61	4.97	5.16	0.042

Table 60: Number of vessels by statistical area from CRA 9, 1979–80 to 2022–23. Vessels catching less than 1 t in a year for the QMA were excluded. A ‘–’ indicates no fishing in the statistical area/fishing year cell and ‘0’ indicates that only vessels with <1 t fished in the cell. This table was generated from data prepared using the B4 algorithm scaled to “L” destination codes.

Fishing year	929	930	931	935	936	937	938	CRA 9
1979–80	4	6	6	3	6	3	–	23
1980–81	2	4	5	4	8	5	1	23
1981–82	1	3	7	3	4	4	–	20
1982–83	2	3	7	2	4	4	–	19
1983–84	1	3	7	3	6	6	–	22
1984–85	0	3	6	3	6	5	–	21
1985–86	0	2	7	7	6	6	–	20
1986–87	0	2	6	5	6	6	–	20
1987–88	0	2	5	5	6	5	–	19
1988–89	–	1	1	4	5	2	0	10
1989–90	1	4	4	7	3	1	–	18
1990–91	0	1	5	5	2	1	1	12
1991–92	–	1	5	6	0	1	0	13
1992–93	–	3	4	6	0	1	0	13
1993–94	0	3	3	6	0	0	–	12
1994–95	1	6	3	5	0	1	–	16
1995–96	1	4	1	6	1	1	–	14
1996–97	1	6	5	6	1	2	–	18
1997–98	1	6	5	7	4	1	–	19
1998–99	1	5	5	5	1	1	1	16
1999–00	1	7	6	4	0	1	–	17
2000–01	0	3	2	3	3	2	0	9
2001–02	0	2	2	4	2	3	0	11
2002–03	0	1	2	4	2	2	–	10
2003–04	–	1	3	3	2	1	–	9
2004–05	–	0	2	4	2	1	–	8
2005–06	0	1	2	4	1	1	–	8
2006–07	–	1	2	3	–	1	–	7
2007–08	–	1	2	3	1	1	–	7
2008–09	–	1	2	2	0	1	–	6
2009–10	–	1	2	2	1	1	–	6
2010–11	0	1	3	2	1	0	–	6
2011–12	–	1	2	2	0	–	–	5
2012–13	–	2	1	1	0	–	–	4
2013–14	–	1	2	1	0	–	–	4
2014–15	–	1	2	1	0	–	–	4
2015–16	–	1	3	1	2	–	–	7
2016–17	–	1	2	2	1	0	–	6
2017–18	0	1	3	2	0	1	–	5
2018–19	1	1	2	4	1	1	–	8
2019–20	2	1	3	3	2	1	–	8
2020–21	1	1	3	3	2	–	0	7
2021–22	–	1	3	3	2	0	–	6
2022–23	–	–	2	3	2	–	–	5

Table 61: Distribution and annual landings by statistical area from CRA 9, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)							Annual Catch (t)						
	929	930	931	935	936	937	938	929	930	931	935	936	937	938 CRA 9
1979–80	14.7	14.7	28.8	13.1	13.4	15.3	–	13.1	13.1	25.6	11.7	11.9	13.7	– 89.0
1980–81	3.3	10.9	16.9	14.4	29.2	25.0	x	3.3	10.5	16.5	14.0	28.3	24.3	x 97.1
1981–82	4.3	8.9	32.5	10.2	20.0	24.1	–	3.1	6.4	23.4	7.4	14.4	17.3	– 72.0
1982–83	7.2	9.1	42.3	16.0	8.5	17.1	–	4.2	5.4	25.0	9.5	5.0	10.1	– 59.1
1983–84	x	6.3	50.1	8.2	12.6	20.7	–	x	4.4	35.4	5.8	8.9	14.6	– 70.6
1984–85	x	12.2	42.1	16.5	12.4	16.1	–	x	9.8	34.0	13.3	10.0	13.0	– 80.8
1985–86	x	7.0	38.6	18.8	16.3	19.2	–	x	5.6	30.6	14.9	12.9	15.2	– 79.2
1986–87	x	6.3	34.6	23.2	23.4	11.5	–	x	5.9	32.2	21.6	21.8	10.8	– 93.3
1987–88	x	x	33.5	36.3	16.1	11.2	–	x	x	31.0	33.7	15.0	10.4	– 92.7
1988–89	–	5.5	x	46.9	19.5	8.0	x	–	1.4	x	12.2	5.1	2.1	x 26.0
1989–90	2.0	19.4	24.3	43.3	6.5	4.4	–	0.5	5.2	6.5	11.6	1.7	1.2	– 26.8
1990–91	x	x	40.4	46.5	5.3	x	2.1	x	x	18.3	21.1	2.4	x	1.0 45.3
1991–92	–	x	49.8	40.2	x	x	x	–	x	23.7	19.1	x	x	x 47.5
1992–93	–	12.0	41.8	40.5	x	x	x	–	5.5	19.1	18.5	x	x	x 45.7
1993–94	x	23.4	25.8	47.7	x	x	–	x	10.7	11.7	21.7	x	x	– 45.5
1994–95	x	32.1	13.0	46.3	x	x	–	x	14.5	5.9	20.9	x	x	– 45.2
1995–96	5.5	27.4	x	44.1	x	x	–	2.5	12.5	x	20.0	x	x	– 45.4
1996–97	x	19.0	22.8	45.5	x	x	–	x	8.9	10.7	21.3	x	x	– 46.9
1997–98	5.7	16.5	19.7	45.4	9.9	x	–	2.7	7.7	9.2	21.2	4.6	x	– 46.7
1998–99	4.7	31.1	19.2	35.2	x	x	x	2.2	14.6	9.0	16.5	x	x	x 46.9
1999–00	x	34.8	28.4	28.7	x	x	–	x	16.3	13.3	13.5	x	x	– 47.0
2000–01	1.2	7.5	x	35.3	10.3	x	x	0.6	3.5	x	16.6	4.9	x	x 47.0
2001–02	x	10.0	24.0	41.6	x	11.5	x	x	4.7	11.2	19.5	x	5.4	x 46.8
2002–03	x	x	x	44.4	x	x	–	x	x	x	20.9	x	x	– 47.0
2003–04	–	x	37.2	31.3	x	x	–	–	x	17.1	14.4	x	x	– 45.9
2004–05	–	x	x	54.7	x	x	–	–	x	x	25.7	x	x	– 47.0
2005–06	x	x	x	56.2	x	5.1	–	x	x	x	26.2	x	2.4	– 46.6
2006–07	–	x	28.8	59.1	–	x	–	–	x	13.5	27.8	–	x	– 47.0
2007–08	–	x	x	63.9	x	x	–	–	x	x	30.1	x	x	– 47.0
2008–09	–	x	x	39.7	x	x	–	–	x	x	18.7	x	x	– 47.0
2009–10	–	x	x	x	x	x	–	–	x	x	x	x	x	– 46.6
2010–11	x	x	45.3	38.0	x	x	–	x	x	21.3	17.8	x	x	– 47.0
2011–12	–	x	x	42.0	x	–	–	–	x	x	19.7	x	–	– 47.0
2012–13	–	x	x	34.0	x	–	–	–	x	x	16.0	x	–	– 47.0
2013–14	–	x	x	x	x	–	–	–	x	x	x	x	–	– 47.1
2014–15	–	x	x	x	x	–	–	–	x	x	x	x	–	– 60.8
2015–16	–	8.3	42.2	29.8	x	–	–	–	5.0	25.6	18.1	x	–	– 60.6
2016–17	–	x	x	47.0	x	x	–	–	x	x	28.6	x	x	– 60.8
2017–18	x	x	40.5	x	x	x	–	x	x	24.6	x	x	x	– 60.7
2018–19	x	x	x	41.7	x	x	–	x	x	x	25.4	x	x	– 60.8
2019–20	11.8	x	34.7	41.1	x	x	–	6.9	x	20.2	24.0	x	x	– 58.4
2020–21	x	x	32.1	47.0	14.8	–	x	x	x	20.2	29.7	9.4	–	x 63.1
2021–22	–	x	36.0	47.4	x	x	–	–	x	21.9	28.8	x	x	– 60.8
2022–23	–	–	x	50.9	x	–	–	–	–	x	30.9	x	–	– 60.8

Table 62: Distribution and annual potlifts by statistical area from CRA 9, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels and a ‘–’ indicates no fishing in the year/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Distribution (%)							Annual Potlifts (000s)							CRA 9
	929	930	931	935	936	937	938	929	930	931	935	936	937	938	
1979–80	13.5	15.8	12.8	23.0	21.8	13.1	–	10.8	12.7	10.2	18.5	17.5	10.5	–	80.2
1980–81	5.9	11.8	8.5	20.1	37.7	15.8	x	5.0	10.1	7.2	17.1	32.2	13.5	x	85.4
1981–82	5.8	10.5	13.6	20.3	31.3	18.4	–	4.3	7.7	10.0	14.9	22.9	13.5	–	73.3
1982–83	7.5	16.2	23.0	19.9	15.8	17.6	–	5.2	11.1	15.8	13.6	10.9	12.1	–	68.7
1983–84	x	8.4	26.2	12.3	27.4	22.1	–	x	6.3	19.6	9.2	20.5	16.5	–	74.7
1984–85	x	17.6	20.9	19.5	21.6	18.7	–	x	16.1	19.1	17.8	19.7	17.0	–	91.2
1985–86	x	9.9	26.8	20.8	22.5	19.8	–	x	10.5	28.6	22.2	24.0	21.1	–	106.8
1986–87	x	8.6	26.2	22.4	25.8	15.9	–	x	9.2	28.2	24.1	27.7	17.1	–	107.6
1987–88	x	x	31.8	25.6	22.4	15.5	–	x	x	34.8	28.1	24.5	17.0	–	109.6
1988–89	–	10.7	x	29.2	30.1	9.8	x	–	3.5	x	9.4	9.7	3.2	x	32.3
1989–90	3.7	26.5	14.1	34.9	12.9	7.8	–	1.2	8.5	4.5	11.2	4.1	2.5	–	32.1
1990–91	x	x	28.9	52.7	4.6	x	3.0	x	x	13.4	24.4	2.1	x	1.4	46.2
1991–92	–	x	34.3	46.3	x	x	x	–	x	17.5	23.6	x	x	x	51.0
1992–93	–	17.5	25.8	45.7	x	x	x	–	8.9	13.1	23.3	x	x	x	50.9
1993–94	x	24.9	23.0	48.5	x	x	–	x	8.7	8.0	16.9	x	x	–	34.9
1994–95	x	45.1	9.2	34.7	x	x	–	x	21.7	4.4	16.7	x	x	–	48.1
1995–96	11.2	39.1	x	33.4	x	x	–	5.0	17.6	x	15.0	x	x	–	45.0
1996–97	x	26.9	25.9	35.7	x	x	–	x	12.9	12.4	17.1	x	x	–	47.9
1997–98	5.4	23.6	25.7	35.1	7.4	x	–	3.2	14.0	15.2	20.8	4.4	x	–	59.4
1998–99	6.9	38.8	14.5	33.2	x	x	x	3.5	19.7	7.4	16.9	x	x	x	50.9
1999–00	x	41.2	25.0	24.9	x	x	–	x	22.2	13.5	13.4	x	x	–	53.8
2000–01	1.6	9.9	x	43.9	20.2	x	x	0.8	5.0	x	22.3	10.2	x	x	50.8
2001–02	x	15.1	10.9	51.9	x	10.3	x	x	8.6	6.2	29.6	x	5.9	x	57.0
2002–03	x	x	x	40.8	x	x	–	x	x	x	17.2	x	x	–	42.2
2003–04	–	x	33.2	22.6	x	x	–	–	x	9.5	6.5	x	x	–	28.7
2004–05	–	x	x	50.8	x	x	–	–	x	x	11.2	x	x	–	22.0
2005–06	x	x	x	58.1	x	7.1	–	x	x	x	12.2	x	1.5	–	21.0
2006–07	–	x	19.0	67.9	–	x	–	–	x	4.6	16.4	–	x	–	24.2
2007–08	–	x	x	67.3	x	x	–	–	x	x	17.1	x	x	–	25.4
2008–09	–	x	x	28.6	x	x	–	–	x	x	7.7	x	x	–	26.9
2009–10	–	x	x	x	x	x	–	–	x	x	x	x	x	–	28.4
2010–11	x	x	33.0	45.5	x	x	–	x	x	9.7	13.4	x	x	–	29.4
2011–12	–	x	x	45.5	x	–	–	–	x	x	10.1	x	–	–	22.2
2012–13	–	x	x	12.3	x	–	–	–	x	x	2.5	x	–	–	20.5
2013–14	–	x	x	x	x	–	–	–	x	x	x	x	–	–	19.0
2014–15	–	x	x	x	x	–	–	–	x	x	x	x	–	–	30.7
2015–16	–	10.8	51.4	19.8	x	–	–	–	3.4	16.3	6.3	x	–	–	31.7
2016–17	–	x	x	43.1	x	x	–	–	x	x	15.6	x	x	–	36.2
2017–18	x	x	33.5	x	x	x	–	x	x	11.8	x	x	x	–	35.4
2018–19	x	x	x	49.9	x	x	–	x	x	x	19.3	x	x	–	38.6
2019–20	5.7	x	29.8	52.6	x	x	–	1.9	x	10.0	17.7	x	x	–	33.6
2020–21	x	x	24.2	50.5	17.2	–	x	x	x	7.9	16.5	5.6	–	x	32.7
2021–22	–	x	35.9	44.6	x	x	–	–	x	9.3	11.6	x	x	–	25.9
2022–23	–	–	x	45.5	x	–	–	–	–	x	11.7	x	–	–	25.7

Table 63: Percentage of annual landings by month from CRA 9, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the month/year cell. This table was generated from data prepared using the B4 algorithm scaled to “L” destination code. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	3.4	x	0.6	3.6	2.9	2.0	15.0	26.0	11.6	17.5	11.0	6.3
1980–81	0.8	0.1	0.2	2.7	2.7	2.4	13.4	5.7	21.1	32.0	15	3.8
1981–82	0.6	0.2	1.4	2.4	3.0	1.2	9.0	19.9	20.7	19.7	14.7	7.3
1982–83	4.0	x	2.4	4.6	8.1	3.1	8.2	8.0	16.0	14.8	20.8	9.3
1983–84	2.6	x	x	11.2	5.2	0.9	5.5	11.6	11.6	21.1	18.4	8.2
1984–85	0.8	2.3	x	5.1	5.3	8.3	7.9	16.4	13.4	15.6	14.4	8.2
1985–86	4.4	1.6	0.3	2.9	6.5	10.4	10.4	14.6	17.3	12.8	11.6	7.3
1986–87	2.0	0.6	0.6	4.8	4.3	5.1	9.5	16.2	20.8	15.3	10.6	10.2
1987–88	2.7	x	x	3.0	5.9	4.8	15.9	18.0	13.6	15.2	11.4	7.8
1988–89	4.4	–	x	4.9	3.0	8.3	3.7	13.6	18.6	21.3	12.9	8.8
1989–90	1.3	x	x	3.9	7.5	16.0	8.0	10.6	12.5	15.8	18.3	6
1990–91	0.4	–	–	2.2	5.1	11.9	21.4	12.2	6.4	13.1	11.1	16.2
1991–92	1.1	x	x	17.1	6.1	8.9	9.8	17.4	12.5	10.1	7.4	7.4
1992–93	0.5	x	11.5	11.8	3.4	13.8	12.1	11.3	10.4	8.6	11.8	4.2
1993–94	1.0	x	1.0	24.3	9.3	12.7	16.7	6.8	11.0	5.9	8.4	2.6
1994–95	x	x	4.4	11.9	12.0	13.6	22.2	8.8	13.6	9.6	2.1	1.4
1995–96	x	x	2.3	8.5	16.5	24.3	23.5	12.8	5.0	3.6	x	x
1996–97	x	0.5	4.6	16.2	17.2	22.3	17.0	8.1	7.3	4.6	0.7	1.1
1997–98	x	x	12.5	21.0	15.0	17.1	12.0	7.3	7.0	3.6	3.9	x
1998–99	1.1	1.2	2.6	8.2	12.7	17.9	12.6	18.4	10.8	8.3	3.7	2.6
1999–00	0.8	1.6	6.4	9.4	15.9	27.3	18.2	12.5	5.7	2.2	x	x
2000–01	3.2	2.3	6.0	20.4	19.5	12.6	13.9	12.5	6.8	x	x	x
2001–02	4.2	2.7	8.8	25.3	13.5	23.3	13.9	3.8	2.8	x	x	x
2002–03	11.3	5.0	1.9	18.0	14.1	14.2	6.3	8.1	8.1	3.2	8.2	x
2003–04	8.1	0.7	x	16.4	29.3	9.2	8.8	5.9	9.7	9.1	–	x
2004–05	x	x	3.6	34.6	27.6	16.3	13.3	–	1.1	x	x	x
2005–06	x	2.5	12.0	20.6	28.8	29.5	2.6	x	0.8	x	x	x
2006–07	x	7.8	21.4	30.4	17.5	16.3	–	x	1.8	–	–	–
2007–08	x	x	16.1	39.2	23.5	12.2	x	x	x	x	–	x
2008–09	x	2.9	7.4	11.5	22.9	34.6	12.9	x	1.7	x	x	x
2009–10	4.9	3.1	8.2	11.7	5.3	29.0	25.3	3.2	5.4	x	x	x
2010–11	5.5	3.2	9.0	28.8	11.8	11.5	23.4	–	x	x	x	–
2011–12	x	x	x	5.2	11.8	30.6	30.0	x	x	x	–	x
2012–13	x	x	4.8	13.8	6.6	35.9	14.0	x	x	–	x	x
2013–14	x	x	x	16.6	23.9	29.0	3.2	8.0	x	–	–	x
2014–15	5.1	4.2	9.2	24.2	26.1	13.4	12.0	x	x	–	–	–
2015–16	x	x	4.2	28.6	21.8	9.4	11.5	13.9	2.4	–	x	–
2016–17	8.8	4.3	0.7	11.7	23.4	18.4	19.9	6.0	6.3	–	–	x
2017–18	2.3	x	9.9	21.0	23.4	25.6	5.8	x	x	–	x	x
2018–19	6.1	x	x	12.2	10.1	22.6	17.8	7.2	x	x	x	x
2019–20	x	4.9	11.6	14.2	5.5	15.4	19.4	18.2	x	x	–	x
2020–21	x	x	x	21.0	17.4	20.9	21.7	4.5	x	x	x	2.9
2021–22	x	x	x	14.8	24.8	17.7	19.9	9.2	x	–	x	x
2022–23	–	–	x	10.4	28.3	32.0	20.9	x	–	–	–	x

Table 64: Percentage of landings from CRA 9 by statistical area and month for 2022–23. An ‘x’ indicates fewer than 3 vessels in the month/statistical area cell (12 instances representing 65% of the annual catch). A ‘–’ indicates no fishing in the month/statistical area cell. This table was generated from data prepared using the B4 algorithm scaled to the “(L+LFL+LR+QL)” destination codes.

Month	929	930	931	935	936	937	938
Apr	–	–	–	–	–	–	–
May	–	–	–	–	–	–	–
Jun	–	–	x	–	–	–	–
Jul	–	–	x	x	–	–	–
Aug	–	–	x	13.8	x	–	–
Sep	–	–	x	21.3	x	–	–
Oct	–	–	x	x	x	–	–
Nov	–	–	x	–	–	–	–
Dec	–	–	–	–	–	–	–
Jan	–	–	–	–	–	–	–
Feb	–	–	–	–	–	–	–
Mar	–	–	x	–	–	–	–

Table 65: Arithmetic CPUE (kg/potlift) for CRA 9 by fishing year and statistical area, 1979–80 to 2022–23. An ‘x’ indicates fewer than 3 vessels, and a ‘–’ indicates no fishing, in the year/statistical area cell. This table was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 (grey shaded) based on mixed source CELR/ERS data. Estimates beginning with 2019–20 may not be comparable to earlier estimates based on CELR or FSU data.

Fishing year	929	930	931	935	936	937	938	CRA 9
1979–80	1.21	1.03	2.51	0.63	0.68	1.30	–	1.11
1980–81	0.65	1.05	2.28	0.82	0.88	1.80	x	1.14
1981–82	0.73	0.83	2.35	0.49	0.63	1.28	–	0.98
1982–83	0.82	0.48	1.58	0.69	0.46	0.83	–	0.86
1983–84	x	0.70	1.81	0.63	0.44	0.89	–	0.95
1984–85	x	0.61	1.78	0.75	0.51	0.77	–	0.89
1985–86	x	0.53	1.07	0.67	0.54	0.72	–	0.74
1986–87	x	0.64	1.14	0.90	0.79	0.63	–	0.87
1987–88	x	x	0.89	1.20	0.61	0.61	–	0.85
1988–89	–	0.42	x	1.29	0.52	0.66	x	0.81
1989–90	–	x	–	1.15	0.45	x	–	0.88
1990–91	–	x	1.32	0.85	x	–	–	0.97
1991–92	–	x	1.43	0.84	–	x	–	0.94
1992–93	–	x	1.47	0.77	–	x	–	1.00
1993–94	–	x	1.49	1.47	–	–	–	1.37
1994–95	–	–	x	x	–	x	–	1.26
1995–96	–	–	x	1.33	x	x	–	1.40
1996–97	–	x	x	1.26	x	x	–	1.13
1997–98	–	0.38	x	1.03	1.01	x	–	0.91
1998–99	–	x	x	0.85	x	x	x	1.08
1999–00	–	x	1.69	0.73	–	x	–	1.01
2000–01	–	0.84	x	0.74	0.45	x	–	0.95
2001–02	–	x	x	0.66	x	0.99	–	0.85
2002–03	–	–	x	1.23	x	x	–	1.25
2003–04	–	–	x	2.01	x	x	–	1.63
2004–05	–	x	x	2.16	x	x	–	2.08
2005–06	–	–	x	2.16	x	x	–	2.30
2006–07	–	–	x	1.71	–	x	–	1.99
2007–08	–	–	x	1.77	x	x	–	1.87
2008–09	–	x	x	2.12	x	x	–	1.74
2009–10	–	x	x	x	x	x	–	2.07
2010–11	–	x	2.95	2.53	x	–	–	2.49
2011–12	–	x	x	x	–	–	–	2.19
2012–13	–	x	–	x	x	–	–	2.49
2013–14	–	x	x	x	x	–	–	2.94
2014–15	–	–	x	x	x	–	–	2.86
2015–16	–	x	x	x	x	–	–	2.38
2016–17	–	x	x	x	x	–	–	1.92
2017–18	–	x	x	x	x	x	–	1.82
2018–19	–	x	x	1.53	x	x	–	1.79
2019–20	–	–	x	1.22	x	x	–	1.55
2020–21	–	x	x	1.85	1.75	–	–	2.03
2021–22	–	–	x	2.54	x	–	–	2.54
2022–23	–	–	x	2.72	x	–	–	2.80

Table 66: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 9 (kg/potlift). This table was generated from data prepared using the F2 algorithm scaled to combined “LFX” destination codes after excluding vessels with <1.0 t combined landings (see Section 2.3); ‘-’: no data. This table has not been updated after 2018–19.

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.11	1.11	1.26	0.047
1980–81	1.14	1.16	1.36	0.046
1981–82	0.98	0.95	1.04	0.053
1982–83	0.86	0.83	0.87	0.052
1983–84	0.94	0.90	0.89	0.053
1984–85	0.89	0.84	0.85	0.051
1985–86	0.74	0.73	0.75	0.052
1986–87	0.87	0.86	0.87	0.053
1987–88	0.85	0.90	0.89	0.056
1988–89	0.81	0.79	0.88	0.068
1989–90	–	–	–	–
1990–91	0.97	0.93	0.83	0.078
1991–92	0.94	1.00	0.87	0.076
1992–93	0.98	1.10	0.94	0.080
1993–94	1.40	1.37	1.18	0.101
1994–95	1.25	1.23	0.95	0.125
1995–96	1.35	1.40	1.36	0.102
1996–97	1.12	1.07	1.16	0.093
1997–98	0.91	0.95	1.08	0.082
1998–99	1.08	1.37	1.42	0.091
1999–00	1.01	1.14	0.96	0.106
2000–01	0.95	1.21	1.20	0.086
2001–02	0.85	1.16	1.14	0.087
2002–03	1.25	1.55	1.49	0.083
2003–04	1.51	1.91	1.73	0.106
2004–05	2.08	2.19	2.15	0.106
2005–06	2.30	2.27	2.10	0.116
2006–07	1.99	2.33	2.19	0.128
2007–08	1.87	1.97	1.77	0.121
2008–09	1.75	1.32	1.32	0.102
2009–10	2.07	1.63	1.58	0.101
2010–11	2.49	2.29	2.31	0.110
2011–12	2.19	1.89	1.99	0.135
2012–13	2.49	2.13	2.96	0.139
2013–14	2.94	2.02	2.21	0.132
2014–15	2.86	2.70	2.32	0.143
2015–16	2.38	1.81	1.97	0.135
2016–17	1.92	1.81	1.95	0.112
2017–18	1.82	1.97	2.16	0.114
2018–19	1.80	1.84	1.96	0.119

8. FIGURES

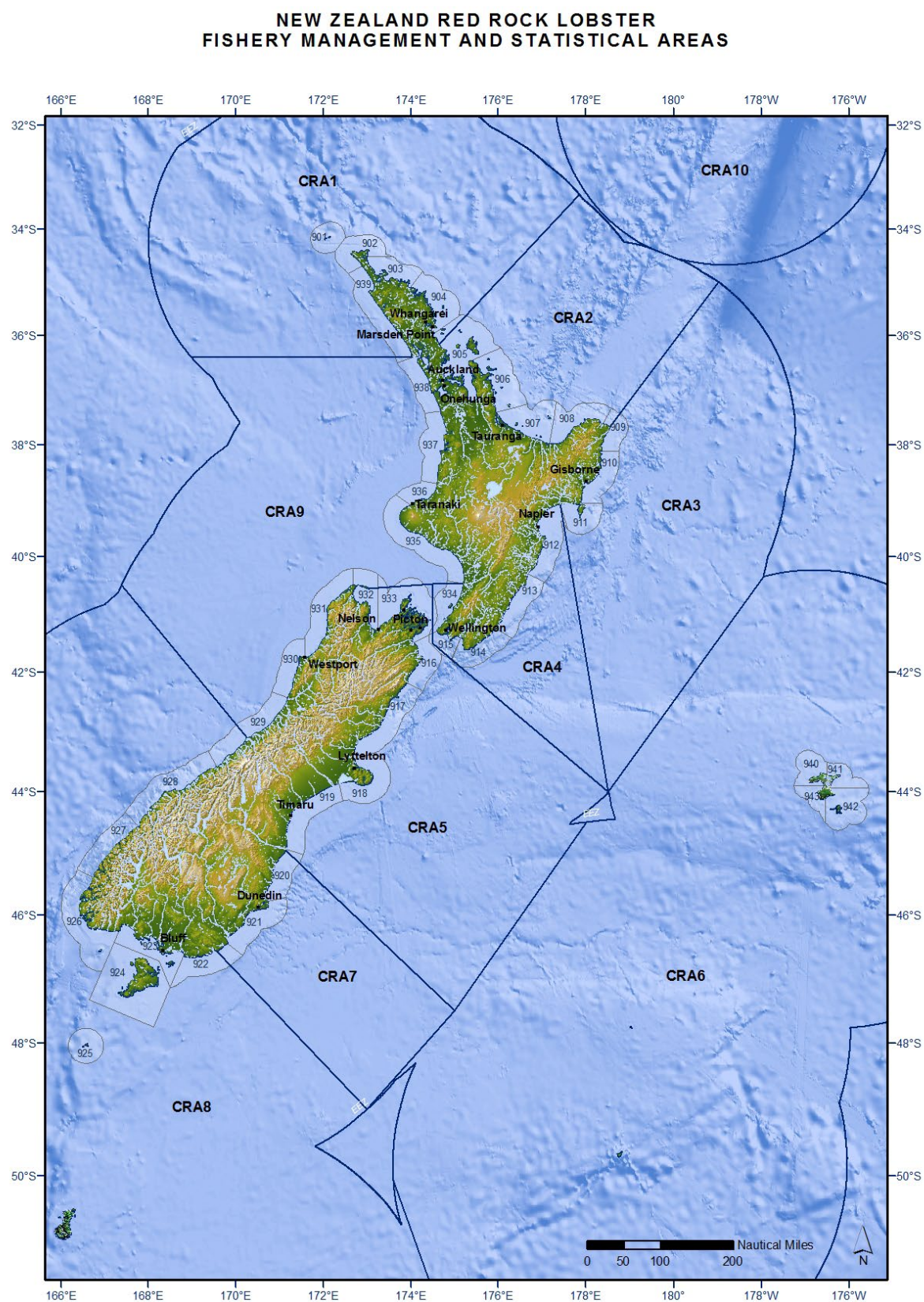


Figure 1: Map of New Zealand red rock lobster (*Jasus edwardsii*) statistical areas and Quota Management Areas.

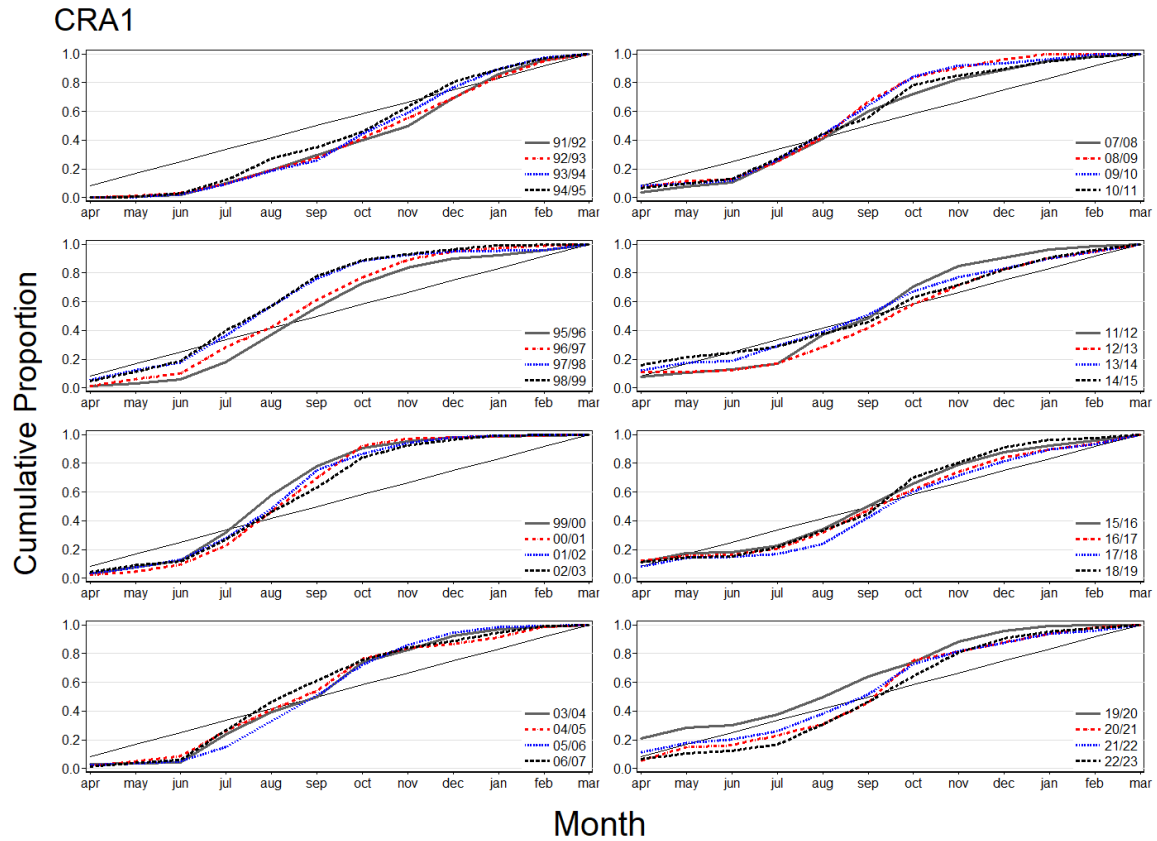


Figure 2: Cumulative landing proportions by fishing month for CRA 1, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

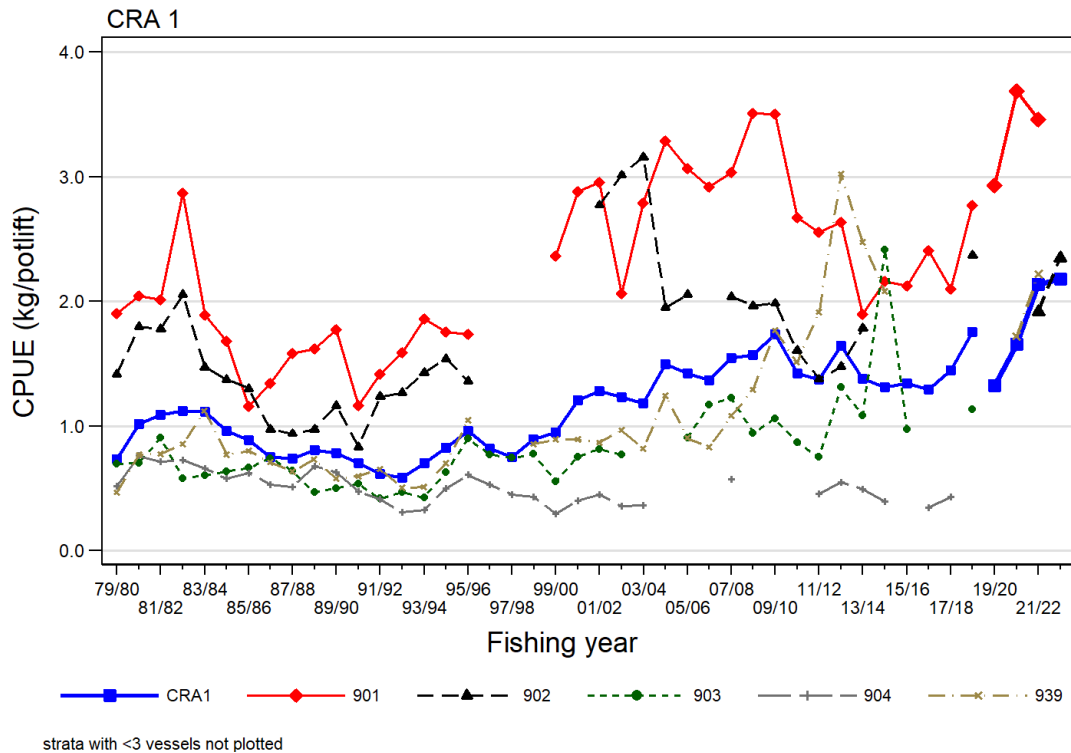


Figure 3: Arithmetic CPUE (Eq. 1) for CRA 1 by fishing year and statistical area from 1979–80 to 2022–23. This figure was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) are based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

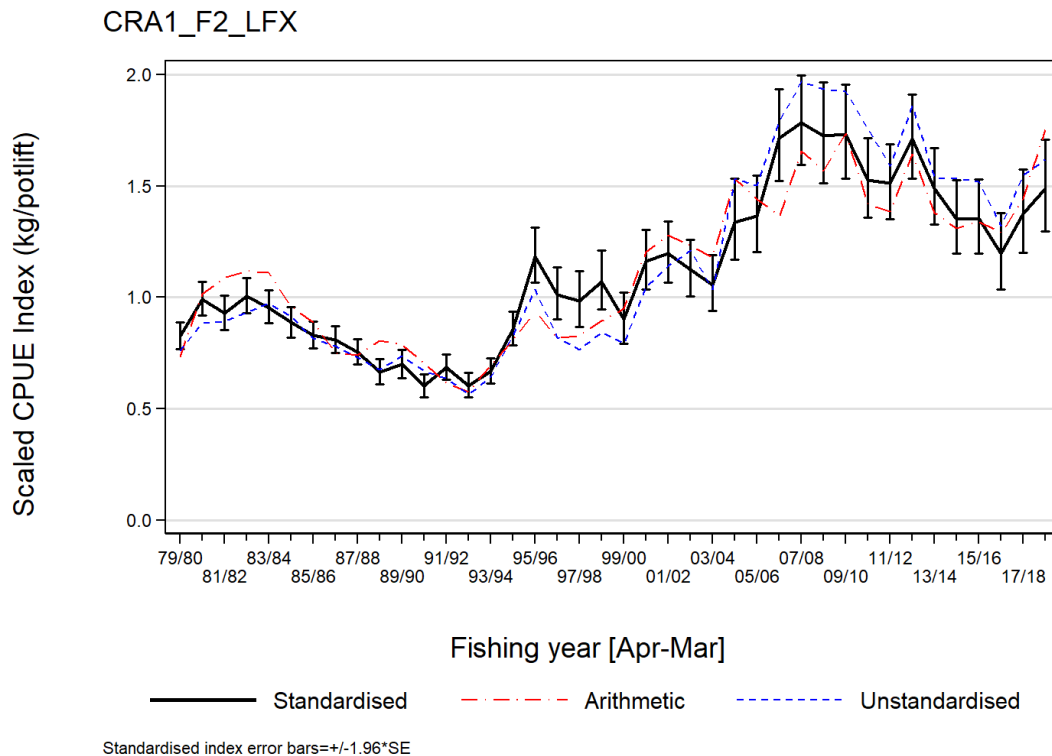


Figure 4: Annual CPUE indices for CRA 1: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 1.08 kg/potlift. This figure was generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

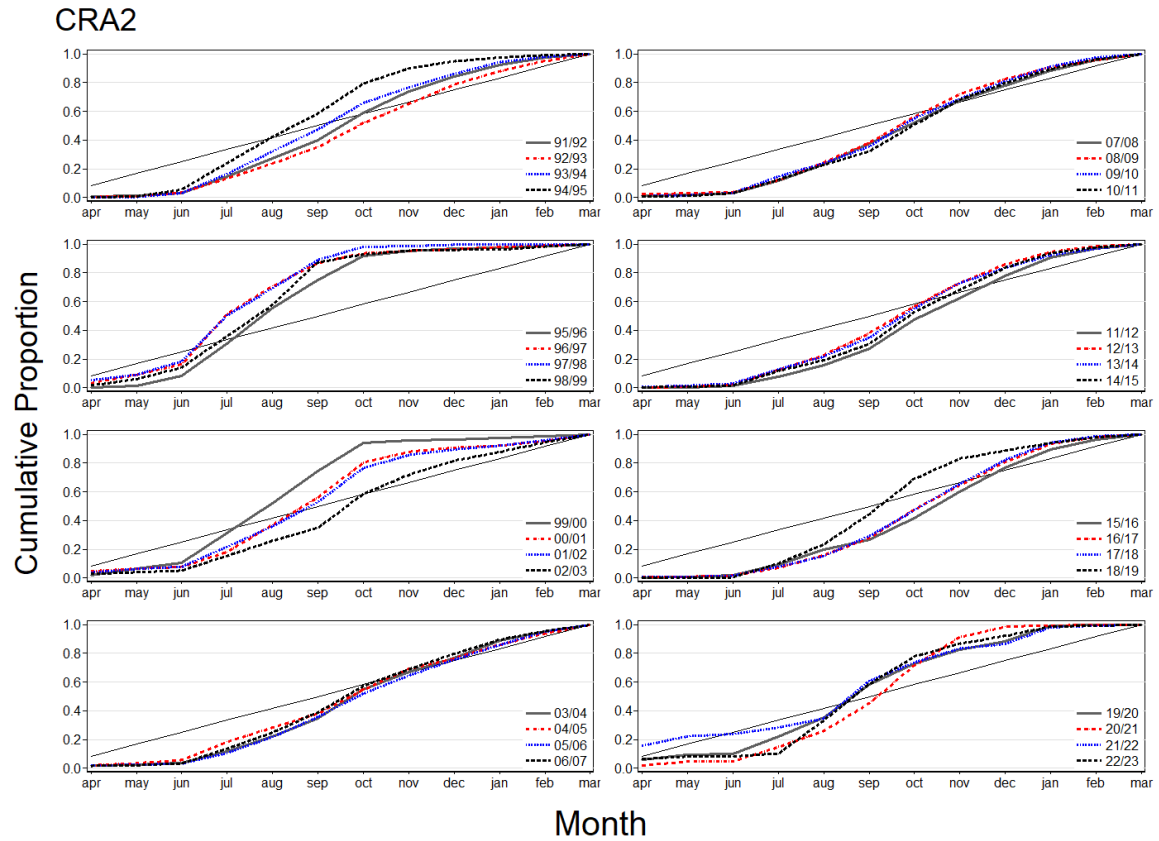


Figure 5: Cumulative landing proportions by fishing month for CRA 2, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure was generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

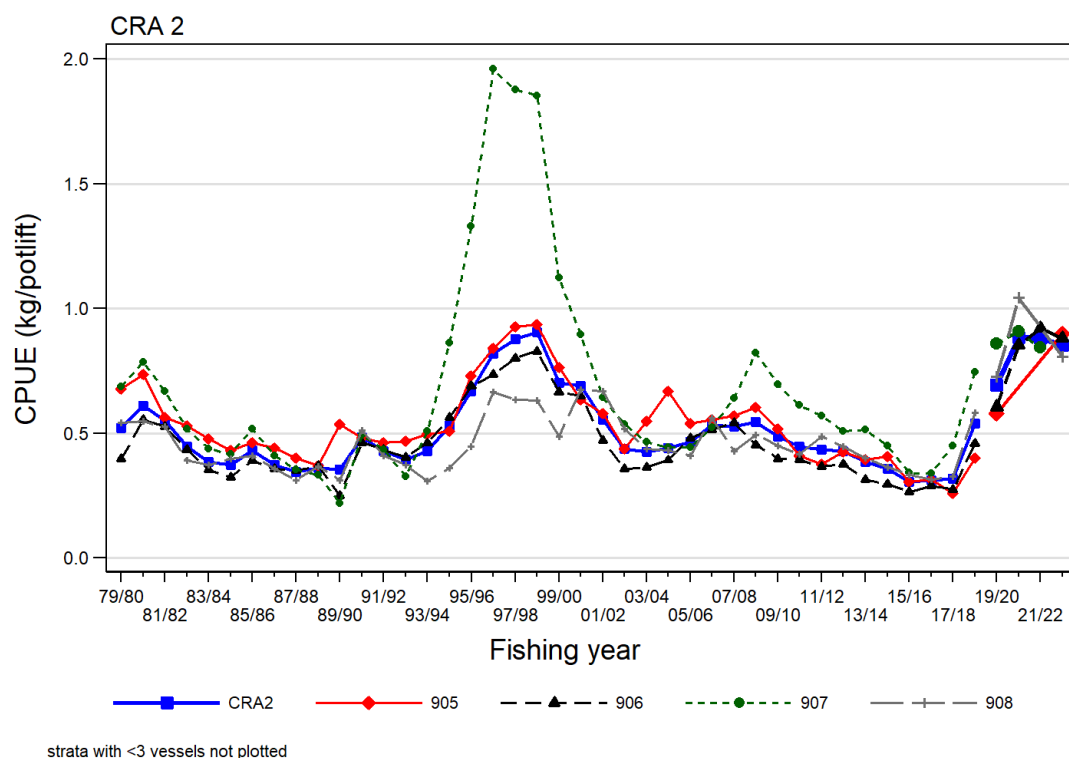


Figure 6: Arithmetic CPUE (Eq. 1) for CRA 2 by fishing year and statistical area from 1979–80 to 2022–23. This figure was generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

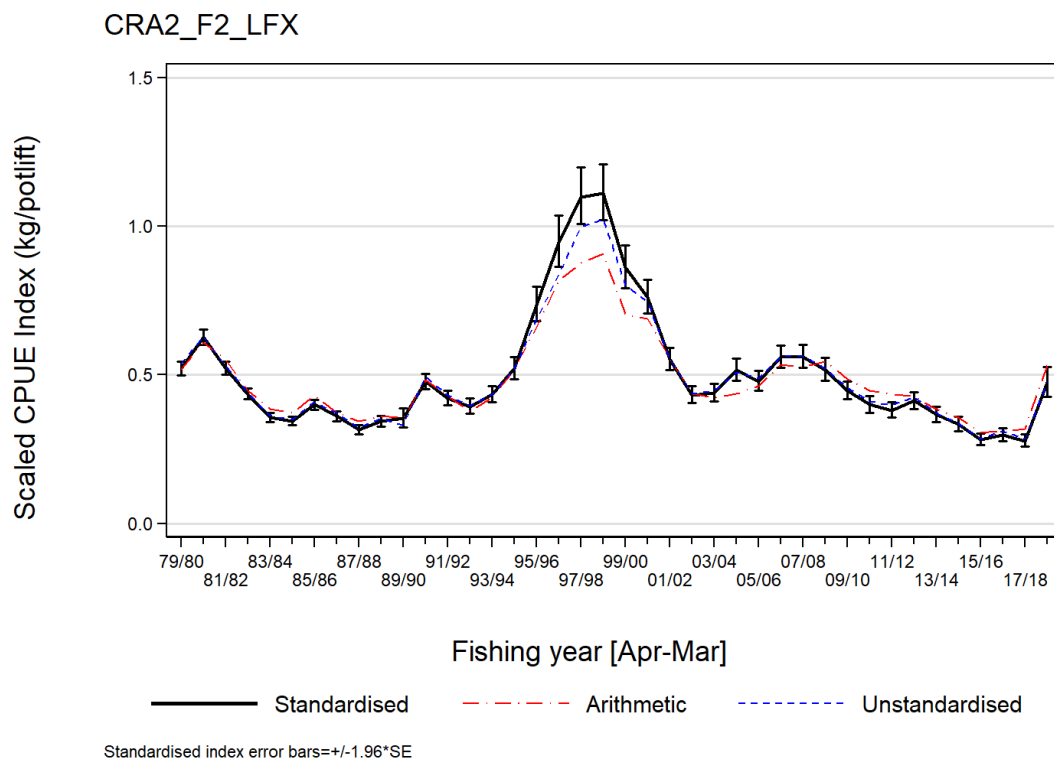


Figure 7: Annual CPUE indices for CRA 2: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 0.47 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

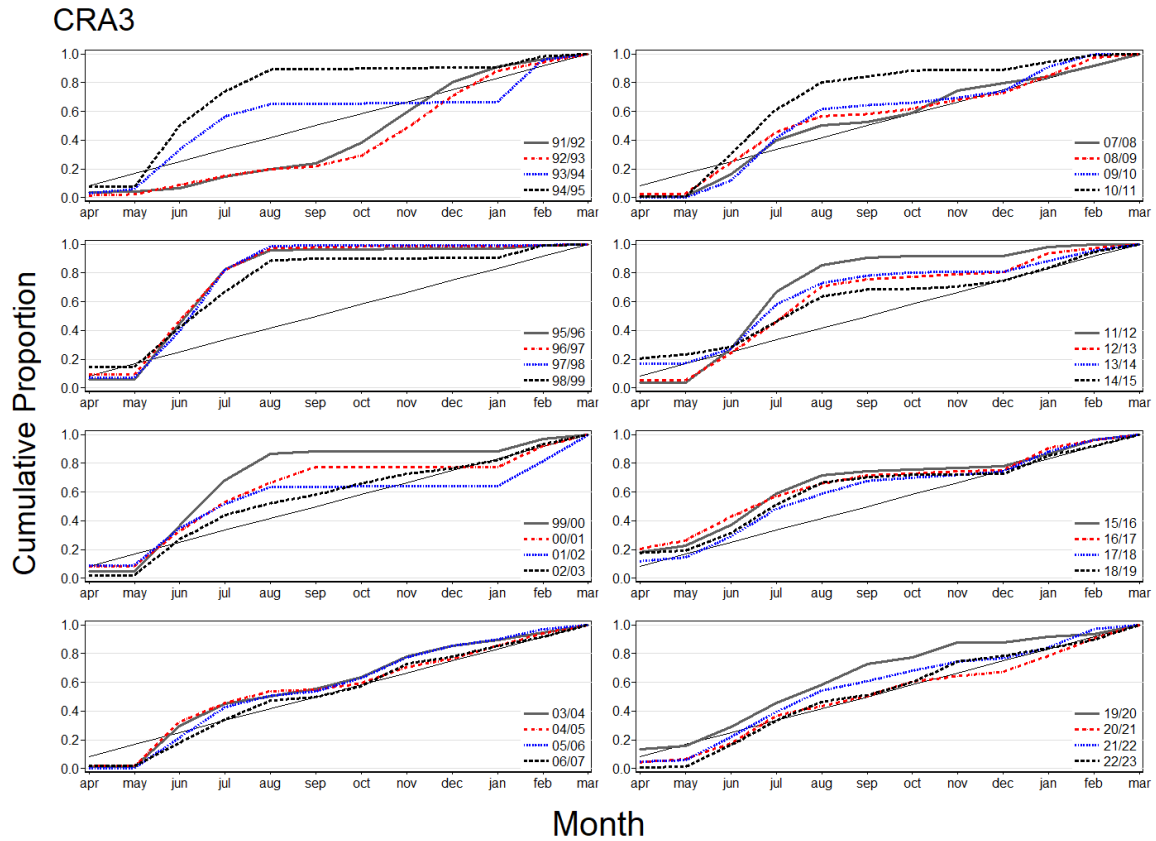


Figure 8: Cumulative landing proportions by fishing month for CRA 3, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

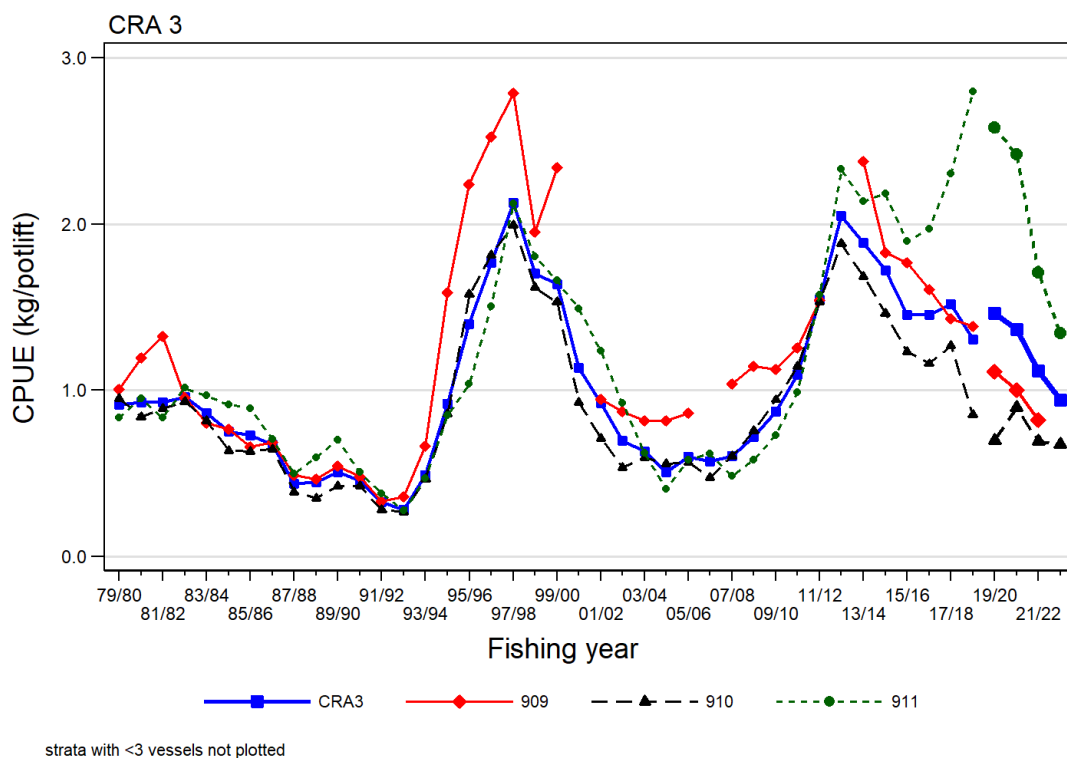


Figure 9: Arithmetic CPUE (Eq. 1) for CRA 3 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

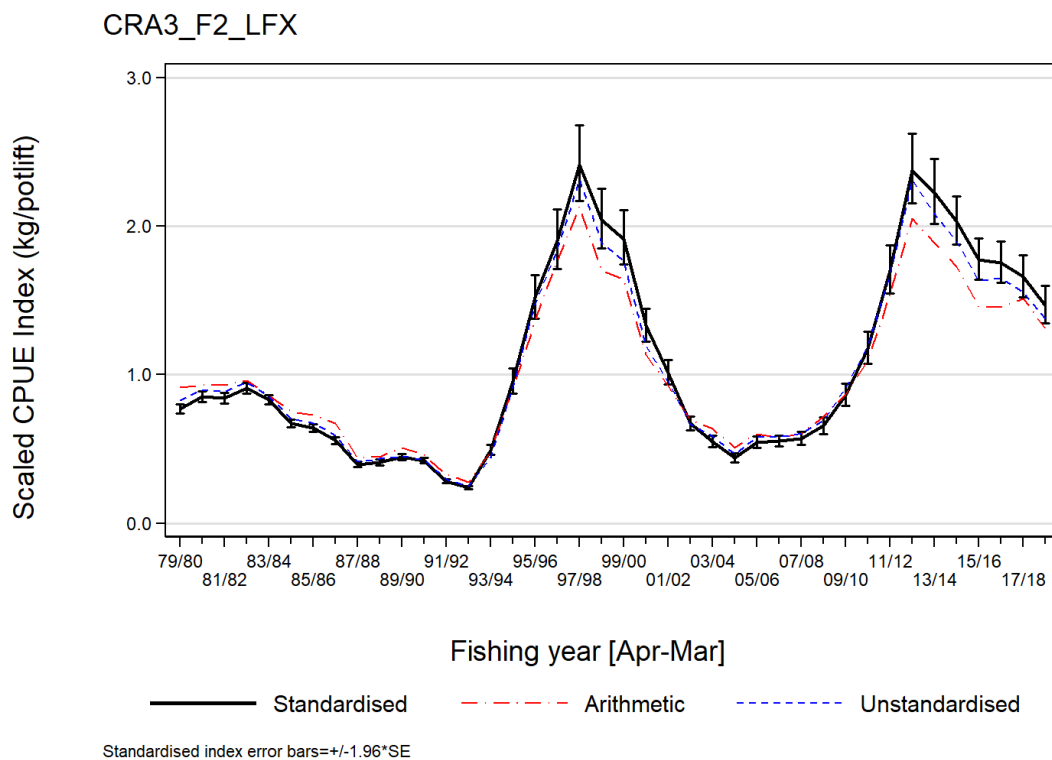


Figure 10: Annual CPUE indices for CRA 3: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 0.89 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

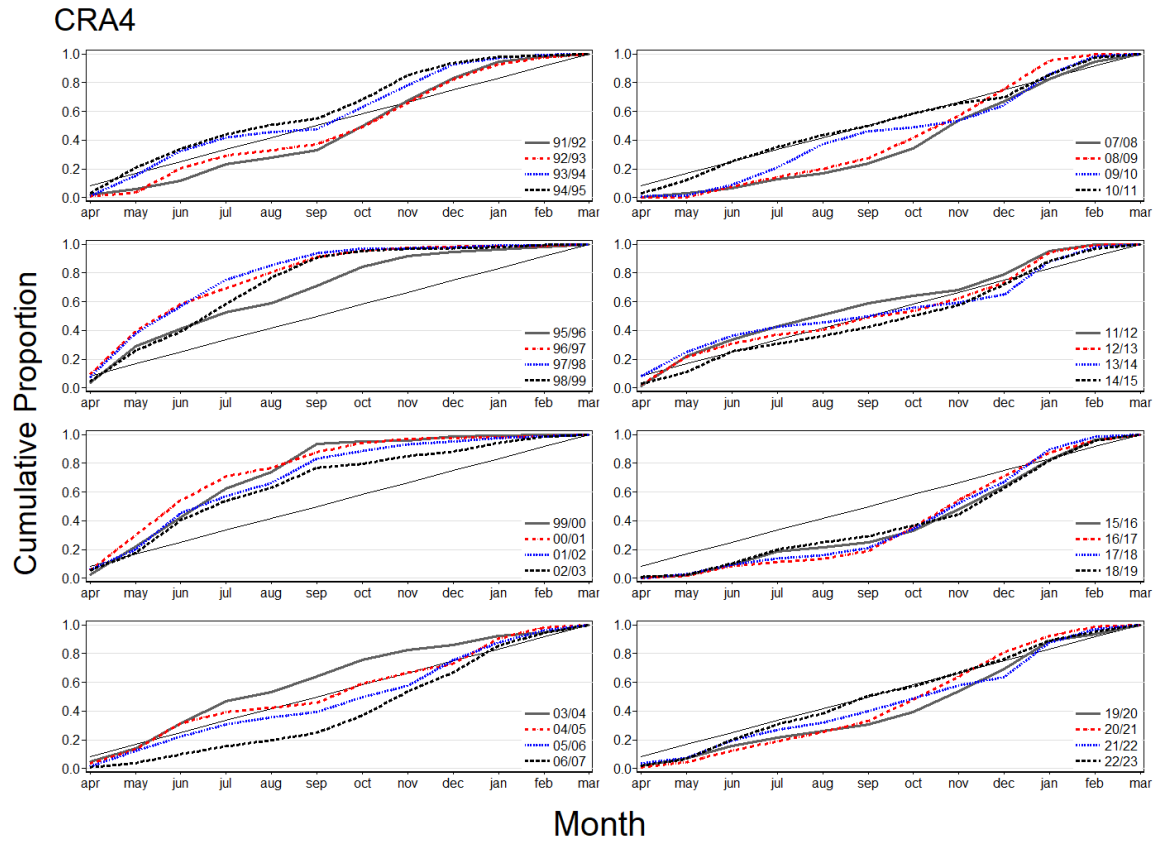


Figure 11: Cumulative landing proportions by fishing month for CRA 4, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

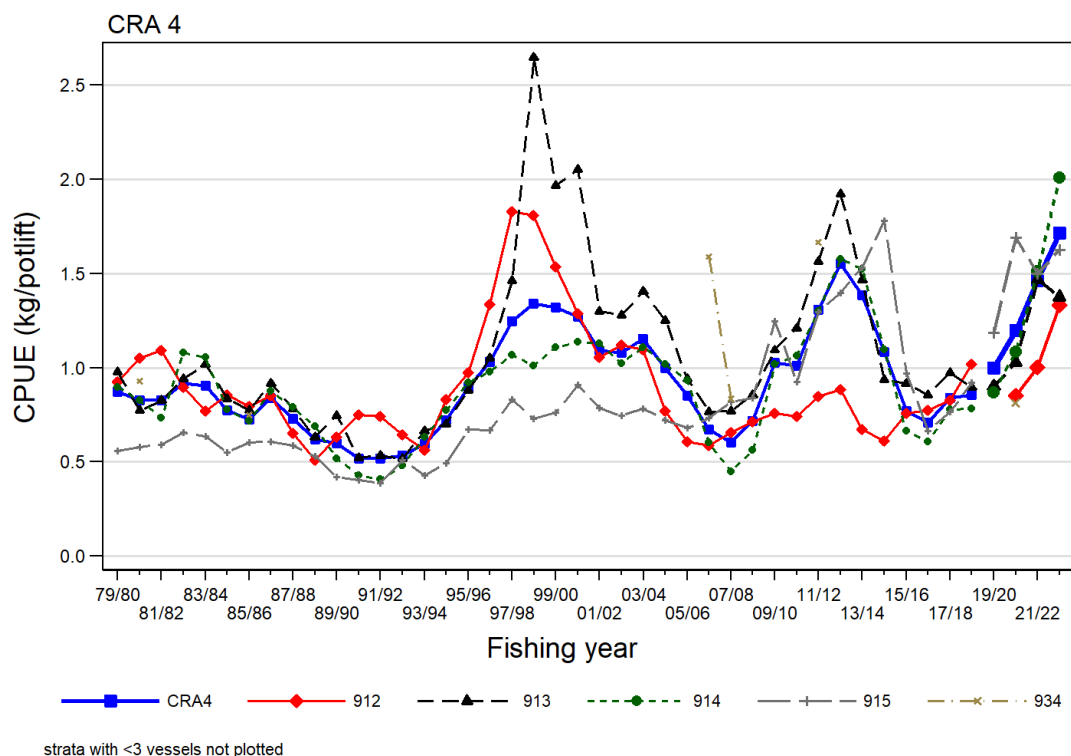


Figure 12: Arithmetic CPUE (Eq. 1) for CRA 4 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

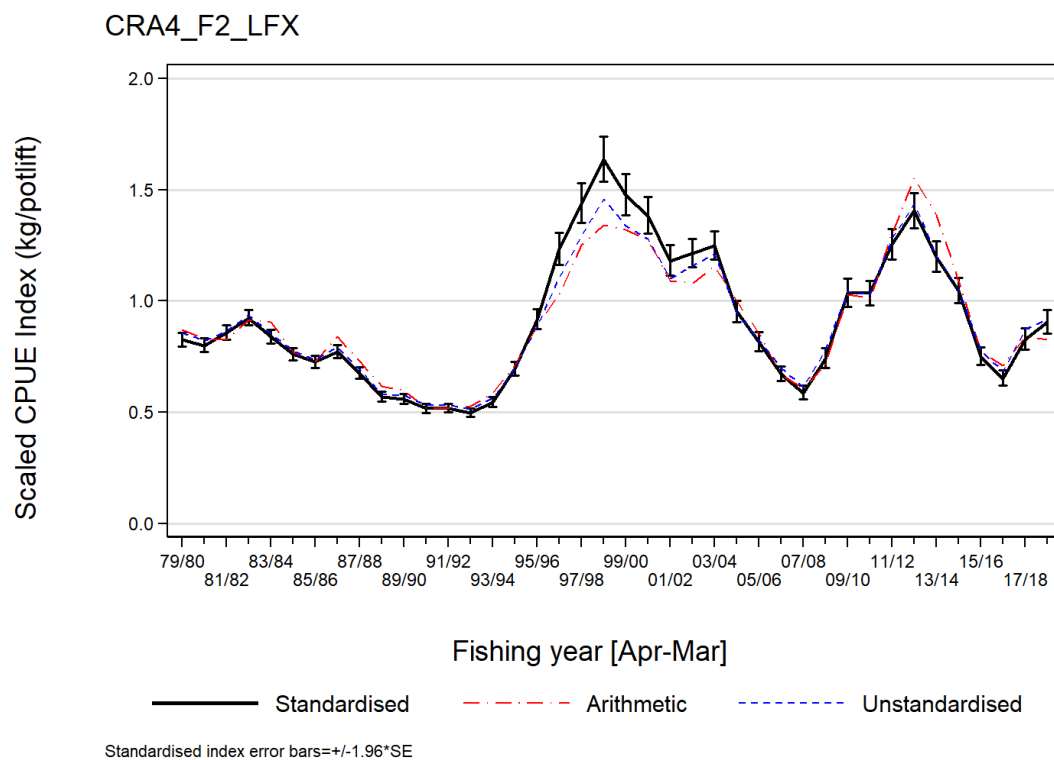


Figure 13: Annual CPUE indices for CRA 4: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 0.87 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

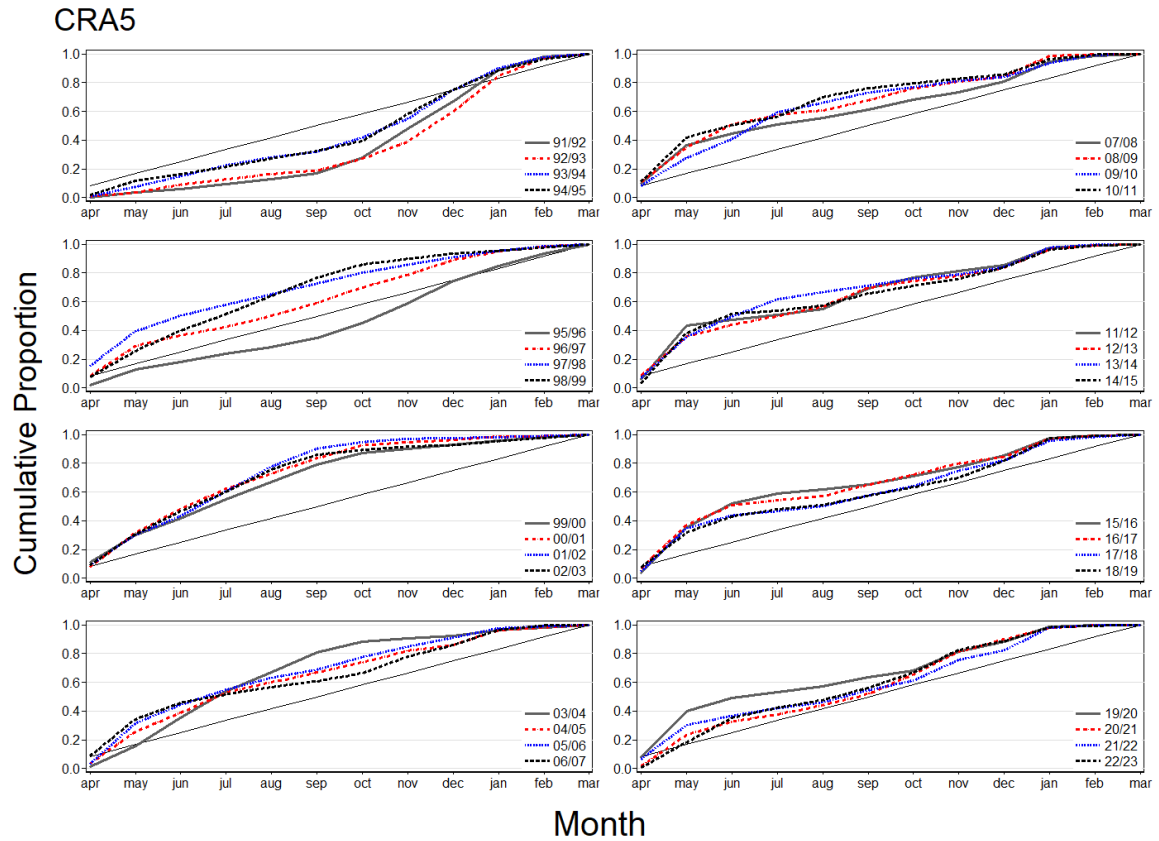


Figure 14: Cumulative landing proportions by fishing month for CRA 5, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

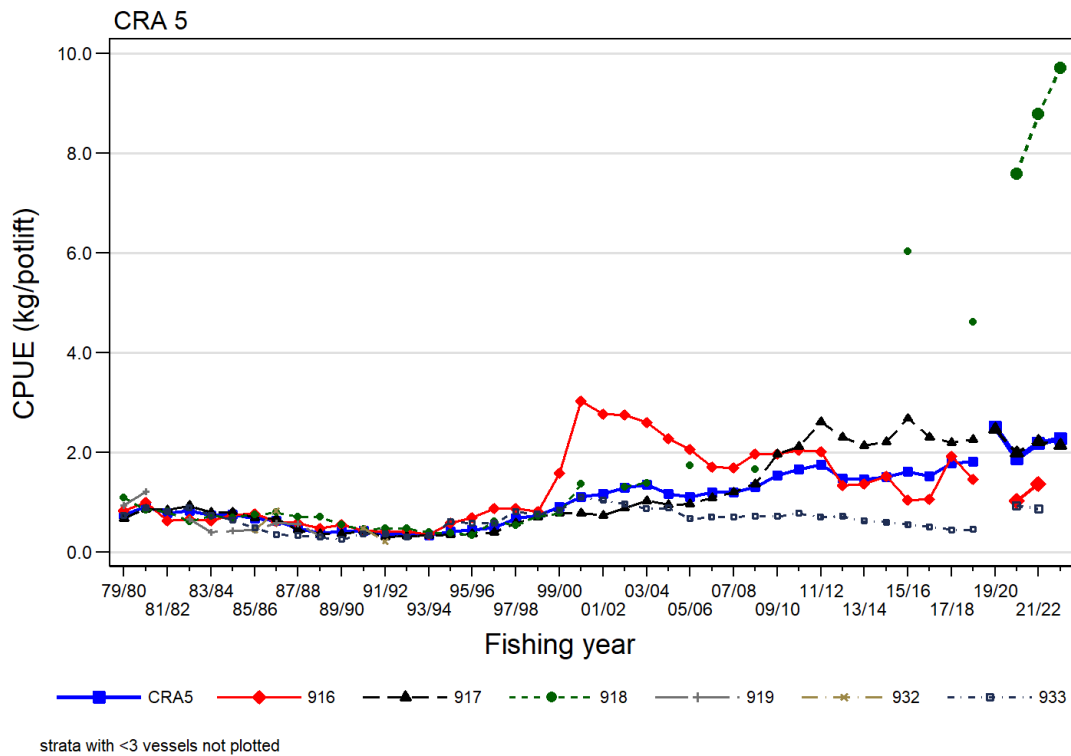


Figure 15: Arithmetic CPUE (Eq. 1) for CRA 5 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

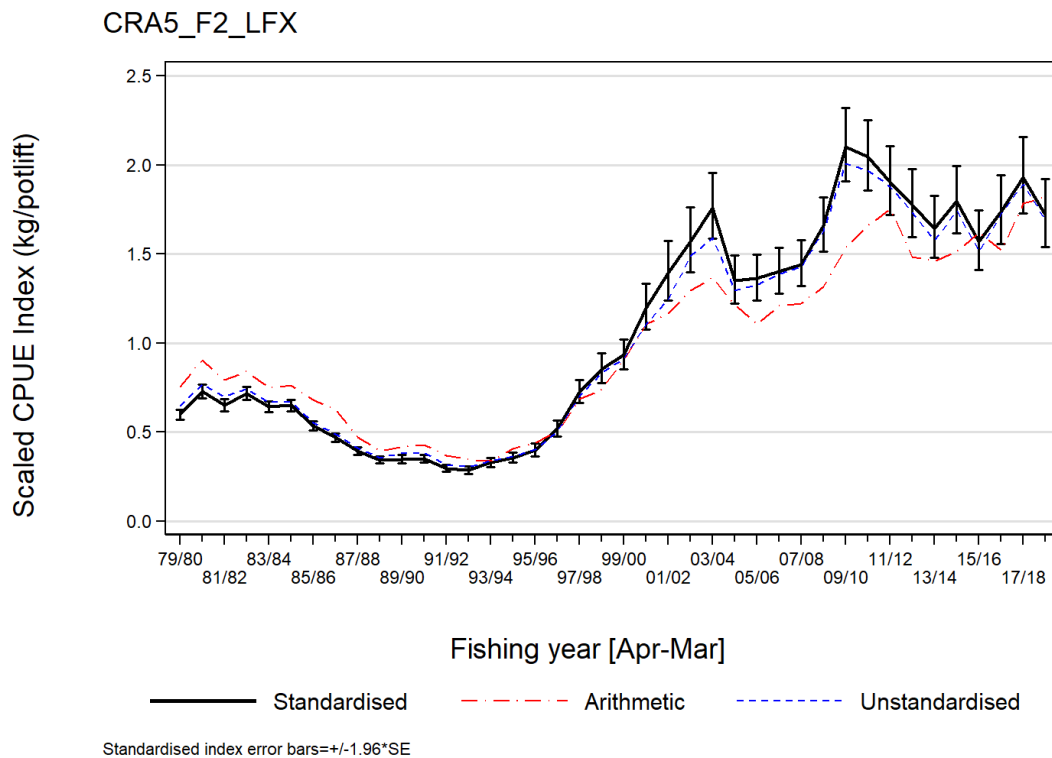


Figure 16: Annual CPUE indices for CRA 5: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 0.87 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

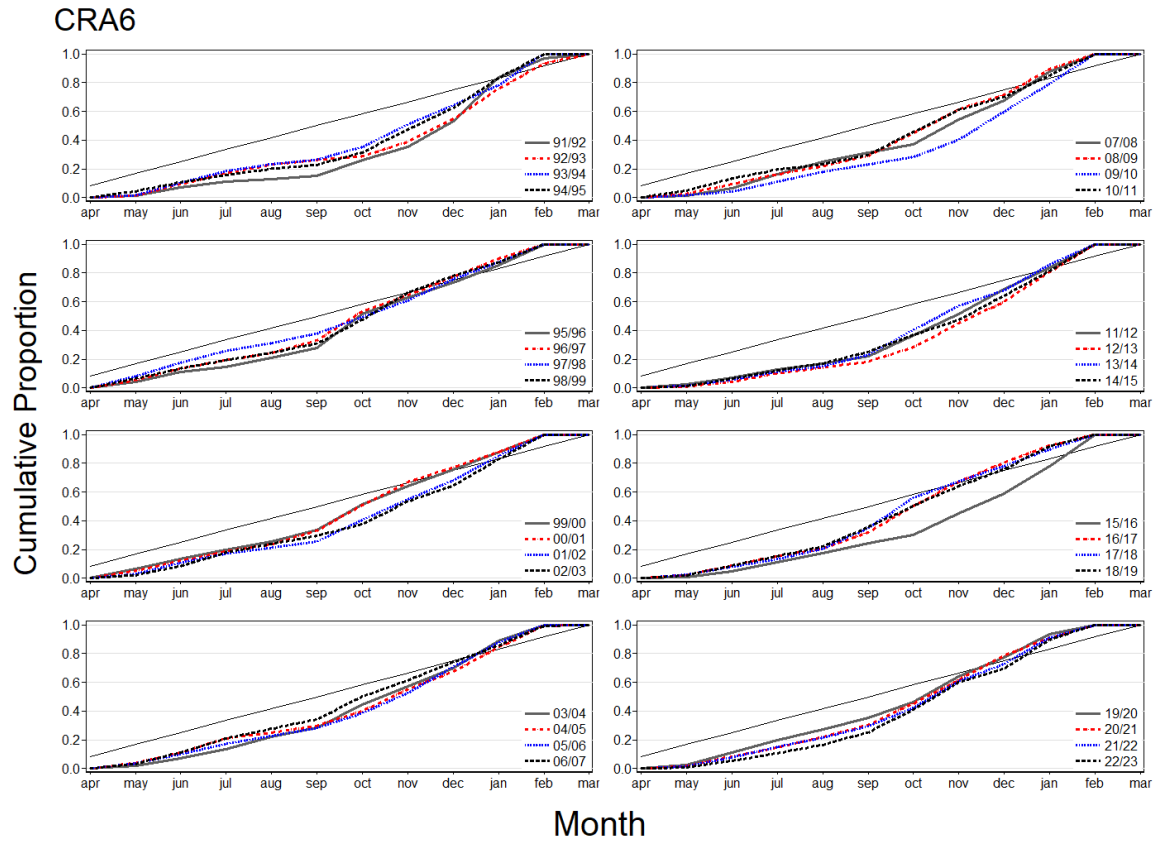


Figure 17: Cumulative landing proportions by fishing month for CRA 6, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

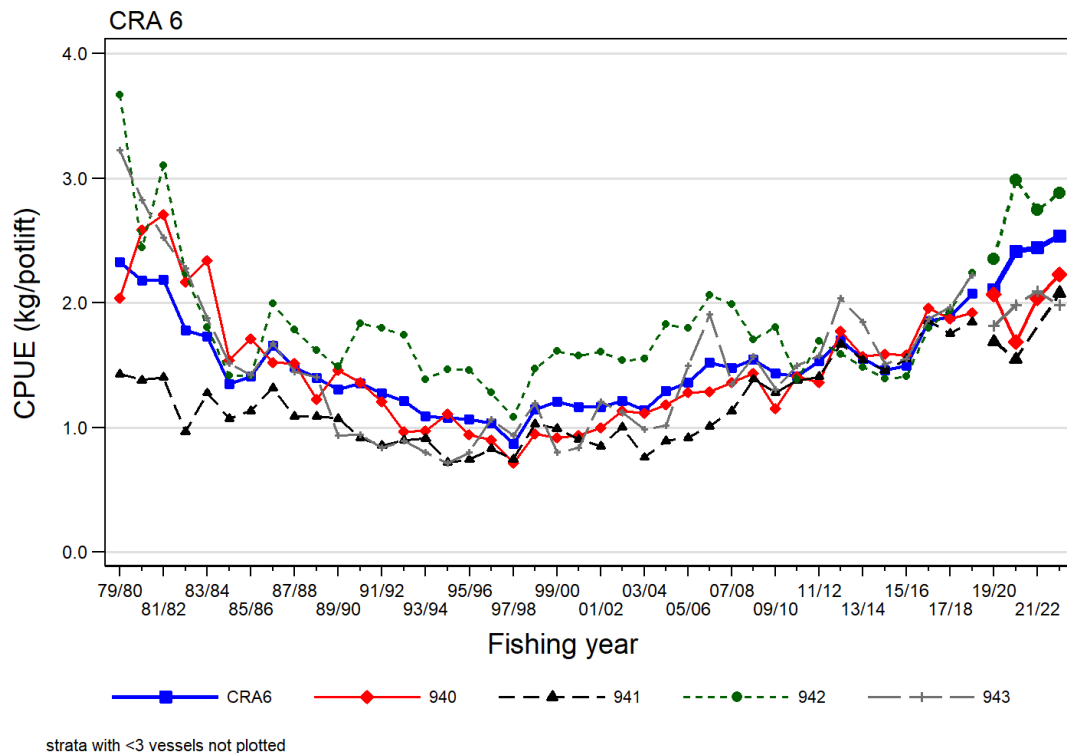


Figure 18: Arithmetic CPUE (Eq. 1) for CRA 6 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

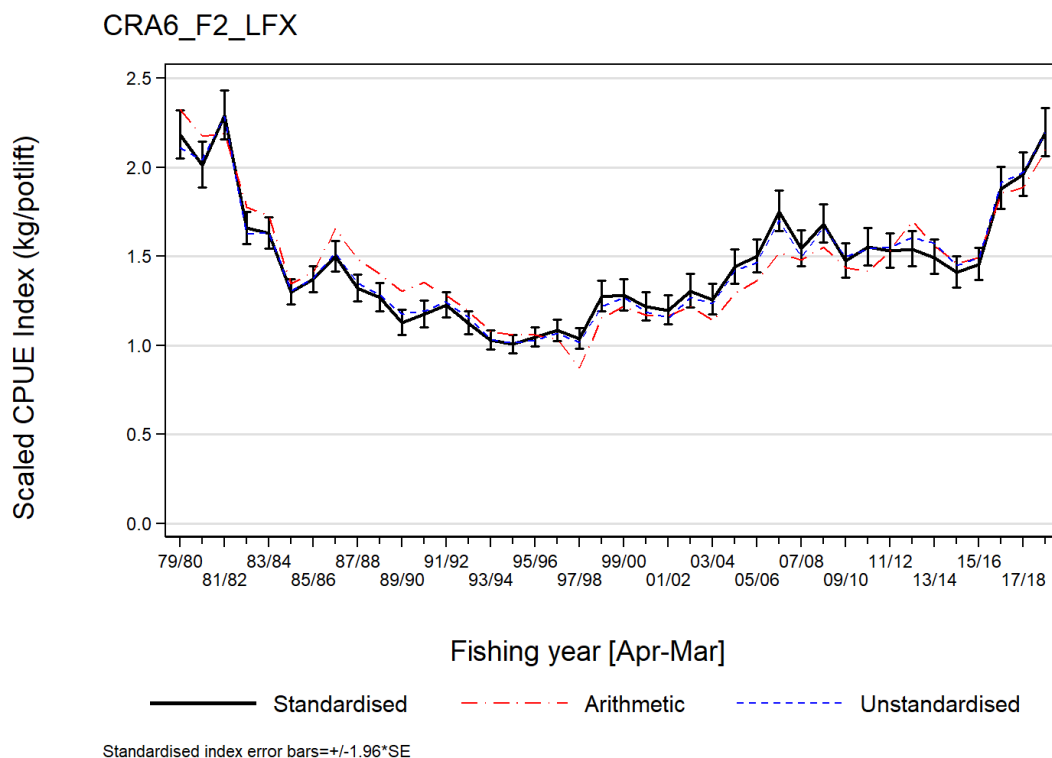


Figure 19: Annual CPUE indices for CRA 6: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 1.42 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

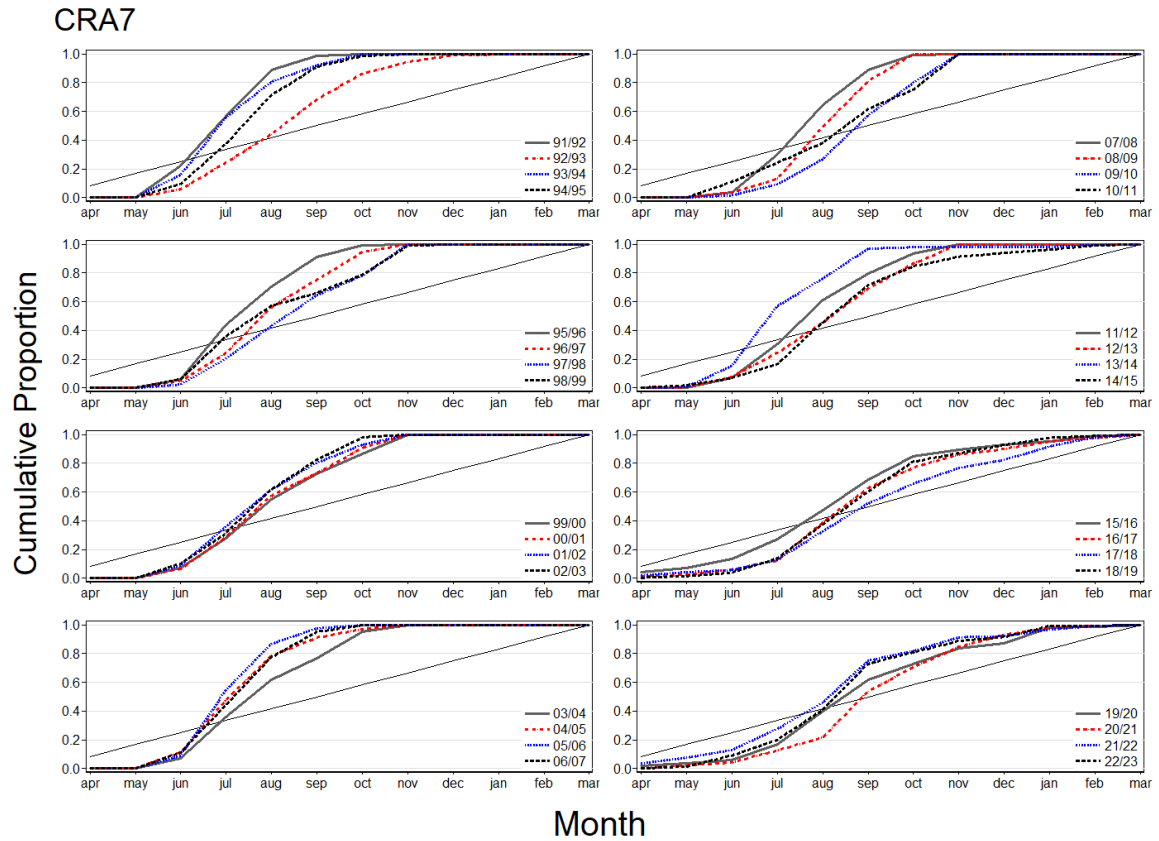


Figure 20: Cumulative landing proportions by fishing month for CRA 7, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

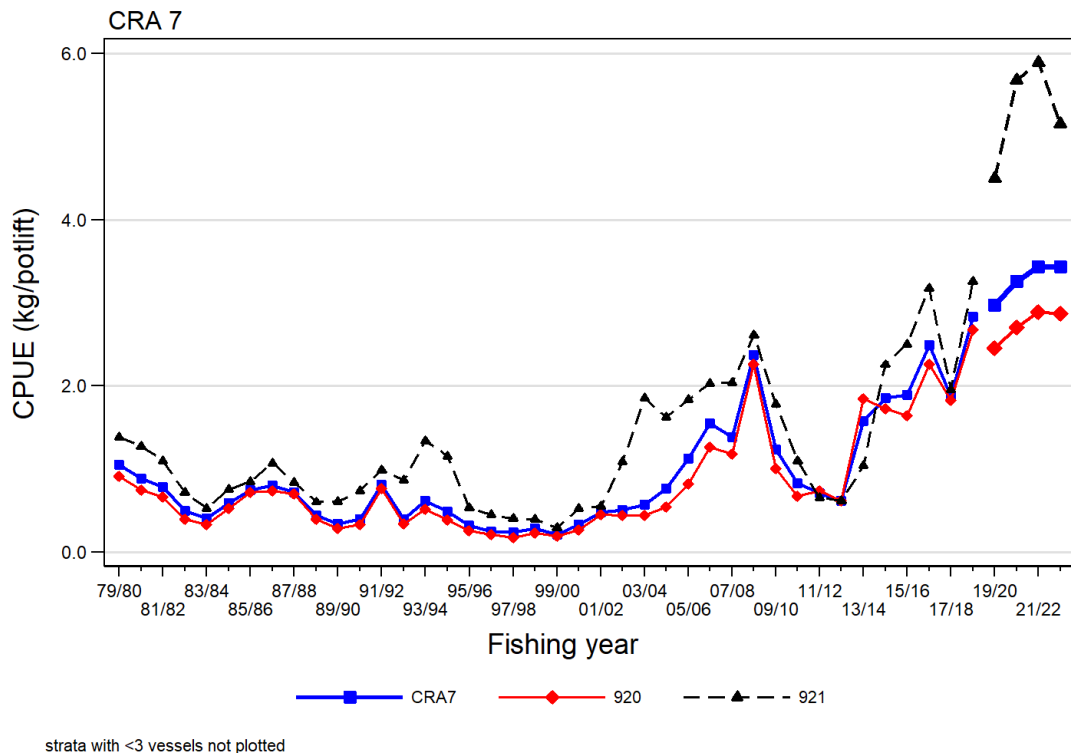


Figure 21: Arithmetic CPUE (Eq. 1) for CRA 7 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

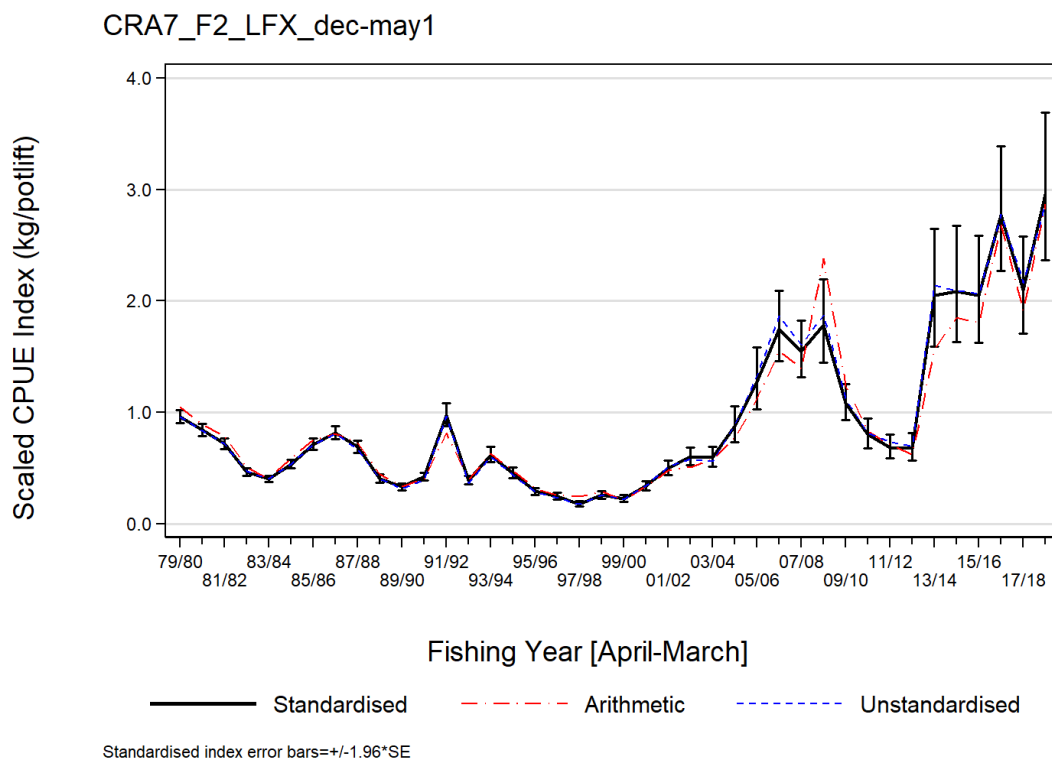


Figure 22: Annual CPUE indices for CRA 7: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 0.72 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

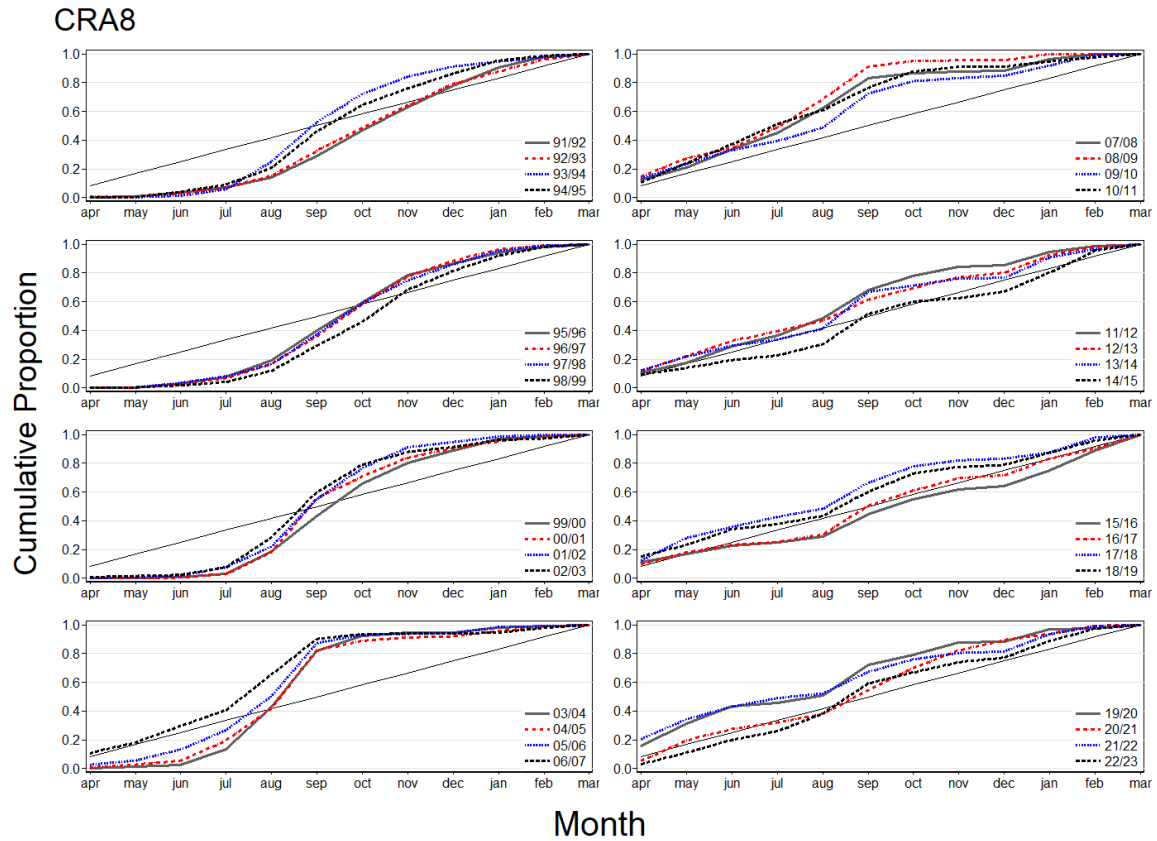


Figure 23: Cumulative landing proportions by fishing month for CRA 8, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

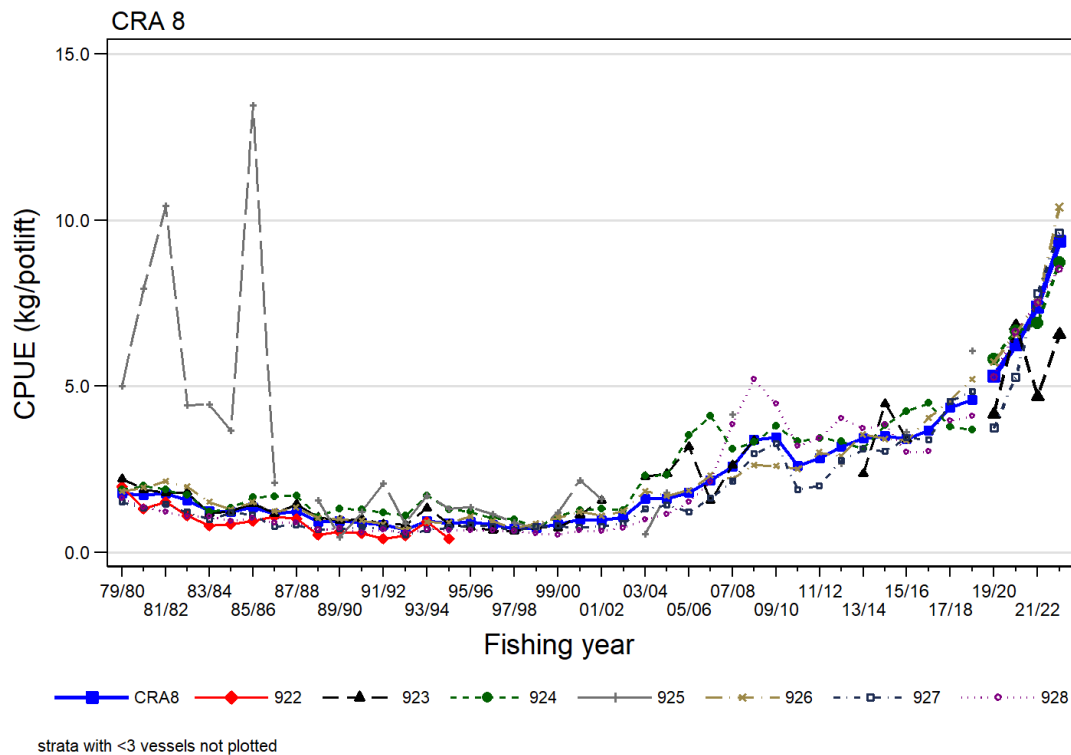


Figure 24: Arithmetic CPUE (Eq. 1) for CRA 8 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable to earlier estimates based on CELR or FSU data.

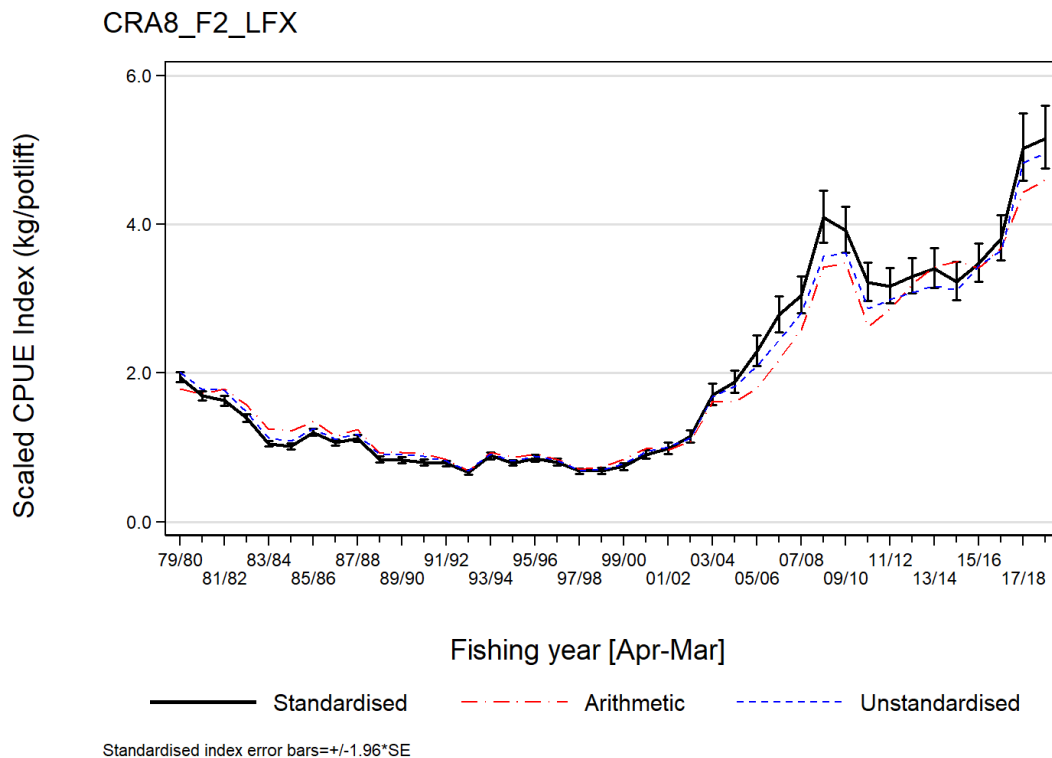


Figure 25: Annual CPUE indices for CRA 8. arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. 1979–80 to 2018–19. The geometric mean for each series = 1.57 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

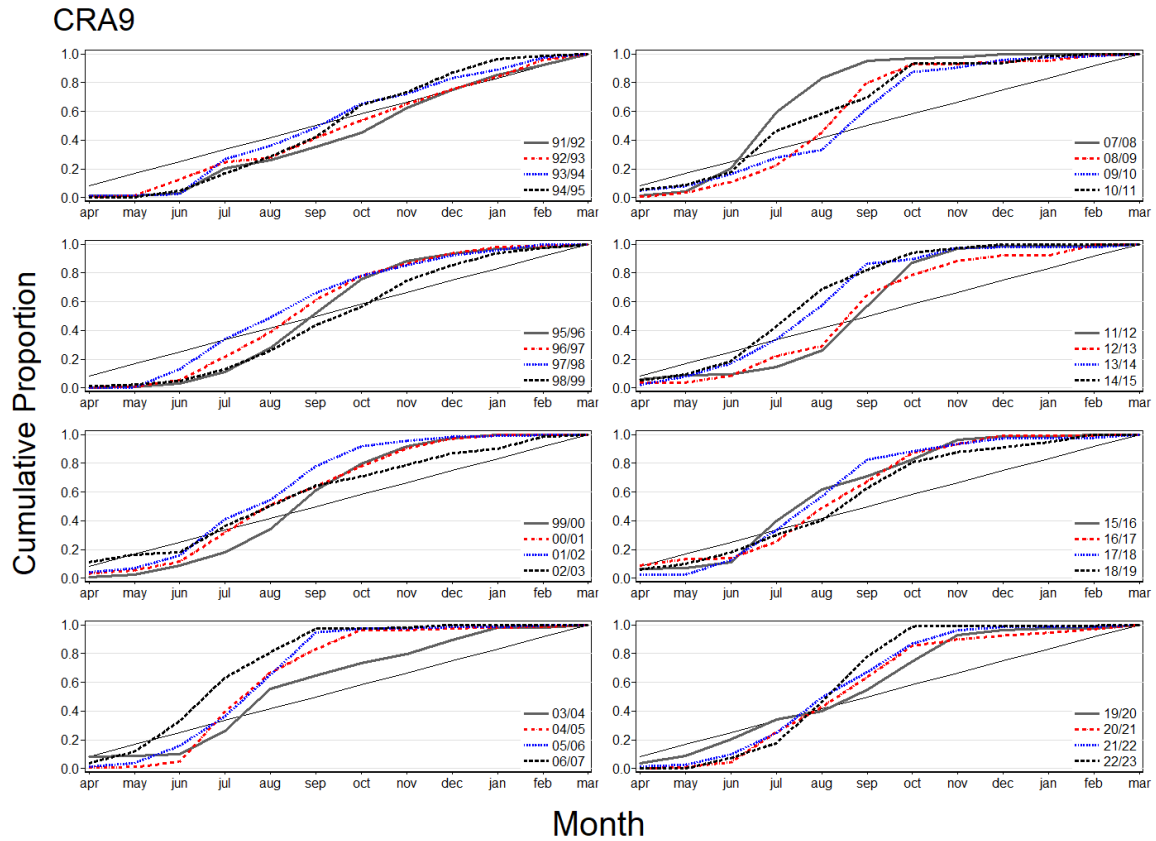


Figure 26: Cumulative landing proportions by fishing month for CRA 9, 1990–91 to 2022–23. Thin black line provides a reference equivalent to a uniform distribution of catch across all months. This figure generated from data prepared using the B4 algorithm scaled to the “L” or the combined “(L+LFL+LR+QL)” destination codes.

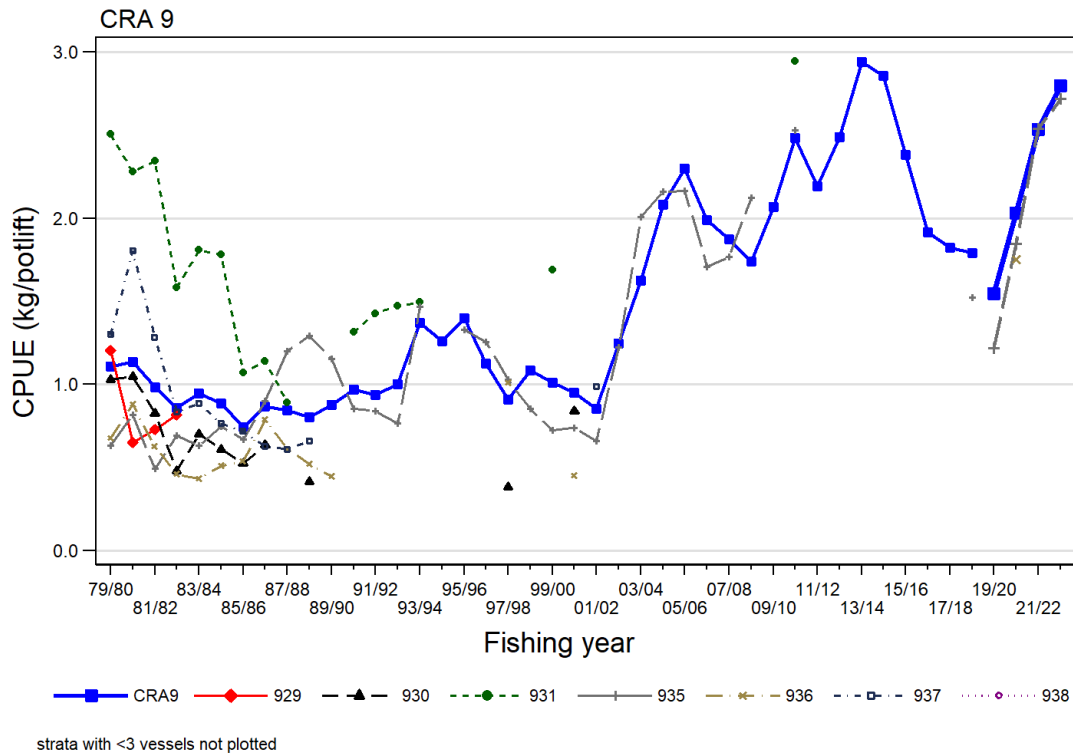


Figure 27: Arithmetic CPUE (Eq. 1) for CRA 9 by fishing year and statistical area from 1979–80 to 2022–23. This figure generated from data prepared using the F2 algorithm scaled to the “LFX” or the combined “(L+LFL+LR+QL)FX” destination codes. Estimates for 2019–20 to 2022–23 (plotted separately with larger markers and thicker lines) based on mixed source CELR/ERS or ERS data and may not be comparable with earlier estimates based on CELR or FSU data.

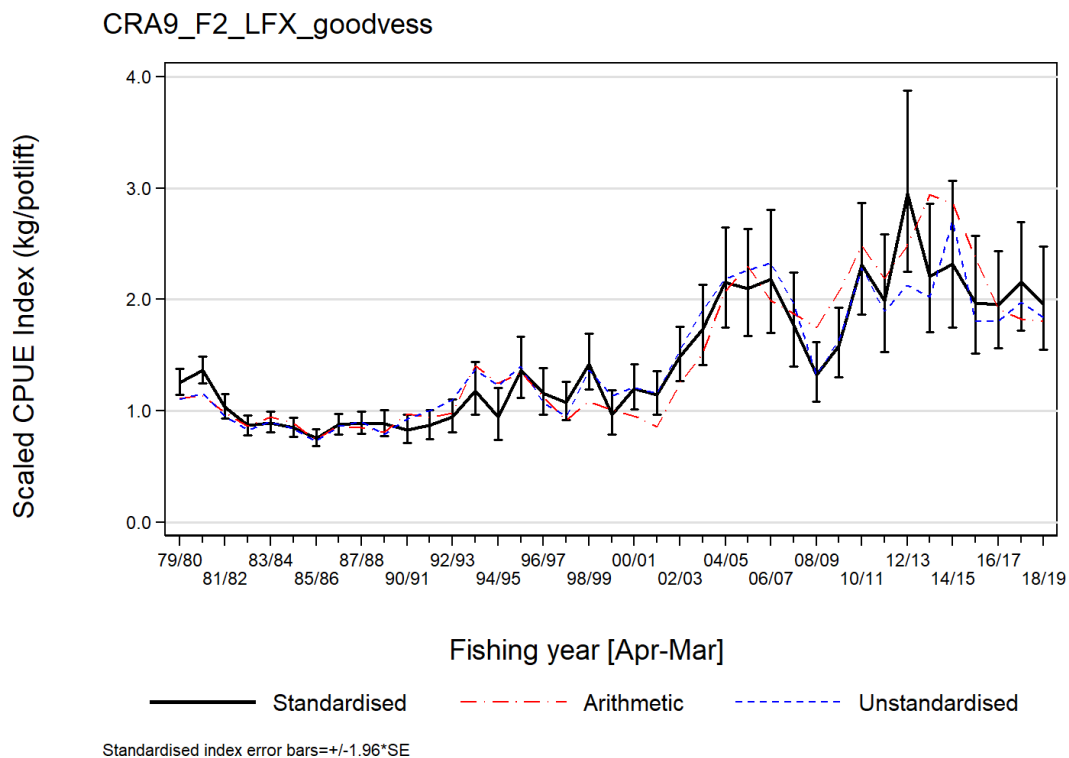


Figure 28: Annual CPUE indices for CRA 9: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 1.96 s.e. from 1979–80 to 2018–19. The geometric mean for each series = 1.36 kg/potlift. This figure generated from data prepared using the F2 algorithm scaled to the combined “LFX” destination codes. This figure has not been updated since 2018–19.

APPENDIX A. TABLE OF ABBREVIATIONS AND DEFINITIONS OF TERMS

Term/Abbreviation	Definition
arithmetic CPUE	Eq. 1
autumn/winter (AW) season	1 April – 30 September period
CELR	Catch Effort Landing Return: Fisheries New Zealand reporting form for rock lobster fishermen since July 1989; these forms come in two parts: the upper or “effort” section of the form which reports potlifts and associated estimated legal catch for a day of fishing in a statistical area and the lower or “landing” section of the form which reports landings by QMA, identified by a destination code; the upper and lower sections of the form are linked through a [trip] field that is computer generated to be unique to the vessel and the dates of the [trip] for the data extract;
CPUE	catch per unit of effort
CRA	Three letter code used for rock lobster (mainly used in WAREHOU database)
CRACE	name of shadow database holding groomed rock lobster catch and effort data
“concession” fisheries in CRA 3, CRA 7 and CRA 8	CRA 3: male MLS of 52 mm TW applies in the months of June, July and August CRA 7: beginning in 2014–15, the MLS for commercial fishing is a tail length (TL) of 127 mm, which applies to both sexes throughout the year. See the discussion in Section 3.8 (CRA 7) for a discussion of the historical application of this regulation. This measurement corresponds to 46 mm (males) and 47 mm (females) TW CRA 8: female MLS of 57 mm TW applies to the entire fishing year
destination code	code used to identify landings on the bottom part of the CELR form; these landings are linked through a common [trip] identifier; there can be multiple records with the same destination code within a [trip]; some destination codes are intermediate (for instance: “P” [Holding receptacle in water]) and are not used because the same catch can be reported again under another destination code; other destination codes are terminal and represent end use of the lobster; the most important of these are “L” [landed in New Zealand to LFR], “X” [QMS catch returned to sea], and “F” [section 111 catch retained for personal use];
disposal code	Fisheries New Zealand terminology used to define catch categories used by fishers (see Appendix B.2); used instead of “destination code” for ERS reporting system;
EDW	Enterprise Data Warehouse: name for new (from 2019) data storage entity which incorporates all parts of MPI business model, including Biosecurity, Food Safety and Forestry as well as Fisheries
ERS	Electronic Reporting System: replacement to the paper CELR forms reporting procedure implemented in the rock lobster fishery by Fisheries New Zealand over the period May–October 2019. ERS reporting is done on data entry “platforms” installed on electronic tablets or smart phones.
estimated catches	when using the old CELR paper forms, a fisher was required to estimate the total legal catch by weight for each day of fishing in a statistical area, including all legal discards; this information was recorded on the same line as the number of potlifts made in the day; under the new ERS procedure, the fisher, depending on the “platform” he is using, responds to a series of fields which categorises his catch and calculates the estimated catch according to Fisheries New Zealand specifications;
fishing year	1 April – 31 March period (statutory, defined by the QMS)
Fisheries New Zealand	Fisheries New Zealand, formed as a business unit within MPI on 1 May 2018 to “provide increased focus on some of MPI’s core responsibilities and align structure to Ministerial portfolios...” (MPI press release 01 May 2018)
FSU	Fisheries Statistics Unit: format used to report rock lobster catches, January 1979 to June 1989
geometric mean CPUE	synonym for unstandardised CPUE (Eq. 2)
landed catch	under the CELR system, fishers declared their landings on the lower part of the form (see above), using destination codes to indicate the fate of the landing (“L” is the code used to indicate a landing to a LFR); under ERS, fishers declare landings at the end of a trip using the platform software; there are three additional landing codes (LFL, LR, QL) which must be included when calculating landings;
LFR	Licensed Fish Receiver: processors legally allowed to receive commercially caught rock lobster

Term/Abbreviation	Definition
MP	Management Procedure
MPI	Ministry for Primary Industries, formerly Ministry of Fisheries (merged with the Ministry of Agriculture and Forestry [MAF] on 1 July 2011)
MHR	Monthly Harvest Return: monthly returns used after 1 October 2001. Replaced QMRs but have same definition and utility.
MLS	Minimum Legal Size: measurement below which rock lobster are required by law to be released. For most QMAs, the male size limit is 54 mm TW and the female size limit is 60 mm TW, except for CRA 3, CRA 7 and CRA 8 (described above)
NRLMG	National Rock Lobster Management Group: stakeholder committee charged with giving the Minister of Fisheries advice on the management of rock lobster
offset year	1 October – 30 September period
platform	ERS software interface used to categorise and report fisher catch according to FNZ specifications
potlift	unit of effort in rock lobster potting fishery: one lift for a single trap; reported as summed daily effort on the CELR form (e.g.: 100=100 daily potlifts);
QMA	Quota Management Area: legally defined unit area used for rock lobster management (see Figure 1)
QMR	Quota Management Report: monthly harvest reports submitted by commercial fishers to the Ministry; considered to be best estimates of commercial harvest and in use from 1986 to 2001; summed landings using the “L” destination code from the bottom of the CELR form should be similar to totals reported by the QMR for an equivalent period
QMS	Quota Management System: name of the management system used in New Zealand to control commercial and non-commercial catches
raw catches or potlifts	unadjusted catches or potlifts (as reported in the catch/effort data)
raw CPUE	synonym for arithmetic CPUE (Eq. 1)
replug	unique identifier issued by Fisheries New Zealand data unit for every data extract
RLWG	Fisheries New Zealand Rock Lobster Working Group (previously Rock Lobster Fishery Assessment Working Group)
scaled catches	Eq. 4: raw catches adjusted to sum to QMR/MHR totals
scaled potlifts	Eq. 5: raw potlifts adjusted because of missing or discarded records
s.e.	Standard error of estimate
spring/summer (SS) season	1 October–31 March period
standardised CPUE	Eq. 3
statistical area	sub-areas contained within a rock lobster QMA which are identified in catch/effort returns (see Figure 1); these statistical areas differ from those used for finfish management.
TAC	Total Allowable Catch: catch limit for a QMA set by the Minister of Fisheries that includes allowances from all sources of fishery-related mortalities, including commercial, recreational, illegal and customary
TACC	Total Allowable Commercial Catch: catch limit set by the Minister of Fisheries for a QMA that applies to commercial fishing
target	before setting gear: this is the species with the primary intent to catch; declared in the upper (“effort”) section of the CELR, associated with each record; the target species is rarely anything other than rock lobster (code CRA) for the rock lobster potting method;
TL	tail length (applies only to CRA 7 MLS)
TW	tail width measured between the second abdominal spines, a measurement used to define the MLS in all QMAs except CRA 7 (see above)
unstandardised CPUE	Eq. 2
WAREHOU	name of former Fisheries New Zealand database holding all compulsory catch and effort data obtained from fishers (see Ministry of Fisheries 2010b for a description of this database); these data have now been transferred into the new EDW entity

APPENDIX B. LACK OF COMPARABILITY BETWEEN ELECTRONIC REPORTING AND PAPER FORMS⁷

9 June 2023

TO: Rock Lobster Working Group
FROM: Paul Starr
RE: Summary of historical *vcf* performance by QMA up to 31 March 2023 (amended)

This paper has been revised by filtering out all vessels with <1000 kg of annual landings (sum of “A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) within each QMA. The overall conclusions remain unchanged.

B.1 ANALYSIS OF *vcf* PERFORMANCE BY QMA AND FISHING YEAR: 1990–2022

B.1.1 INTRODUCTION

This paper presents a detailed look at the historical performance of the *vcf* statistic by RL QMA in the rock lobster potting fishery from the 1990–91 fishing year up to the end of the 2022–23 fishing year.

The table below lists all versions of this report:

RLWG meeting date	Report number	Last date in extract
20 February 2022	RLWG 2022-005 - Historical <i>vcf</i> analysis v2.pdf	15 December 2021
15 September 2022	RLWG 2022-023 - Historical <i>vcf</i> analysis_updated to end of 2021–22.pdf	31 March 2022
8 June 2023	RLWG 2023-026 - Historical <i>vcf</i> analysis_updated to end of 2022–23.pdf	31 March 2023
9 June 2023	RLWG 2023-026 - Historical <i>vcf</i> analysis_updated to end of 2022–23(amended).pdf	31 March 2023

The *vcf* (“vessel correction factor”) statistic is an empirical measure of the bias in landing to estimated catch by vessel, fishing year, and QMA. This statistic is calculated annually by vessel and QMA, on the assumption that, within the fishing year and for each QMA, all expended effort and associated estimated catch will be matched with terminal landings, thus removing the effect of the intermediate non-terminal landings (e.g., destination codes “P”, “Q”, and “LF”). It also assumes that the correction factor is constant for all months in a fishing year and QMA for the originating vessel. The intent is to apply this correction factor to every record from the vessel in the year, thus correcting the estimated catch weight bias relative to the landings.

This statistic is ideally calculated for an entire fishing year within a QMA, because this is the logical unit for reporting within the existing structure of the QMS with operators wanting to balance ACE against available quota by the end of each fishing year. However, this statistic is incomplete in this paper for fishing year 2019–20, which is the year that the reporting system changed from paper based Catch Effort Landing Return (CELR) forms to electronic reporting (ER), so the *vcf* calculations, which have been kept separate by reporting format, represent a partial fishing year for either reporting format in that year.

⁷ Inclusion of this Appendix has been agreed by Fisheries New Zealand. All confidential information has been removed.

The definition of the vcf statistic includes the destination codes listed in Table B.1, showing the codes used for each reporting format. It should be noted that destination code “F” (lobsters taken home for personal use under section 111), which formed part of the original definition of the vcf statistic (Starr 2013), has not been included in the list of Table B.1 codes. This is because the “platforms” (software used to enter the catch and effort data in the ER system while the operator is pulling his pots) do not recognise this code. This code is available in the landing table, as it is reported at the end of a trip in the ER system. However, it cannot be applied correctly to the estimated catch data, so this code has been dropped from this vcf analysis, for both reporting formats, for comparability.

Table B.1: Destination codes in the EDW landing table assumed to be valid terminal landing codes.

paper (CELR) reports	electronic (ER) reports
“A”	“A”
“L”	“L”
“X”	“X”
	“LFL”
	“QL”
	“LR”

Note 1: that destination code “F” (section 111) has been dropped in this analysis because this code is not included in the Deckhand or eCatch estimated catch summary.

Note 2: vessels with less than 1000 kg of the above destination codes in a fishing year/QMA have been dropped from this analysis.

Note 3: estimated catches are provided by species in the [estimated_subcatch] table obtained from MPI using species code “CRA”. These are linked by fishing event to the [fishing_event] table which holds the effort, location and timing for each fishing event. Only fishing events using the RLP (rock lobster potting) method are included in the [fishing_event] table. Destination codes are provided by vessel, QMA, and date in the [landings] table.

The vessel correction factor (vcf_{iqy}) is defined for each vessel i in QMA q and fishing year y as:

$$\text{Eq. 6} \quad vcf_{iqy} = \frac{\sum_{g=1}^{n_{iqy}^l} \sum_{d=1}^D L_{dgiqy}}{\sum_{h=1}^{n_{iqy}^c} C_{hiqy}}$$

where L_{dgiqy} = legal catch weight in record g for vessel i in QMA q in fishing year y ; there are n_{iqy}^l such records; legal catch weight is summed across D destination codes (Table B.1), with the number of codes dependent on the data source.

C_{hiqy} = estimated catch weight in record h for vessel i in QMA q in fishing year y ; there are n_{iqy}^c such records.

B.1.2 METHODS

All catch and effort data were analysed after discarding records with error codes > 1 (Bentley et al. 2005). The vcf was summarised by vessel, QMA, and fishing year from 1990 to 2022 (fishing year is designated by the first value in the pair), separately for each reporting format (paper or ERS). The Table B.1 destination codes were used to define the L_{giqy} numerator for each reporting format, summing by QMA as reported in the landing table. This analysis assumes that disposal codes “P” and “LF” will eventually find their way into the system as either “L” or “LFL”. The estimated catches (using species code “CRA”) were summed by fishing year, vessel and QMA (using statistical area to define the QMA

for the estimated catches). The fishing year/vessel/QMA landing and estimated catch records were then matched by vessel to calculate the *vcf*. The *vcf* values were placed into three categories: < 0.8, between 0.8 and 1.2 and > 1.2. These are the cutoff values agreed by the RLWG (Starr 2013), with the data associated with the central *vcf* = 0.8 to 1.2 being used for the calculation of the rock lobster potting CPUE series.

B.1.3 RESULTS

A commentary on each QMA can be found in Table B.2. The total numbers and percentages of vessels in each of the three *vcf* categories are presented by fishing year for each QMA in Table B.3 (CRA 1) to Table B.11 (CRA 9) and proportionately in Figure B.1 (CRA 1) to Figure B.9 (CRA 9). These tables and plots show that, while there may be some improvements in the 2021 and 2022 *vcf* values relative to the previous two ER years in some QMAs (e.g., CRA 3 and CRA 5), the changes appear to be small and generally do not approach the performance of the previous paper forms. The exceptions to this conclusion are CRA 5 and CRA 7, which show similar percentages of vessels in the 0.8–1.2 *vcf* category under the ERS as were seen in the previous paper forms (Figure B.5, Figure B.7). CRA 8 remains problematic, with poor relative *vcf* performance beginning in the later years of paper form reporting and continuing into the ERS era (Table B.10, Figure B.8). All QMAs show an equal or lesser proportion of vessels reporting in the key *vcf* = 0.8–1.2 category under the ER reporting scheme compared to the previous paper reporting scheme.

B.1.4 REFERENCES

- Bentley, N.; Starr, P.J.; Walker, N.A.; Breen, P.A. (2005). Catch and effort data for New Zealand rock lobster fisheries. *New Zealand Fisheries Assessment Report 2005/49*. 49 p.
- Starr, P.J. (2013). Rock lobster catch and effort data: summaries and CPUE standardisations, 1979–80 to 2011–12. *New Zealand Fisheries Assessment Report 2013/58*. 107 p.

Table B.2: Commentary by CRA QMA on the times series of annual *vcf* performance.

QMA	Comment	Figure	Table
CRA 1	some improvement in the ERS proportion of <i>vcf</i> in the 0.8–1.2 range for 2021 and 2022 relative to 2019 and 2020 but still not up to the levels seen in the paper forms from the early 2000s	Figure B.1	Table B.3
CRA 2	some improvement in the ERS proportion of <i>vcf</i> in the 0.8–1.2 range for 2022 relative to 2019--2021 but still not up to the levels seen in the paper forms from the early 1990s	Figure B.2	Table B.4
CRA 3	some improvement in the ERS proportion of <i>vcf</i> in the 0.8–1.2 range for 2021 and 2022 relative to 2019 and 2020 but still not up to the levels seen in the paper forms from the early 1990s	Figure B.3	Table B.5
CRA 4	no improvement in the ERS proportion of <i>vcf</i> in the 0.8–1.2 range over all years and still not up to the levels seen in the paper forms from the early 1990s	Figure B.4	Table B.6
CRA 5	the ERS proportions of <i>vcf</i> in the 0.8–1.2 range for 2020 to 2022 are similar to the levels seen from the paper forms since the early 2000s; the low proportion in this category in 2019 is less consequential because this is an incomplete year	Figure B.5	Table B.7
CRA 6	some improvement in the ERS proportion of <i>vcf</i> in the 0.8–1.2 range for 2020 to 2022 relative to 2019 but still below the levels seen in the paper forms from the early 1990s	Figure B.6	Table B.8
CRA 7	this is the only QMA where the ERS proportion of <i>vcf</i> in the 0.8–1.2 range appeared to meet or exceed the paper form <i>vcf</i> proportion	Figure B.7	Table B.9
CRA 8	the proportion of <i>vcf</i> in the 0.8–1.2 range appeared to be declining in this QMA before the introduction of the ERS; under ERS, the proportion of <i>vcf</i> in the 0.8–1.2 range has remained low	Figure B.8	Table B.10
CRA 9	as seen in CRA 8, the proportion of <i>vcf</i> in the 0.8–1.2 range was declining in this QMA before the introduction of the ERS; under ERS, the proportion of <i>vcf</i> in the 0.8–1.2 range has remained low	Figure B.9	Table B.11

Table B.3: CRA 1: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER			
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	<0.8	>1.2
1990	–	21	4	25	–	–	–	–	–	84.0	16.0	–	–	–	–	–
1991	1	24	4	29	–	–	–	–	3.4	82.8	13.8	–	–	–	–	–
1992	1	20	5	26	–	–	–	–	3.8	76.9	19.2	–	–	–	–	–
1993	1	23	–	24	–	–	–	–	4.2	95.8	–	–	–	–	–	–
1994	–	21	–	21	–	–	–	–	–	100.0	–	–	–	–	–	–
1995	1	18	3	22	–	–	–	–	4.5	81.8	13.6	–	–	–	–	–
1996	1	14	9	24	–	–	–	–	4.2	58.3	37.5	–	–	–	–	–
1997	1	11	10	22	–	–	–	–	4.5	50.0	45.5	–	–	–	–	–
1998	–	13	7	20	–	–	–	–	–	65.0	35.0	–	–	–	–	–
1999	–	13	7	20	–	–	–	–	–	65.0	35.0	–	–	–	–	–
2000	–	17	1	18	–	–	–	–	–	94.4	5.6	–	–	–	–	–
2001	–	16	2	18	–	–	–	–	–	88.9	11.1	–	–	–	–	–
2002	–	16	1	17	–	–	–	–	–	94.1	5.9	–	–	–	–	–
2003	1	14	1	16	–	–	–	–	6.3	87.5	6.3	–	–	–	–	–
2004	2	10	3	15	–	–	–	–	13.3	66.7	20.0	–	–	–	–	–
2005	3	11	1	15	–	–	–	–	20.0	73.3	6.7	–	–	–	–	–
2006	2	10	2	14	–	–	–	–	14.3	71.4	14.3	–	–	–	–	–
2007	2	10	1	13	–	–	–	–	15.4	76.9	7.7	–	–	–	–	–
2008	–	10	3	13	–	–	–	–	–	76.9	23.1	–	–	–	–	–
2009	–	12	2	14	–	–	–	–	–	85.7	14.3	–	–	–	–	–
2010	–	12	2	14	–	–	–	–	–	85.7	14.3	–	–	–	–	–
2011	–	12	1	13	–	–	–	–	–	92.3	7.7	–	–	–	–	–
2012	–	13	1	14	–	–	–	–	–	92.9	7.1	–	–	–	–	–
2013	–	11	3	14	–	–	–	–	–	78.6	21.4	–	–	–	–	–
2014	–	13	1	14	–	–	–	–	–	92.9	7.1	–	–	–	–	–
2015	–	12	1	13	–	–	–	–	–	92.3	7.7	–	–	–	–	–
2016	1	11	2	14	–	–	–	–	7.1	78.6	14.3	–	–	–	–	–
2017	–	9	4	13	–	–	–	–	–	69.2	30.8	–	–	–	–	–
2018	–	10	4	14	–	–	–	–	–	71.4	28.6	–	–	–	–	–
2019	1	10	2	13	–	5	5	10	7.7	76.9	15.4	–	50.0	50.0	–	–
2020	–	–	–	–	–	6	7	13	–	–	–	–	46.2	53.8	–	–
2021	–	–	–	–	1	8	4	13	–	–	–	7.7	61.5	30.8	–	–
2022	–	–	–	–	3	7	2	12	–	–	–	25.0	58.3	16.7	–	–

Table B.4: CRA 2: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER		
	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	
	N vessels								% vessels						
1990	—	51	8	59	—	—	—	—	—	86.4	13.6	—	—	—	
1991	1	43	8	52	—	—	—	—	1.9	82.7	15.4	—	—	—	
1992	2	38	6	46	—	—	—	—	4.3	82.6	13.0	—	—	—	
1993	3	37	7	47	—	—	—	—	6.4	78.7	14.9	—	—	—	
1994	4	41	5	50	—	—	—	—	8.0	82.0	10.0	—	—	—	
1995	3	36	5	44	—	—	—	—	6.8	81.8	11.4	—	—	—	
1996	2	31	6	39	—	—	—	—	5.1	79.5	15.4	—	—	—	
1997	1	37	4	42	—	—	—	—	2.4	88.1	9.5	—	—	—	
1998	1	31	5	37	—	—	—	—	2.7	83.8	13.5	—	—	—	
1999	1	30	3	34	—	—	—	—	2.9	88.2	8.8	—	—	—	
2000	—	36	4	40	—	—	—	—	—	90.0	10.0	—	—	—	
2001	—	35	4	39	—	—	—	—	—	89.7	10.3	—	—	—	
2002	—	34	3	37	—	—	—	—	—	91.9	8.1	—	—	—	
2003	—	34	2	36	—	—	—	—	—	94.4	5.6	—	—	—	
2004	—	26	7	33	—	—	—	—	—	78.8	21.2	—	—	—	
2005	—	31	6	37	—	—	—	—	—	83.8	16.2	—	—	—	
2006	—	33	4	37	—	—	—	—	—	89.2	10.8	—	—	—	
2007	—	31	3	34	—	—	—	—	—	91.2	8.8	—	—	—	
2008	3	29	3	35	—	—	—	—	8.6	82.9	8.6	—	—	—	
2009	1	32	2	35	—	—	—	—	2.9	91.4	5.7	—	—	—	
2010	1	34	2	37	—	—	—	—	2.7	91.9	5.4	—	—	—	
2011	1	33	1	35	—	—	—	—	2.9	94.3	2.9	—	—	—	
2012	1	37	4	42	—	—	—	—	2.4	88.1	9.5	—	—	—	
2013	1	34	2	37	—	—	—	—	2.7	91.9	5.4	—	—	—	
2014	1	29	4	34	—	—	—	—	2.9	85.3	11.8	—	—	—	
2015	—	28	4	32	—	—	—	—	—	87.5	12.5	—	—	—	
2016	—	26	1	27	—	—	—	—	—	96.3	3.7	—	—	—	
2017	—	27	1	28	—	—	—	—	—	96.4	3.6	—	—	—	
2018	—	18	2	20	—	—	—	—	—	90.0	10.0	—	—	—	
2019	—	13	—	13	2	10	3	15	—	100.0	—	13.3	66.7	20.0	
2020	—	—	—	—	2	12	4	18	—	—	—	11.1	66.7	22.2	
2021	—	—	—	—	—	10	6	16	—	—	—	—	62.5	37.5	
2022	—	—	—	—	3	11	1	15	—	—	—	20.0	73.3	6.7	

Table B.5: CRA 3: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER			
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	<0.8	>1.2
1990	2	52	2	56	–	–	–	–	3.6	92.9	3.6	–	–	–	–	–
1991	3	60	2	65	–	–	–	–	4.6	92.3	3.1	–	–	–	–	–
1992	4	47	3	54	–	–	–	–	7.4	87.0	5.6	–	–	–	–	–
1993	1	46	–	47	–	–	–	–	2.1	97.9	–	–	–	–	–	–
1994	2	37	1	40	–	–	–	–	5.0	92.5	2.5	–	–	–	–	–
1995	1	31	1	33	–	–	–	–	3.0	93.9	3.0	–	–	–	–	–
1996	–	25	8	33	–	–	–	–	–	75.8	24.2	–	–	–	–	–
1997	–	27	5	32	–	–	–	–	–	84.4	15.6	–	–	–	–	–
1998	3	24	3	30	–	–	–	–	10.0	80.0	10.0	–	–	–	–	–
1999	1	25	4	30	–	–	–	–	3.3	83.3	13.3	–	–	–	–	–
2000	1	25	6	32	–	–	–	–	3.1	78.1	18.8	–	–	–	–	–
2001	2	29	2	33	–	–	–	–	6.1	87.9	6.1	–	–	–	–	–
2002	3	30	5	38	–	–	–	–	7.9	78.9	13.2	–	–	–	–	–
2003	3	32	5	40	–	–	–	–	7.5	80.0	12.5	–	–	–	–	–
2004	2	29	3	34	–	–	–	–	5.9	85.3	8.8	–	–	–	–	–
2005	–	25	4	29	–	–	–	–	–	86.2	13.8	–	–	–	–	–
2006	–	26	4	30	–	–	–	–	–	86.7	13.3	–	–	–	–	–
2007	–	25	4	29	–	–	–	–	–	86.2	13.8	–	–	–	–	–
2008	1	23	3	27	–	–	–	–	3.7	85.2	11.1	–	–	–	–	–
2009	1	23	2	26	–	–	–	–	3.8	88.5	7.7	–	–	–	–	–
2010	1	25	1	27	–	–	–	–	3.7	92.6	3.7	–	–	–	–	–
2011	–	24	1	25	–	–	–	–	–	96.0	4.0	–	–	–	–	–
2012	–	20	3	23	–	–	–	–	–	87.0	13.0	–	–	–	–	–
2013	–	21	5	26	–	–	–	–	–	80.8	19.2	–	–	–	–	–
2014	–	24	1	25	–	–	–	–	–	96.0	4.0	–	–	–	–	–
2015	–	26	–	26	–	–	–	–	–	100.0	–	–	–	–	–	–
2016	–	24	1	25	–	–	–	–	–	96.0	4.0	–	–	–	–	–
2017	1	21	3	25	–	–	–	–	4.0	84.0	12.0	–	–	–	–	–
2018	1	20	4	25	–	–	–	–	4.0	80.0	16.0	–	–	–	–	–
2019	–	19	4	23	3	10	3	16	–	82.6	17.4	18.8	62.5	18.8	–	–
2020	–	–	–	–	5	15	5	25	–	–	–	20.0	60.0	20.0	–	–
2021	–	–	–	–	4	17	–	21	–	–	–	19.0	81.0	–	–	–
2022	–	–	–	–	4	16	3	23	–	–	–	17.4	69.6	–	–	–

Table B.6: CRA 4: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER		
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	
1990	2	81	1	84	—	—	—	—	2.4	96.4	1.2	—	—	—	
1991	3	84	—	87	—	—	—	—	3.4	96.6	—	—	—	—	
1992	2	91	1	94	—	—	—	—	2.1	96.8	1.1	—	—	—	
1993	—	98	1	99	—	—	—	—	—	99.0	1.0	—	—	—	
1994	1	83	2	86	—	—	—	—	1.2	96.5	2.3	—	—	—	
1995	3	70	5	78	—	—	—	—	3.8	89.7	6.4	—	—	—	
1996	8	56	10	74	—	—	—	—	10.8	75.7	13.5	—	—	—	
1997	8	56	8	72	—	—	—	—	11.1	77.8	11.1	—	—	—	
1998	7	50	7	64	—	—	—	—	10.9	78.1	10.9	—	—	—	
1999	8	51	8	67	—	—	—	—	11.9	76.1	11.9	—	—	—	
2000	8	49	2	59	—	—	—	—	13.6	83.1	3.4	—	—	—	
2001	11	49	2	62	—	—	—	—	17.7	79.0	3.2	—	—	—	
2002	4	58	3	65	—	—	—	—	6.2	89.2	4.6	—	—	—	
2003	2	58	5	65	—	—	—	—	3.1	89.2	7.7	—	—	—	
2004	2	55	7	64	—	—	—	—	3.1	85.9	10.9	—	—	—	
2005	1	47	7	55	—	—	—	—	1.8	85.5	12.7	—	—	—	
2006	1	60	7	68	—	—	—	—	1.5	88.2	10.3	—	—	—	
2007	3	45	7	55	—	—	—	—	5.5	81.8	12.7	—	—	—	
2008	1	40	4	45	—	—	—	—	2.2	88.9	8.9	—	—	—	
2009	2	41	3	46	—	—	—	—	4.3	89.1	6.5	—	—	—	
2010	1	46	4	51	—	—	—	—	2.0	90.2	7.8	—	—	—	
2011	1	47	4	52	—	—	—	—	1.9	90.4	7.7	—	—	—	
2012	1	46	3	50	—	—	—	—	2.0	92.0	6.0	—	—	—	
2013	1	41	6	48	—	—	—	—	2.1	85.4	12.5	—	—	—	
2014	—	44	5	49	—	—	—	—	—	89.8	10.2	—	—	—	
2015	1	44	4	49	—	—	—	—	2.0	89.8	8.2	—	—	—	
2016	—	44	4	48	—	—	—	—	—	91.7	8.3	—	—	—	
2017	—	39	2	41	—	—	—	—	—	95.1	4.9	—	—	—	
2018	—	43	2	45	—	—	—	—	—	95.6	4.4	—	—	—	
2019	—	23	5	28	13	20	2	35	—	82.1	17.9	37.1	57.1	5.7	
2020	—	—	—	—	8	24	4	36	—	—	—	22.2	66.7	11.1	
2021	—	—	—	—	7	22	7	36	—	—	—	19.4	61.1	19.4	
2022	—	—	—	—	6	20	4	30	—	—	—	20.0	66.7	13.3	

Table B.7: CRA 5: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER			
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	<0.8	>1.2
1990	4	51	8	63	–	–	–	–	6.3	81.0	12.7	–	–	–	–	–
1991	17	47	3	67	–	–	–	–	25.4	70.1	4.5	–	–	–	–	–
1992	23	35	2	60	–	–	–	–	38.3	58.3	3.3	–	–	–	–	–
1993	22	34	3	59	–	–	–	–	37.3	57.6	5.1	–	–	–	–	–
1994	18	31	2	51	–	–	–	–	35.3	60.8	3.9	–	–	–	–	–
1995	20	22	6	48	–	–	–	–	41.7	45.8	12.5	–	–	–	–	–
1996	11	29	7	47	–	–	–	–	23.4	61.7	14.9	–	–	–	–	–
1997	9	33	5	47	–	–	–	–	19.1	70.2	10.6	–	–	–	–	–
1998	8	25	8	41	–	–	–	–	19.5	61.0	19.5	–	–	–	–	–
1999	8	26	5	39	–	–	–	–	20.5	66.7	12.8	–	–	–	–	–
2000	9	24	3	36	–	–	–	–	25.0	66.7	8.3	–	–	–	–	–
2001	7	23	4	34	–	–	–	–	20.6	67.6	11.8	–	–	–	–	–
2002	6	21	6	33	–	–	–	–	18.2	63.6	18.2	–	–	–	–	–
2003	3	26	4	33	–	–	–	–	9.1	78.8	12.1	–	–	–	–	–
2004	5	26	2	33	–	–	–	–	15.2	78.8	6.1	–	–	–	–	–
2005	4	25	2	31	–	–	–	–	12.9	80.6	6.5	–	–	–	–	–
2006	–	26	2	28	–	–	–	–	–	92.9	7.1	–	–	–	–	–
2007	–	25	2	27	–	–	–	–	–	92.6	7.4	–	–	–	–	–
2008	–	26	1	27	–	–	–	–	–	96.3	3.7	–	–	–	–	–
2009	2	23	2	27	–	–	–	–	7.4	85.2	7.4	–	–	–	–	–
2010	2	24	1	27	–	–	–	–	7.4	88.9	3.7	–	–	–	–	–
2011	1	26	1	28	–	–	–	–	3.6	92.9	3.6	–	–	–	–	–
2012	1	23	3	27	–	–	–	–	3.7	85.2	11.1	–	–	–	–	–
2013	1	21	5	27	–	–	–	–	3.7	77.8	18.5	–	–	–	–	–
2014	–	24	4	28	–	–	–	–	–	85.7	14.3	–	–	–	–	–
2015	–	24	5	29	–	–	–	–	–	82.8	17.2	–	–	–	–	–
2016	–	23	8	31	–	–	–	–	–	74.2	25.8	–	–	–	–	–
2017	1	24	4	29	–	–	–	–	3.4	82.8	13.8	–	–	–	–	–
2018	2	24	5	31	–	–	–	–	6.5	77.4	16.1	–	–	–	–	–
2019	–	18	6	24	9	7	1	17	–	75.0	25.0	52.9	41.2	5.9	–	–
2020	–	–	–	–	4	17	4	25	–	–	–	16.0	68.0	16.0	–	–
2021	–	–	–	–	2	21	3	26	–	–	–	7.7	80.8	11.5	–	–
2022	–	–	–	–	3	18	3	24	–	–	–	12.5	75.0	12.5	–	–

Table B.8: CRA 6: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘-’: no data..

Fishing year	CELR				ER				CELR						ER	
	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2		
	N vessels								% vessels							
1990	—	38	2	40	—	—	—	—	—	95.0	5.0	—	—	—		
1991	1	42	5	48	—	—	—	—	2.1	87.5	10.4	—	—	—		
1992	1	47	4	52	—	—	—	—	1.9	90.4	7.7	—	—	—		
1993	1	48	4	53	—	—	—	—	1.9	90.6	7.5	—	—	—		
1994	1	54	4	59	—	—	—	—	1.7	91.5	6.8	—	—	—		
1995	1	46	5	52	—	—	—	—	1.9	88.5	9.6	—	—	—		
1996	2	44	6	52	—	—	—	—	3.8	84.6	11.5	—	—	—		
1997	—	43	7	50	—	—	—	—	—	86.0	14.0	—	—	—		
1998	1	34	5	40	—	—	—	—	2.5	85.0	12.5	—	—	—		
1999	—	27	9	36	—	—	—	—	—	75.0	25.0	—	—	—		
2000	1	31	1	33	—	—	—	—	3.0	93.9	3.0	—	—	—		
2001	3	29	2	34	—	—	—	—	8.8	85.3	5.9	—	—	—		
2002	5	27	—	32	—	—	—	—	15.6	84.4	—	—	—	—		
2003	3	29	3	35	—	—	—	—	8.6	82.9	8.6	—	—	—		
2004	3	31	—	34	—	—	—	—	8.8	91.2	—	—	—	—		
2005	—	34	1	35	—	—	—	—	—	97.1	2.9	—	—	—		
2006	2	33	1	36	—	—	—	—	5.6	91.7	2.8	—	—	—		
2007	—	33	2	35	—	—	—	—	—	94.3	5.7	—	—	—		
2008	—	34	1	35	—	—	—	—	—	97.1	2.9	—	—	—		
2009	—	32	5	37	—	—	—	—	—	86.5	13.5	—	—	—		
2010	—	30	6	36	—	—	—	—	—	83.3	16.7	—	—	—		
2011	—	33	2	35	—	—	—	—	—	94.3	5.7	—	—	—		
2012	—	35	3	38	—	—	—	—	—	92.1	7.9	—	—	—		
2013	—	33	1	34	—	—	—	—	—	97.1	2.9	—	—	—		
2014	1	33	2	36	—	—	—	—	2.8	91.7	5.6	—	—	—		
2015	1	33	3	37	—	—	—	—	2.7	89.2	8.1	—	—	—		
2016	—	35	1	36	—	—	—	—	—	97.2	2.8	—	—	—		
2017	2	38	1	41	—	—	—	—	4.9	92.7	2.4	—	—	—		
2018	—	37	2	39	—	—	—	—	—	94.9	5.1	—	—	—		
2019	1	21	2	24	11	19	5	35	4.2	87.5	8.3	31.4	54.3	14.3		
2020	—	—	—	—	8	23	2	33	—	—	—	24.2	69.7	6.1		
2021	—	—	—	—	4	26	4	34	—	—	—	11.8	76.5	11.8		
2022	—	—	—	—	8	26	4	38	—	—	—	21.1	68.4	10.5		

Table B.9: CRA 7: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER			
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2		
1990	—	34	4	38	—	—	—	—	—	89.5	10.5	—	—	—		
1991	—	44	3	47	—	—	—	—	—	93.6	6.4	—	—	—		
1992	1	30	5	36	—	—	—	—	2.8	83.3	13.9	—	—	—		
1993	2	32	4	38	—	—	—	—	5.3	84.2	10.5	—	—	—		
1994	—	30	3	33	—	—	—	—	—	90.9	9.1	—	—	—		
1995	3	24	2	29	—	—	—	—	10.3	82.8	6.9	—	—	—		
1996	2	19	1	22	—	—	—	—	9.1	86.4	4.5	—	—	—		
1997	—	6	1	7	—	—	—	—	—	85.7	14.3	—	—	—		
1998	1	14	5	20	—	—	—	—	5.0	70.0	25.0	—	—	—		
1999	—	14	4	18	—	—	—	—	—	77.8	22.2	—	—	—		
2000	—	22	4	26	—	—	—	—	—	84.6	15.4	—	—	—		
2001	—	19	2	21	—	—	—	—	—	90.5	9.5	—	—	—		
2002	—	19	1	20	—	—	—	—	—	95.0	5.0	—	—	—		
2003	—	17	—	17	—	—	—	—	—	100.0	—	—	—	—		
2004	—	13	1	14	—	—	—	—	—	92.9	7.1	—	—	—		
2005	—	12	2	14	—	—	—	—	—	85.7	14.3	—	—	—		
2006	—	13	1	14	—	—	—	—	—	92.9	7.1	—	—	—		
2007	—	16	3	19	—	—	—	—	—	84.2	15.8	—	—	—		
2008	2	10	3	15	—	—	—	—	13.3	66.7	20.0	—	—	—		
2009	1	15	3	19	—	—	—	—	5.3	78.9	15.8	—	—	—		
2010	—	13	4	17	—	—	—	—	—	76.5	23.5	—	—	—		
2011	—	9	3	12	—	—	—	—	—	75.0	25.0	—	—	—		
2012	1	10	1	12	—	—	—	—	8.3	83.3	8.3	—	—	—		
2013	—	7	2	9	—	—	—	—	—	77.8	22.2	—	—	—		
2014	—	6	5	11	—	—	—	—	—	54.5	45.5	—	—	—		
2015	—	7	5	12	—	—	—	—	—	58.3	41.7	—	—	—		
2016	—	9	2	11	—	—	—	—	—	81.8	18.2	—	—	—		
2017	—	8	3	11	—	—	—	—	—	72.7	27.3	—	—	—		
2018	—	8	3	11	—	—	—	—	—	72.7	27.3	—	—	—		
2019	—	4	1	5	—	8	—	8	—	80.0	20.0	—	100.0	—		
2020	—	—	—	—	1	8	1	10	—	—	—	10.0	80.0	10.0		
2021	—	—	—	—	—	11	—	11	—	—	—	—	100.0	—		
2022	—	—	—	—	—	8	2	10	—	—	—	—	80.0	20.0		

Table B.10: CRA 8: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR						ER	
	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2		
	N vessels								% vessels							
1990	14	103	20	137	—	—	—	—	10.2	75.2	14.6	—	—	—		
1991	11	116	22	149	—	—	—	—	7.4	77.9	14.8	—	—	—		
1992	18	117	12	147	—	—	—	—	12.2	79.6	8.2	—	—	—		
1993	16	115	15	146	—	—	—	—	11.0	78.8	10.3	—	—	—		
1994	12	102	12	126	—	—	—	—	9.5	81.0	9.5	—	—	—		
1995	13	84	18	115	—	—	—	—	11.3	73.0	15.7	—	—	—		
1996	9	85	19	113	—	—	—	—	8.0	75.2	16.8	—	—	—		
1997	7	88	14	109	—	—	—	—	6.4	80.7	12.8	—	—	—		
1998	9	71	23	103	—	—	—	—	8.7	68.9	22.3	—	—	—		
1999	6	74	12	92	—	—	—	—	6.5	80.4	13.0	—	—	—		
2000	6	73	9	88	—	—	—	—	6.8	83.0	10.2	—	—	—		
2001	11	56	8	75	—	—	—	—	14.7	74.7	10.7	—	—	—		
2002	8	59	4	71	—	—	—	—	11.3	83.1	5.6	—	—	—		
2003	5	61	1	67	—	—	—	—	7.5	91.0	1.5	—	—	—		
2004	1	58	3	62	—	—	—	—	1.6	93.5	4.8	—	—	—		
2005	7	52	2	61	—	—	—	—	11.5	85.2	3.3	—	—	—		
2006	1	51	7	59	—	—	—	—	1.7	86.4	11.9	—	—	—		
2007	4	53	3	60	—	—	—	—	6.7	88.3	5.0	—	—	—		
2008	6	51	9	66	—	—	—	—	9.1	77.3	13.6	—	—	—		
2009	1	51	13	65	—	—	—	—	1.5	78.5	20.0	—	—	—		
2010	3	53	10	66	—	—	—	—	4.5	80.3	15.2	—	—	—		
2011	1	53	9	63	—	—	—	—	1.6	84.1	14.3	—	—	—		
2012	2	56	8	66	—	—	—	—	3.0	84.8	12.1	—	—	—		
2013	4	51	9	64	—	—	—	—	6.3	79.7	14.1	—	—	—		
2014	3	50	14	67	—	—	—	—	4.5	74.6	20.9	—	—	—		
2015	—	52	13	65	—	—	—	—	—	80.0	20.0	—	—	—		
2016	4	48	16	68	—	—	—	—	5.9	70.6	23.5	—	—	—		
2017	3	40	23	66	—	—	—	—	4.5	60.6	34.8	—	—	—		
2018	3	43	20	66	—	—	—	—	4.5	65.2	30.3	—	—	—		
2019	4	35	22	61	9	28	12	49	6.6	57.4	36.1	18.4	57.1	24.5		
2020	—	—	—	—	11	40	11	62	—	—	—	17.7	64.5	17.7		
2021	—	—	—	—	10	40	15	65	—	—	—	15.4	61.5	23.1		
2022	—	—	—	—	10	48	11	69	—	—	—	14.5	69.6	15.9		

Table B.11: CRA 9: Number of vessels and percentage of vessels in each of three *vcf* categories by reporting form type and fishing year from 1990–91 to 2022–23.
Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting. ‘–’: no data.

Fishing year	CELR				ER				CELR				ER			
	<0.8 N vessels	0.8-1.2	>1.2	Total	<0.8	0.8-1.2	>1.2	Total	<0.8 % vessels	0.8-1.2	>1.2	<0.8	0.8-1.2	>1.2	<0.8	>1.2
1990	–	10	3	13	–	–	–	–	–	76.9	23.1	–	–	–	–	–
1991	–	12	–	12	–	–	–	–	–	100.0	–	–	–	–	–	–
1992	–	11	1	12	–	–	–	–	–	91.7	8.3	–	–	–	–	–
1993	–	8	2	10	–	–	–	–	–	80.0	20.0	–	–	–	–	–
1994	2	5	3	10	–	–	–	–	20.0	50.0	30.0	–	–	–	–	–
1995	–	8	1	9	–	–	–	–	–	88.9	11.1	–	–	–	–	–
1996	1	8	1	10	–	–	–	–	10.0	80.0	10.0	–	–	–	–	–
1997	–	12	–	12	–	–	–	–	–	100.0	–	–	–	–	–	–
1998	–	8	2	10	–	–	–	–	–	80.0	20.0	–	–	–	–	–
1999	–	7	2	9	–	–	–	–	–	77.8	22.2	–	–	–	–	–
2000	–	9	–	9	–	–	–	–	–	100.0	–	–	–	–	–	–
2001	–	10	1	11	–	–	–	–	–	90.9	9.1	–	–	–	–	–
2002	–	9	1	10	–	–	–	–	–	90.0	10.0	–	–	–	–	–
2003	–	8	1	9	–	–	–	–	–	88.9	11.1	–	–	–	–	–
2004	1	8	1	10	–	–	–	–	10.0	80.0	10.0	–	–	–	–	–
2005	–	7	1	8	–	–	–	–	–	87.5	12.5	–	–	–	–	–
2006	–	7	–	7	–	–	–	–	–	100.0	–	–	–	–	–	–
2007	–	7	–	7	–	–	–	–	–	100.0	–	–	–	–	–	–
2008	1	6	1	8	–	–	–	–	12.5	75.0	12.5	–	–	–	–	–
2009	–	6	1	7	–	–	–	–	–	85.7	14.3	–	–	–	–	–
2010	–	6	1	7	–	–	–	–	–	85.7	14.3	–	–	–	–	–
2011	–	4	2	6	–	–	–	–	–	66.7	33.3	–	–	–	–	–
2012	–	3	2	5	–	–	–	–	–	60.0	40.0	–	–	–	–	–
2013	–	3	2	5	–	–	–	–	–	60.0	40.0	–	–	–	–	–
2014	–	3	2	5	–	–	–	–	–	60.0	40.0	–	–	–	–	–
2015	–	5	3	8	–	–	–	–	–	62.5	37.5	–	–	–	–	–
2016	–	4	2	6	–	–	–	–	–	66.7	33.3	–	–	–	–	–
2017	–	4	2	6	–	–	–	–	–	66.7	33.3	–	–	–	–	–
2018	1	4	2	7	–	–	–	–	14.3	57.1	28.6	–	–	–	–	–
2019	–	2	2	4	1	3	2	6	–	50.0	50.0	16.7	50.0	33.3	–	–
2020	–	–	–	–	–	4	2	6	–	–	–	–	66.7	33.3	–	–
2021	–	–	–	–	1	4	2	7	–	–	–	14.3	57.1	28.6	–	–
2022	–	–	–	–	–	4	1	5	–	–	–	–	80.0	20.0	–	–

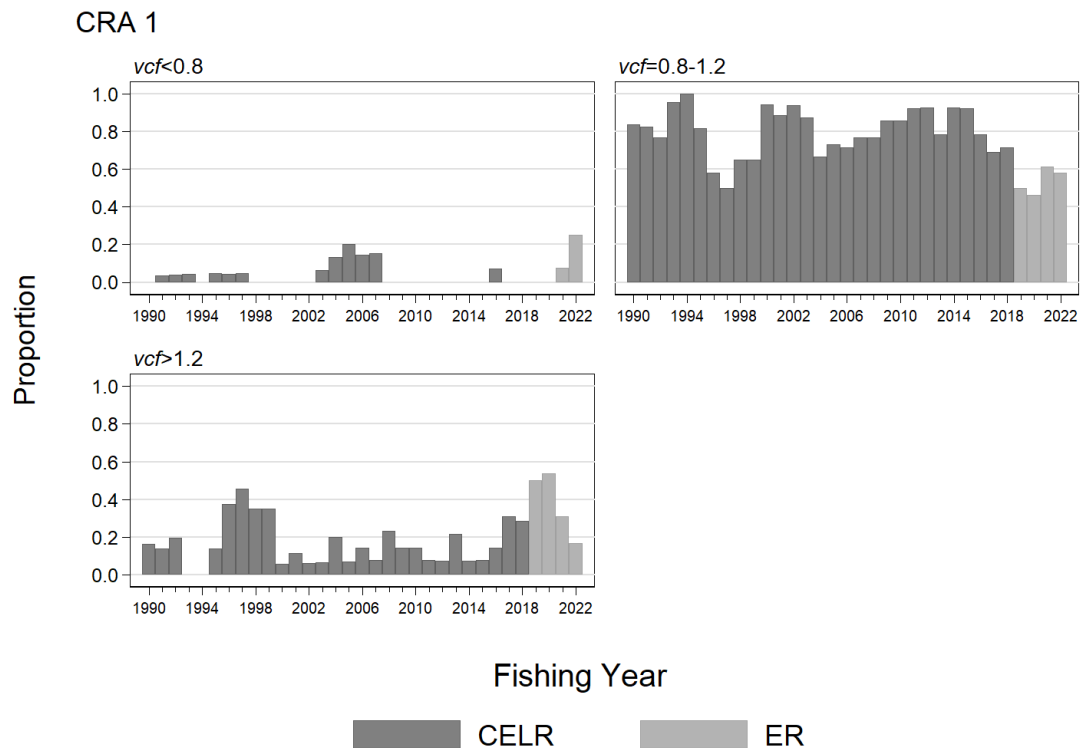


Figure B.1: CRA 1: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR = paper forms; ER = electronic reporting.

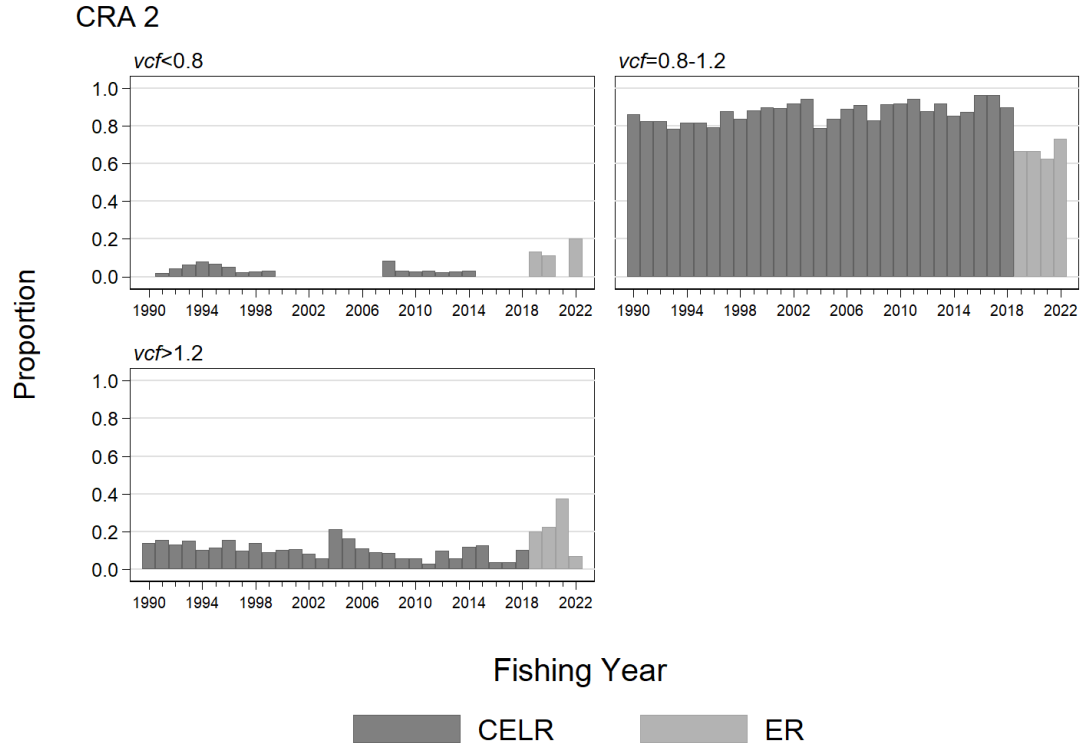


Figure B.2: CRA 2: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR = paper forms; ER = electronic reporting.

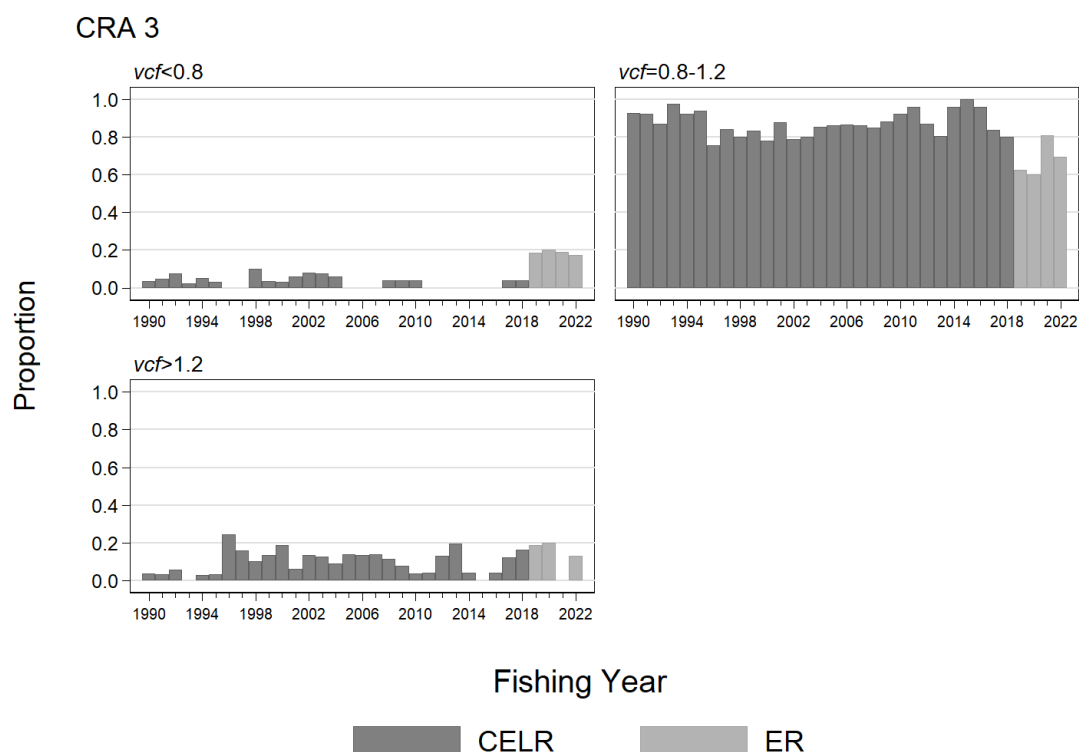


Figure B.3: CRA 3: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

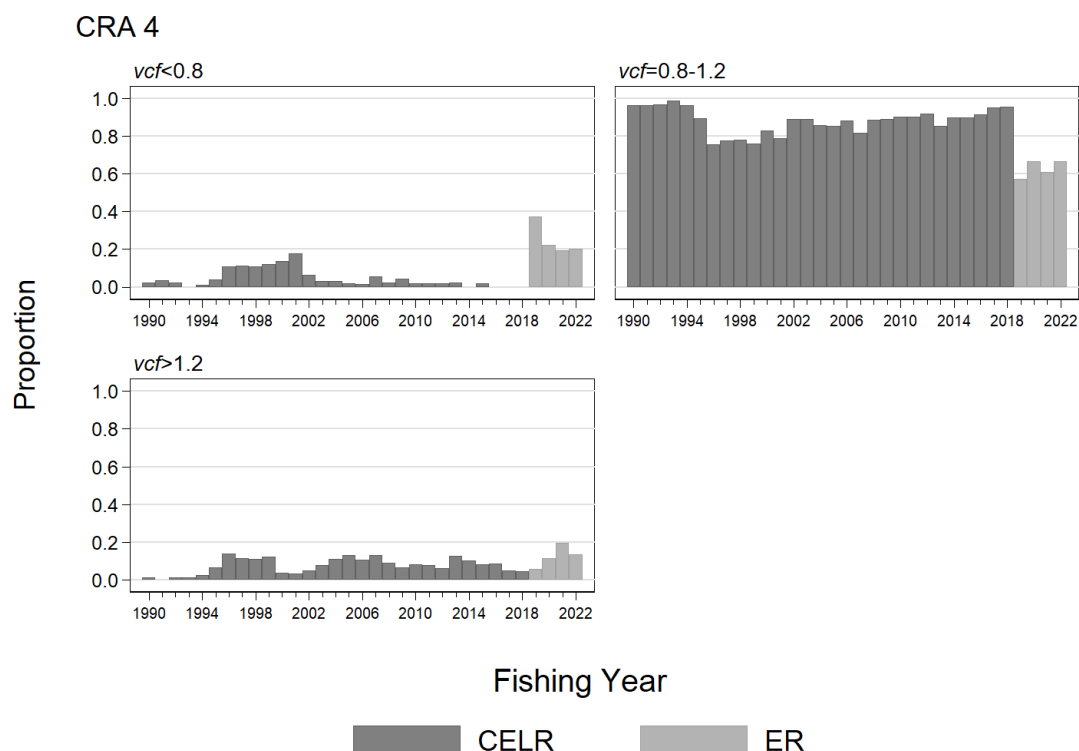


Figure B.4: CRA 4: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

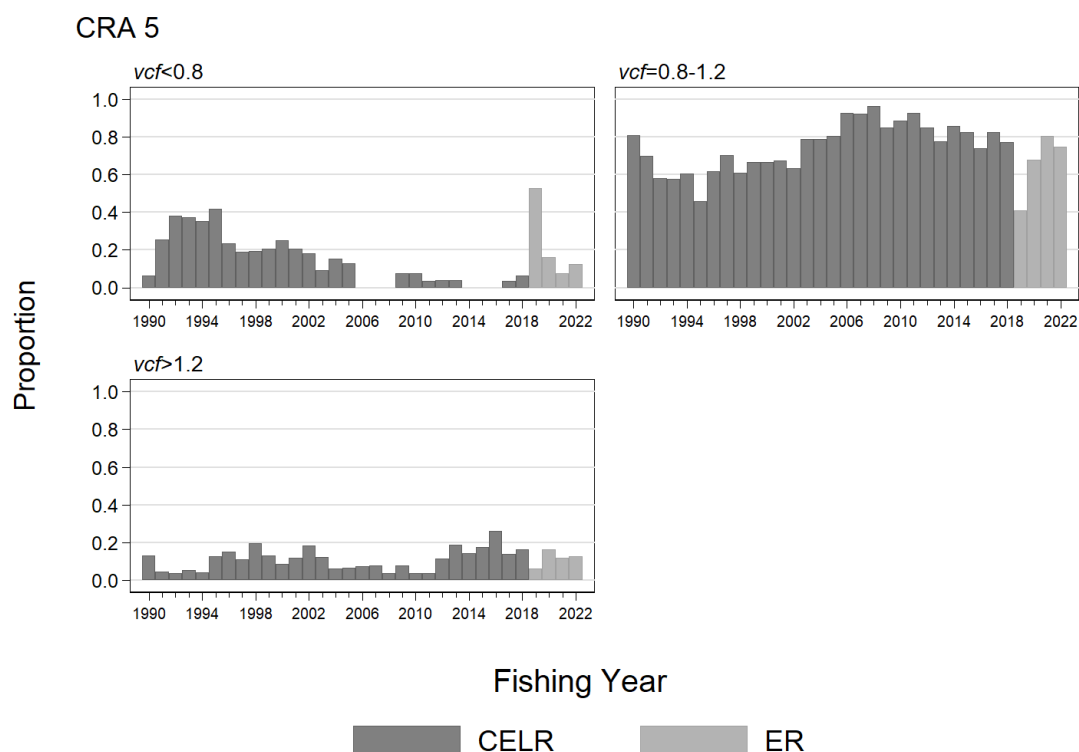


Figure B.5: CRA 5: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

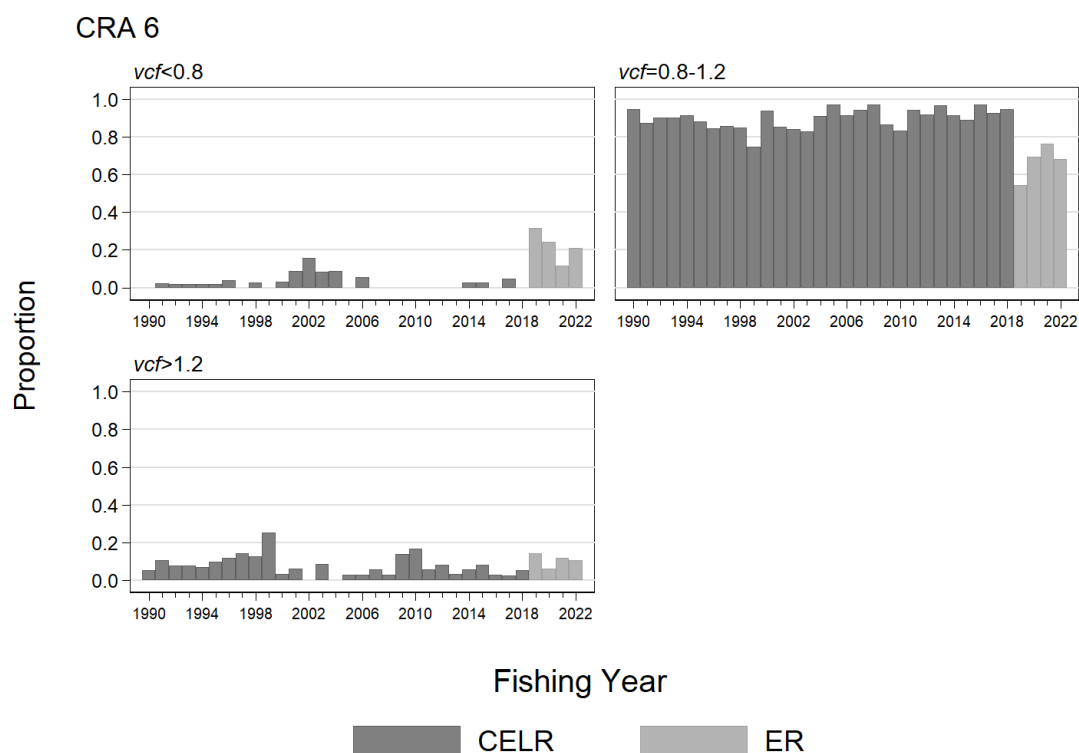


Figure B.6: CRA 6: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

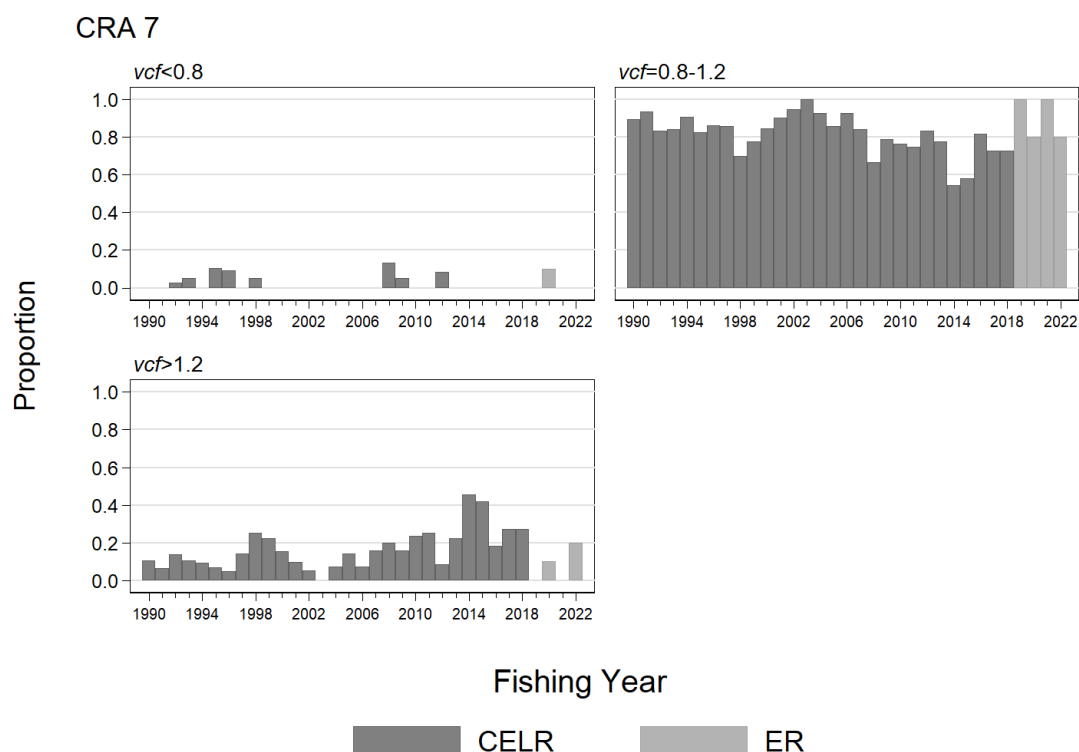


Figure B.7: CRA 7: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

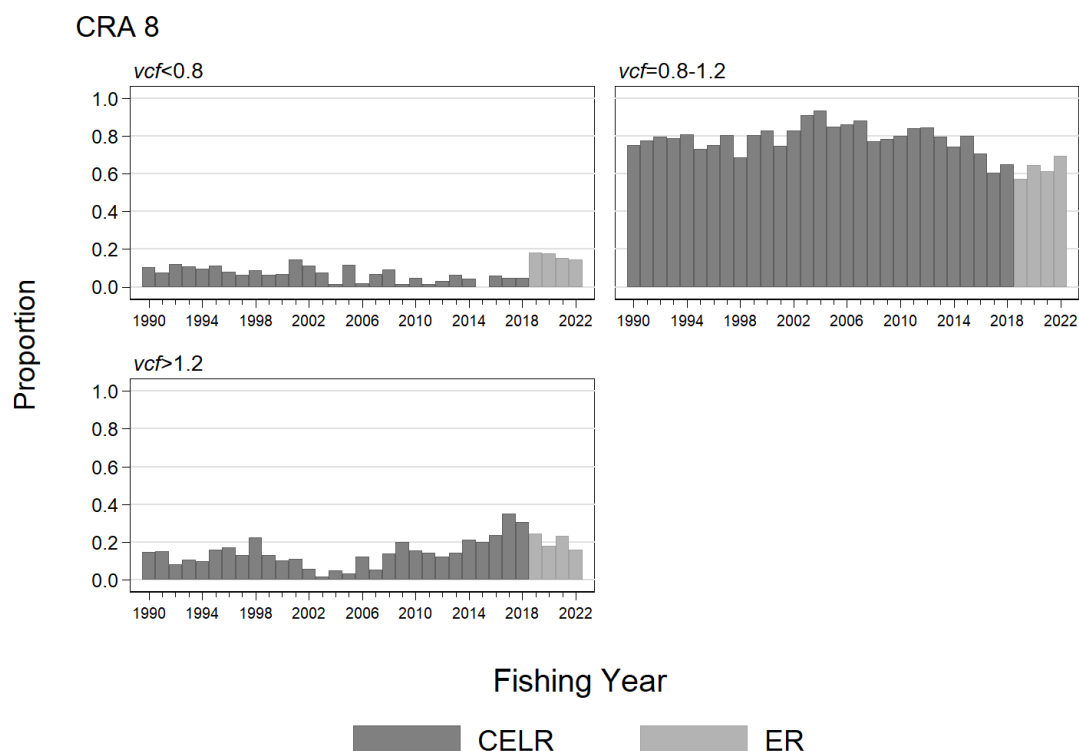


Figure B.8: CRA 8: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

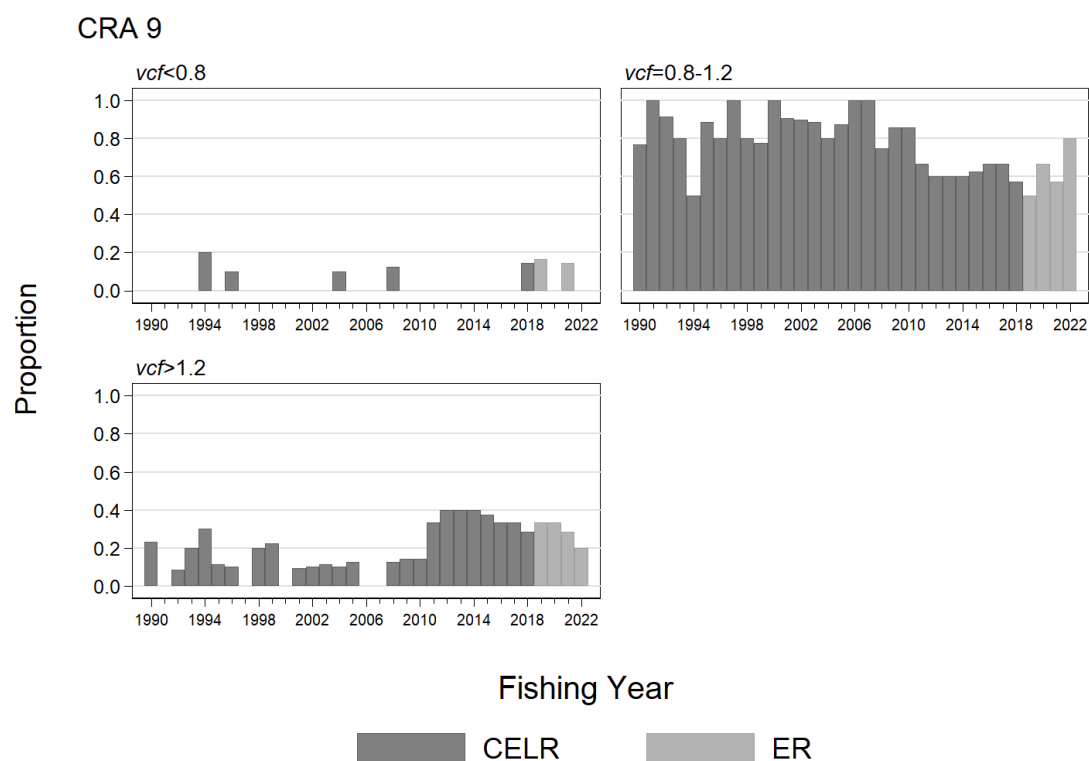


Figure B.9: CRA 9: plot of vcf series by fishing year and data form type from 1990–91 to 2022–23; 2019 CELR proportions have been dropped. Vessels with <1000 kg of annual QMA landings (“A”, “L”, “X”, “LR”, “LFL”, “QL” destination codes) have been dropped. CELR=paper forms; ER=electronic reporting.

B.2 LIST OF ALL FISHERIES NEW ZEALAND LANDINGS AND DISPOSAL CODES

Note: these tables have been extracted from Fisheries Circular 2019 (E-logbook Users Instructions and Codes)

Part 5: Disposal codes

Disposal type	Disposal code	Required to be recorded on Monthly Harvest Return?
Fish or fish product used for human consumption on board a vessel	E	Yes
Fish or fish product of a stock managed under the QMS that are abandoned in the sea, or accidentally lost at sea, except for fish or fish product to which another disposal code applies	A	Yes
Loss of fish or fish product from a holding container in the water (e.g. through theft, mortality, escape, or damage to fish product)	HW	Yes
Fish or fish product taken or used for bait during the period of a trip	U	Yes
Spiny dogfish that are returned to the water	M	Yes
Blue shark (<i>Prionace glauca</i>), mako shark (<i>Isurus oxyrinchus</i>) or porbeagle shark (<i>Lamna nasus</i>) that are returned to the water dead or near-dead in accordance with the requirements set out for those species in Schedule 6 of the Act	Z	Yes
Fish or fish products of a stock subject to the QMS that are returned to, or abandoned in, the sea in accordance with the requirements set out in section 72(5)(c)(i) to (iii) of the Act	J	Yes
Fish or fish product of a stock not managed under the QMS that are returned to the sea, abandoned in the sea, or accidentally lost at sea	D	No
Fish or fish product placed in a holding receptacle in New Zealand fisheries waters	P	No
Fish of stocks subject to the QMS that are— (a) listed in Schedule 6 of the Act; and (b) not spiny dogfish; and (c) not blue shark, mako shark or porbeagle shark that are returned to the water dead or near-dead; and (d) not rock lobster that must be returned to the sea; and (e) returned to the water in accordance with the requirements set out for the relevant species or class of fish in Schedule 6 of the Act	X	No
Fish below a minimum legal size, width or weight	Y	No
Fish above a maximum legal size, width or weight	G	No
Rock lobster that is alive and must be returned to the sea (excludes rock lobster below a minimum legal size)	K	No
Fish or fish product removed from holding receptacle in New Zealand fisheries waters	N	No

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Fisheries Circular 2019 (E-logbook Users Instructions and Codes)

Part 6: Landing codes

Landing type	Landing code	Required to be recorded on Monthly Harvest Return?
Fish or fish product conveyed or sold to an LFR at the time of landing	L	Yes
Live fish that is placed in a holding container on land at the conclusion of a trip	LF	No
Fish or fish product conveyed or sold to an LFR that has previously been recorded on a landing report under landing code LF	LFL	Yes
Fish or fish product conveyed or sold to an LFR at the time of landing but that has previously recorded under landing code R	LR	Yes
Fish or fish product conveyed or transported on a vessel leaving the exclusive economic zone by its seaward boundary having been granted permission to do so under section 110 of the Act	O	Yes
Fish defined as landed under regulation 4(2)(b) of the Fisheries (Reporting) Regulations 2017 (end of fishing year)	EOY	Yes
Fish or fish product seized by a Fishery Officer under section 207 of the Act	S	Yes
Fish or fish products sold under section 191(2) of the Act (commonly referred to as wharf sales)	W	Yes
Loss of fish or fish product from a holding container on land (e.g. through mortality, escape, or damage to fish product)	HL	Yes
Fish or fish product taken and stored during the period of a trip for subsequent use as bait for personal use	B	Yes
Fish or fish product conveyed or sold to an LFR after being transferred from a vessel to another vessel. In this scenario all catch balancing and reporting obligations lie with the operator of the vessel that caught the fish. See below:	TL	Yes
Fish or fish product retained on board a vessel at the time of landing	R	No
Fish or fish product conveyed or sold to an LFR after being transferred from one vessel to another. In this scenario catch balancing obligations, lie with the operator of vessel to which the fish was transferred together with the obligation to record the fish received on a landing report. See below:	TT	No ³
Fish landed under an approval under section 111 of the Act	F	No
Fish or fish product, excluding live fish, placed in a holding container on land at the time of landing, before being conveyed or sold to an LFR. . However, if another landing code also applies, use that code instead. See below:	QL	Yes

³ Fish recorded under this code are not required to be recorded on an MHR by the operator of the vessel from which the fish was transferred.

Fish or fish product taken by a scientific observer under Part 12 of the Act	V	No
Predated fish (any QMS fish that has been damaged by other organisms and is unfit for human consumption)	PF	Yes
Fish or fish product taken under section 81A of the Animal Products Act 1999, for the purposes of biotoxin sampling	BS	No

Further explanation for the use of TL, TT and QL landing codes

If it is a transhipment where the catch is owned by the catching vessel. (TL)

- 1) Vessel A completes Landing Report with landing code TL as soon as catch is transferred to vessel B (along with registration number of vessel B)
- 2) Vessel B has no reporting obligations, but **must keep transhipped catch separate from other catch on board** and inform LFR of catching vessel A details.
- 3) LFR provides greenweight information for vessel A to update Landing Report

If it is a transhipment where the catch is owned by the landing vessel. (TT)

- 1) Vessel A completes Landing Report with landing code TT as soon as catch is transferred to vessel B (along with registration number of vessel B and greenweight estimate).
- 2) Vessel B takes ownership of catch and reporting obligations (including MHR). **The transhipped catch does not need to be kept separate from other catch on board.**
- 3) Vessel B completes Landing Report with landing code L.
- 4) LFR provides greenweight information for vessel B to update Landing Report.

If dead fish or fish product is stored on land in a holding container after landing and before being sold to a licensed fish receiver (QL)

- 1) Fish or fish product is recorded in a way that it is identifiable (as per reg 4d of the Fisheries (Recordkeeping) Regulations 1990) and placed into the holding container, an associated landing report is then provided for that trip.
- 2) Catch from more than one trip may be placed into the same holding container
- 3) The fish product is sold or otherwise conveyed to the licensed fish receiver.
- 4) licensed fish receiver provides greenweight information.
- 5) Based on information provided by the licensed fish receiver, the fisher then updates each landing report with the corresponding greenweight.
- 6) If the licensed fish receiver information is not provided on a trip-specific basis, the fisher may pro rata the information in a manner that is consistent with the information having been provided for each separate trip.

APPENDIX C. ERROR CODES USED IN CRACE

The following tables describe the error fields that are active in CRACE (Bentley et al. 2005). There are seven error codes used in CRACE for the Fisheries New Zealand catch effort data: two apply to the estimated catch information, two apply to the potlift and statistical area information, and three apply to the landing data.

The following text table describes the three main data tables used in CRACE to contain components of the Fisheries New Zealand catch/effort data (see Ministry of Fisheries 2010b):

Data table	Description
[estimated_subcatch]	contains the catch estimates by species for each reported [fishing_event]. The fisher is only required to report the top 5 species by weight.
[fishing_event]	contains the date, effort and statistical area for the day of fishing. The fisher is required to report each day of fishing in a statistical area.
[landing]	contains the date of landing, the green weight of the landed lobsters and other auxiliary information. Landings can be reported in a number of categories, designated as “destination codes”.

Error codes are applied to data fields present in the Fisheries New Zealand data obtained with each data extract. Error codes are labelled 0–3, ranked from “no error” (=0) to “fatal error” (=3). By convention, all rock lobster catch/effort analyses are based on records with error codes “0” or “1”. Records with error codes “2” or “3” are discarded. The convention used in the tables below is to use indicated fonts to designate database [tables] and database [fields].

Table C.1: Error codes used in the [estimated_subcatch] table, showing the definitions for each error level and number of records in each error level summed over the period 1 Oct 1989 to 31 March 2023 (Fisheries New Zealand Replog 15071 [22 May 2023]).

Error Code	Definition	Number records
field: [catch_weight]		
0	no error	1 289 740
1	catch >2000 kg and catch <= 3000 kg	260
2	catch >3000 kg and catch <= 4000 kg	48
3	catch =Null or catch >4000	453
find duplicates		
0	no error	1 285 597
	N([event_key] & [species]="CRA")>1 and	
3	[estimated_catch]<>Max[estimated_catch]	4 904

Table C.2: Error codes used in the [fishing_event] table, showing the definitions for each error level and number of records in each error level summed over the period 1 Oct 1989 to 31 March 2023 (Fisheries New Zealand Replog 15071 [22 May 2023]).

Error Code	Definition	Number records
field: [pots_lifted]		
0	no error	952 457
2	A: 3*[mean] for vessel-month-year and lifts>60	
2	B: 3*[pots_overnight] and lifts>60	16 935
2	C: lifts <=10 and >30 kg/potlift	
3	A: lifts=NULL	
3	B: lifts>500	4 782
3	C: lifts=0 and catch >0 kg	
field: [statistical_area]		
0	no error	952 941
1	>0 and <44 ¹	17 718
1	49,50,52 or 51 ¹	
2	outlier: if <5% of records for vessel-month and >2 statistical areas away from mode for that vessel	1 851
3	Null or >43 and not 49,50,52,51	1 664

¹ 900 is added to these fields because all rock lobster statistical areas are coded 901 and above.

Table C.3: Error codes used in the [landings] table, showing the definitions for each error level and number of records in each error level summed over the period 1 Oct 1989 to 31 March 2023 (Fisheries New Zealand Replog 15071 [22 May 2023]).

Error Code	Definition	Number records
field: [calc_error]		
0	no error	1 142 802
1	>(2*[unit_number]*[unit_weight]*[conv_factor]) and >200 kg	2 709
2	>(5*[unit_number]*[unit_weight]*[conv_factor]) and >500 kg	649
3	>(10*[unit_number]*[unit_weight]*[conv_factor]) and >1000 kg	323
field: [green_weight]		
0	no error	1 143 255
1	landing >2 000 kg and landing <=6 000 kg	722
2	landing>6 000 kg and landing <=10 000 kg	23
3	landing=NULL or landing>10 000 kg	2 483
find duplicates		
0	no error	1 144 740
	N([source],[landing_datetime],[species_code],[fishstock_code],[state_code],[vessel_key],[green_weight],[green_weight_type])	1 743
3	and [destination_type]="L" and [green_weight]>100 kg	

APPENDIX D. CATCH CORRECTION ALGORITHM DOCUMENTATION

D.1 DOCUMENTATION FOR THE B4 CATCH CORRECTION ALGORITHM

Note: the following algorithm is performed on records where the error code is ≤ 1 (Bentley et al. 2005) (see Appendix C for a description of these error codes and the number of records in each error code category).

Step 1: aggregate all landings by vessel (i) and month (m) within a fishing year (y):

$$\text{Eq. D.1} \quad L_{imy} = \sum_{g=1}^{n_{imy}^l} L_{giy}$$

where L_{giy} = landed weight in record g for vessel i in month m and year y ; there are n_{imy}^l such records;

L_{giy} can be composed of “L” or “L+F+X” destination codes⁴.

Step 2:

A. Create a list of vessels V_{my} that are active in month (m) within a fishing year, based on the [fishing event] table.

B. if $L_{V_{my}my} = 0$ then $L_{V_{(m+1)y}(m+1)y} = 0$

note that the pointer array V_{my} evaluates to a vessel subscript i .

Step 3: aggregate all estimated catch weight by vessel (i) and month (m) within a fishing year (y):

$$\text{Eq. D.2} \quad C_{imy} = \sum_{h=1}^{n_{imy}^c} C_{hiy}$$

where C_{hiy} = estimated catch weight in record h for vessel i in month m and year y ; there are n_{imy}^c such records;

Step 4: aggregate all estimated catch weight and potlifts by vessel (i), month (m) and statistical area (a) within a fishing year (y):

$$\text{Eq. D.3} \quad C_{iamy} = \sum_{j=1}^{n_{iamy}^c} C_{jiy}$$

where C_{jiy} = estimated catch weight in record j for vessel i in month m , statistical area (a) and year y ; there are n_{iamy}^c such records;

$$\text{Eq. D.4} \quad P_{iamy} = \sum_{j=1}^{n_{iamy}^c} P_{jiy}$$

where P_{jiy} = number potlifts in record j for vessel i in month m , statistical area (a) and year y ; there are n_{iamy}^c such records;

Step 5: estimate landed catch weight by vessel (i), month (m) and statistical area (a) within a fishing year (y):

$$\text{Eq. D.5} \quad \hat{L}_{iamy} = \frac{C_{iamy}}{C_{imy}} L_{imy}$$

where $\hat{L}_{iamy}$ = estimated landed weight in area a for vessel i in month m and year y ;

note that $\hat{L}_{iamy} = 0$ for the month/vessel strata identified in Step 2

Step 6: obtain the QMA (Q_{iamy}^c) based on the statistical area in stratum $iamy$ (use associations in Table D.1)

The nominal arithmetic CPUE (I_{iamy}) in stratum $iamy$ is defined in Eq. D.10.

D.2 DOCUMENTATION FOR THE VARIANTS OF “F” CATCH CORRECTION ALGORITHM

Note 1: this algorithm is labelled F because E is the final algorithm described by Bentley et al. (2005)

Note 2: the algorithm uses records where the error code is ≤ 1 (Bentley et al. 2005) (see Appendix C for a description of these error codes and the number of records in each error code category)

Note 3: a detailed comparison of the F1, F2, and F3 variants with the B4 algorithm can be found in Appendix B of Starr (2013)

Step 1: calculate vessel correction factors (vcf) (vcf_{iy}) for each vessel and fishing year:

$$\text{Eq. D.6} \quad vcf_{iy} = \frac{\sum_{g=1}^{n_{iy}^l} L_{g_{iy}}}{\sum_{h=1}^{n_{iy}^c} C_{h_{iy}}}$$

where $L_{g_{iy}}$ = landed weight in record g for vessel i in year y ; there are n_{iy}^l such records;
 $C_{h_{iy}}$ = estimated catch weight in record h for vessel i in year y ; there are n_{iy}^c such records;
 $L_{g_{iy}}$ can be composed of “L⁴” or “L⁴+F” or “L⁴+F+X” destination codes.

Step 2: truncate vcf_{iy} by setting lower lb_{iy} and upper ub_{iy} bounds:

- A. variant algorithm F1: replace $vcf_{iy} = 1.0$ if $vcf_{iy} < lb_{iy}$;
 $vcf_{iy} = 1.0$ if $vcf_{iy} > ub_{iy}$;
- B. variant algorithm F2: replace $vcf_{iy} = \text{NULL}$ if $vcf_{iy} < lb_{iy}$;
 $vcf_{iy} = \text{NULL}$ if $vcf_{iy} > ub_{iy}$;
- C. variant algorithm F3: replace $vcf_{iy} = lb_{iy}$ if $vcf_{iy} < lb_{iy}$;
 $vcf_{iy} = ub_{iy}$ if $vcf_{iy} > ub_{iy}$;
- D. variant algorithm F0: do not drop any vessels, regardless of vcf value.

Note 4: data for vessels outside the bounds are dropped in F2, but retained in F1 using the estimated catch and retained in F3 using the upper or lower bound for vcf_{iy} . By agreement within the RLWG: $lb_{iy} = 0.8$ and $ub_{iy} = 1.2$ for all CRA QMAs when operating the F2 algorithm.

Step 3: Apply the vcf to every estimated catch record for vessel i in fishing year y :

$$\text{Eq. D.7} \quad \hat{L}_{h_{iy}} = vcf_{iy} C_{h_{iy}}$$

where $\hat{L}_{h_{iy}}$ = estimated landed weight for record h associated with estimated catch weight $C_{h_{iy}}$.

Step 4: determine the QMA for each $\hat{L}_{h_{iy}}$ using the following procedure:

- A. link the effort data for record h with the associated landing g using the [trip] field;
- B. obtain the QMA (Q_g^l) from the landing record g and determine the QMA (Q_h^c) from the statistical area (based on the associations in Table D.1) for effort record h ;

- C. if $Q_g^l = Q_h^c$, then $Q_{hiy} = Q_h^c = Q_g^l$;
- D. if $Q_g^l \neq Q_h^c$, then $Q_{hiy} = Q_h^l$.
- E. if $Q_g^l = [\text{NULL}]$, then $Q_{hiy} = Q_h^c$.

Note 5: there can only be one QMA per trip for the procedure in Step 4 to work unambiguously; this information can be obtained either from the fishing event data or from the landing data, with the landing data being the preferred source

Step 5: aggregate the data set to vessel (*i*) /month (*m*) /statistical_area (*a*) /year (*y*) strata, summing the estimated landed weights and associated pot lifts:

$$\text{Eq. D.8} \quad \hat{L}_{iamy} = \sum_{j=1}^{n_{iamy}^c} \hat{L}_{jiy}$$

where $\hat{L}_{jiy}$ = estimated landed weight for record *j* in stratum *iamy*; there are n_{iamy}^c such records;

$$\text{Eq. D.9} \quad P_{iamy} = \sum_{j=1}^{n_{iamy}^c} P_{jiy}$$

where P_{jiy} = number potlifts in record *j* for stratum *iamy*; there are n_{iamy}^c such records;

Note 6: nominal arithmetic CPUE (I_{iamy}) in stratum *iamy* is (this is not part of the F algorithm):

$$\text{Eq. D.10} \quad I_{iamy} = \frac{\hat{L}_{iamy}}{P_{iamy}}$$

Table D.1: Assignment table for QMA's derived from rock lobster statistical areas (Figure 1).

QMA	1	2	3	4	5	6	7
CRA 1	901	902	903	904	939		
CRA 2	905 ¹	906	907	908			
CRA 3	909 ¹	910	911				
CRA 4	912	913	914	915	934		
CRA 5	916	917	918	919	932	933	
CRA 6	940	941	942	943			
CRA 7	920	921					
CRA 8	922 ¹	923	924	925	926	927	928
CRA 9	929 ¹	930	931	935	936	937	938

¹ straddling statistical area: the assignment rules in this table ignore this status.

APPENDIX E. CRA 2 LOGBOOK CPUE UPDATE TO 2022–23

E.1 CATCH PER UNIT EFFORT (CPUE)

CPUE indices provide the stock assessment with a relative measure of abundance which is assumed to reflect the underlying biomass over time. A series extending from 1993–94 to 2021–22, based on the voluntary logbook data collected by the CRA 2 fishing industry primarily for the purpose of providing biological data from the fishery, was used in the 2022 CRA 2 stock assessment (Roberts et al. 2023). This series, which was described in detail by Webber & Starr (2022), was extended by one year (2022–23) for use in the CRA 2 ‘Rapid Update’. This analysis extended the CRA 2 base run stock assessment by one year to provide current estimates of stock status (Pons et al. in press).

E.1.1 LOGBOOK CPUE INDICES

The logbook CPUE series covers the period 1993–94 AW to 2022–23 SS. The logbook CPUE analysis for CRA 2 was first described in Sections 2.2 and 3.2 of Webber & Starr (2022). Logbook CPUE differs from other CPUE series used in New Zealand stock assessments because the collection of the data require that the analysis must include all lobsters above the MLS (i.e., includes berried females) and has units in numbers per potlift (rather than weight per potlift). The number of potlifts by year, statistical area and 6-month season (which is the same as the number of records) is provided in Table E.1.

The model used in the stock assessment was the pot-by-pot series, with the number of lobsters caught per pot specified as the dependent variable and included the explanatory terms: period, month, vessel, statistical area, and a period/statistical area interaction term. A negative binomial distribution was assumed. The resulting CPUE series (Figure E.1, Table E.2) was essentially identical to the series generated by Webber & Starr (2022) for the overlapping years, using the same model structure (not shown in this figure) with four additional data points for AW and SS of 2021–22 and 2022–23. The MCMC for the best model mixed well (Figure E.2), and the negative binomial assumption fitted the data adequately (Figure E.3). The trend in logbook CPUE differed somewhat in detail among the four statistical areas, but overall was generally similar (Figure E.4).

Table E.1: Number of potlifts in the data set used to calculate the CRA 2 seasonal CPUE time series for the logbook data. Data are provided by statistical area, fishing year, and 6-month season.

Fishing year	Autumn/Winter					Spring/Summer				
	905	906	907	908	Total	905	906	907	908	Total
1993–94	269	2 117	451	906	3 743	70	1 997	416	845	3 328
1994–95	933	2 092	790	842	4 657	190	894	242	262	1 588
1995–96	171	1 964	738	587	3 460	–	361	19	94	474
1996–97	174	1 996	592	553	3 315	–	84	–	93	177
1997–98	84	1 643	685	475	2 887	–	3	7	56	66
1998–99	357	1 770	257	496	2 880	15	–	–	156	171
1999–00	252	1 595	790	565	3 202	63	326	85	8	482
2000–01	233	1 453	628	598	2 912	15	605	151	104	875
2001–02	106	255	456	447	1 264	169	1 190	203	84	1 646
2002–03	165	1 677	396	580	2 818	226	1 303	403	264	2 196
2003–04	244	631	354	183	1 412	122	1 575	273	428	2 398
2004–05	243	1 563	128	314	2 248	170	1 765	–	494	2 429
2005–06	192	1 373	301	426	2 292	92	2 156	628	706	3 582
2006–07	88	1 500	308	409	2 305	24	881	405	555	1 865
2007–08	–	874	314	537	1 725	6	1 143	341	1 059	2 549
2008–09	43	1 035	250	711	2 039	44	1 479	305	1 207	3 035
2009–10	17	913	330	459	1 719	46	1 390	430	1 111	2 977
2010–11	66	745	377	449	1 637	229	1 785	287	1 266	3 567
2011–12	293	583	398	487	1 761	200	2 186	317	624	3 327
2012–13	229	855	405	639	2 128	93	1 826	446	1 268	3 633
2013–14	287	906	464	839	2 496	153	1 724	684	930	3 491
2014–15	147	932	852	143	2 074	165	1 794	463	495	2 917
2015–16	309	649	779	394	2 131	503	1 509	515	630	3 157
2016–17	214	424	426	68	1 132	342	724	667	454	2 187
2017–18	337	439	366	345	1 487	234	786	348	447	1 815
2018–19	126	482	278	24	910	3	308	226	259	796
2019–20	184	426	441	226	1 277	36	115	62	230	443
2020–21	84	436	410	74	1 004	139	270	133	358	900
2021–22	104	476	573	66	1 219	–	124	96	361	581
2022–23	–	518	397	194	1 109	–	179	75	223	477
Total	5 951	32 322	13 934	13 036	65 243	3 349	30 482	8 227	15 071	57 129

Table E.2: Seasonal CRA 2 standardised logbook CPUE index series showing median estimated standardised indices and standard deviation by fishing year and season (1993–94 AW to 2022–23 SS).

Fishing year	Autumn/Winter (AW)		Spring/Summer (SS)	
	Index	SD	Index	SD
1993–94	0.998	0.176	0.926	0.167
1994–95	1.194	0.211	1.337	0.233
1995–96	1.429	0.263	1.778	0.384
1996–97	1.973	0.354	1.727	0.414
1997–98	1.836	0.324	1.864	0.498
1998–99	1.646	0.286	2.179	0.556
1999–00	1.591	0.287	1.944	0.384
2000–01	1.165	0.211	1.516	0.286
2001–02	0.922	0.171	0.949	0.171
2002–03	0.726	0.129	0.756	0.132
2003–04	0.780	0.144	0.914	0.163
2004–05	0.772	0.137	0.855	0.168
2005–06	0.710	0.128	0.772	0.139
2006–07	0.775	0.143	0.905	0.167
2007–08	0.883	0.175	0.863	0.166
2008–09	0.951	0.174	0.897	0.160
2009–10	0.620	0.116	0.750	0.135
2010–11	0.810	0.148	0.994	0.176
2011–12	0.789	0.141	0.733	0.132
2012–13	0.787	0.138	0.697	0.125
2013–14	0.769	0.139	0.736	0.134
2014–15	0.617	0.113	0.707	0.125
2015–16	0.577	0.101	0.566	0.097
2016–17	0.463	0.086	0.591	0.106
2017–18	0.542	0.097	0.708	0.128
2018–19	1.080	0.208	1.177	0.225
2019–20	1.148	0.206	1.400	0.261
2020–21	1.262	0.233	1.572	0.283
2021–22	1.352	0.243	1.250	0.251
2022–23	1.189	0.237	1.274	0.255

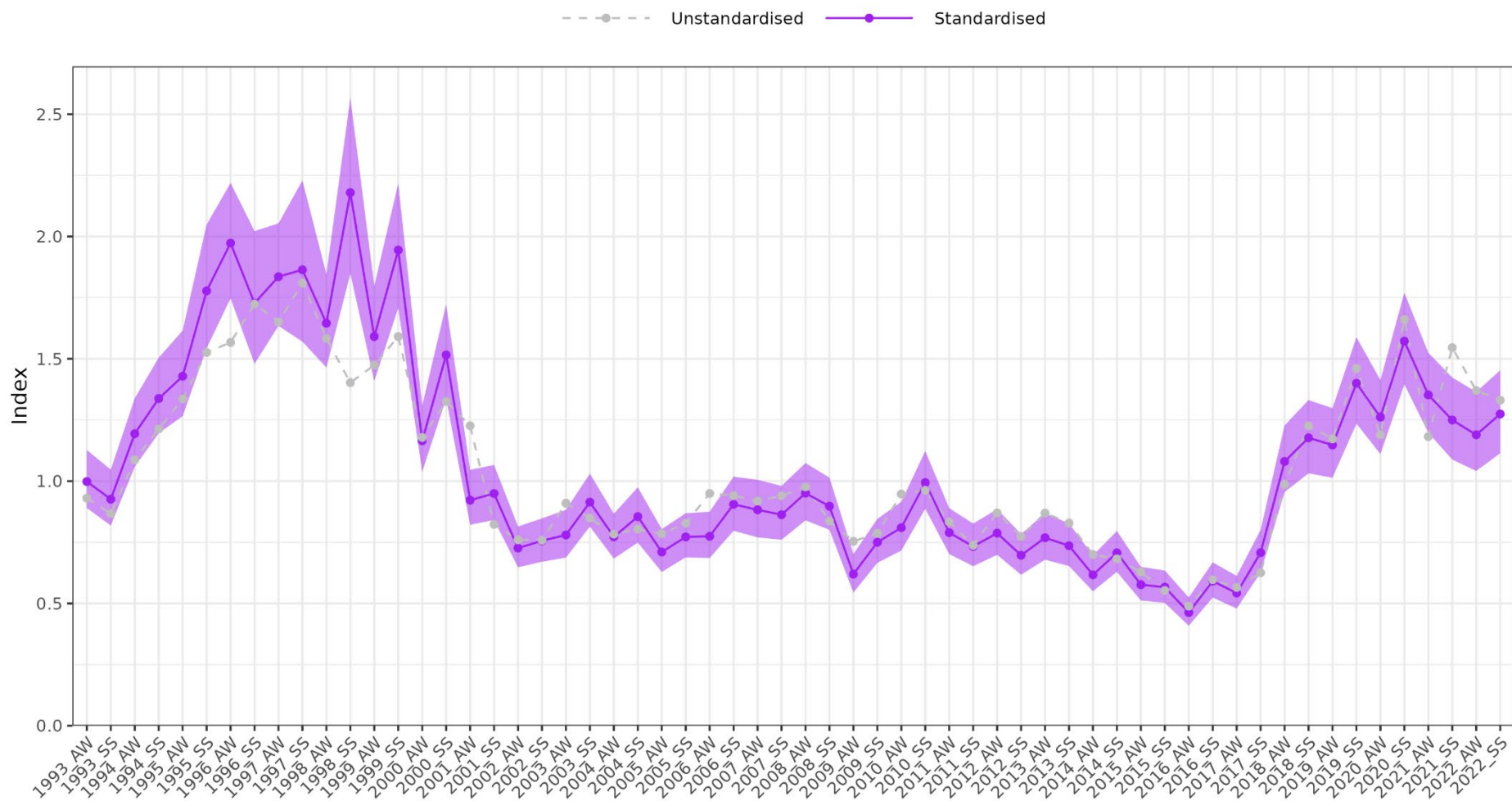


Figure E.1: Standardised CPUE indices (number/potlift) by season and fishing year for CRA 2 from the final CPUE models fitted to logbook data in number/pot (purple). Plot shows the posterior medians (lines) and the 50% credible interval (shaded regions).

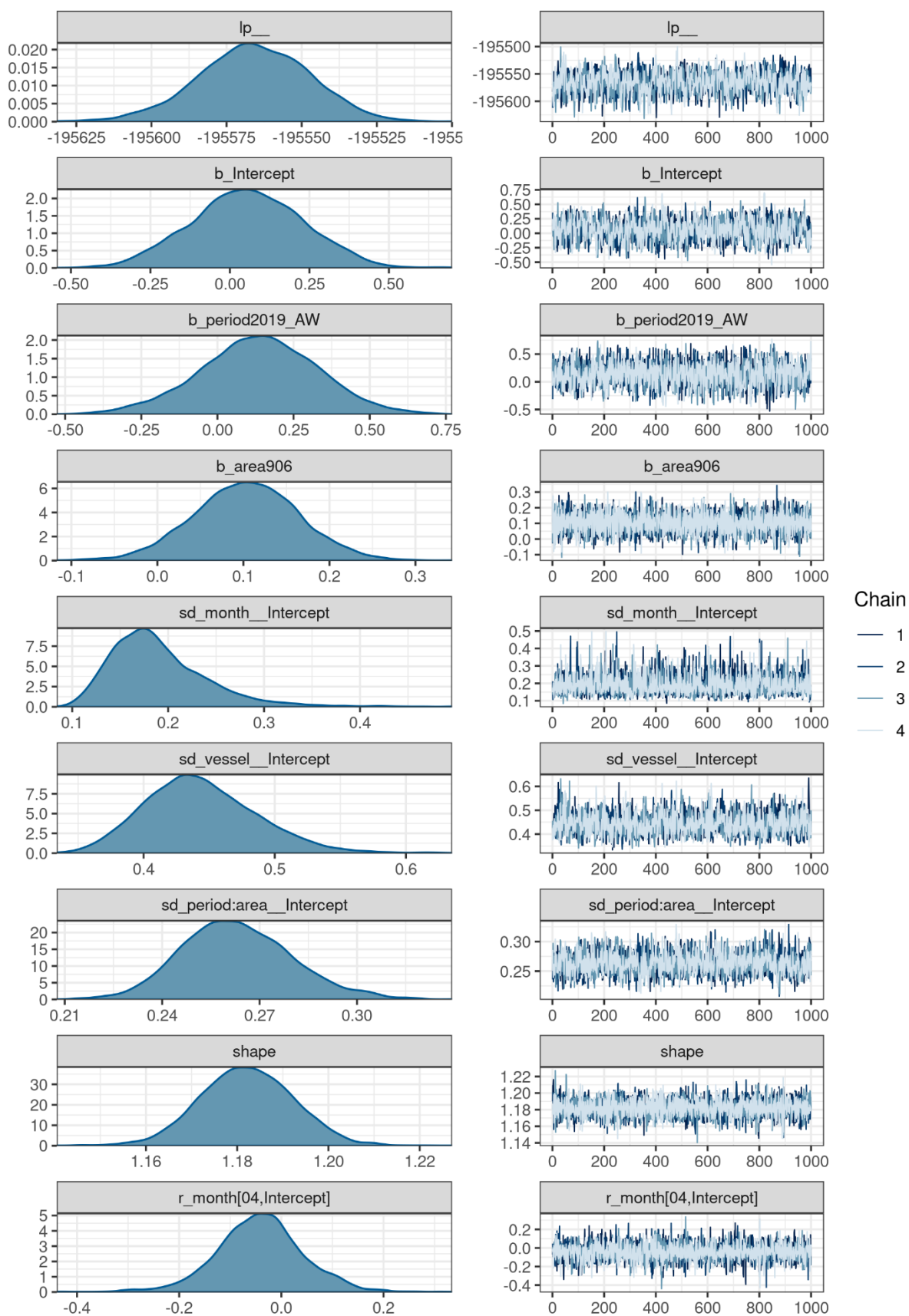


Figure E.2: CRA 2 logbook CPUE MCMC trace plots.

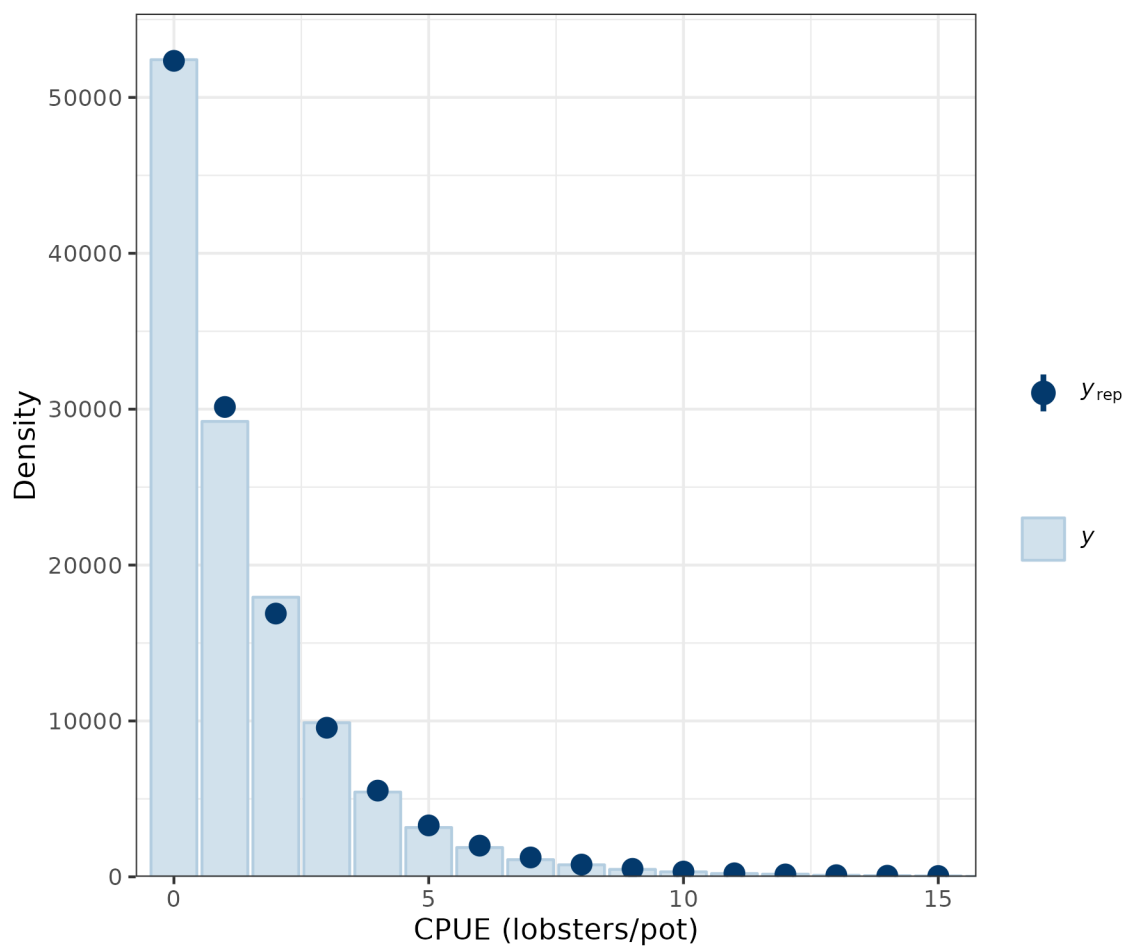


Figure E.3: CRA 2 logbook CPUE distribution showing the fit of the model to the negative binomial distribution assumption.

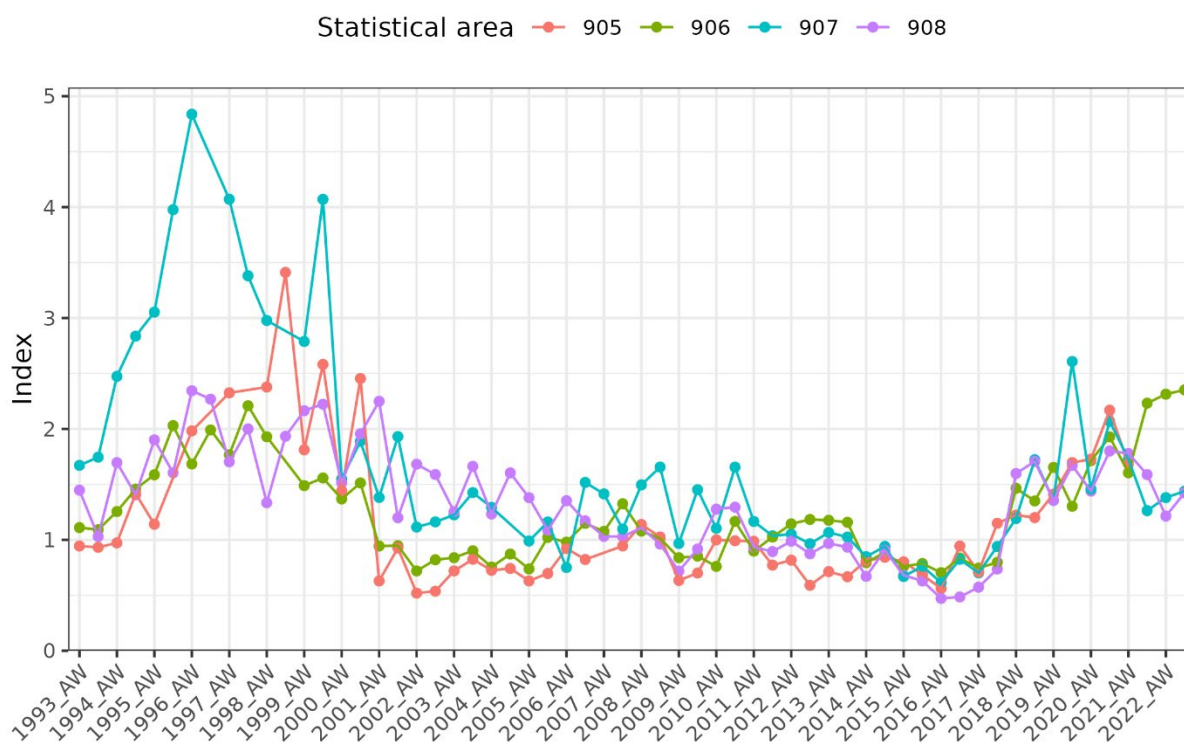


Figure E.4: CRA 2 logbook CPUE by statistical area showing the median.