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summaries and CPUE standardisations,
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EXECUTIVE SUMMARY

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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 fishing years 1979–80 to 2007–08 as well as standardisations of catch per unit effort (CPUE) for each of the nine rock lobster Quota Management Areas (QMAs) (Figure 1) for the same period. Summaries of the half-year (seasonal) standardisation procedures performed in CRA 3, CRA 4, and CRA 5, which were used to provide advice to stakeholders and the Ministry of Fisheries, are included. Annual CPUE standardisations based on a 1 October–30 September fishing year are provided for CRA 7 and CRA 8 because these are used as input to a revised management procedure developed in spring 2007.

The spatial distribution of catch by statistical area has varied in most rock lobster QMAs over the 29 years of available data. For example, in CRA 3, Area 911 (Mahia) rose to more than 50% of the landed catch in the early 2000s after being less than 30% of the catch in the mid 1990s. In CRA 5, catch taken in Area 916 increased substantially from 2000–01 with a corresponding drop in the proportion of catch taken in Area 917. There has been less change in the spatial distribution of catch in other QMAs, notably CRA 2 where the distribution between statistical areas has remained relatively consistent over time. There has been an increase in the proportion of catch taken during autumn and winter in most QMAs, including recent shifts in CRA 7, CRA 8, and CRA 9. The shift from a spring/summer to an autumn/winter fishery occurred quite rapidly in the 1990s in most of the east coast QMAs, first in the North Island, followed by CRA 5 in the South Island. For example, in CRA 2, the proportion of catch taken in July rose from 8% to 35% in the six years from 1990–91 to 1996–97. In CRA 5, the proportion of catch taken during spring and summer (October to March) decreased from a peak of 83% in 1990–91 to 10% in 2001–02. This shift has now reversed in CRA 2, CRA 3, and CRA 4 and is possibly beginning to reverse in CRA 5. There is evidence in the two most recent fishing years that CRA 7 and CRA 8 are establishing predominant July and August fisheries. A recent development in CRA 8 is the landing of 10% or more of the annual catch in April 2006 and April 2007. Only in CRA 6 has the seasonal distribution of catch remained relatively constant.

There is some consistency among the component statistical areas within most QMAs in the trends shown by the unstandardised CPUE series. This consistency exists in spite of considerable year-to-year variation in these series. CRA 3 is the QMA with the greatest similarity in the CPUE trends among statistical areas.

The standardisation procedure applied to each QMA did not usually result in much change relative to the arithmetic and unstandardised annual indices of CPUE. However, there was a general tendency for the standardisation procedure to upwardly adjust the relative peak CPUE in the late 1990s. This occurred because unstandardised catch rates tended to be lower in winter and these fisheries shifted to predominantly winter fishing when catch rates were high. Standardised CPUE for CRA 1 to CRA 5 show a similar pattern: catch rates peaked in the early to mid 1980s then declined steadily to the early 1990s, followed by a rapid rise in CPUE. In CRA 2, CRA 3, and CRA 4, CPUEs peaked towards the end of the decade, and these series continued with various degrees of steady decline, with CRA 4 currently being the most severe. CRA 1 and CRA 5 showed increasing trends in CPUE beyond the end of 1990s, although there has been a drop in the CRA 5 CPUE from 2004–05. CRA 2 reached its lowest CPUE in 1987–88 but the other north and east coast CRA QMAs recorded nadirs in 1992–93. The year when the peak CPUE was achieved and the relative magnitude of the peak CPUE also differ between these QMAs. Standardised CPUE in CRA 7 and CRA 8 declined steadily from 1979–80 to a low in the mid to late 1990s. Relative CPUEs in both QMAs have now risen to the highest levels in each series, with the increases beginning after the first of two TACC (Total Annual Commercial Catch) reductions were made in 1999–2000.

1. INTRODUCTION

Commercial catch and effort data are an important source of information for stock assessments of rock lobster. They are used to provide an annual index of vulnerable biomass for each stock and to estimate the distribution of catch between seasons and among month/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) and the way in which standardised indices of vulnerable biomass are calculated from them (Maunder & Starr 1995). Earlier versions of this report have been published by Starr & Bentley (2005) and Starr (2006, 2007, 2009).

While the primary use of catch and effort data in stock assessments is to estimate annual indices that are assumed to be proportional to vulnerable biomass, the same data can also be used to examine the spatial and temporal distribution of catch and effort. Such analyses can be important for interpreting changes in overall catch rates for a Quota Management Area. They can also provide information for use in monitoring the fishery. For example, the proportion of catch by month and statistical area is used as a guideline for the allocation of rock lobster catch sampling effort.

In this report, summaries of the spatial and temporal distribution of the catch and standardised indices of vulnerable biomass are presented. The following information for each QMA is presented:

- (a) the number of vessels targeting rock lobster using pots by statistical area and fishing year;
- (b) the percentage of catch by statistical area and fishing year,
- (c) the percentage of catch by month and fishing year,
- (d) the percentage of catch by month and statistical area for the 2006–07 fishing year,
- (e) the cumulative monthly catch by fishing year,
- (f) the arithmetic catch per unit effort by statistical area and fishing year,
- (g) arithmetic, unstandardised, and standardised indices of catch per unit effort for each fishing year.

This report also documents half-year (seasonal) standardisation procedures performed for CRA 3, CRA 4, and CRA 5. These were used to provide advice to stakeholders and the Ministry of Fisheries. The CRA 4 and CRA 5 seasonal CPUE estimates are inputs to management procedures that set catch limits for the next 1 April–31 March fishing year for these QMAs. For CRA 7 and CRA 8, this report documents annual CPUE standardisations based on a 1 October–30 September fishing year which are inputs to management procedures (Breen et al. 2008) which set the TAC (Total Annual Catch) in the following 1 April–31 March fishing year.

In stock assessments, the standardised indices of CPUE are assumed to reflect changes in vulnerable biomass; that is, the total weight of the lobsters vulnerable to the fishery that can be legally retained. The vulnerable biomass will be affected by changes in the management of the fishery (e.g., changes in the size limit or changes to the escape gap regulations) in addition to other factors. The standardisation procedure takes into account changes in the spatial and temporal distribution of fishing effort (at the scale of statistical area), but cannot adjust for changes in vulnerable biomass caused by management or regulatory changes. Therefore, the CPUE indices within each series will not be comparable across the entire series if regulations have changed the component of the stock that is vulnerable to commercial fishing during the period of analysis. Adjustments are made explicitly in the stock assessments to account for the effect of regulation changes on the vulnerable biomass.

Changes in the definition of vulnerable biomass due to management actions need to be considered when interpreting the CPUE indices presented in this report. For example, there were significant management changes to the CRA 3 fishery in 1993–94, including a change in the size limit for males in the winter. The CPUE indices will reflect the changes in the definitions of the vulnerable biomass due to this management initiative. It is not possible to draw conclusions directly about the state of the stock based solely on the CPUE series presented in this report, largely because of changes over time in the definition of vulnerable biomass. The stock assessment model is better able to make these comparisons because it includes additional information such as catch sampling and tagging data as well as the information in CPUE about stock abundance trends.

2. METHODS

2.1 Data

Catch and effort data from 1 April 1979 to 30 June 1989 were obtained from the Fisheries Statistics Unit (FSU), and equivalent data from 1 July 1989 to 31 March 2008 were obtained from the Ministry of Fisheries [MFish] Catch Effort Landing Returns (CELR; MFish replog 7131A). These data sources were documented by Bentley et al. (2005) and the data were stored and maintained in the CRACE database (Bentley et al. 2005). A further data extract [MFish replog 7287] covering the period 1 April 2008 to 30 September 2008 was used to extend several CPUE analyses for an additional one-half year for use in management procedures. Management procedure evaluations (Breen & Kim 2006, Breen et al. 2008) found that adding an additional half year of data greatly improved the capacity of the rule to react to stock abundance changes, thus reducing stock and fishery risk. Total annual landings, total annual commercial catch (TACC) limits, and total annual catch (TAC) limits were obtained from Ministry of Fisheries Quota Management Reports [QMR] from 1 April 1990 to 31 March 2001 and from Monthly Harvest Returns [MHR] after 1 April 2001.

2.2 Error checking

All records with error ratings equal to or greater than 2, for the fields FSU statistical area, CELR pots lifted, and CELR statistical area, were excluded from this analysis. The documentation of these error designations, including how they were defined and generated, was described by Bentley et al. (2005).

All records for vessel 4548 (a coded value), which exclusively fishes in CRA 2, have been dropped from this analysis because of an extreme number of outliers from this vessel. All other data have been retained in the analyses.

2.3 Catch correction

A corrected catch weight was calculated by adjusting the estimated catch weight in the effort part of the CELR form by the corresponding landed weight from the landing part of the form. This was done using method B4, described by Bentley et al. (2005). This algorithm summarises the data for every vessel by month and statistical area and corrects the total estimated catch based on the total landed catch for the month. Data are excluded from a vessel in a month where the landed catch is zero but the effort is not zero, and the data from the following month from that vessel are also excluded. The presumption is that some of the catch landed in the second month was held over from the first month, thus breaking the link between the catch and effort data.

2.4 Calculation of number of vessels fishing rock lobster

The number of vessels that fished within each statistical area is determined for each fishing year using the same data set which was used to generate the catch summaries and CPUE standardisation. This data set is based on vessels that target rock lobster and for which the primary method is rock lobster potting.

There are often a relatively large number of vessels that report small quantities of rock lobster in an area 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 had a total catch for the year of less than 1 t (5 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 caught at least 1 t of CRA in any of the statistical areas that comprise the QMA within a fishing year.

For some Quota Management Areas, there is a significant change 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 (A_y) for year y is calculated as the total catch for the year divided by the total number of pot lifts in the year:

$$A_y = \frac{\sum_{i \in y} C_i}{\sum_{i \in y} P_i} \quad \text{Eq. 1}$$

where C_i and P_i are the catch and pot lifts for the vessel-month-area combination i in year y .

Unstandardised CPUE (G_y) for the year y is the geometric mean of the ratio of catch to potlifts for each vessel, month, statistical area combination:

$$G_y = \exp \left[\frac{\sum_{i \in y} \ln \left(\frac{C_i}{P_i} \right)}{n_y} \right] \quad \text{Eq. 2}$$

where, n_y is the number of vessel-month-area combinations in year y . It has the same distributional assumptions as the standardised CPUE (lognormal), but does not take into account changes in the seasonal and spatial distribution of fishing effort. This index is the same as the “year index” calculated by the standardisation procedure without additional explanatory variables. Presenting the arithmetic and unstandardised CPUE indices in this report provides a measure of how much the standardisation procedure has modified the series from these two sets of indices.

Standardised CPUE is calculated from a generalised linear model (GLM) (Maunder & Starr 1995) using fishing year, month, and statistical area as explanatory variables. 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 superior to a model including vessel effects because it allowed more data to be used. Canonical coefficients and standard errors were calculated for each factor (Francis 1999).

For comparability, the unstandardised and standardised coefficients (the geometric mean of these series equal 1.0) were multiplied by the geometric mean of the arithmetic CPUE indices (Eq. 1) so that all three sets of indices were scaled to the same mean in terms of kg/potlift.

Annual CPUE standardisations based on an alternative definition of fishing year (1 October to 30 September) have been prepared for CRA 7 and CRA 8. The methodology used to estimate these series is identical to the methodology used for the standard 1 April to 31 March fishing year and makes use of data up to 30 September 2008.

2.6 Indices by assessment (seasonal) period for CRA 3, CRA 4, and CRA 5

CPUE standardisations based on an “assessment period” have been prepared for CRA 3, CRA 4, and CRA 5. A period is defined as one of two six month seasons, either autumn–winter (1 April to 30 September) or spring–summer (1 October to 31 March). Thus, the fishing year explanatory variable is replaced in the standardisation model by a period explanatory variable. The model becomes

$$\ln(\text{CPUE}) = \text{Intercept} + \text{Period} + \text{Month} + \text{Area} + \varepsilon \quad \text{Eq. 3}$$

The interpretation of the *month* explanatory variable in the model defined by Eq. 3 differs from the annual model described by Maunder & Starr (1995). In the annual model, the *month* categorical variable is estimated for 11 months with the remaining month set to 1 because of parameter confounding. When the fishing year is split into two seasons, further confounding occurs with the *month* effects, resulting in dropping one of the *month* coefficients in each period. The indices are slightly sensitive to the choice of the month dropped, with the estimated coefficients changing by small amounts when different months are successively dropped. A convention has been adopted which sets the month with the most records in each six-month period equal to 1.0 because this month should generally have the lowest standard error. The *month* coefficients in the seasonal model do not show as much variation as the *month* effects in an annual model because part of the seasonal variation would be explained by differences between periods. Therefore, the *month* effect will take into account only the within-period variation, rather than the full seasonal variation within a fishing year.

A further refinement was added in 2006 to the seasonal standardisation procedure by scaling the geometric mean of each seasonal standardised CPUE series (autumn/winter and spring/summer) to equal 1.0 and then scaling to the geometric mean of the arithmetic series (Eq. 1) for each season. This was done so that each series would be scaled to the correct relative level within the stock assessment model. Previously this function was handled by a parameter in the stock assessment model which tended to be poorly estimated.

The final data point for each of the three standardisations by season presented in this report (autumn–winter 2008–09) was based on an analysis of data from an incomplete year (1 April 2008 to 30 September 2008; see Section 2.1).

3. RESULTS

3.1 Landed catch and TACC

Total landed New Zealand commercial rock lobster catch in 2007–08 decreased by about 150 t to levels similar to those observed from 2003–04 to 2005–06 (Table 1). This decrease can be mostly attributed to a drop in CRA 4 landings, which was the only CRA QMA to substantially undercatch its TACC in 2007–08. CRA 3 also undercaught its TACC of 190 t by 20 t in 2007–08. Landings for 2007–08 in CRA QMAs other than in CRA 3 and CRA 4 were all close to the specified TACCs (Table 1).

There is a correspondence in all rock lobster QMAs between the catch reported to the QMR and the sum of the landings from the bottom section of the CELR form (Table 2). However, all QMAs recorded a shortfall in 2007–08 when the totals landed to the Licensed Fish Receivers (LFRs) are compared to the official MHR landing totals. These shortfalls are in part due to the grooming procedure used to prepare the data for analysis (Bentley et al. 2005). Another reason for shortfalls is that some QMAs (such as in CRA 6 and CRA 8) exhibit a common practice of holding fish after capture but before landing and some of these landings are excluded from this analysis as described in Section 2.3. There appears to be some year-to-year variation in this ratio: for instance, CRA 8 showed higher ratios in 2005–06 to 2007–08 than in 2004–05 and earlier. CRA 3 reversed a low value observed for this ratio in 2004–05. CRA 5 showed a drop in this ratio in 2007–08 compared to the preceding 4 years, with the 2007–08 ratio similar to those observed in the late 1990s and the early 2000s.

The numbers of vessels by QMA generally show a steady downward trend beginning from early 1990s (Table 3). Vessel numbers tended to be higher in the 1980s in all QMAs and there is one year (1989–90) where there is evidence of double counting of vessels in some QMAs in the change-over from the previous FSU catch recording system to the current (CELR) system (see Section 2.2). The total number of vessels has declined by 46% since the early 1990s (comparing the 1990–91 to 1992–93 average number of vessels to the 2005–06 to 2007–08 vessel average, see Table 3) when rock lobster entered the Quota Management System (QMS).

3.2 CRA 1

Only 13 vessels reported catch from CRA 1 in 2006–07 and 2007–08, extending a declining trend in this statistic to about one-third of the vessels reporting in the 1979–80 fishing year (Table 4). There was a large increase in the proportion of the CRA 1 catch taken from Area 901 during the late 1990s, and a corresponding drop in the proportion of catch taken in Areas 902 and 903 (Table 5). This pattern changed in 2003–04 when over 45% of the catch was taken in Area 902, but Area 901 has once again become dominant, with 40% of the catch taken from Area 901 in both 2005–06 and 2006–07 and over 50% in 2007–08 (Table 5). The remaining four statistical areas now account for roughly equal proportions of the remaining catch.

Trends in cumulative monthly catch by fishing year showed relatively stable catch distributions in the early 1980s, with most catch taken in the late winter and spring months (Table 6, Figure 2). There was a shift towards a winter–spring fishery in the mid 1990s, with July–October accounting for 67–83% of the total annual catches since 1995–96, up from 25–45% before that fishing year. The July–October percentage of catch dropped to 63% in 2007–08 (Table 7). Catches extended to January 2008 in Area 901.

Arithmetic CPUE trajectories from 1979–80 to 2001–02 showed variable trends between areas, although Area 901 has shown the most increase and it, along with Area 902, had the highest overall CPUE (Table 8, Figure 3). CPUE from all areas combined showed a shallow peak in 1982–83 followed by a long steady decline to 1992–93 (Table 9, Figure 4). Catch rates then increased rapidly to near 1 kg/potlift in 1995–96 and have since remained above this level, increasing gradually to 1.64 kg/potlift in 2007–08. Catch rates have recently increased in all statistical areas, including Area 939, and remain very high in Areas 901 and 902 (see Table 8). The standardised and the two unstandardised series (Eq. 1 and Eq. 2) all show strong increases in 2007–08 relative to the 2006–07 values (Figure 4).

3.3 CRA 2

Thirty-three vessels reported catch from CRA 2 in 2007–08, which is a drop of 4–5 vessels compared to those reporting in 2005–06 and 2006–07, and is less than half the number reporting in 1979–80 (Table 10). The relative importance of the four rock lobster statistical areas which make up this QMA has remained relatively constant over the last decade, with Area 906 (western Bay of Plenty) continuing to be the most important statistical area, recording over 40% of the annual catch (Table 11). The percentage of catch coming from the eastern Bay of Plenty (Areas 907 and 908) has also remained relatively constant between 40 and 50% since the early 1990s, but the relative contribution between these two statistical areas has varied between years.

The trends in cumulative monthly catch by fishing year show a stable catch distribution in the early 1980s with most of the catch taken in the spring and summer, apart from a high level of catch in July 1989 (Table 12, Figure 5). There was a gradual shift towards a winter fishery in the early 1990s, with about 60% of the 1994–95 catch taken from April to September. This shift peaked between 1996–97 and 1998–99 with over 85% of the catch in each of those three fishing years taken between April and September. The shift then reversed, with over 40% of the catch remaining at the end of October in the most recent six fishing years, while in the latter half of the 1990s less than 10% of the catch was taken after October (Table 12). In 2007–08, over 90% of the catch was taken between July and February, spread between the four statistical areas with Area 906 predominating (Table 13).

Arithmetic CPUE trajectories showed increasing trends in all areas from the early 1990s, with Area 907 showing a stronger increase than the other statistical areas (Table 14, Figure 6). The overall trend in arithmetic CPUE for the entire QMA showed a steady increase from the early 1990s to a peak in 1997–98 and 1998–99 followed by a decline to current levels, reached in 2002–03 (Table 15, Figure 7). The arithmetic and standardised CPUE trends were very similar, except that the standardised analysis estimated a higher peak for 1997–98 and 1998–99. This was likely caused by the shift in effort towards winter months which caused a reduction in the arithmetic and unstandardised CPUE. The standardised indices for 2006–07 and 2007–08 are higher than the nadir reached in 2002–03 and 2003–04, but CPUE has not returned to the high levels observed in the late 1990s and early 2000s (Figure 7).

3.4 CRA 3

As with most other rock lobster QMAs, there has been a decrease since the 1979–80 fishing year in the number of vessels that reported catch from CRA 3 (Table 16). The number of vessels declined from about 80 in the early 1980s to about 30 in the late 1990s. Vessel numbers increased to 38–39 in 2002–03 and 2004–04 but dropped to fewer than 30 by 2005–06 (Table 16). Relatively high numbers of vessels (near 50 or greater) continued to report catch in this QMA until the 1993–94 fishing year, the year after the TACC was cut by 50% and the fishery shifted to the winter months.

The relative importance of the three rock lobster statistical areas which make up this QMA remained relatively constant to 2000–01, with Area 910 (Gisborne) being the most important (Table 17). Area 911 (Mahia Peninsula) then became the statistical area with the highest catch from the 2001–02 to 2003–04 fishing years, possibly because of the higher catch rates in this area. However, the proportion of the catch recorded in Area 911 dropped in 2004–05 to about 40% and has stayed at this level since then (Table 17).

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. Regulation changes included lowering the minimum size limit for males in the winter months June to August from 54 to 52 mm tail width, prohibiting the take of females in the same period, and closing the fishery from the beginning of September to the end of November (Sullivan 2004). The cumulative monthly catch proportions by fishing year show the shift to a winter fishery, with over 60% of the catch taken by the end of August in 1993–94 rising to nearly 90% in 1995–96 and remaining above 80% in 1999–2000 (Table 18, Figure 8). This shift then reversed, with the winter catch (June–August) dropping to 58% in 2000–01 and since fluctuating around 50% (Table 18). There have been significant catches in November and December since 2002–03, when these months were reopened to commercial fishing. In 2007–08, June, July, and August remained important months for catch, especially in Area 910, accounting for 50% of the total annual catch (Table 19).

Arithmetic CPUE trajectories showed strong increasing trends in all areas beginning in the early 1990s, with Area 909 increasing to a higher level than the other two statistical areas (Table 20, Figure 9). CPUE in all statistical areas peaked in 1997–98 and have since declined. Area 909 appears to have dropped less (to about 0.8 kg/potlift in the early 2000s and rising to 1.0 kg/potlift in 2006–07 and 2007–08) while Areas 910 and 911 dropped to about 0.5–0.6 kg/potlift, except for 2004–05 when Area 911 dropped to about 0.4 kg/potlift. Area 910 dropped to less than 0.5 kg/potlift in 2006–07 but all three statistical areas recorded increased unstandardised CPUE in 2007–08 relative to the previous fishing year (see Table 19). The overall trend in CPUE for the entire QMA showed a steady increase from the early 1990s to a peak in 1997–98, followed by a decline to a level somewhat higher than observed in the early 1990s (Table 21, Figure 10). The arithmetic, unstandardised, and standardised CPUE trends were all very similar, except that the standardised analysis estimated a relatively higher peak for 1997–98 (Table 21, Figure 10). This was probably caused by the shift in effort towards winter months causing a reduction in average CPUE in the arithmetic series. There has been no change in the arithmetic, unstandardised, and standardised series since 2005–06 (Table 21, Figure 10).

3.5 CRA 4

Although there has been a decrease in the number of vessels that reported catch from CRA 4 since the 1979–80 fishing year, the decline was relatively less than observed in CRA 1, CRA 2, and CRA 3 (Table 22; see Table 4). There was a jump in the number of vessels in 2006–07, going from 54 to 67 in a single year and reversing a drop of 11 vessels from 2003–04. However, the vessel numbers dropped again to 53 in 2007–08. The single count of 131 vessels in 1989 is probably an artefact of the changeover from the FSU to CELR systems where vessels were likely double-counted because the vessel codes were not properly transferred between the systems.

The relative importance of the five rock lobster statistical areas that make up this QMA has remained relatively consistent, with Area 914 (South Wairarapa) being the most important in terms of total catch (Table 23). However, there was a drop in the proportion of catch reported from this area in 2006–07 and 2007–08, with Area 914 going from 55 to 43 to 38% over these two years while both Area 913 (North Wairarapa) and Area 915 (Palliser) increased.

Before 1993–94, most fishing took place in the spring and summer months, although a significant proportion of the catch was also taken in winter (Table 24, Figure 11). Winter fishing predominated by the 1994–95 fishing year and this pattern was maintained up to the 2002–03 fishing year, with over 60% of the catch taken from April to August in that year (Table 24, Figure 11). This trend has since reversed, with about 40% of the catch taken by the end of August in 2004–05 and 2005–06, followed by a drop to 20% and 16% for the same period in 2006–07 and 2007–08 respectively. Concurrently, the proportion of catch taken from November to March increased from 40% in 2004–05, to 50% in 2005–06 and to over 60% in 2006–07 and 2007–08. Only 21% of the catch was taken between June and September in Areas 912, 913, 914, and 915 in 2007–08 (Table 25).

Arithmetic CPUE trajectories showed an increase in all areas (the data for Area 934 are too sparse to draw a conclusion for that statistical area) beginning from 1992–93 (Table 26, Figure 12). The increase in Area 914 ended by the 1996–97 fishing year, well below the peak catch rates observed in the two more northerly areas, and then remained relatively constant near 1.0 kg/potlift while Areas 912 and 913 increased to much higher levels (Table 26, Figure 12). CPUE in the four main statistical areas declined to about the same mean catch per potlift by 2002–03, although all were still above 1.0 kg/potlift (Table 26). CPUEs in these statistical areas dropped to below 1.0 kg/potlift in 2005–06 and have remained below that level since then. Area 914 has shown the greatest drop, going below 0.5 kg/potlift in 2007–08. The patterns of increase and the peak year for mean catch rate in Areas 912 and 913 resembled similar patterns observed in the CRA 2 and CRA 3 statistical areas (compare Figure 6 and Figure 9 with Figure 12). Note that the year of peak catch rates in CRA 3 was one to two years earlier than the peaks observed in Areas 912 and 913. The overall trend in CPUE for the entire QMA was similar to that for CRA 3, showing a steady increase from the early 1990s to a peak in 1998–99, which was one year later than in CRA 3 (Table 27, Figure 13). The relative decline since the peak fishing year was slightly less for CRA 4 than for CRA 3, with CRA 3 registering a drop of nearly 80% compared to the peak year in 2005–06 to 2007–08 while the equivalent reduction for CRA 4 is 47 to 62% in these same three successive fishing years (compare Table 21 with Table 27). However, CRA 4 was much closer to the minimum CPUE recorded for the series, with the 2007–08 CPUE only 24% greater than the minimum while the equivalent value for CRA 3 was over 140%. The arithmetic, unstandardised, and standardised CPUE trends for CRA 4 were all very similar, except that the standardised analysis estimated a higher peak for 1998–99 (Table 27, Figure 13). This was probably caused by the shift in effort towards winter months, causing a reduction in average CPUE in the arithmetic and unstandardised series. The standardised CPUE index for CRA 4 dropped to 0.60 kg/potlift in 2007–08, continuing a declining trend from 2004–05 (Figure 13).

3.6 CRA 5

The number of vessels fishing in CRA 5 declined since the 1979–80 fishing year, with less than 40 vessels reporting in this QMA since 2000–01 compared to the 80 to 90 vessels which fished there during the 1980s (Table 28). There has been a further gradual attrition in the number of vessels since 2000–01, with the number of reporting vessels dropping below 30 in 2006–07 and 2007–08. Six rock lobster statistical areas make up this QMA, but most of the catch was reported from Area 916 (Cape Campbell) and Area 917 (Kaikoura-Motunau) and a lesser amount from Area 933 (Marlborough Sounds; Table 29). The relative catch proportions between these areas changed somewhat, with Area 916 rising in importance in the last five years to near or above 40% of the catch along with a corresponding decrease in the relative importance of Area 933. Area 917 has also increased in the relative proportion of reported landings in 2006–07 and 2007–08, exceeding Area 916 in importance in both of those fishing years (Table 29).

This fishery remained predominantly a summer fishery for longer than any of the North Island QMAs and did not shift to a predominantly winter fishery until 1996–97 (Table 30, Figure 14). Also, unlike the more northerly QMAs, the relative proportion of the catch taken in the winter months continued to stay high to 2003–04, with about 80% of the catch taken by the end of September in 2003–04. However, the April-September percentage dropped to below 70% in both 2004–05 and 2005–06 and was near 60% in both 2006–07 and 2007–08, indicating that this trend may be reversing. About 50%

of the catch was taken between April and August in Areas 916 and 917 in 2007–08, with the peak catch month being May in both Areas 916 and 917 (Table 31). Note that historically May has been a strong catch month in this QMA, with this month accounting for 14–28% of the annual catch since 1996–97 (see Table 30).

Arithmetic CPUE trajectories showed similar trends in each of the statistical areas up to 1997–98. At that time, there was an increase in CPUE in all areas, but at a much greater rate in Area 916 (Table 32, Figure 15). CPUE in Area 916 increased to much higher levels than those in the other statistical areas, peaking in 2000–01. The arithmetic catch rate for Area 916 dropped to below 2 kg/potlift in 2005–06 and has been near 1.7 kg/potlift in both 2006–07 and 2007–08 after being stable at 2.2 to 2.4 kg/potlift for the previous three fishing years. The overall trend in CPUE for this QMA showed a continuous increase that peaked in 2003–04, then dropped in three successive fishing years and finally remained unchanged between 2006–07 and 2007–08 (Table 33, Figure 16). The unstandardised and standardised CPUE trends were nearly identical, while the arithmetic CPUE trend lagged behind the two series based on assumed lognormal distributions (Table 33, Figure 16). This difference reflected the different methods used to compute the mean catch rate within a year by each index (i.e., the arithmetic mean in Eq. 1 compared to the geometric mean in Eq. 2).

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. In 1999–2000 the number of vessels dropped to 34 and has since fluctuated around 35 participating vessels (Table 34). The decline in the number of participating vessels in this QMA has been much less than in the other CRA QMAs.

Four rock lobster statistical areas make up the Chatham Islands QMA, with Area 942 (Southeast Chatham Islands) generally having about half of the total landings for the QMA (Table 35). The proportion of the total CRA 6 landings in Area 942 dropped to about 40% in 2006–07, with most of this catch shifting to Area 940. The relative proportions between the remaining areas remained reasonably constant, with the two northern statistical areas (940 and 941) accounting for nearly 50% of the annual catch in recent years.

This fishery has been predominantly a spring-summer (October to February) fishery for its entire history, with little tendency to shift to a winter fishery as on the New Zealand mainland (Table 36, Figure 17). In 2007–08, 68% of the catch was taken between October and February (Table 37).

Arithmetic CPUE trajectories showed a decline in mean annual catch rates in the early 1980s for all areas, except for possibly Area 941 which never had the high catch rates seen in the other three statistical areas (Table 38, Figure 18). Area 942 consistently had the highest mean catch rate since the mid 1980s, which possibly explains why this statistical area has the highest overall catch (see Table 37). Mean catch rates in all four statistical areas, although variable, stabilised during the mid to late 1990s and now appear to be increasing in all statistical areas, with variability between years in some areas. The overall trend in CPUE for the QMA showed a drop in the early 1980s, followed by a period of relative stability near 1.0 kg/potlift through the 1990s (Table 39, Figure 19). CPUE then increased to nearly 1.7 kg/potlift in 2006–07 and dropped back to 1.62 kg/potlift in 2007–08. The standardised and unstandardised indices were slightly higher than the arithmetic index in recent years, with all three series showing a gradual increasing trend since the late 1990s or the early 2000s.

3.8 CRA 7

The number of vessels reporting rock lobster in CRA 7 dropped more precipitously than in the other rock lobster QMAs, with 70–90 vessels participating in the early 1980s compared to a low of 7 in 1997–98 (Table 40). The number of vessels increased to 25 by 2000–01, dropped to 14 in 2004–05 to 2006–07, and increased to 20 in 2007–08. There are only two statistical areas in this QMA, with Area 920 accounting for about two-thirds of the catch in most years up to 2003–04, but with a shift towards more equal distribution of catch between the two areas from 2004–05 to 2006–07 and then shifting back to predominantly Area 920 in 2007–08 (Table 41). The distribution between the two statistical areas varied, with the percentage of catch in Area 920 dropping to near 50% in some years, including 2005–06 and 2006–07.

The seasonal distribution for this fishery has tended to be relatively consistent over most of the period reported because this fishery has been restricted by regulation to 21 June to 19 November since the 1992–93 fishing year (for the take of “concession” sized lobsters (Sullivan 2004)) (Table 42, Figure 20). However, Figure 20 shows that catches accumulated much more quickly in 2004–05 and even more quickly in both 2005–06 and 2006–07, with over 50% of the 2005–06 and 45% of the 2006–07 annual catch taken by the end of July compared to a more usual expectation of 20 to 36% taken to the end of that month. This trend may be changing, with only 30% of the annual catch accumulated in 2007–08 by the end of July. However, 61% of the catch was taken in July and August 2007 in combined Areas 920 and 921 which is similar to the 67% taken in the same period in 2006 (Table 43).

Arithmetic CPUE trajectories showed a decline in mean annual catch rates into the early 1980s, followed by a period of variable catch rates declining to a low in 1999–2000 (Table 44, Figure 21). Area 921 consistently had higher mean catch rates, but they tended also to be more variable. Both areas had broadly declining trends in mean CPUE to the end of the 1990s, although this pattern was variable and has reversed, particularly in Area 921 (Figure 21). The overall trend in CPUE for this QMA also reflected this downward trend, but there were notable increases in mean CPUE in 1986–87, 1991–92, and 1993–94 (Table 45, Figure 22). Mean CPUE has risen consistently since 1997–98, the nadir of the series. The index for 2007–08 (1.61 kg/potlift) represents a drop from the 2006–07 value of 1.92 kg/potlift, which was by far the highest in the series (Figure 22). The two unstandardised CPUE series and the standardised series show similar trends, with the arithmetic series lying below the standardised and unstandardised series (Table 45, Figure 22).

3.9 CRA 8

Historically, CRA 8 has had the greatest number of vessels of any rock lobster QMA (Table 46). Over 250 vessels reported lobster in the early 1980s, but this total gradually dropped to below 60 at the present time, with a continuous decline in the number of vessels in the fishery since in 1993–94 (Table 46). This decline is proportionately almost as great as the decline in vessels observed for CRA 7 (see Table 4). Seven rock lobster statistical areas make up this QMA, with about 80% of the catch reported from Areas 926 to 928 since the mid 1990s (Fiordland; Table 47). Area 926 (Puysegur) increased in relative importance within the three Fiordland statistical areas, accounting for about 50% of the total CRA 8 landings in some recent fishing years. This proportion declined to nearly 40% in 2006–07 and then to 35% in 2007–08, with a transfer in catch from Area 926 to Area 927 in 2006–07 and to Area 928 in 2007–08. Area 924 (Stewart Island) was also an important fishery which contributed between 12 and 23% of the annual landings, with recent levels near 12–16% (Table 47).

The seasonal distribution of catch for this fishery has been relatively consistent over the entire period, with about 60–80% of catch taken from August to November (Table 48, Figure 23). In some years, up to 14% of the annual catch was taken in December and up to 11% in January, probably reflecting poor catches earlier in the fishing year (Table 48). The seasonal distribution of catch has shifted since 2003–04, with a trend towards an earlier fishery (much as has been observed in the east coast QMAs). Catches from April to the end of July accounted for over 40% of the annual catch in 2006–07 and 45% in 2007–08, compared to a more usual cumulative total of less than 10% of the annual catch (Figure

23). Over 80% of the annual catch was taken by the end of September in the five years since 2003–04, including over 90% in 2006–07 and 83% in 2007–08, compared to less than 60% in 2002–03 and less than 40% in the mid 1990s. Three percent of the annual catch took place in April 2005, increasing to over 11% in April 2006 and 13% in April 2007. This is a large change compared to earlier years, when only a small proportion of the total catch was taken in April (usually less than 1%). It is likely that some of the April 2007 landings included lobster captured in the previous fishing year which were held over in holding pots. Thirty-eight percent of the total annual catch was taken in Areas 926 to 928 in July, August, and September 2007–08 (Table 49).

Arithmetic CPUE trajectories by statistical area showed a gradual decline in mean annual catch rates during the 1980s and early 1990s (Table 50, Figure 24). Catch rates by statistical area were relatively stable up to the early 2000s, with Areas 924 and 926 having the highest mean catch rates amongst the statistical areas with high total catch (Table 50). Catch rates then improved at a great rate, with rising trends in all statistical areas to 2007–08 (Table 50). The overall trend in CPUE for this QMA showed a drop from the early 1980s to the early 1990s, followed by a period of relative stability. A rising trend followed from 1999–2000, with a very strong rise in 2003–04 and successive rises in 2005–06, 2006–07 and 2007–08, all characterised by large standard errors (Table 51, Figure 25). The lowest mean annual CPUE values in this time series were recorded in 1992–93 and 1997–98 (Table 51). The arithmetic, unstandardised, and standardised CPUE trends were all very similar, with the standardised index rising the most steeply of the three (Table 51, Figure 25).

3.10 CRA 9

The number of vessels reporting lobster catch in CRA 9 more than halved from about 20 in the early 1980s to less than 10 in the four most recent fishing years (Table 52). Some of the statistical areas in this QMA did not have any vessels reporting catch in recent fishing years. There are seven rock lobster statistical areas in CRA 9, with Areas 931 and 935 being the most important in size of landings, and there were lower proportions of landings in Areas 930, 936, and 937 (Table 53). The relative contributions of these areas to the total CRA 9 catch have fluctuated widely, but Area 935 consistently has had the highest proportion of landings, probably reflecting the distribution of effort rather than any underlying changes in the relative abundance between statistical areas (Table 53).

The temporal distribution of catch in this fishery shifted away from being a predominantly summer to a late winter fishery in the mid 1990s, with the cumulative catch to the end of September increasing beyond 50% in 1995–96 (Table 54, Figure 26). This shift has been particularly strong from 2001–02, with nearly 80% of the annual catch taken by the end of September in that year and with at least 95% of the annual catch taken by the end of September in each fishing year since 2005–06 (Table 54). Eighty-two percent of the 2007–08 catch was taken from June to September in Areas 931 and 935 (Table 55).

The arithmetic CPUE trajectories by statistical area from 1979–80 to 2007–08 are difficult to interpret because many of the year/statistical area combinations cannot be reported because of confidentiality restrictions (Table 56, Figure 27). However, Areas 931 and 935 have shown the highest mean annual catch rates in most years (Table 56). CPUE for this QMA increased strongly from 2002–03 to 2004–05 after a long period of relative stability. This was followed by a flattening of the series in 2005–06 and declines in both 2006–07 and 2007–08 (Table 57, Figure 28). The arithmetic, unstandardised, and standardised CPUE trends are similar throughout the series (Table 57, Figure 28).

3.11 Comparison of standardised CPUE trends across the nine CRA QMAs

A comparison plot of the standardised CPUE series for the nine CRA QMAs (see Figure 1) showed that CRA 4, CRA 5, and CRA 9 all have declining trends in recent fishing years (Figure 29). CRA 6 and CRA 7 both showed drops in CPUE in 2007–08 relative to 2006–07 after several years of increasing CPUE. CRA 2 and CRA 3 had stable or slightly rising CPUE trends over the last 4 (CRA 3) and 6 (CRA 2) fishing years. Finally, CRA 1 and CRA 8 had strong increasing trends in

standardised CPUE since the early 2000s. The lowest values of CPUE in 2007–08 were observed in CRA 2, CRA 3, and CRA 4, all of which have mean CPUE values near 0.5 kg/potlift. The highest CPUE values in 2007–08 were found in CRA 6, CRA 7, CRA 8, and CRA 9, all of which exceeded 1.5 kg/potlift, with a maximum mean catch rate of 3.0 kg/potlift in CRA 8.

3.12 CRA 3: standardised CPUE indices by period

Standardised indices by season (autumn-winter [AW]: April–September; spring-summer [SS]: October–March) have been calculated for CRA 3 (Table 58; Figure 30), beginning from the 1979–80 autumn-winter season and ending with the 2008–09 autumn-winter season. This series was used to provide advice to CRA 3 stakeholders on recent CPUE trends. The trends for the AW and SS standardised series and the annual CPUE series (Figure 10) are similar. All three series showed a long period of slow decline to the early 1990s, followed by a steep increase to a peak in 1997–98, which in turn was followed by a decline to present levels. The declining trend appeared to have levelled out in the most recent four years.

The total deviance explained by the standardisation analysis was high (48%, Table 59), with most of the explanatory power lying with the variable *period*. The residual patterns showed some deviation from the lognormal assumption at the extreme tails of the residual distribution, but were acceptable over most of the distribution. There was some contrast in the *month* variable, with higher monthly coefficients in June (autumn-winter season) and November (spring-summer season), and with a drop in the relative coefficients at the end of each season (Figure 31). Catch rates are lowest in Area 910, which is near Gisborne and which accounts for most of the catch in the QMA (see Table 19), but the contrast in the relative coefficients between the three statistical areas is low (Figure 31).

3.13 CRA 4: standardised CPUE indices by period

Standardised indices by season (autumn-winter [AW]: April–September; spring-summer [SS]: October–March) have been calculated for CRA 4 (Table 60, Figure 32), beginning from the 1979–80 autumn-winter season and ending with the 2008–09 autumn-winter season. This series was used to provide advice to the Minister of Fisheries and to the CRA 4 stakeholders on recent CPUE trends so they could make an informed decision on the adoption and subsequent operation of a management procedure (Breen & Kim 2006) used to set the 2009–10 Total Allowable Catch. The trends for the AW and SS standardised series were similar to each other and the AW series was very similar to the annual CPUE series reported in Figure 13. As in CRA 3, these series showed a long period of slow decline from the beginning of the series to the early 1990s, followed by a steep increase to a peak in 1998–99 which in turn was followed by a decline to 2001–02, at which point there was an interruption of about 2 years before the stock resumed its decline to present levels.

The total deviance explained by the standardisation analysis was good (29%, Table 61), with most of the explanatory power lying with the variable *period*. The residual patterns showed some deviation from the lognormal assumption at the extreme tails of the residual distribution, but were acceptable throughout most of the distribution. There was contrast in the *month* variable, with higher relative monthly coefficients in May/June (autumn-winter season) and November/December (spring-summer season), and with the relative coefficients dropping to below 1.0 at the end of each season (Figure 33). Relative catch rates were slightly higher in the more northerly statistical areas of CRA 4 compared to the statistical areas near and in Cook Strait (the coefficients for Areas 912 to 914 were greater than 1.0 while the coefficients for Areas 915 and 934 were below 1.0; Figure 33).

3.14 CRA 5: standardised CPUE indices by period

Standardised indices by season (autumn-winter [AW]: April–September; spring-summer [SS]: October–March) have been calculated for CRA 5 (Table 62, Figure 34), beginning from the 1979–80 autumn-winter season and ending with the 2008–09 autumn-winter season. This series was used to provide advice to CRA 5 stakeholders on recent CPUE trends so that they could make an informed decision on temporarily retiring (“shelving”) of quota on a voluntary basis in response to observed catch rates. The decision to put quota aside was based on a set of operational decision rules (P. Breen, NIWA, pers. comm.). The trends for the AW and SS standardised series differed somewhat, with the AW series showing a relatively smaller increase to the peak in the early 2000s than did the SS series and the AW series dropped more following the peak (Figure 34). The annual CPUE series (see Figure 16) more closely resembled the SS series, except for the decline in the most recent three years, which more closely resembled the AW series.

The total deviance explained by the model was good for these types of models (33%, Table 63), with most of the explanatory power lying with the *period* variable. The residual patterns showed deviation from the lognormal assumption at the extreme tails of the residual distribution, but were acceptable through most of the centre of the distribution. There was contrast in the *month* variable, with high relative coefficients over most of the autumn-winter season (May was highest) and with high relative coefficients in December and January (spring-summer season). The relative coefficients dropped to less than 1.0 at the end of each season, as with the other seasonal standardised analyses (Figure 35). Relative catch rates were above 1.0 for Areas 916 and 918 while the remainder were near to or below 1.0 (Figure 35). However the contrast between all five statistical areas was low.

3.15 CRA 7 standardised CPUE: 1 October–30 September fishing year

Annual standardised indices for CRA 7 have been calculated based on an alternative definition for a fishing year, spanning the period 1 October to 30 September year rather than the 1 April–31 March fishing year specified under the QMS for rock lobster (Table 64, Figure 36). More recent data were available to this series (up to 30 September 2008: see Section 2.1) than for the analysis presented in Table 45 and this series formed the input for the management decision rule that was developed for CRA 7 (Breen et al. 2008). This series showed a reversal of the drop observed in Figure 22 for the 2007–08 fishing year (Figure 36).

The total deviance explained by the standardisation analysis was good (28%, Table 65), with most of the explanatory power lying with the *fishing year* variable. The residual patterns showed deviation from the lognormal assumption at the extreme tails of the residual distribution, but were acceptable for more than 90% of the distribution. There was almost no contrast in the *month* variable, except for the March and April relative coefficients, which were well below 1.0. Fishermen cannot land lobster using the concession Minimum Legal Size from December, resulting in little fishing in these months and low relative catch rates (Figure 37). As seen in the analysis presented in Section 3.8, Area 921 had a much higher catch rate than Area 920 (Figure 37).

3.16 CRA 8 standardised CPUE: 1 October–30 September fishing year

Annual standardised indices for CRA 8 have been calculated based on an alternative definition for a fishing year, spanning the period 1 October to 30 September year rather than the 1 April–31 March fishing year specified under the QMS for rock lobster (Table 66, Figure 38). More recent data were available to this series (up to 30 September 2008: see Section 2.1) than for the analysis presented in Table 51 and this series formed the input for the management decision rule that was developed for CRA 8 (Breen et al. 2008). This series resembled the 1 April–31 March series presented in Figure 25, except that the increasing trend seen over the past three years was more attenuated in the 1 October–30 September series than in the 1 April–31 March series.

The total deviance explained by the standardisation analysis was not as high as in the CRA 7 model (21%, Table 67), again with most of the explanatory power lying with *fishing year* variable. As with the CRA 7 model, the residual patterns showed some deviation from the lognormal assumption at both tails of the residual distribution, but were acceptable throughout the majority of the distribution. The peak catching months extended from September to February, with considerably lower relative catch rates in the winter months (Figure 39). Area 925 (Snares) had the highest relative catch rate, although very little catch has been taken from this statistical area (see Table 47). The relative catch rates for the other four important statistical areas (Area 924: Stewart Island; Areas 926 to 928: Fiordland) showed some contrast, with Areas 924 and 926 being above 1.0 while Areas 927 and 928 were less than 1.0 (Figure 39).

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Table 1: Reported commercial catch (t), commercial TACC (t), and total allowable catch (TAC) of *Jasus edwardsii* to the Quota Management System by rock lobster QMA for each fishing year since the species was included in the QMS on 1 April 1990. –, TAC not set. (Sources: QMR [1990–91 to 2000–01]; MHR [2001–02 to 2007–08])

Fishing Year	Catch	TACC	CRA 1			CRA 2			CRA 3	
			TAC	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC
1990–91	131.1	160.1	–	237.6	249.5	–	324.1	437.1	–	–
1991–92	128.3	146.8	–	229.7	229.4	–	268.8	397.7	–	–
1992–93	110.5	137.4	–	190.3	214.6	–	191.5	327.5	–	–
1993–94	127.4	130.5	–	214.9	214.6	–	179.5	163.7	–	–
1994–95	130.0	130.5	–	212.8	214.6	–	160.7	163.7	–	–
1995–96	126.7	130.5	–	212.5	214.6	–	156.9	163.7	–	–
1996–97	129.4	130.5	–	213.2	214.6	–	203.5	204.7	–	–
1997–98	129.3	130.5	–	234.4	236.1	452.6	223.4	224.9	379.4	–
1998–99	128.7	131.1	–	232.3	236.1	452.6	325.7	327.0	453.0	–
1999–00	125.7	131.1	–	235.1	236.1	452.6	326.1	327.0	453.0	–
2000–01	130.9	131.1	–	235.4	236.1	452.6	328.1	327.0	453.0	–
2001–02	130.6	131.1	–	225.0	236.1	452.6	289.9	327.0	453.0	–
2002–03	130.8	131.1	–	205.7	236.1	452.6	291.3	327.0	453.0	–
2003–04	128.7	131.1	–	196.0	236.1	452.6	215.9	327.0	453.0	–
2004–05	130.8	131.1	–	197.3	236.1	452.6	162.0	327.0	453.0	–
2005–06	130.5	131.1	–	225.2	236.1	452.6	170.1	190.0	319.0	–
2006–07	130.8	131.1	–	226.7	236.1	452.6	178.7	190.0	319.0	–
2007–08	129.6	131.1	–	229.7	236.1	452.6	171.0	190.0	319.0	–
2008–09	N/A	131.1	–	N/A	236.1	452.6	N/A	190.0	319.0	–
Fishing Year	Catch	TACC	CRA 4			CRA 5			CRA 6	
			TAC	Catch	TACC	TAC	Catch	TACC	TAC	Catch	TACC
1990–91	523.2	576.3	–	308.6	465.2	–	369.7	518.2	–	–
1991–92	530.5	529.8	–	287.4	426.8	–	388.3	503.0	–	–
1992–93	495.7	495.7	–	258.8	336.9	–	329.4	503.0	–	–
1993–94	492.0	495.7	–	311.0	303.2	–	341.8	530.6	–	–
1994–95	490.4	495.7	–	293.9	303.2	–	312.5	530.6	–	–
1995–96	487.2	495.7	–	297.6	303.2	–	315.3	530.6	–	–
1996–97	493.6	495.7	–	300.3	303.2	–	378.3	530.6	–	–
1997–98	490.4	495.7	–	299.6	303.2	–	338.7	400.0	480.0	–
1998–99	493.3	495.7	–	298.2	303.2	–	334.2	360.0	370.0	–
1999–00	576.5	577.0	771.0	349.5	350.0	467.0	322.4	360.0	370.0	–
2000–01	573.8	577.0	771.0	347.4	350.0	467.0	342.7	360.0	370.0	–
2001–02	574.1	577.0	771.0	349.1	350.0	467.0	328.7	360.0	370.0	–
2002–03	575.7	577.0	771.0	348.7	350.0	467.0	336.3	360.0	370.0	–
2003–04	575.7	577.0	771.0	349.9	350.0	467.0	290.4	360.0	370.0	–
2004–05	569.9	577.0	771.0	345.1	350.0	467.0	323.0	360.0	370.0	–
2005–06	504.1	577.0	771.0	349.5	350.0	467.0	351.7	360.0	370.0	–
2006–07	444.6	577.0	771.0	349.8	350.0	467.0	352.1	360.0	370.0	–
2007–08	315.2	577.0	771.0	349.8	350.0	467.0	350.0	360.0	370.0	–
2008–09	N/A	577.0	771.0	N/A	350.0	467.0	N/A	360.0	370.0	–
Fishing Year	Catch	TACC	CRA 7			CRA 8				
			TAC	Catch	TACC	TAC	Catch			
1990–91	133.4	179.4	–	834.5	1152.4	–	–			
1991–92	177.7	164.7	–	962.7	1054.6	–	–			
1992–93	131.6	153.1	–	876.5	986.8	–	–			
1993–94	138.1	138.7	–	896.1	888.1	–	–			
1994–95	120.3	138.7	–	855.6	888.1	–	–			
1995–96	81.3	138.7	–	825.6	888.1	–	–			
1996–97	62.9	138.7	–	862.4	888.1	–	–			
1997–98	36.0	138.7	–	785.6	888.1	–	–			
1998–99	58.6	138.7	–	808.1	888.1	–	–			
1999–00	56.5	111.0	131.0	709.8	711.0	798.0	–			
2000–01	87.2	111.0	131.0	703.4	711.0	798.0	–			
2001–02	76.9	89.0	109.0	572.1	568.0	655.0	–			
2002–03	88.6	89.0	109.0	567.1	568.0	655.0	–			
2003–04	81.4	89.0	109.0	567.6	568.0	655.0	–			
2004–05	94.2	94.9	114.9	603.0	603.4	690.4	–			
2005–06	95.0	94.9	114.9	603.2	603.4	690.4	–			
2006–07	120.2	120.2	140.2	754.9	755.2	842.2	–			
2007–08	120.1	120.2	140.2	752.4	755.2	842.2	–			
2008–09	N/A	123.9	143.9	N/A	966.0	1053.0	–			

Table 1 (cont.): Reported commercial catch (t), TACC and TAC for CRA 9 and for all New Zealand. –, TAC not set for QMA.

Fishing Year	Catch	TACC	CRA 9		TACC ¹	Total
			TAC	Catch ¹		TAC ¹
1990–91	45.3	54.7	–	2907.4	3793.0	–
1991–92	47.5	50.2	–	3020.9	3502.9	–
1992–93	45.7	47.0	–	2629.9	3201.9	–
1993–94	45.5	47.0	–	2746.2	2912.1	–
1994–95	45.2	47.0	–	2621.5	2912.1	–
1995–96	45.4	47.0	–	2548.6	2912.1	–
1996–97	46.9	47.0	–	2690.5	2953.1	–
1997–98	46.7	47.0	–	2584.2	2864.1	1312.0
1998–99	46.9	47.0	–	2726.0	2926.8	1275.6
1999–00	47.0	47.0	–	2748.5	2850.2	3442.6
2000–01	47.0	47.0	–	2795.9	2850.2	3442.6
2001–02	46.8	47.0	–	2593.0	2685.2	3277.6
2002–03	47.0	47.0	–	2591.1	2685.2	3277.6
2003–04	45.9	47.0	–	2451.5	2685.2	3277.6
2004–05	47.0	47.0	–	2472.3	2726.4	3318.8
2005–06	46.6	47.0	–	2475.8	2589.4	3184.8
2006–07	47.0	47.0	–	2604.8	2766.6	3362.0
2007–08	47.0	47.0	–	2464.8	2766.6	3362.0
2008–09	N/A	47.0	–	N/A	2981.0	3576.5

¹ TACC totals exclude CRA 10 (TACC=0.1 t); catch totals exclude CRA 10 and ET catches (outside EEZ).

Table 2: Ratio of the sum of landed catch from the bottom portion of the CELR forms to the reported QMR/MHR catch for each QMA and fishing year. Landed catches from CELRs include only records where error ratings are less than or equal to 1 and have been adjusted using the B4 algorithm (Bentley et al. 2005). The landed catch data from CELRs are the data used to calculate all tables and graphs in this report, apart from Table 1.

Fishing Year	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 6	CRA 7	CRA 8	CRA 9
1990–91	0.96	0.87	1.00	0.99	0.94	0.81	0.89	0.86	1.03
1991–92	1.12	0.92	0.99	0.99	1.00	0.85	0.94	0.93	1.02
1992–93	1.08	0.97	0.99	1.00	0.98	0.83	0.97	0.92	1.04
1993–94	1.06	1.00	1.03	1.00	0.96	0.86	0.98	0.89	1.17
1994–95	0.99	0.95	1.00	1.01	0.96	0.92	0.98	0.90	1.35
1995–96	0.93	0.96	1.02	0.98	0.95	0.94	0.96	0.89	1.24
1996–97	1.01	0.89	0.93	0.94	0.94	0.88	0.92	0.86	1.84
1997–98	0.87	0.89	0.91	0.95	0.95	0.87	0.92	0.85	1.55
1998–99	0.87	0.93	0.87	0.94	0.92	0.83	0.86	0.85	1.45
1999–00	0.98	0.88	0.97	0.94	0.91	0.75	0.58	0.84	1.75
2000–01	0.91	0.95	0.97	0.96	0.87	0.83	0.95	0.87	1.02
2001–02	0.95	0.93	0.94	0.96	0.88	0.85	0.97	0.85	0.93
2002–03	0.96	0.95	0.91	0.98	0.87	0.82	0.95	0.79	0.94
2003–04	0.96	0.95	0.91	0.92	0.96	0.83	1.00	0.83	0.92
2004–05	0.96	0.95	0.88	0.92	1.01	0.88	0.91	0.83	0.89
2005–06	0.92	0.95	0.95	0.87	0.98	0.87	0.94	0.90	1.01
2006–07	0.92	1.00	0.95	0.93	0.97	0.89	0.97	0.90	0.94
2007–08	0.95	0.93	0.97	0.88	0.92	0.89	0.95	0.88	0.89

Table 3: Summary table showing the number of vessels reporting rock lobster by CRA QMA and for all of New Zealand, 1979–80 through to 2007–08. Vessels recorded as catching less than 1 t in a year for an entire QMA have been excluded. The problem fishing year with overlapping vessel codes from the previous FSU and the current CELR catch reporting systems has been indicated in bold type.

Fishing year	CRA1	CRA2	CRA3	CRA4	CRA5	CRA6	CRA7	CRA8	CRA9	All QMA _s
1979–80	34	80	70	86	88	39	90	271	23	759
1980–81	34	89	85	86	86	42	86	253	23	771
1981–82	33	88	77	88	85	45	79	221	20	724
1982–83	33	82	85	89	93	54	42	214	19	705
1983–84	31	75	84	89	93	50	40	208	22	687
1984–85	30	73	86	90	95	53	59	212	21	712
1985–86	34	78	83	88	92	57	66	208	20	718
1986–87	35	70	76	88	91	48	58	187	20	656
1987–88	30	59	72	85	84	47	51	173	19	612
1988–89	26	55	58	87	71	42	38	135	10	515
1989–90	27	17	77	131	66	55	17	178	18	562
1990–91	27	58	58	85	62	40	37	134	12	487
1991–92	33	52	65	88	68	45	46	144	13	532
1992–93	31	48	54	94	60	50	35	144	12	505
1993–94	27	47	48	100	59	53	37	143	12	513
1994–95	22	47	41	89	51	59	32	122	16	467
1995–96	23	44	34	80	49	51	27	112	14	420
1996–97	26	40	33	75	47	50	22	111	18	408
1997–98	22	42	30	72	45	50	7	107	19	378
1998–99	19	35	31	65	41	42	18	104	16	356
1999–00	20	34	32	70	39	34	17	91	17	342
2000–01	18	39	33	61	36	33	25	87	9	327
2001–02	18	36	33	62	34	32	22	74	11	303
2002–03	17	37	38	65	34	32	20	69	10	311
2003–04	16	35	39	65	34	35	17	66	9	304
2004–05	15	32	33	61	32	34	14	62	8	281
2005–06	15	37	29	54	31	35	14	60	8	273
2006–07	13	36	28	66	28	36	14	57	7	278
2007–08	13	33	28	53	27	35	20	59	7	266
Mean: 1979–80 to 1983–84	33.0	82.8	80.2	87.6	89.0	46.0	67.4	233.4	21.4	729.2
Mean: 2003–04 to 2007–08	14.4	34.6	31.4	59.8	30.4	35.0	15.8	60.8	7.8	280.4
Percent drop	-56%	-58%	-61%	-32%	-66%	-24%	-77%	-74%	-64%	-62%

Table 4: Number of vessels reporting rock lobster by statistical area from CRA 1, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	901	902	903	904	939	All
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	9	4	22
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

Table 5: Percentage of annual catch by statistical area from CRA 1, 1979–80 to 2007–08.

Fishing year	901	902	903	904	939
1979–80	16.9	23.6	19.8	15.3	24.4
1980–81	12.5	31.0	13.4	17.8	25.2
1981–82	11.1	35.4	20.6	12.1	20.8
1982–83	18.3	32.4	12.1	14.1	23.1
1983–84	21.3	31.7	7.9	14.3	24.7
1984–85	16.4	39.6	7.4	14.7	21.9
1985–86	17.4	31.1	8.6	19.2	23.7
1986–87	11.0	25.0	19.5	22.2	22.2
1987–88	18.3	23.9	15.7	18.3	23.8
1988–89	20.1	25.2	12.0	19.6	23.1
1989–90	28.2	20.4	11.3	19.6	20.5
1990–91	27.2	27.8	9.9	14.0	21.0
1991–92	7.9	30.7	16.7	18.4	26.3
1992–93	15.5	28.6	14.0	20.1	21.8
1993–94	27.0	27.9	11.7	16.8	16.6
1994–95	25.2	20.7	13.6	24.4	16.2
1995–96	15.3	16.6	17.0	31.9	19.2
1996–97	16.2	16.2	19.0	30.5	18.1
1997–98	13.8	19.4	16.0	22.9	27.9
1998–99	23.2	18.5	12.0	15.7	30.6
1999–00	45.1	8.3	5.3	10.3	30.9
2000–01	51.5	10.9	8.0	10.2	19.4
2001–02	49.2	9.5	8.5	8.6	24.1
2002–03	36.8	21.1	7.0	6.9	28.3
2003–04	15.4	46.9	6.1	10.1	21.5
2004–05	28.1	30.6	8.1	9.3	23.9
2005–06	40.4	19.1	8.8	10.6	21.1
2006–07	44.8	15.6	13.9	10.0	15.7
2007–08	52.6	15.4	10.8	9.1	12.1

Table 6: Percentage of annual catch by month from CRA 1, 1979–80 to 2007–08.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	0.9	0.1	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	0.1	0.3	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	0.0	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	3.9	5.3	8.9	5.9	18.6	20.9	16.9	12.2	5.3
1990–91	0.1	0.2	0.7	4.3	14.9	12.0	14.2	15.0	15.9	11.2	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	6.3	9.5	8.3	14.0	13.9	14.2	14.9	11.0	4.9
1993–94	0.1	0.3	1.8	7.2	9.2	7.2	18.4	14.7	17.7	12.9	7.9	2.6
1994–95	0.1	0.5	2.4	9.5	15.0	7.6	10.8	17.1	17.2	8.9	7.7	3.1
1995–96	1.2	2.1	2.8	11.9	19.0	18.9	16.8	10.6	6.8	2.4	3.4	4.1
1996–97	1.2	4.9	3.9	18.5	13.8	18.8	15.8	12.3	5.8	2.2	1.7	1.0
1997–98	5.3	6.7	5.4	20.8	20.0	18.4	12.2	4.0	2.4	0.4	0.3	4.0
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	25.7	20.1	13.1	4.7	2.6	0.7	0.2	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	0.3	0.4
2002–03	4.1	5.0	2.5	15.5	19.0	16.9	21.0	8.4	4.0	3.0	0.2	0.4
2003–04	3.1	0.7	0.5	19.5	15.7	10.3	24.1	8.7	9.8	4.2	2.3	1.0
2004–05	1.9	2.8	3.8	17.8	14.8	12.9	21.4	8.9	2.7	4.4	7.2	1.4
2005–06	2.5	1.0	1.6	9.8	17.8	19.0	21.1	13.5	8.5	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	3.5	4.1	2.7	14.5	17.9	18.6	11.7	9.9	6.3	6.1	2.7	1.8

Table 7: Percentage of catch from CRA 1 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	901	902	903	904	939
Apr	1.3	0.1	0.1	.	1.9
May	1.5	0.7	0.0	.	1.9
Jun	1.6	0.4	0.0	0.4	0.3
Jul	7.2	1.2	3.3	1.7	1.1
Aug	9.7	1.7	3.0	1.9	1.6
Sep	9.7	2.4	1.9	0.7	3.9
Oct	5.2	3.0	0.5	2.1	0.8
Nov	4.9	3.3	0.2	1.2	0.4
Dec	3.9	2.1	0.1	0.2	.
Jan	4.6	0.2	0.9	0.3	0.1
Feb	2.0	0.2	0.1	0.4	.
Mar	1.1	0.0	0.6	0.1	.

Table 8: Arithmetic CPUE (total kg/total potlifts) for CRA 1 by fishing year and statistical area, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	901	902	903	904	939
1979–80	1.91	1.42	0.70	0.52	0.47
1980–81	2.05	1.80	0.71	0.76	0.77
1981–82	2.01	1.78	0.90	0.72	0.78
1982–83	2.87	2.06	0.58	0.72	0.86
1983–84	1.89	1.47	0.60	0.66	1.12
1984–85	1.68	1.37	0.64	0.58	0.77
1985–86	1.16	1.30	0.67	0.62	0.80
1986–87	1.34	0.97	0.74	0.53	0.71
1987–88	1.58	0.94	0.64	0.51	0.64
1988–89	1.62	0.98	0.47	0.68	0.73
1989–90	1.49	1.14	0.50	0.49	0.60
1990–91	1.10	0.68	0.57	0.48	0.60
1991–92	1.45	0.81	0.44	0.41	0.65
1992–93	1.73	0.65	0.47	0.32	0.49
1993–94	1.88	1.03	0.41	0.33	0.50
1994–95	1.76	1.19	0.61	0.47	0.66
1995–96	1.83	1.30	0.90	0.67	1.02
1996–97	2.42	1.04	0.83	0.66	1.27
1997–98	2.12	1.24	0.74	0.52	1.12
1998–99	.	1.18	0.80	0.54	1.08
1999–00	2.85	1.13	0.48	0.34	1.16
2000–01	2.82	1.22	0.72	0.40	0.89
2001–02	2.92	2.77	0.77	0.50	0.86
2002–03	2.05	3.04	0.72	0.36	0.96
2003–04	.	3.29	0.79	0.36	0.81
2004–05	3.48	2.01	1.14	0.58	0.69
2005–06	3.21	2.19	0.81	.	0.57
2006–07	2.88	.	1.17	.	0.78
2007–08	3.29	1.97	1.12	0.56	1.08

Table 9: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 1 (kg/potlift) for 1979–80 to 2007–08. (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.74	0.77	0.80	0.041
1980–81	1.01	0.89	0.96	0.043
1981–82	1.09	0.90	0.91	0.046
1982–83	1.12	0.94	0.98	0.044
1983–84	1.11	0.98	0.93	0.043
1984–85	0.96	0.92	0.87	0.043
1985–86	0.89	0.82	0.81	0.041
1986–87	0.75	0.79	0.79	0.041
1987–88	0.74	0.74	0.74	0.042
1988–89	0.80	0.68	0.65	0.049
1989–90	0.75	0.73	0.66	0.047
1990–91	0.68	0.63	0.55	0.046
1991–92	0.60	0.64	0.64	0.041
1992–93	0.53	0.53	0.54	0.043
1993–94	0.65	0.61	0.62	0.044
1994–95	0.77	0.78	0.79	0.047
1995–96	0.94	1.05	1.20	0.054
1996–97	0.95	0.98	1.16	0.053
1997–98	0.89	0.95	1.16	0.058
1998–99	1.04	1.15	1.35	0.061
1999–00	1.09	1.04	1.11	0.064
2000–01	1.17	1.08	1.12	0.063
2001–02	1.30	1.24	1.28	0.064
2002–03	1.20	1.22	1.12	0.062
2003–04	1.22	1.13	1.12	0.068
2004–05	1.24	1.41	1.28	0.067
2005–06	1.14	1.48	1.32	0.072
2006–07	1.32	1.60	1.41	0.071
2007–08	1.64	2.16	1.73	0.068

Table 10: Number of vessels reporting rock lobster by statistical area from CRA 2, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	905	906	907	908	All
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	30	16	20	58
1991–92	12	28	16	17	52
1992–93	9	21	8	18	48
1993–94	8	25	11	15	47
1994–95	9	23	9	14	48
1995–96	9	24	8	16	45
1996–97	8	17	7	13	40
1997–98	12	17	8	10	43
1998–99	10	13	5	10	36
1999–00	8	15	7	9	35
2000–01	11	17	7	12	40
2001–02	11	14	7	10	36
2002–03	9	15	10	9	37
2003–04	9	14	7	9	36
2004–05	6	15	8	11	34
2005–06	12	15	9	9	38
2006–07	9	18	5	11	37
2007–08	9	13	6	10	33

Table 11: Percentage of annual catch by statistical area from CRA 2, 1979–80 to 2007–08.

Fishing year	905	906	907	908
1979–80	10.6	31.4	25.0	32.9
1980–81	9.8	38.6	24.0	27.6
1981–82	12.0	40.0	18.6	29.4
1982–83	14.0	42.9	18.9	24.3
1983–84	13.8	41.5	18.7	26.0
1984–85	11.0	38.8	18.2	31.9
1985–86	11.2	38.4	25.1	25.3
1986–87	9.8	44.1	19.6	26.5
1987–88	8.2	50.2	17.3	24.3
1988–89	10.5	49.8	18.3	21.4
1989–90	68.1	15.2	5.8	10.9
1990–91	14.9	41.8	17.3	26.1
1991–92	11.1	44.8	19.3	24.9
1992–93	14.6	44.0	11.7	29.8
1993–94	15.2	45.1	14.4	25.3
1994–95	14.8	46.4	17.9	20.9
1995–96	13.5	48.2	14.4	23.9
1996–97	15.7	48.9	14.8	20.6
1997–98	14.6	47.2	20.9	17.3
1998–99	18.9	41.1	21.0	19.0
1999–00	15.4	43.0	24.7	17.0
2000–01	16.0	43.6	22.5	18.0
2001–02	15.9	41.7	21.2	21.2
2002–03	15.8	34.2	21.4	28.6
2003–04	18.1	35.2	24.2	22.5
2004–05	11.9	39.0	22.7	26.4
2005–06	16.4	38.6	23.7	21.3
2006–07	15.2	39.1	21.1	24.6
2007–08	15.4	40.7	20.9	23.0

Table 12: Percentage of annual catch by month from CRA 2, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/month cell.

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	0.0	0.1	0.5	7.9	16.7	14.7	16.4	14.6	12.4	8.3	5.8	2.6
1991–92	0.5	0.8	1.4	11.5	12.9	12.9	19.0	15.0	10.3	7.7	5.4	2.5
1992–93	0.4	0.5	2.6	9.8	10.3	11.2	16.6	13.3	13.7	9.3	7.2	5.1
1993–94	0.3	0.1	2.7	13.4	15.6	15.4	18.3	10.9	9.4	8.2	3.7	2.0
1994–95	0.3	0.3	5.2	18.6	18.6	16.0	20.5	10.6	5.0	2.6	1.7	0.8
1995–96	0.4	0.9	7.0	22.5	24.6	19.7	17.0	3.4	1.8	0.6	0.9	1.3
1996–97	3.2	5.9	7.0	35.1	19.6	16.0	6.8	1.8	1.1	1.4	1.1	0.9
1997–98	5.1	3.8	9.3	32.2	18.9	20.0	8.9	0.4	0.9	.	0.1	0.3
1998–99	1.6	4.3	8.2	22.3	21.7	29.6	5.5	2.5	0.6	0.1	2.2	1.6
1999–00	2.1	4.5	3.8	21.1	20.3	22.9	19.3	2.0	0.6	1.2	1.0	1.3
2000–01	4.6	1.8	1.2	10.5	18.7	18.8	24.7	7.9	2.8	1.4	3.1	4.5
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	10.3	8.9	23.2	13.3	10.1	6.2	7.0	5.6
2003–04	2.0	0.6	1.1	7.7	10.9	12.8	19.9	12.5	9.4	11.9	6.4	4.8
2004–05	1.9	1.4	2.1	12.4	9.8	10.9	16.7	14.4	7.3	9.2	7.5	6.3
2005–06	1.7	0.8	0.5	7.3	11.1	14.0	16.4	12.7	11.1	10.0	9.3	4.9
2006–07	1.6	0.5	1.2	10.3	11.5	14.2	18.2	11.8	10.4	9.7	6.1	4.5
2007–08	1.4	0.6	1.1	8.9	11.7	14.1	14.8	15.7	10.0	10.2	7.3	4.2

Table 13: Percentage of catch from CRA 2 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	905	906	907	908
Apr	0.3	1.1.	.	.
May	0.2	0.2	0.2.	.
Jun	0.4	0.1	0.6	0.0
Jul	0.9	3.7	2.6	1.7
Aug	1.3	5.5	2.5	2.4
Sep	2.0	5.7	3.1	3.4
Oct	2.2	5.5	3.3	3.8
Nov	2.6	6.8	3.0	3.3
Dec	1.4	3.7	2.5	2.4
Jan	1.5	3.3	1.9	3.5
Feb	1.4	3.1	1.2	1.6
Mar	1.2	2.0	0.1	0.9

Table 14: Arithmetic CPUE (total kg/total potlifts) for CRA 2 by fishing year and statistical area, 1979–80 to 2007–08.

Fishing year	905	906	907	908
1979–80	0.68	0.40	0.69	0.54
1980–81	0.74	0.55	0.79	0.55
1981–82	0.57	0.53	0.67	0.53
1982–83	0.53	0.43	0.52	0.39
1983–84	0.48	0.35	0.44	0.37
1984–85	0.43	0.33	0.42	0.40
1985–86	0.46	0.39	0.52	0.41
1986–87	0.44	0.36	0.41	0.36
1987–88	0.40	0.35	0.35	0.31
1988–89	0.37	0.37	0.33	0.37
1989–90	0.45	0.26	0.22	0.36
1990–91	0.50	0.46	0.49	0.53
1991–92	0.49	0.43	0.45	0.39
1992–93	0.49	0.39	0.36	0.38
1993–94	0.48	0.45	0.56	0.37
1994–95	0.47	0.55	0.89	0.43
1995–96	0.75	0.72	1.28	0.54
1996–97	0.90	0.77	1.91	0.65
1997–98	0.88	0.85	2.16	0.54
1998–99	0.96	0.88	2.19	0.61
1999–00	0.75	0.71	1.18	0.47
2000–01	0.72	0.68	0.89	0.70
2001–02	0.59	0.47	0.65	0.67
2002–03	0.48	0.36	0.49	0.53
2003–04	0.56	0.36	0.46	0.46
2004–05	0.61	0.40	0.47	0.44
2005–06	0.51	0.49	0.47	0.43
2006–07	0.61	0.53	0.56	0.55
2007–08	0.57	0.57	0.60	0.43

Table 15: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 2 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.52	0.52	0.51	0.025
1980–81	0.61	0.61	0.61	0.024
1981–82	0.55	0.52	0.51	0.024
1982–83	0.45	0.43	0.42	0.024
1983–84	0.39	0.35	0.35	0.025
1984–85	0.37	0.34	0.34	0.025
1985–86	0.43	0.40	0.39	0.025
1986–87	0.37	0.36	0.35	0.026
1987–88	0.34	0.31	0.31	0.027
1988–89	0.36	0.34	0.33	0.030
1989–90	0.38	0.35	0.35	0.043
1990–91	0.49	0.48	0.46	0.031
1991–92	0.43	0.44	0.42	0.031
1992–93	0.40	0.41	0.41	0.034
1993–94	0.44	0.44	0.43	0.033
1994–95	0.54	0.52	0.52	0.038
1995–96	0.71	0.77	0.82	0.042
1996–97	0.83	0.80	0.89	0.046
1997–98	0.88	0.98	1.06	0.048
1998–99	0.93	1.07	1.15	0.047
1999–00	0.73	0.81	0.85	0.046
2000–01	0.73	0.76	0.76	0.043
2001–02	0.56	0.53	0.53	0.040
2002–03	0.44	0.43	0.42	0.038
2003–04	0.43	0.43	0.42	0.039
2004–05	0.45	0.49	0.49	0.038
2005–06	0.47	0.51	0.49	0.038
2006–07	0.55	0.57	0.56	0.038
2007–08	0.54	0.57	0.56	0.040

Table 16: Number of vessels reporting rock lobster by statistical area from CRA 3, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	909	910	911	All
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

Table 17: Percentage of annual catch by statistical area from CRA 3, 1979–80 to 2007–08.

Fishing year	909	910	911
1979–80	12.3	53.0	34.7
1980–81	16.1	44.8	39.1
1981–82	19.2	48.3	32.5
1982–83	16.8	51.9	31.3
1983–84	11.7	52.9	35.4
1984–85	16.7	41.7	41.7
1985–86	15.4	41.8	42.8
1986–87	13.2	51.1	35.7
1987–88	19.8	47.6	32.6
1988–89	14.9	42.0	43.1
1989–90	11.8	52.8	35.5
1990–91	11.0	49.8	39.3
1991–92	11.8	41.1	47.1
1992–93	12.1	40.1	47.9
1993–94	17.9	46.1	36.0
1994–95	16.8	47.7	35.5
1995–96	13.4	54.4	32.2
1996–97	14.9	55.6	29.4
1997–98	17.2	54.9	27.9
1998–99	17.3	59.3	23.4
1999–00	17.2	54.6	28.1
2000–01	15.0	45.4	39.6
2001–02	15.5	35.5	49.1
2002–03	11.9	36.2	51.8
2003–04	13.9	36.1	50.0
2004–05	18.5	41.0	40.5
2005–06	13.5	45.6	40.9
2006–07	15.3	41.2	43.6
2007–08	15.9	45.5	38.6

Table 18: Percentage of annual catch by month from CRA 3, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/month cell.

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	4.0	1.7	6.4	10.1	21.8	23.1	14.9	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	1.6	0.8	6.5	6.3	4.8	1.9	7.1	19.0	22.5	17.8	5.9	5.9
1993–94	3.1	2.8	27.1	23.6	8.4	0.2	0.3	0.4	0.3	0.3	29.5	4.1
1994–95	7.5	.	42.9	24.0	14.9	0.3	0.4	0.2	0.6	0.1	7.7	1.6
1995–96	6.1	0.0	38.2	37.7	13.4	0.2	0.4	0.2	0.1	.	3.3	0.6
1996–97	9.2	.	37.5	35.5	15.2	0.5	0.7	0.1	.	.	0.6	0.7
1997–98	7.2	.	32.3	42.9	16.2	0.8	.	.	.	.	0.1	0.6
1998–99	14.4	.	27.9	24.5	21.8	1.5	0.0	.	0.4	.	8.5	0.9
1999–00	4.6	0.1	32.1	31.5	18.3	1.5	0.1	.	.	.	8.8	3.0
2000–01	8.4	.	24.2	20.0	13.4	10.7	0.0	.	.	0.0	15.5	7.8
2001–02	9.1	0.0	25.7	16.9	11.7	0.1	0.5	.	.	0.0	17.3	18.6
2002–03	2.2	.	24.8	16.9	8.3	5.8	8.0	6.7	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	5.4
2004–05	1.7	.	30.9	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	3.1
2006–07	1.8	.	16.2	16.2	13.2	2.5	7.5	15.5	5.0	7.5	6.3	8.3
2007–08	0.6	.	15.8	24.0	9.9	2.6	6.0	15.6	5.4	4.8	7.5	8.0

Table 19: Percentage of catch from CRA 3 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	909	910	911
Apr	.	0.4	0.2
May	.	.	.
Jun	3.2	11	1.5
Jul	5.6	12.9	5.4
Aug	2.8	4.6	2.5
Sep	.	0.1	2.5
Oct	.	0.7	5.3
Nov	0.9	6.1	8.5
Dec	.	2.1	3.4
Jan	0.8	1.0	3.0
Feb	2.1	1.9	3.5
Mar	0.5	4.7	2.7

Table 20: Arithmetic CPUE (total kg/total potlifts) for CRA 3 by fishing year and statistical area, 1979–80 to 2007–08.

Fishing year	909	910	911
1979–80	1.01	0.95	0.84
1980–81	1.20	0.84	0.95
1981–82	1.32	0.89	0.84
1982–83	0.96	0.93	1.01
1983–84	0.80	0.82	0.97
1984–85	0.77	0.64	0.92
1985–86	0.66	0.64	0.89
1986–87	0.69	0.65	0.71
1987–88	0.49	0.39	0.50
1988–89	0.47	0.35	0.60
1989–90	0.56	0.43	0.68
1990–91	0.46	0.42	0.50
1991–92	0.32	0.28	0.38
1992–93	0.34	0.27	0.27
1993–94	0.59	0.46	0.46
1994–95	1.04	0.84	0.85
1995–96	1.22	1.57	1.03
1996–97	2.02	1.87	1.50
1997–98	2.62	2.10	2.12
1998–99	1.94	1.57	1.61
1999–00	1.69	1.50	1.61
2000–01	1.45	0.93	1.61
2001–02	1.00	0.71	1.22
2002–03	0.81	0.55	0.93
2003–04	0.88	0.60	0.60
2004–05	0.82	0.55	0.43
2005–06	0.82	0.59	0.61
2006–07	0.99	0.48	0.62
2007–08	1.02	0.60	0.52

Table 21: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 3 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.91	0.85	0.80	0.022
1980–81	0.93	0.93	0.89	0.021
1981–82	0.93	0.91	0.88	0.021
1982–83	0.96	0.98	0.95	0.021
1983–84	0.86	0.88	0.87	0.020
1984–85	0.75	0.72	0.70	0.020
1985–86	0.73	0.69	0.67	0.021
1986–87	0.67	0.61	0.58	0.022
1987–88	0.44	0.43	0.41	0.022
1988–89	0.45	0.45	0.43	0.025
1989–90	0.51	0.46	0.46	0.023
1990–91	0.45	0.43	0.43	0.023
1991–92	0.33	0.31	0.30	0.022
1992–93	0.28	0.26	0.25	0.023
1993–94	0.48	0.45	0.50	0.033
1994–95	0.87	0.89	0.93	0.043
1995–96	1.30	1.37	1.42	0.048
1996–97	1.76	1.79	1.91	0.049
1997–98	2.18	2.49	2.68	0.052
1998–99	1.63	1.86	2.03	0.047
1999–00	1.56	1.76	1.90	0.045
2000–01	1.19	1.26	1.41	0.040
2001–02	0.95	1.00	1.07	0.040
2002–03	0.73	0.73	0.73	0.032
2003–04	0.63	0.60	0.57	0.032
2004–05	0.52	0.52	0.49	0.035
2005–06	0.62	0.62	0.59	0.035
2006–07	0.58	0.61	0.59	0.034
2007–08	0.60	0.63	0.60	0.036

Table 22: Number of vessels reporting rock lobster by statistical area from CRA 4, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded. A ‘.’ indicates that no fishing took place in the indicated statistical area/fishing year cell. A ‘0’ indicates that fishing took place but none of the qualified vessels fished.

Fishing year	912	913	914	915	934	All
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	31	29	33	11	1	94
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	12	4	67
2007–08	10	11	24	11	6	53

Table 23: Percentage of annual catch by statistical area from CRA 4, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	912	913	914	915	934
1979–80	21.4	30.2	38.2	10.1	0.1
1980–81	32.4	21.7	33.5	12.2	0.2
1981–82	35.6	22.6	29.3	12.4	0.0
1982–83	25.7	21.8	37.6	14.8	0.1
1983–84	19.8	27.8	40.0	12.2	0.1
1984–85	25.1	25.7	37.1	11.6	0.5
1985–86	27.0	21.2	36.7	14.7	0.4
1986–87	21.9	29.3	37.4	11.2	0.3
1987–88	19.3	25.0	44.3	11.4	0.0
1988–89	17.6	27.0	45.5	9.9	0.0
1989–90	23.0	35.2	33.8	7.9	0.0
1990–91	28.3	29.5	31.7	10.5	0.1
1991–92	31.6	29.3	30.0	8.8	0.3
1992–93	30.1	26.3	32.6	10.6	0.4
1993–94	23.8	28.8	36.7	9.9	0.9
1994–95	21.9	24.5	41.7	9.7	2.1
1995–96	22.9	23.1	46.8	6.3	0.9
1996–97	24.6	19.6	46.0	9.2	0.6
1997–98	25.5	22.0	45.0	7.5	.
1998–99	31.3	21.9	38.2	8.5	.
1999–00	26.5	22.4	39.7	10.6	0.8
2000–01	26.9	23.5	37.8	10.9	0.9
2001–02	22.2	21.5	42.2	12.8	1.3
2002–03	23.4	27.0	36.6	12.5	0.5
2003–04	19.3	31.9	40.8	8.0	.
2004–05	15.6	28.4	48.8	6.3	1.0
2005–06	9.7	21.1	55.0	12.9	1.3
2006–07	11.9	22.9	43.2	18.2	3.8
2007–08	15.9	21.0	38.4	21.1	3.6

Table 24: Percentage of annual catch by month from CRA 4, 1979–80 to 2007–08.

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	2.2	9.0	11.5	19.6	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	2.6	17.2	8.7	3.7	4.0	11.5	17.2	16.2	10.7	4.7	2.5
1993–94	1.1	14.2	17.1	9.5	3.7	1.9	15.3	15.3	14.5	4.6	2.1	0.6
1994–95	3.2	17.5	13.3	10.3	6.6	4.3	13.1	17.2	8.2	4.3	0.8	1.2
1995–96	3.9	25.1	12.1	11.9	6.1	11.8	13.2	7.3	3.1	1.6	1.8	2.1
1996–97	9.3	30.2	18.9	11.1	11.2	10.7	4.4	2.1	0.7	0.5	0.0	1.1
1997–98	7.3	30.6	19.3	18.3	10.0	8.4	3.2	0.2	0.5	1.5	0.3	0.5
1998–99	4.3	21.6	13.2	19.3	18.2	14.0	4.6	1.4	0.5	0.8	1.7	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	24.3	24.4	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	17.0	5.3	4.6	2.0	2.4	1.1	1.3
2002–03	5.6	11.9	22.9	13.5	9.2	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	6.6	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	1.9
2005–06	1.4	11.0	10.0	8.5	4.9	3.7	10.2	8.0	17.8	12.2	8.4	3.9
2006–07	0.8	3.0	6.1	5.8	4.3	5.5	11.9	16.8	13.2	18.3	8.8	5.5
2007–08	.	2.8	3.8	6.1	3.9	6.8	10.6	19.4	13.9	15.5	11.7	5.5

Table 25: Percentage of catch from CRA 4 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	912	913	914	915	934
Apr	.	.	.	.	.
May	0.1	1.2	1.4	0.1	.
Jun	0.2	0.9	1.7	0.6	0.4
Jul	0.3	0.9	2.4	2.0	0.5
Aug	0.4	0.2	0.6	2.3	0.3
Sep	1.9	0.7	2.1	2.0	0.1
Oct	3.6	1.8	2.1	2.9	0.2
Nov	4.5	3.9	8.6	2.4	0.1
Dec	1.7	4.1	6.9	1.2	0.1
Jan	1.3	3.6	6.3	3.4	0.8
Feb	0.9	2.5	4.3	3.3	0.7
Mar	1.0	1.3	1.9	1.0	0.3

Table 26: Arithmetic CPUE (total kg/total potlifts) for CRA 4 by fishing year and statistical area, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	912	913	914	915	934
1979–80	0.93	0.98	0.90	0.56	.
1980–81	1.05	0.77	0.83	0.58	0.93
1981–82	1.09	0.83	0.74	0.59	.
1982–83	0.90	0.94	1.08	0.66	.
1983–84	0.77	1.02	1.05	0.64	.
1984–85	0.86	0.84	0.78	0.55	.
1985–86	0.79	0.77	0.72	0.60	0.75
1986–87	0.85	0.92	0.88	0.61	.
1987–88	0.65	0.78	0.79	0.59	.
1988–89	0.51	0.63	0.69	0.53	.
1989–90	0.64	0.74	0.51	0.41	.
1990–91	0.75	0.53	0.39	0.39	.
1991–92	0.74	0.54	0.38	0.38	.
1992–93	0.63	0.51	0.47	0.46	0.46
1993–94	0.55	0.65	0.62	0.41	.
1994–95	0.78	0.69	0.76	0.46	0.41
1995–96	0.95	0.82	0.92	0.59	0.37
1996–97	1.21	1.03	1.03	0.74	.
1997–98	1.71	1.49	1.07	0.84	.
1998–99	1.72	2.51	1.02	0.72	.
1999–00	1.38	1.80	1.05	1.23	0.84
2000–01	1.16	1.91	1.14	1.11	0.95
2001–02	0.93	1.17	1.08	1.11	0.81
2002–03	1.08	1.18	1.02	1.21	.
2003–04	1.10	1.36	1.08	0.90	.
2004–05	0.77	1.20	1.06	0.70	.
2005–06	0.60	0.94	0.94	0.81	.
2006–07	0.58	0.76	0.57	0.76	1.55
2007–08	0.66	0.71	0.47	0.79	0.81

Table 27: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 4 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.87	0.86	0.82	0.021
1980–81	0.83	0.82	0.80	0.021
1981–82	0.83	0.86	0.85	0.021
1982–83	0.92	0.94	0.92	0.020
1983–84	0.90	0.85	0.83	0.020
1984–85	0.77	0.78	0.76	0.020
1985–86	0.73	0.74	0.72	0.020
1986–87	0.84	0.79	0.77	0.020
1987–88	0.73	0.69	0.67	0.021
1988–89	0.62	0.58	0.56	0.021
1989–90	0.59	0.57	0.54	0.020
1990–91	0.50	0.51	0.50	0.021
1991–92	0.50	0.52	0.50	0.020
1992–93	0.52	0.50	0.48	0.020
1993–94	0.58	0.56	0.54	0.021
1994–95	0.69	0.68	0.67	0.022
1995–96	0.86	0.84	0.85	0.025
1996–97	1.03	1.08	1.18	0.028
1997–98	1.24	1.29	1.39	0.030
1998–99	1.31	1.44	1.57	0.030
1999–00	1.27	1.35	1.46	0.029
2000–01	1.26	1.17	1.25	0.030
2001–02	1.06	1.04	1.10	0.028
2002–03	1.09	1.14	1.19	0.027
2003–04	1.14	1.19	1.22	0.027
2004–05	1.00	0.96	0.96	0.026
2005–06	0.88	0.84	0.83	0.027
2006–07	0.66	0.73	0.71	0.025
2007–08	0.60	0.61	0.60	0.028

Table 28: Number of vessels reporting rock lobster by statistical area from CRA 5, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded. A ‘.’ indicates that no fishing took place in the statistical area/fishing year cell. A ‘0’ indicates that fishing took place but none of the qualified vessels fished.

Fishing year	916	917	918	919	932	933	All
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	11	0	0	7	67
1990–91	11	40	11	1	3	11	63
1991–92	11	37	21	1	1	11	68
1992–93	12	31	13	0	.	11	59
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	9	21	7	1	1	12	46
1998–99	6	18	5	.	1	13	41
1999–00	7	21	7	1	1	12	40
2000–01	8	18	6	.	.	10	36
2001–02	10	18	2	.	0	8	35
2002–03	10	17	2	.	.	9	35
2003–04	12	15	2	.	.	11	35
2004–05	12	14	1	.	2	9	33
2005–06	11	15	2	.	0	8	32
2006–07	10	14	2	.	.	8	28
2007–08	8	14	2	.	0	7	27

Table 29: Percentage of annual catch by statistical area from CRA 5, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	916	917	918	919	932	933
1979–80	26.7	47.9	12.8	1.1	1.0	10.4
1980–81	29.3	50.2	6.3	0.4	0.3	13.5
1981–82	23.0	52.0	7.3	0.1	1.5	16.1
1982–83	19.9	57.3	4.0	0.7	0.1	18.0
1983–84	19.2	57.5	5.6	0.3	.	17.4
1984–85	19.5	61.4	4.7	0.7	0.1	13.6
1985–86	19.4	62.1	6.7	0.7	0.3	10.8
1986–87	15.9	65.3	7.3	1.9	1.6	8.0
1987–88	22.4	58.0	6.3	3.2	0.7	9.4
1988–89	19.3	58.6	8.2	3.2	0.7	10.0
1989–90	28.4	55.8	10.1	0.1	0.0	5.5
1990–91	28.3	57.4	5.3	0.0	0.6	8.4
1991–92	29.9	46.1	10.9	0.0	0.1	13.0
1992–93	24.9	58.4	7.0	0.2	.	9.6
1993–94	23.5	54.3	8.1	.	0.1	14.1
1994–95	28.0	50.5	4.3	.	0.0	17.2
1995–96	26.9	43.2	3.2	0.0	1.3	25.3
1996–97	24.4	45.0	4.8	0.0	2.1	23.7
1997–98	24.3	42.2	4.4	0.0	2.4	26.8
1998–99	23.2	41.9	5.8	.	3.4	25.6
1999–00	29.4	42.0	4.0	0.0	0.0	24.6
2000–01	31.0	40.1	2.8	.	.	26.1
2001–02	42.6	39.4	1.5	.	0.1	16.3
2002–03	45.4	36.1	1.0	.	.	17.5
2003–04	46.8	33.8	0.9	.	.	18.5
2004–05	43.1	40.2	0.9	.	0.1	15.8
2005–06	44.2	41.0	1.4	.	0.0	13.4
2006–07	41.2	45.6	0.8	.	.	12.4
2007–08	37.4	45.3	1.0	.	0.2	16.2

Table 30: Percentage of annual catch by month from CRA 5, 1979–80 to 2007–08.

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	2.1	5.1	2.4	2.3	2.3	4.1	7.0	15.8	20.8	25.1	10.4	2.5
1990–91	2.7	3.7	1.6	2.8	2.2	3.9	13.5	24.7	22.7	14.7	6.2	1.3
1991–92	0.4	3.4	1.9	3.8	3.6	4.0	10.8	19.9	19.1	22.1	8.9	2.1
1992–93	0.9	2.5	5.7	3.5	3.7	2.3	7.9	12.0	21.1	25.0	12.2	3.1
1993–94	0.7	6.7	7.3	7.6	5.6	3.8	10.0	13.0	19.9	15.3	7.7	2.2
1994–95	1.8	9.9	4.6	5.2	5.7	5.1	7.0	19.0	17.0	13.3	7.9	3.6
1995–96	1.8	10.9	5.1	5.5	5.0	5.9	10.9	14.3	15.3	10.6	8.2	6.5
1996–97	8.3	20.9	7.4	5.9	7.7	9.0	10.7	8.8	10.2	6.1	3.2	1.6
1997–98	15.2	24.0	10.8	7.8	7.3	7.4	7.7	5.6	5.1	4.6	3.2	1.3
1998–99	7.7	18.0	14.1	11.8	12.9	12.3	9.3	4.0	3.6	2.0	2.2	2.2
1999–00	11.0	19.4	11.7	13.2	12.1	11.6	8.1	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	21.2	13.0	17.1	17.4	12.4	4.6	2.4	0.5	0.6	0.9	0.9
2002–03	9.0	21.5	15.8	13.9	15.9	10.1	3.3	2.3	1.1	2.8	2.2	2.3
2003–04	1.4	14.4	20.0	19.1	12.5	13.7	7.6	2.0	2.0	3.9	1.7	1.6
2004–05	3.7	22.6	13.3	13.9	7.1	6.8	6.9	7.9	4.1	10.1	1.9	1.9
2005–06	3.1	28.3	13.0	10.5	8.4	5.6	8.7	7.3	6.1	6.6	1.4	1.0
2006–07	8.7	25.8	11.3	5.9	5.1	4.1	5.5	11.6	7.8	10.7	3.1	0.4
2007–08	10.1	25.7	8.4	6.2	4.3	6.1	6.9	4.9	8.8	13.7	3.9	1.1

Table 31: Percentage of catch from CRA 5 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	916	917	918	919	932	933
Apr	4.2	5.4	.	.	.	0.5
May	11.6	12.9	.	.	.	1.2
Jun	2.8	4.1	.	.	.	1.6
Jul	1.2	3.4	0.7	.	.	0.9
Aug	0.7	2.5	.	.	.	1.1
Sep	0.5	3.0	.	.	0	2.5
Oct	0.4	2.1	0.1	.	0	4.2
Nov	0.3	2.9	0.1	.	0.1	1.6
Dec	4.4	2.9	0.1	.	.	1.4
Jan	8.8	4.0	0.0	.	0	0.8
Feb	2.3	1.5	.	.	0	0.1
Mar	0.3	0.6	.	.	0	0.2

Table 32: Arithmetic CPUE (total kg/total potlifts) for CRA 5 by fishing year and statistical area, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	916	917	918	919	932	933
1979–80	0.83	0.68	1.10	0.95	.	0.73
1980–81	1.00	0.87	0.85	1.22	.	0.90
1981–82	0.64	0.86	0.82	.	.	0.81
1982–83	0.67	0.94	0.61	0.67	.	0.90
1983–84	0.64	0.80	0.73	0.40	.	0.74
1984–85	0.75	0.81	0.70	0.43	.	0.65
1985–86	0.77	0.70	0.75	0.44	0.45	0.49
1986–87	0.61	0.67	0.80	0.59	0.84	0.36
1987–88	0.59	0.45	0.71	0.57	.	0.34
1988–89	0.48	0.37	0.71	0.32	.	0.30
1989–90	0.56	0.38	0.63	.	.	0.29
1990–91	0.44	0.42	0.51	.	0.55	0.41
1991–92	0.44	0.31	0.55	.	0.24	0.37
1992–93	0.37	0.34	0.45	.	.	0.31
1993–94	0.43	0.36	0.49	.	.	0.39
1994–95	0.56	0.35	0.37	.	.	0.51
1995–96	0.64	0.39	0.41	.	.	0.63
1996–97	0.69	0.46	0.65	.	.	0.66
1997–98	1.06	0.65	0.61	.	.	0.95
1998–99	1.12	0.76	0.88	.	.	1.04
1999–00	2.13	0.77	0.87	.	.	0.91
2000–01	3.48	0.83	1.40	.	.	0.97
2001–02	2.85	0.84	1.64	.	.	1.06
2002–03	2.25	0.96	1.31	.	.	0.88
2003–04	2.36	1.18	1.38	.	.	0.86
2004–05	2.21	1.00	1.37	.	.	0.87
2005–06	1.90	0.98	1.72	.	.	0.70
2006–07	1.68	1.09	.	.	.	0.68
2007–08	1.73	1.19	.	.	.	0.68

Table 33: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 5 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.76	0.66	0.64	0.025
1980–81	0.90	0.79	0.77	0.027
1981–82	0.79	0.72	0.69	0.028
1982–83	0.84	0.77	0.75	0.026
1983–84	0.75	0.69	0.67	0.026
1984–85	0.76	0.69	0.68	0.026
1985–86	0.68	0.57	0.56	0.026
1986–87	0.63	0.50	0.50	0.027
1987–88	0.47	0.42	0.42	0.027
1988–89	0.39	0.37	0.36	0.030
1989–90	0.43	0.42	0.39	0.031
1990–91	0.43	0.40	0.38	0.030
1991–92	0.37	0.33	0.31	0.027
1992–93	0.35	0.32	0.30	0.029
1993–94	0.39	0.38	0.37	0.031
1994–95	0.42	0.39	0.38	0.033
1995–96	0.49	0.46	0.45	0.034
1996–97	0.56	0.60	0.61	0.036
1997–98	0.79	0.84	0.87	0.039
1998–99	0.89	1.05	1.11	0.042
1999–00	1.00	1.11	1.16	0.042
2000–01	1.16	1.24	1.33	0.047
2001–02	1.27	1.43	1.57	0.052
2002–03	1.27	1.53	1.64	0.051
2003–04	1.42	1.78	1.87	0.049
2004–05	1.27	1.67	1.70	0.048
2005–06	1.18	1.44	1.45	0.048
2006–07	1.18	1.31	1.34	0.049
2007–08	1.19	1.32	1.34	0.050

Table 34: Number of vessels reporting rock lobster by statistical area from CRA 6, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	940	941	942	943	All
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	6	46
1992–93	14	20	25	6	50
1993–94	16	19	28	10	54
1994–95	19	15	31	15	59
1995–96	17	15	24	12	51
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	9	11	12	7	35

Table 35: Percentage of annual catch by statistical area from CRA 6, 1979–80 to 2007–08.

Fishing year	940	941	942	943
1979–80	21.5	24.6	38.4	15.5
1980–81	28.5	21.3	31.2	19.0
1981–82	19.6	29.0	34.8	16.6
1982–83	24.6	19.1	40.1	16.1
1983–84	21.8	24.2	38.9	15.1
1984–85	25.6	25.1	36.7	12.6
1985–86	28.4	22.1	33.1	16.5
1986–87	29.0	15.6	37.1	18.3
1987–88	24.0	19.2	41.1	15.7
1988–89	20.4	13.9	50.0	15.6
1989–90	30.0	21.8	38.8	9.4
1990–91	23.4	19.2	50.5	6.9
1991–92	20.9	21.7	51.8	5.6
1992–93	23.0	21.4	47.1	8.5
1993–94	24.7	20.4	45.0	9.9
1994–95	22.5	19.5	49.4	8.7
1995–96	27.9	14.1	46.8	11.2
1996–97	27.0	18.3	42.9	11.7
1997–98	29.1	19.8	43.6	7.5
1998–99	29.0	19.4	43.5	8.2
1999–00	24.0	21.8	47.1	7.1
2000–01	24.1	17.5	51.8	6.6
2001–02	24.2	18.6	48.1	9.0
2002–03	19.5	24.2	43.1	13.2
2003–04	23.4	21.4	45.7	9.5
2004–05	20.0	23.3	51.4	5.4
2005–06	21.8	20.3	48.5	9.4
2006–07	28.2	20.8	40.0	11.0
2007–08	26.3	19.2	41.6	12.8

Table 36: Percentage of annual catch by month from CRA 6, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/month cell.

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	0.1
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	0.1
1990–91	.	1.9	5.5	3.4	1.6	1.5	16.0	15.0	16.7	17.0	21.3	0.0
1991–92	.	1.4	5.8	3.9	1.8	2.1	10.7	9.4	17.3	30.8	13.8	3.0
1992–93	.	1.3	8.1	7.2	6.0	3.5	2.5	10.2	16.1	20.9	17.6	6.6
1993–94	.	1.6	8.6	8.1	4.7	3.3	8.7	15.9	13.0	14.1	22.0	.
1994–95	0.0	4.4	6.2	5.1	4.4	2.6	8.6	16.1	14.8	20.9	17.0	.
1995–96	.	4.2	6.8	3.8	5.9	6.7	23.7	11.9	10.0	12.2	14.6	0.3
1996–97	.	5.3	8.3	5.7	5.1	8.7	20.3	11.1	12.9	12.5	10.1	0.0
1997–98	0.0	8.0	9.3	8.2	5.3	6.6	11.3	12.1	14.7	11.7	12.7	0.0
1998–99	.	6.5	7.1	5.6	5.2	6.5	16.6	18.7	11.9	9.4	12.6	.
1999–00	.	6.6	7.3	6.2	5.6	8.3	17.7	12.9	11.2	12.1	12.1	0.1
2000–01	.	5.2	6.7	6.7	4.8	9.7	17.8	16.0	10.1	10.8	11.9	0.2
2001–02	.	2.9	7.9	6.3	4.1	4.3	15.1	14.3	13.1	17.0	14.8	0.3
2002–03	.	2.2	6.2	9.5	5.9	5.7	8.0	15.9	11.1	18.4	17.0	0.1
2003–04	.	1.7	5.3	6.6	8.6	6.3	15.9	12.8	12.4	19.1	11.2	0.1
2004–05	.	3.8	7.1	10.0	3.9	4.7	10.1	15.7	12.4	16.8	14.6	0.8
2005–06	.	3.7	6.3	7.2	5.5	5.5	10.4	14.2	18.0	16.7	12.3	0.1
2006–07	.	3.3	8.1	9.6	6.6	6.7	15.7	11.3	12.6	11.7	13.6	0.8
2007–08	.	1.4	4.9	9.8	8.7	6.5	5.8	17.2	13.5	20.4	11.5	0.2

Table 37: Percentage of catch from CRA 6 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	940	941	942	943
Apr	.	.	.	.
May	0.6	0.1	0.6	0.1
Jun	1.2	1.1	1.9	0.7
Jul	4.2	1.5	2.9	1.2
Aug	2.7	1.5	3.3	1.2
Sep	1.5	0.9	2.9	1.2
Oct	1.2	1.8	2.2	0.6
Nov	4.6	3.1	7.4	2.1
Dec	3.8	2.5	6.1	1.2
Jan	4.6	3.6	9.7	2.5
Feb	2.1	3.1	4.6	1.6
Mar	.	.	.	0.2

Table 38: Arithmetic CPUE (total kg/total potlifts) for CRA 6 by fishing year and statistical area, 1979–80 to 2007–08.

Fishing year	940	941	942	943
1979–80	2.04	1.43	3.67	3.22
1980–81	2.59	1.38	2.44	2.82
1981–82	2.71	1.40	3.10	2.52
1982–83	2.17	0.97	2.23	2.28
1983–84	2.34	1.28	1.80	1.88
1984–85	1.54	1.07	1.42	1.51
1985–86	1.71	1.14	1.42	1.42
1986–87	1.52	1.32	2.00	1.68
1987–88	1.52	1.09	1.78	1.45
1988–89	1.22	1.09	1.62	1.41
1989–90	1.47	1.09	1.50	1.15
1990–91	1.36	0.92	1.87	0.94
1991–92	1.24	0.86	1.78	1.04
1992–93	0.94	0.81	1.72	0.94
1993–94	0.97	0.90	1.38	0.85
1994–95	1.09	0.74	1.46	0.70
1995–96	1.00	0.77	1.44	0.82
1996–97	0.88	0.84	1.29	0.95
1997–98	0.73	0.77	1.09	0.95
1998–99	0.91	1.04	1.53	1.24
1999–00	0.97	0.94	1.71	0.83
2000–01	0.92	0.92	1.54	0.84
2001–02	0.98	0.87	1.47	1.15
2002–03	1.12	0.99	1.31	1.18
2003–04	1.15	0.76	1.40	0.99
2004–05	1.14	0.89	1.58	1.04
2005–06	1.30	0.91	1.72	1.51
2006–07	1.25	1.03	1.93	1.95
2007–08	1.38	1.15	2.04	1.41

Table 39: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 6 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	2.33	2.10	2.17	0.037
1980–81	2.18	2.03	2.00	0.038
1981–82	2.19	2.27	2.28	0.035
1982–83	1.78	1.61	1.64	0.032
1983–84	1.73	1.63	1.61	0.032
1984–85	1.35	1.30	1.29	0.032
1985–86	1.41	1.37	1.36	0.032
1986–87	1.66	1.51	1.50	0.034
1987–88	1.48	1.34	1.28	0.034
1988–89	1.40	1.28	1.26	0.037
1989–90	1.34	1.20	1.14	0.036
1990–91	1.38	1.19	1.17	0.036
1991–92	1.31	1.26	1.21	0.033
1992–93	1.15	1.23	1.18	0.031
1993–94	1.08	1.06	1.06	0.029
1994–95	1.07	1.04	1.03	0.030
1995–96	1.08	1.02	1.05	0.029
1996–97	1.02	1.09	1.12	0.030
1997–98	0.88	1.03	1.05	0.031
1998–99	1.17	1.25	1.29	0.036
1999–00	1.19	1.30	1.35	0.039
2000–01	1.15	1.19	1.21	0.038
2001–02	1.15	1.18	1.20	0.039
2002–03	1.16	1.26	1.28	0.039
2003–04	1.10	1.20	1.21	0.039
2004–05	1.23	1.40	1.38	0.038
2005–06	1.36	1.48	1.47	0.037
2006–07	1.45	1.63	1.67	0.038
2007–08	1.53	1.60	1.62	0.039

Table 40: Number of vessels reporting rock lobster by statistical area from CRA 7, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	920	921	All
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	8	32
1995–96	22	16	27
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

Table 41: Percentage of annual catch by statistical area from CRA 7, 1979–80 to 2007–08.

Fishing year	920	921
1979–80	61.3	38.7
1980–81	62.0	38.0
1981–82	60.5	39.5
1982–83	53.6	46.4
1983–84	52.3	47.7
1984–85	63.5	36.5
1985–86	74.5	25.5
1986–87	72.6	27.4
1987–88	78.5	21.5
1988–89	70.1	29.9
1989–90	63.9	36.1
1990–91	66.5	33.5
1991–92	71.9	28.1
1992–93	69.9	30.1
1993–94	67.4	32.6
1994–95	64.9	35.1
1995–96	57.2	42.8
1996–97	62.9	37.1
1997–98	51.6	48.4
1998–99	48.3	51.7
1999–00	74.0	26.0
2000–01	50.7	49.3
2001–02	72.8	27.2
2002–03	76.5	23.5
2003–04	70.5	29.5
2004–05	58.4	41.6
2005–06	52.0	48.0
2006–07	50.4	49.6
2007–08	64.5	35.5

Table 42: Percentage of annual catch by month from CRA 7, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/month cell.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	1.7	0.0	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	0.1	0.0	5.7	25.8	24.3	15.3	11.6	10.0	5.0	1.8	0.3	0.0
1983–84	.	.	5.8	19.0	24.9	19.9	15.4	6.6	5.3	2.0	0.8	0.2
1984–85	0.0	0.0	15.8	30.5	16.6	12.6	11.7	7.6	3.1	1.5	0.5	0.1
1985–86	0.0	0.0	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	0.0	7.1	24.7	27.4	16.0	12.0	7.0	2.8	1.6	0.9	0.5
1988–89	0.0	.	4.3	18.6	28.1	14.8	18.3	11.5	1.8	1.5	1.0	0.0
1989–90	.	0.1	2.6	6.0	18.0	27.2	16.5	11.7	8.6	6.5	2.7	0.2
1990–91	0.0	.	7.0	25.0	20.0	19.6	9.1	5.9	6.8	4.2	1.9	0.2
1991–92	0.0	0.0	21.9	34.6	32.7	9.6	0.9	0.2	0.1	.	0.0	.
1992–93	.	.	5.9	18.7	19.9	24.1	17.9	7.8	5.0	0.4	0.3	0.1
1993–94	0.0	.	15.7	40.1	24.4	11.6	8.0	0.1	0.0	0.0	.	.
1994–95	.	0.0	9.4	28.7	33.5	19.6	7.4	1.2	.	.	0.2	.
1995–96	.	0.0	5.9	39.0	26.1	19.9	8.1	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	1.0	.	.	.
1999–00	.	.	7.3	20.4	27.5	17.4	14.0	13.5	.	.	.	.
2000–01	.	.	6.6	22.2	28.6	15.6	17.7	9.2	.	0.1	.	.
2001–02	.	.	9.0	27.2	25.7	18.6	12.6	6.9	.	.	0.0	.
2002–03	.	0.0	10.2	21.2	30.5	20.6	15.8	1.8	.	.	.	.
2003–04	.	0.0	7.1	29.1	25.5	15.2	18.4	4.8	.	.	.	.
2004–05	0.0	.	11.5	36.2	30.8	12.8	5.9	2.9	.	.	.	.
2005–06	.	.	9.0	45.7	32.1	10.9	2.0	0.2	.	.	.	.
2006–07	.	.	11.3	33.4	33.2	17.4	4.3	0.4	.	.	.	.
2007–08	.	0.4	3.3	26.5	34.4	24.3	10.6	0.6	.	.	.	.

Table 43: Percentage of catch from CRA 7 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	920	921
Apr	.	.
May	.	0.4
Jun	2.4	0.9
Jul	16.5	9.9
Aug	24	10.4
Sep	14.5	9.8
Oct	7	3.6
Nov	0.2	0.5
Dec	.	.
Jan	.	.
Feb	.	.
Mar	.	.

Table 44: Arithmetic CPUE (total kg/total potlifts) for CRA 7 by fishing year and statistical area, 1979–80 to 2007–08.

Fishing year	920	921
1979–80	0.91	1.39
1980–81	0.75	1.27
1981–82	0.66	1.10
1982–83	0.40	0.72
1983–84	0.33	0.53
1984–85	0.52	0.76
1985–86	0.72	0.85
1986–87	0.74	1.08
1987–88	0.70	0.84
1988–89	0.40	0.61
1989–90	0.28	0.68
1990–91	0.34	0.74
1991–92	0.77	1.02
1992–93	0.33	0.76
1993–94	0.51	1.17
1994–95	0.37	1.06
1995–96	0.24	0.49
1996–97	0.20	0.44
1997–98	0.18	0.36
1998–99	0.25	0.38
1999–00	0.20	0.31
2000–01	0.27	0.49
2001–02	0.45	0.50
2002–03	0.45	1.07
2003–04	0.45	1.88
2004–05	0.55	1.61
2005–06	0.83	1.81
2006–07	1.27	2.12
2007–08	1.14	1.81

Table 45: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 7 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.05	0.98	0.98	0.031
1980–81	0.89	0.86	0.86	0.033
1981–82	0.79	0.73	0.73	0.034
1982–83	0.50	0.48	0.47	0.037
1983–84	0.40	0.41	0.41	0.038
1984–85	0.59	0.55	0.55	0.038
1985–86	0.75	0.73	0.73	0.037
1986–87	0.81	0.83	0.83	0.039
1987–88	0.73	0.68	0.70	0.041
1988–89	0.45	0.41	0.41	0.047
1989–90	0.36	0.32	0.34	0.044
1990–91	0.41	0.41	0.43	0.042
1991–92	0.83	0.95	0.95	0.053
1992–93	0.40	0.39	0.41	0.045
1993–94	0.63	0.61	0.61	0.056
1994–95	0.48	0.45	0.46	0.052
1995–96	0.31	0.28	0.27	0.052
1996–97	0.25	0.23	0.23	0.056
1997–98	0.24	0.17	0.17	0.061
1998–99	0.30	0.27	0.26	0.061
1999–00	0.22	0.27	0.27	0.065
2000–01	0.35	0.36	0.35	0.058
2001–02	0.46	0.46	0.45	0.063
2002–03	0.52	0.61	0.62	0.068
2003–04	0.58	0.57	0.61	0.076
2004–05	0.75	0.83	0.84	0.091
2005–06	1.12	1.26	1.24	0.102
2006–07	1.59	2.05	1.92	0.095
2007–08	1.31	1.66	1.61	0.083

Table 46: Number of vessels reporting rock lobster by statistical area from CRA 8, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded.

Fishing year	922	923	924	925	926	927	928	All
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	19	33	8	51	34	34	143
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

Table 47: Percentage of estimated annual catch by statistical area from CRA 8, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Fishing year	922	923	924	925	926	927	928
1979–80	1.9	12.7	25.6	0.4	22.4	19.5	17.6
1980–81	1.2	11.3	30.5	1.3	24.1	17.1	14.5
1981–82	1.5	11.9	27.5	1.9	32.4	13.8	11.0
1982–83	1.4	9.9	24.9	1.0	33.2	18.8	10.8
1983–84	1.1	10.2	22.3	1.5	35.8	17.2	11.9
1984–85	1.3	9.4	22.0	0.8	30.5	24.9	11.2
1985–86	0.7	10.5	21.3	1.0	29.5	24.2	12.9
1986–87	1.1	9.9	27.8	0.4	30.2	16.2	14.3
1987–88	1.3	12.5	27.8	0.1	32.0	15.5	10.8
1988–89	1.7	16.2	23.8	1.0	32.8	11.5	12.9
1989–90	1.1	9.7	22.8	0.5	36.2	19.1	10.6
1990–91	0.9	6.7	23.0	1.4	37.9	18.9	11.2
1991–92	1.0	6.0	19.6	1.3	32.3	23.1	16.6
1992–93	0.8	5.6	19.5	1.4	33.0	18.4	21.2
1993–94	1.5	6.4	22.9	1.7	30.1	17.4	19.8
1994–95	1.0	3.9	24.2	4.0	27.8	18.7	20.3
1995–96	0.8	5.0	17.1	3.6	30.4	21.2	21.9
1996–97	0.8	5.5	16.1	2.7	33.3	21.7	20.0
1997–98	0.3	4.4	16.6	1.2	32.6	19.3	25.6
1998–99	0.4	6.0	11.6	1.3	35.0	20.0	25.7
1999–00	0.5	6.5	13.7	3.1	36.4	22.8	17.1
2000–01	0.5	3.6	15.6	2.1	40.7	25.3	12.2
2001–02	0.8	3.3	14.8	0.3	42.8	22.9	15.0
2002–03	0.9	1.8	15.5	1.1	48.2	18.3	14.1
2003–04	0.6	3.9	12.9	0.3	51.4	16.8	14.2
2004–05	0.8	3.8	12.1	1.2	49.8	16.6	15.7
2005–06	0.5	2.9	12.3	0.6	45.8	19.7	18.1
2006–07	1.1	3.2	13.4	.	41.2	23.0	18.1
2007–08	0.9	2.5	13.3	0.8	35.5	21.4	25.5

Table 48: Percentage of estimated annual catch by month from CRA 8, 1979–80 to 2007–08.

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	23.0	14.2	19.0	12.3	9.0	6.1	1.9
1990–91	0.3	0.1	0.9	2.5	8.3	17.6	17.1	19.7	10.5	11.9	7.0	4.2
1991–92	0.3	0.4	2.9	3.5	7.1	14.7	18.2	16.0	14.7	12.9	7.2	2.1
1992–93	0.5	0.2	2.2	4.0	8.3	17.4	15.5	15.8	15.1	8.6	8.5	3.9
1993–94	0.1	0.2	1.0	4.5	19.2	27.6	19.8	11.9	7.0	3.4	2.9	2.4
1994–95	0.1	0.4	3.5	5.2	11.2	25.6	18.5	11.4	10.4	9.0	3.3	1.3
1995–96	0.2	0.2	3.0	4.2	11.9	20.4	19.8	18.9	8.3	7.1	4.3	1.9
1996–97	0.2	0.3	2.2	4.0	10.0	19.1	22.4	19.1	11.1	8.2	2.4	0.9
1997–98	0.2	0.3	3.0	4.7	8.1	21.0	21.6	15.9	11.1	9.6	3.6	0.9
1998–99	0.1	0.3	1.4	2.3	7.6	17.5	16.6	22.4	13.1	10.4	6.3	1.8
1999–00	0.0	0.1	0.6	2.1	15.9	24.9	22.5	14.0	8.7	7.9	2.1	1.1
2000–01	0.1	0.0	0.4	2.6	14.9	37.7	15.3	13.0	6.5	4.9	3.7	1.0
2001–02	0.2	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	20.6	31.6	19.2	8.9	3.4	5.0	1.0	2.7
2003–04	0.5	0.8	1.5	10.5	29.5	38.8	10.6	2.2	0.3	3.7	1.1	0.7
2004–05	0.7	2.0	2.8	14.1	22.2	40.5	6.6	2.4	0.7	3.7	2.8	1.4
2005–06	2.6	3.0	7.7	13.6	23.6	36.9	5.7	0.7	0.5	4.2	0.6	1.0
2006–07	10.9	7.4	11.5	11.0	24.7	24.6	3.5	0.2	0.1	0.6	3.3	2.0
2007–08	12.7	8.6	12.5	11.5	17.2	20.8	3.6	1.0	0.4	8.2	3.2	0.3

Table 49: Percentage of estimated catch from CRA 8 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	922	923	924	925	926	927	928
Apr	.	.	0.2	0.2	2.4	5.8	4.1
May	.	.	.	0.4	2.1	3.7	2.4
Jun	.	.	0.0	.	2.7	3.6	6.2
Jul	0.0	.	0.6	.	3.0	2.2	5.7
Aug	0.2	0.2	3.6	.	7.1	1.9	4.0
Sep	0.6	0.5	5.9	.	9.7	1.9	2.3
Oct	0.1	0.0	1.4	0.0	2.0	0.1	0.0
Nov	.	.	0.6	0.0	0.4	.	.
Dec	.	0.0	.	0.2	0.2	.	0.0
Jan	.	1.7	0.9	.	2.8	2.0	0.7
Feb	.	0.1	0.1	.	2.8	0.2	.
Mar	.	.	.	.	0.2	0.1	0.0

Table 50: Arithmetic CPUE (total kg/total potlifts) for CRA 8 by fishing year and statistical area, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	922	923	924	925	926	927	928
1979–80	1.99	2.23	1.89	5.01	1.84	1.52	1.63
1980–81	1.32	1.90	2.00	7.95	1.96	1.33	1.37
1981–82	1.52	1.81	1.90	10.43	2.14	1.45	1.22
1982–83	1.10	1.82	1.73	4.44	1.99	1.22	1.07
1983–84	0.81	1.18	1.23	4.46	1.53	0.99	1.09
1984–85	0.86	1.25	1.33	3.67	1.30	1.19	0.96
1985–86	0.94	1.49	1.66	13.46	1.51	1.14	1.04
1986–87	1.10	1.17	1.69	2.11	1.23	0.79	0.91
1987–88	1.01	1.45	1.72	.	1.35	0.82	0.91
1988–89	0.54	1.07	1.07	1.58	1.04	0.70	0.69
1989–90	0.81	0.97	1.27	0.60	0.91	0.72	0.71
1990–91	0.61	0.93	1.23	1.38	0.94	0.72	0.57
1991–92	0.42	0.86	1.12	2.02	0.84	0.74	0.68
1992–93	0.47	0.79	1.07	0.93	0.71	0.54	0.57
1993–94	1.21	1.34	1.64	1.78	0.94	0.71	0.65
1994–95	0.73	0.89	1.22	1.29	0.90	0.75	0.70
1995–96	0.92	0.76	1.10	1.24	1.08	0.85	0.69
1996–97	0.80	0.75	0.96	1.20	1.01	0.83	0.72
1997–98	0.64	0.66	0.90	0.94	0.78	0.69	0.62
1998–99	.	0.73	0.71	0.88	1.01	0.86	0.62
1999–00	.	0.75	0.88	0.82	1.14	0.89	0.52
2000–01	.	1.20	1.26	1.56	1.28	0.82	0.55
2001–02	.	1.44	1.33	0.61	1.04	0.79	0.64
2002–03	.	.	1.34	.	1.29	0.93	0.75
2003–04	.	2.75	2.34	1.57	1.92	1.56	0.94
2004–05	.	2.46	1.93	1.15	1.74	1.43	1.15
2005–06	.	4.27	3.08	.	1.93	1.21	1.52
2006–07	.	2.02	3.90	.	2.41	1.56	2.13
2007–08	.	3.82	2.79	2.87	1.99	2.21	3.99

Table 51: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 8 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.79	2.05	2.04	0.020
1980–81	1.72	1.81	1.78	0.021
1981–82	1.79	1.80	1.71	0.023
1982–83	1.57	1.50	1.46	0.022
1983–84	1.25	1.15	1.10	0.021
1984–85	1.22	1.11	1.06	0.022
1985–86	1.36	1.27	1.26	0.022
1986–87	1.15	1.13	1.12	0.022
1987–88	1.24	1.20	1.17	0.023
1988–89	0.92	0.92	0.88	0.028
1989–90	0.90	0.88	0.82	0.024
1990–91	0.87	0.87	0.82	0.026
1991–92	0.82	0.80	0.78	0.024
1992–93	0.68	0.70	0.70	0.024
1993–94	0.92	0.93	0.94	0.027
1994–95	0.88	0.86	0.85	0.027
1995–96	0.90	0.89	0.88	0.029
1996–97	0.87	0.83	0.83	0.029
1997–98	0.72	0.70	0.71	0.027
1998–99	0.79	0.73	0.73	0.029
1999–00	0.84	0.76	0.75	0.033
2000–01	0.98	0.91	0.90	0.036
2001–02	0.92	0.95	0.96	0.040
2002–03	1.11	1.21	1.24	0.044
2003–04	1.67	1.78	1.84	0.050
2004–05	1.58	1.71	1.79	0.049
2005–06	1.75	1.93	2.18	0.049
2006–07	2.19	2.37	2.76	0.050
2007–08	2.47	2.72	3.00	

Table 52: Number of vessels reporting rock lobster by statistical area from CRA 9, 1979–80 to 2007–08. Vessels recorded as catching less than 1 t in a year for the entire QMA have been excluded. A ‘.’ indicates that no fishing took place in the statistical area/fishing year cell. A ‘0’ indicates that fishing took place but none of the qualified vessels fished.

Fishing year	929	930	931	935	936	937	938	All
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	5	0	1	0	12
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

Table 53: Percentage of estimated annual catch by statistical area from CRA 9, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	929	930	931	935	936	937	938
1979–80	14.7	14.7	28.8	13.1	13.4	15.3	.
1980–81	3.3	10.9	16.9	14.4	29.2	25.0	0.3
1981–82	4.3	8.9	32.5	10.2	20.0	24.1	.
1982–83	7.2	9.0	42.3	16.0	8.5	17.1	.
1983–84	2.0	6.3	50.1	8.2	12.6	20.7	.
1984–85	0.7	12.2	42.1	16.5	12.4	16.1	.
1985–86	0.1	7.0	38.6	18.8	16.3	19.2	.
1986–87	1.0	6.3	34.6	23.2	23.4	11.5	.
1987–88	0.0	2.8	33.5	36.3	16.1	11.2	.
1988–89	.	5.5	19.6	46.9	19.5	8.0	0.4
1989–90	2.0	19.3	23.9	44.0	6.4	4.3	.
1990–91	0.1	3.8	40.3	46.4	5.4	1.8	2.1
1991–92	.	2.6	49.8	40.2	1.3	5.1	0.9
1992–93	.	12.5	41.7	40.2	0.1	3.9	1.6
1993–94	1.4	23.0	26.3	47.5	0.1	1.6	.
1994–95	5.6	31.9	13.2	46.1	0.4	2.8	.
1995–96	5.7	27.9	5.7	43.2	8.8	8.7	.
1996–97	4.8	19.0	22.8	45.5	3.2	4.7	.
1997–98	5.7	16.5	19.7	45.4	9.9	2.9	.
1998–99	4.7	31.1	19.2	35.2	4.5	4.7	0.7
1999–00	2.6	34.9	28.3	28.6	0.6	5.0	.
2000–01	1.2	7.5	33.7	35.3	10.3	11.9	0.0
2001–02	0.1	10.0	24.0	41.6	12.2	11.5	0.6
2002–03	0.3	4.9	27.8	44.4	12.4	10.1	.
2003–04	.	6.3	36.5	30.7	17.6	8.8	.
2004–05	.	2.3	30.3	54.7	8.5	4.2	.
2005–06	0.1	5.8	25.4	56.2	7.4	5.1	.
2006–07	.	5.6	28.8	59.1	.	6.6	.
2007–08	.	6.9	24.6	63.9	0.4	4.2	.

Table 54: Percentage of estimated annual catch by month from CRA 9, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/month cell.

Fishing year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1979–80	3.4	0.1	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	15.0	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	0.7	2.4	4.6	8.1	3.1	8.2	8.0	16.0	14.8	20.8	9.3
1983–84	2.6	0.9	2.8	11.2	5.2	0.9	5.5	11.6	11.6	21.1	18.4	8.2
1984–85	0.8	2.3	2.3	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	0.1	1.7	3.0	5.9	4.8	15.9	18.0	13.6	15.2	11.4	7.8
1988–89	4.4	.	0.5	4.9	3.0	8.3	3.7	13.6	18.6	21.3	12.9	8.8
1989–90	1.3	0.0	0.0	3.9	7.7	16.2	7.7	10.9	12.4	15.7	18.4	5.9
1990–91	0.4	.	.	2.3	5.1	11.9	21.4	12.2	6.4	13.1	11.1	16.2
1991–92	1.1	0.0	2.0	17.1	6.1	8.9	9.8	17.4	12.5	10.1	7.4	7.4
1992–93	0.5	0.8	11.7	11.9	3.4	13.6	11.6	11.1	10.4	9.1	11.7	4.3
1993–94	1.0	0.5	1.0	24.3	9.3	12.7	16.3	7.1	11.0	5.7	8.7	2.5
1994–95	0.3	0.0	4.4	12.0	11.6	13.7	22.4	8.9	13.8	9.4	2.0	1.4
1995–96	0.0	0.5	2.4	7.4	16.5	24.1	23.9	13.1	5.1	3.7	0.5	2.7
1996–97	0.4	0.5	4.6	16.2	17.2	22.3	17.0	8.1	7.3	4.6	0.7	1.1
1997–98	0.2	0.2	12.5	21.0	15.0	17.1	12.0	7.3	7.0	3.6	3.9	0.2
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	27.2	18.1	12.5	5.6	2.5	0.1	0.0
2000–01	3.2	2.3	6.0	20.4	19.5	12.6	13.9	12.5	6.8	2.5	0.0	0.3
2001–02	4.2	2.7	8.8	25.3	13.5	23.3	13.9	3.8	2.8	0.6	0.6	0.3
2002–03	11.3	5.0	1.9	18.0	14.1	14.2	6.3	8.1	8.1	3.2	8.2	1.6
2003–04	8.0	0.7	1.1	16.1	28.8	9.0	8.7	5.8	9.5	10.7	.	1.6
2004–05	0.8	0.2	3.6	34.6	27.6	16.3	13.3	.	1.1	0.8	0.1	1.5
2005–06	1.3	2.5	12.0	20.6	28.8	29.5	2.6	0.4	0.8	0.2	0.9	0.3
2006–07	3.8	7.8	21.4	30.4	17.5	16.3	.	0.9	1.8	.	.	.
2007–08	1.2	2.8	16.1	39.2	23.5	12.2	1.7	0.5	2.4	0.1	.	0.2

Table 55: Percentage of estimated catch from CRA 9 by statistical area and month for 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that month/statistical area combination.

Month	929	930	931	935	936	937	938
Apr	.	.	.	1.2	.	.	.
May	.	.	.	2.8	.	.	.
Jun	.	5.0	2.2	8.9	.	.	.
Jul	.	1.9	7.3	29.4	.	0.6	.
Aug	.	.	6.2	16.3	0.4	0.7	.
Sep	.	.	7.3	4.3	.	0.7	.
Oct	.	.	1.7	.	.	.	.
Nov	0.5	.
Dec	.	.	.	0.9	.	1.5	.
Jan	0.1	.
Feb
Mar	0.2	.

Table 56: Arithmetic CPUE (total kg/total potlifts) for CRA 9 by fishing year and statistical area, 1979–80 to 2007–08. A ‘.’ indicates that the value was not available because there were fewer than 3 vessels or there was no fishing in that year/statistical area combination.

Fishing year	929	930	931	935	936	937	938
1979–80	1.21	1.03	2.51	0.63	0.68	1.30	.
1980–81	0.65	1.05	2.28	0.82	0.88	1.80	.
1981–82	0.73	0.83	2.35	0.49	0.63	1.28	.
1982–83	0.82	0.48	1.58	0.69	0.46	0.83	.
1983–84	.	0.70	1.81	0.63	0.44	0.89	.
1984–85	.	0.61	1.78	0.75	0.51	0.77	.
1985–86	.	0.53	1.07	0.67	0.54	0.72	.
1986–87	.	0.64	1.14	0.90	0.79	0.63	.
1987–88	.	.	0.89	1.20	0.61	0.61	.
1988–89	.	0.42	.	1.29	0.52	0.66	.
1989–90	0.46	0.61	1.44	1.06	0.42	0.47	.
1990–91	.	.	1.37	0.86	1.17	.	0.70
1991–92	.	.	1.36	0.81	.	.	.
1992–93	.	0.63	1.43	0.78	.	.	.
1993–94	.	1.20	1.49	1.28	.	.	.
1994–95	.	0.66	1.33	1.23	.	.	.
1995–96	0.50	0.70	.	1.27	.	.	.
1996–97	.	0.70	0.86	1.25	.	.	.
1997–98	0.83	0.55	0.61	1.02	1.06	.	.
1998–99	0.63	0.74	1.22	0.98	.	.	.
1999–00	.	0.74	0.99	1.01	.	.	.
2000–01	0.72	0.70	.	0.74	0.47	.	.
2001–02	.	0.54	1.81	0.66	.	0.92	.
2002–03	.	.	.	1.21	.	.	.
2003–04	.	.	1.79	2.21	.	.	.
2004–05	.	.	.	2.30	.	.	.
2005–06	.	.	.	2.15	.	1.58	.
2006–07	.	.	2.94	1.69	.	.	.
2007–08	.	.	.	1.76	.	.	.

Table 57: Annual arithmetic, unstandardised, and standardised (with standard error) CPUE indices for CRA 9 (kg/potlift). (s.e.=standard error).

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.11	1.06	1.17	0.050
1980–81	1.14	1.11	1.26	0.049
1981–82	0.98	0.91	0.97	0.057
1982–83	0.86	0.79	0.81	0.056
1983–84	0.94	0.87	0.84	0.057
1984–85	0.89	0.80	0.80	0.055
1985–86	0.74	0.70	0.71	0.056
1986–87	0.87	0.82	0.82	0.057
1987–88	0.85	0.87	0.84	0.061
1988–89	0.81	0.76	0.82	0.074
1989–90	0.84	0.72	0.74	0.063
1990–91	0.98	0.90	0.83	0.080
1991–92	0.93	0.98	0.85	0.078
1992–93	0.88	1.03	0.94	0.081
1993–94	1.30	1.17	1.11	0.081
1994–95	0.93	0.82	0.88	0.071
1995–96	0.98	0.97	1.07	0.081
1996–97	0.98	0.95	0.95	0.071
1997–98	0.79	0.81	0.82	0.069
1998–99	0.92	1.03	1.08	0.072
1999–00	0.88	0.90	0.90	0.074
2000–01	0.93	1.02	1.05	0.086
2001–02	0.82	1.02	1.02	0.091
2002–03	1.11	1.21	1.19	0.090
2003–04	1.63	1.89	1.73	0.111
2004–05	2.14	2.43	2.25	0.120
2005–06	2.22	2.08	2.05	0.112
2006–07	1.94	2.16	2.09	0.136
2007–08	1.85	1.87	1.77	0.133

Table 58: Standardised indices for each period with associated standard error and the corresponding arithmetic (unstandardised) CPUE (kg/potlift) for CRA 3 from period 69 (autumn/winter 1979–80) through period 125 (autumn/winter 2007–08). [s.e.=standard error; N/A: not available]

Fishing year	Autumn/winter season				Spring/summer season			
	Period	Arithmetic	Standardised	s.e.	Period	Arithmetic	Standardised	s.e.
1979–80	69	0.75	0.74	0.038	70	0.97	0.81	0.029
1980–81	71	0.85	0.85	0.036	72	0.96	0.87	0.028
1981–82	73	0.84	0.82	0.035	74	0.97	0.88	0.029
1982–83	75	0.87	0.94	0.034	76	1.00	0.91	0.029
1983–84	77	0.79	0.85	0.033	78	0.90	0.83	0.028
1984–85	79	0.65	0.64	0.032	80	0.80	0.71	0.028
1985–86	81	0.58	0.57	0.032	82	0.79	0.72	0.029
1986–87	83	0.47	0.49	0.037	84	0.75	0.62	0.030
1987–88	85	0.36	0.38	0.034	86	0.47	0.42	0.030
1988–89	87	0.34	0.36	0.042	88	0.49	0.45	0.033
1989–90	89	0.34	0.36	0.038	90	0.58	0.51	0.030
1990–91	91	0.33	0.38	0.037	92	0.51	0.44	0.032
1991–92	93	0.24	0.25	0.035	94	0.37	0.31	0.031
1992–93	95	0.18	0.19	0.035	96	0.32	0.29	0.032
1993–94	97	0.42	0.39	0.039	98	0.65	0.77	0.067
1994–95	99	0.88	0.84	0.048	100	0.87	0.94	0.112
1995–96	101	1.31	1.31	0.053	102	1.20	1.24	0.139
1996–97	103	1.77	1.75	0.052	104	1.66	2.15	0.179
1997–98	105	2.19	2.43	0.054	106	1.99	2.77	0.219
1998–99	107	1.62	1.81	0.051	108	2.11	2.85	0.127
1999–00	109	1.60	1.72	0.051	110	1.36	1.94	0.102
2000–01	111	1.17	1.24	0.047	112	1.27	1.58	0.085
2001–02	113	0.91	0.94	0.050	114	1.02	1.18	0.069
2002–03	115	0.73	0.68	0.046	116	0.73	0.72	0.048
2003–04	117	0.71	0.60	0.047	118	0.54	0.50	0.047
2004–05	119	0.56	0.46	0.049	120	0.48	0.48	0.052
2005–06	121	0.66	0.61	0.053	122	0.58	0.54	0.049
2006–07	123	0.59	0.56	0.051	124	0.56	0.55	0.048
2007–08	125	0.63	0.59	0.054	126	0.57	0.57	0.050
2008–09	127	0.75	0.68	0.060	128	N/A	N/A	N/A

Table 59: Proportion of the total deviance explained by each variable in the standardised CPUE model used in the CRA 3 management decision making.

Variable	Iteration		
	1	2	3
Period	0.407		
Month	0.072	0.457	
Area	0.015	0.426	0.478
Additional deviance explained	0.000	0.051	0.020

Table 60: Standardised indices for each period with associated standard error and the corresponding arithmetic (unstandardised) CPUE (kg/potlift) for CRA 4 from period 69 (autumn/winter 1979–80) through period 125 (autumn/winter 2007–08). [s.e.=standard error; N/A: not available]

Fishing year	Autumn/winter season				Spring/summer season			
	Period	Arithmetic	Standardised	s.e.	Period	Arithmetic	Standardised	s.e.
1979–80	69	0.79	0.82	0.034	70	0.92	0.86	0.028
1980–81	71	0.85	0.85	0.032	72	0.82	0.80	0.028
1981–82	73	0.83	0.87	0.033	74	0.83	0.86	0.029
1982–83	75	0.89	0.94	0.031	76	0.93	0.94	0.027
1983–84	77	0.92	0.89	0.031	78	0.90	0.83	0.027
1984–85	79	0.76	0.77	0.030	80	0.78	0.76	0.029
1985–86	81	0.61	0.64	0.030	82	0.80	0.83	0.028
1986–87	83	0.68	0.69	0.031	84	0.93	0.87	0.028
1987–88	85	0.60	0.58	0.032	86	0.80	0.78	0.029
1988–89	87	0.50	0.50	0.032	88	0.69	0.64	0.030
1989–90	89	0.48	0.46	0.031	90	0.66	0.64	0.028
1990–91	91	0.42	0.43	0.032	92	0.55	0.58	0.029
1991–92	93	0.40	0.43	0.029	94	0.57	0.58	0.029
1992–93	95	0.45	0.41	0.029	96	0.58	0.57	0.029
1993–94	97	0.50	0.45	0.029	98	0.67	0.66	0.033
1994–95	99	0.61	0.59	0.029	100	0.84	0.80	0.038
1995–96	101	0.79	0.72	0.030	102	1.07	1.10	0.046
1996–97	103	1.00	1.05	0.031	104	1.61	1.42	0.069
1997–98	105	1.22	1.24	0.033	106	1.67	1.69	0.082
1998–99	107	1.28	1.35	0.033	108	1.85	2.13	0.074
1999–00	109	1.25	1.31	0.032	110	1.73	1.70	0.076
2000–01	111	1.20	1.04	0.034	112	1.88	1.94	0.067
2001–02	113	1.01	0.94	0.033	114	1.39	1.46	0.058
2002–03	115	0.98	0.97	0.033	116	1.74	1.68	0.050
2003–04	117	1.01	1.01	0.035	118	1.49	1.62	0.047
2004–05	119	0.79	0.73	0.035	120	1.30	1.32	0.040
2005–06	121	0.79	0.73	0.039	122	0.94	0.94	0.038
2006–07	123	0.51	0.61	0.040	124	0.71	0.77	0.033
2007–08	125	0.48	0.53	0.046	126	0.64	0.68	0.036
2008–09	127	0.53	0.57	0.051	128	N/A	N/A	N/A

Table 61: Proportion of the total deviance explained by each variable in the standardised CPUE model used in the CRA 4 management decision making.

Variable	Iteration		
	1	2	3
Period	0.218		
Month	0.046	0.259	
Area	0.019	0.241	0.281
Additional deviance explained	0.000	0.041	0.022

Table 62: Standardised indices for each period with associated standard error and the corresponding arithmetic (unstandardised) CPUE (kg/potlift) for CRA 5 from period 69 (autumn/winter 1979–80) through period 125 (autumn/winter 2007–08). [s.e.=standard error; N/A: not available]

Fishing year	Autumn/winter season				Spring/summer season			
	Period	Arithmetic	Standardised	s.e.	Period	Arithmetic	Standardised	s.e.
1979–80	69	0.75	0.64	0.039	70	0.76	0.65	0.033
1980–81	71	0.80	0.72	0.041	72	0.95	0.82	0.037
1981–82	73	0.64	0.58	0.045	74	0.84	0.78	0.036
1982–83	75	0.66	0.71	0.040	76	0.91	0.80	0.035
1983–84	77	0.68	0.67	0.041	78	0.78	0.69	0.035
1984–85	79	0.69	0.70	0.041	80	0.79	0.68	0.036
1985–86	81	0.56	0.51	0.042	82	0.72	0.61	0.035
1986–87	83	0.52	0.46	0.042	84	0.67	0.53	0.037
1987–88	85	0.41	0.38	0.042	86	0.50	0.45	0.037
1988–89	87	0.33	0.34	0.046	88	0.42	0.39	0.039
1989–90	89	0.35	0.35	0.054	90	0.44	0.42	0.039
1990–91	91	0.34	0.35	0.051	92	0.45	0.40	0.038
1991–92	93	0.25	0.26	0.044	94	0.41	0.35	0.036
1992–93	95	0.25	0.26	0.046	96	0.39	0.34	0.038
1993–94	97	0.33	0.34	0.045	98	0.43	0.39	0.043
1994–95	99	0.35	0.33	0.047	100	0.46	0.44	0.046
1995–96	101	0.40	0.38	0.049	102	0.56	0.53	0.047
1996–97	103	0.50	0.52	0.047	104	0.67	0.73	0.056
1997–98	105	0.74	0.75	0.051	106	0.95	1.02	0.062
1998–99	107	0.84	0.99	0.053	108	1.10	1.24	0.069
1999–00	109	0.96	1.00	0.052	110	1.19	1.29	0.069
2000–01	111	1.13	1.12	0.057	112	1.35	1.70	0.083
2001–02	113	1.28	1.30	0.059	114	1.22	1.75	0.112
2002–03	115	1.24	1.31	0.061	116	1.36	1.85	0.087
2003–04	117	1.30	1.32	0.060	118	1.96	2.46	0.086
2004–05	119	1.17	1.19	0.063	120	1.51	2.02	0.074
2005–06	121	1.05	1.08	0.062	122	1.58	1.89	0.076
2006–07	123	0.97	1.02	0.063	124	1.78	1.91	0.079
2007–08	125	0.98	1.05	0.067	126	1.76	1.66	0.074
2008–09	127	1.18	1.17	0.066	128	N/A	N/A	N/A

Table 63: Proportion of the total deviance explained by each variable in the standardised CPUE model used in the CRA 5 management decision making.

Variable	Iteration		
	1	2	3
Period	0.284		
Area	0.028	0.310	
Month	0.022	0.305	0.331
Additional deviance explained	0.000	0.026	0.022

Table 64: Annual standardised CPUE analysis used to operate the 2007–08 CRA 7 decision rule. This analysis is based on a 1 October–30 September fishing year (see Section 3.15). [s.e.=standard error]

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	0.94	0.96	0.96	0.033
1980–81	0.80	0.76	0.76	0.033
1981–82	0.50	0.49	0.49	0.036
1982–83	0.44	0.44	0.44	0.039
1983–84	0.58	0.54	0.53	0.038
1984–85	0.76	0.70	0.70	0.038
1985–86	0.75	0.72	0.72	0.038
1986–87	0.78	0.80	0.83	0.041
1987–88	0.47	0.47	0.47	0.043
1988–89	0.37	0.31	0.31	0.048
1989–90	0.45	0.44	0.47	0.042
1990–91	0.70	0.62	0.64	0.042
1991–92	0.42	0.43	0.43	0.055
1992–93	0.52	0.55	0.58	0.047
1993–94	0.55	0.49	0.49	0.056
1994–95	0.32	0.30	0.30	0.051
1995–96	0.24	0.22	0.22	0.055
1996–97	0.22	0.18	0.18	0.059
1997–98	0.29	0.25	0.24	0.062
1998–99	0.26	0.28	0.29	0.065
1999–00	0.33	0.34	0.32	0.060
2000–01	0.46	0.47	0.45	0.061
2001–02	0.48	0.52	0.53	0.064
2002–03	0.57	0.62	0.65	0.077
2003–04	0.79	0.74	0.77	0.082
2004–05	1.02	1.15	1.12	0.098
2005–06	1.54	1.83	1.71	0.098
2006–07	1.32	1.66	1.61	0.088
2007–08	1.58	2.13	2.09	0.100

Table 65: Proportion of the total deviance explained by each variable in the standardised CPUE model used to operate the 2007–08 CRA 7 decision rule.

Variable	Iteration		
	1	2	3
Fishing year	0.234		
Area	0.051	0.281	
Month	0.006	0.244	0.289
Additional deviance explained	0.000	0.047	0.009

Table 66: Annual standardised CPUE analysis used to operate the 2007–08 CRA 8 decision rule. This analysis is based on a 1 October–30 September fishing year (see Section 3.16). [s.e.=standard error]

Fishing year	Arithmetic	Unstandardised	Standardised	s.e.
1979–80	1.84	2.04	2.01	0.021
1980–81	1.78	1.85	1.76	0.022
1981–82	1.60	1.62	1.56	0.022
1982–83	1.41	1.29	1.25	0.022
1983–84	1.32	1.25	1.18	0.021
1984–85	1.35	1.22	1.19	0.021
1985–86	1.17	1.10	1.08	0.022
1986–87	1.20	1.20	1.17	0.023
1987–88	1.14	1.13	1.07	0.025
1988–89	0.92	0.90	0.86	0.026
1989–90	0.87	0.87	0.79	0.025
1990–91	0.81	0.82	0.80	0.025
1991–92	0.80	0.78	0.77	0.024
1992–93	0.79	0.80	0.79	0.024
1993–94	0.90	0.90	0.91	0.027
1994–95	0.88	0.89	0.87	0.028
1995–96	0.86	0.83	0.82	0.029
1996–97	0.81	0.77	0.78	0.028
1997–98	0.77	0.72	0.71	0.029
1998–99	0.84	0.81	0.78	0.029
1999–00	0.96	0.85	0.83	0.034
2000–01	0.86	0.88	0.87	0.036
2001–02	1.05	1.07	1.07	0.041
2002–03	1.53	1.68	1.69	0.045
2003–04	1.55	1.63	1.73	0.048
2004–05	1.73	1.87	2.06	0.047
2005–06	2.19	2.41	2.83	0.049
2006–07	2.35	2.57	2.97	0.050
2007–08	3.22	3.34	3.84	0.046

Table 67: Proportion of the total deviance explained by each variable in the standardised CPUE model used to operate the 2007–08 CRA 8 decision rule.

Variable	Iteration		
	1	2	3
Fishing year	0.138		
Month	0.040	0.190	
Area	0.035	0.171	0.220
Additional deviance explained	0.000	0.051	0.030

New Zealand CRA Quota Management and Statistical Areas

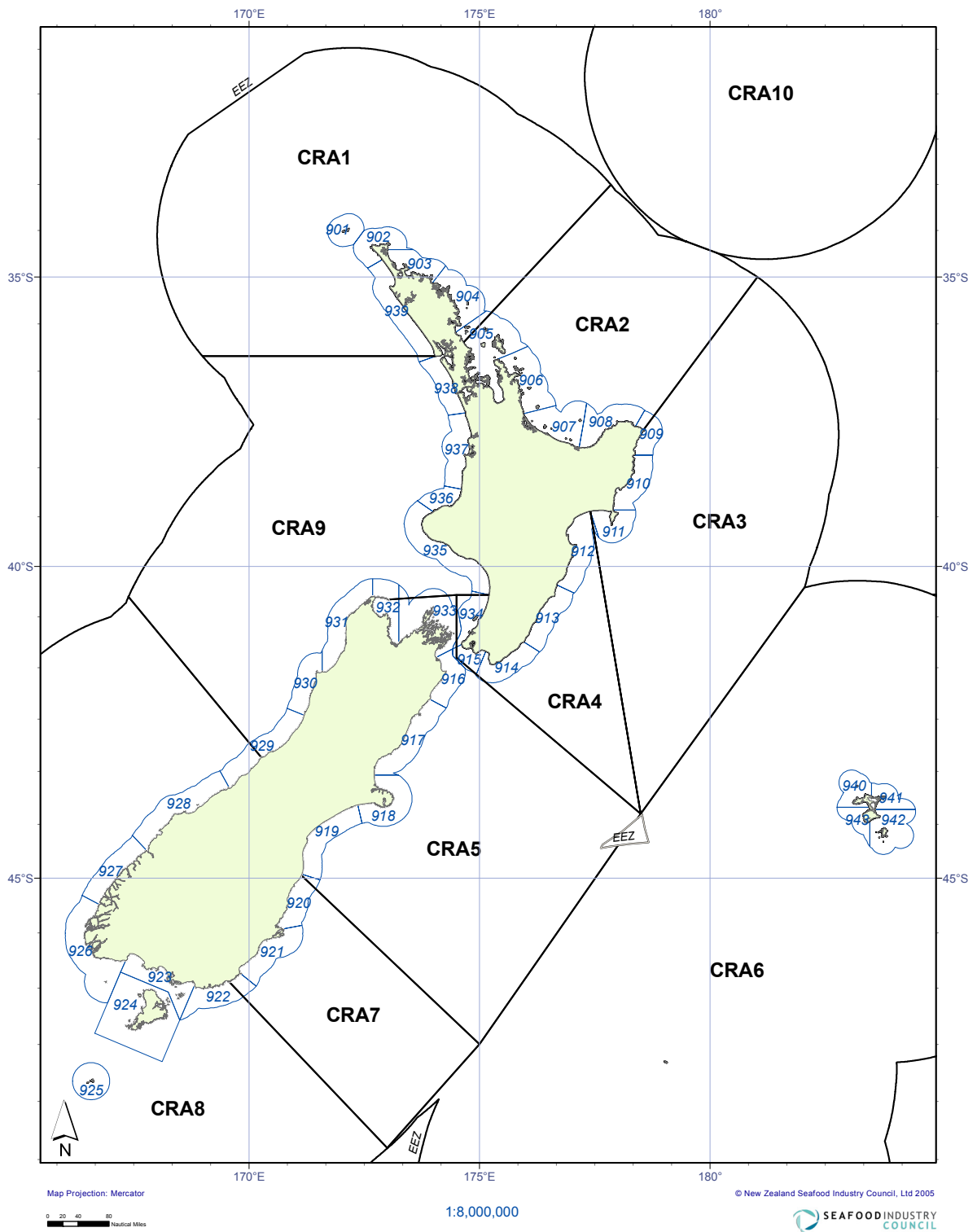


Figure 1: Map of rock lobster statistical areas and Quota Management Areas.

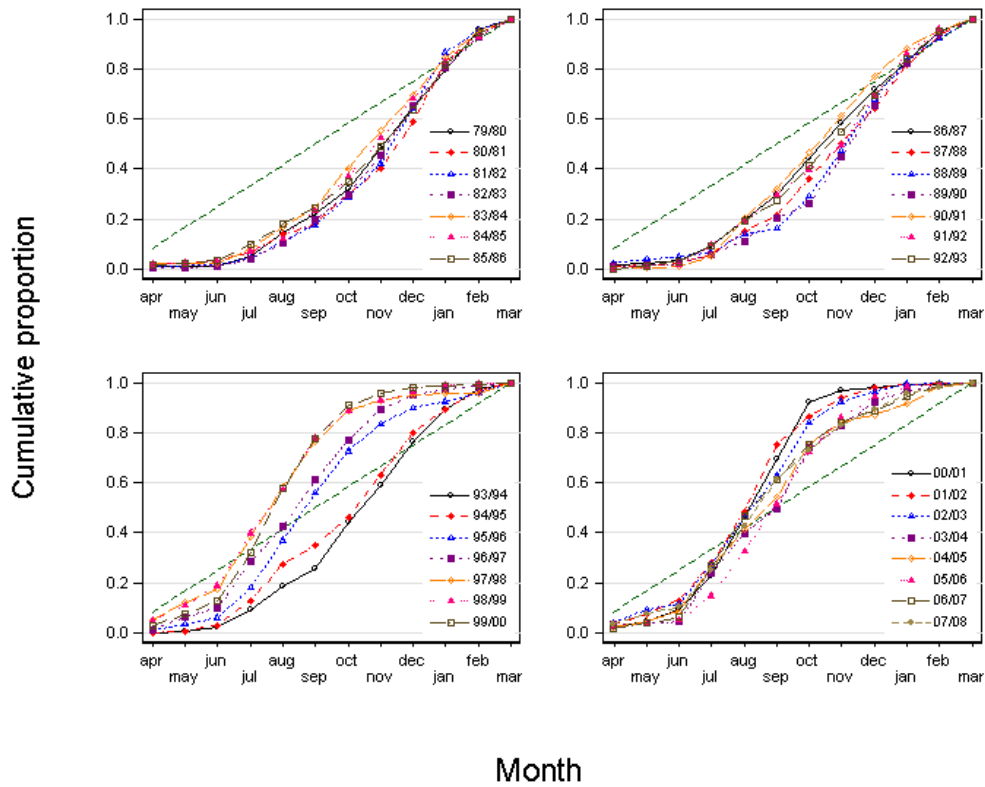


Figure 2: Cumulative catch percentages by fishing month for CRA 1, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

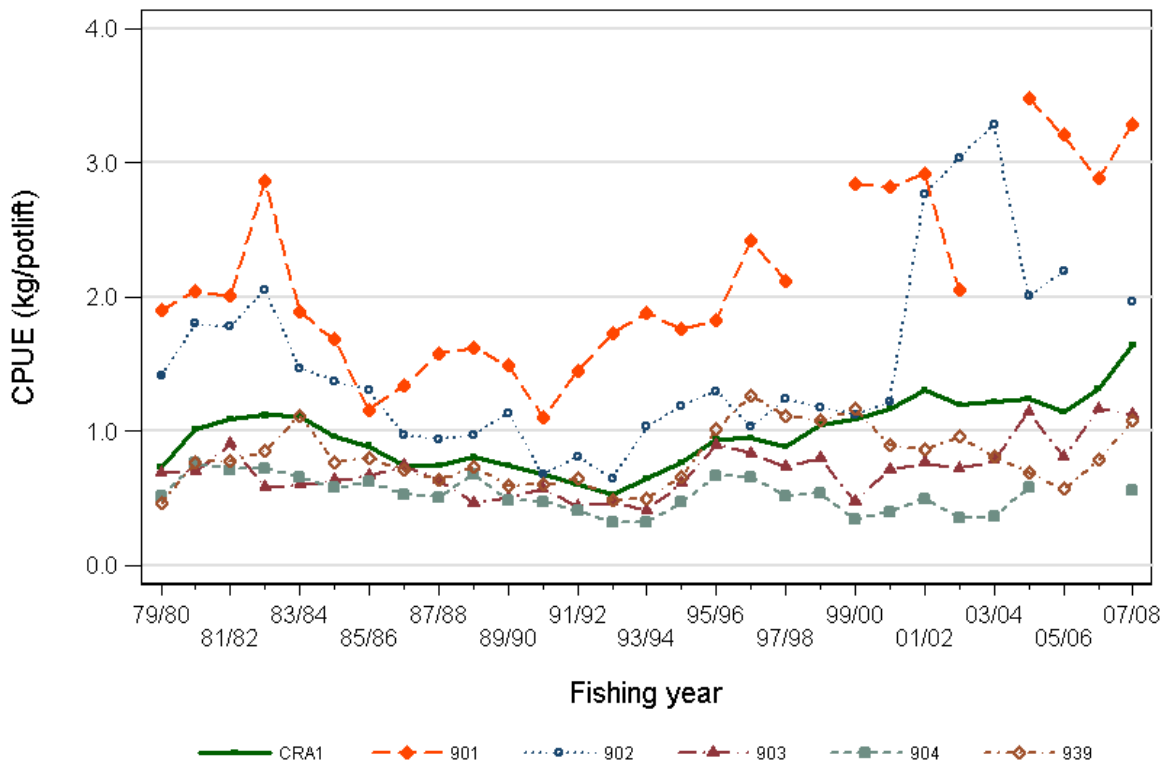


Figure 3: Arithmetic CPUE (total kg/total potlifts) for CRA 1 by fishing year and statistical area from 1979–80 to 2007–08.

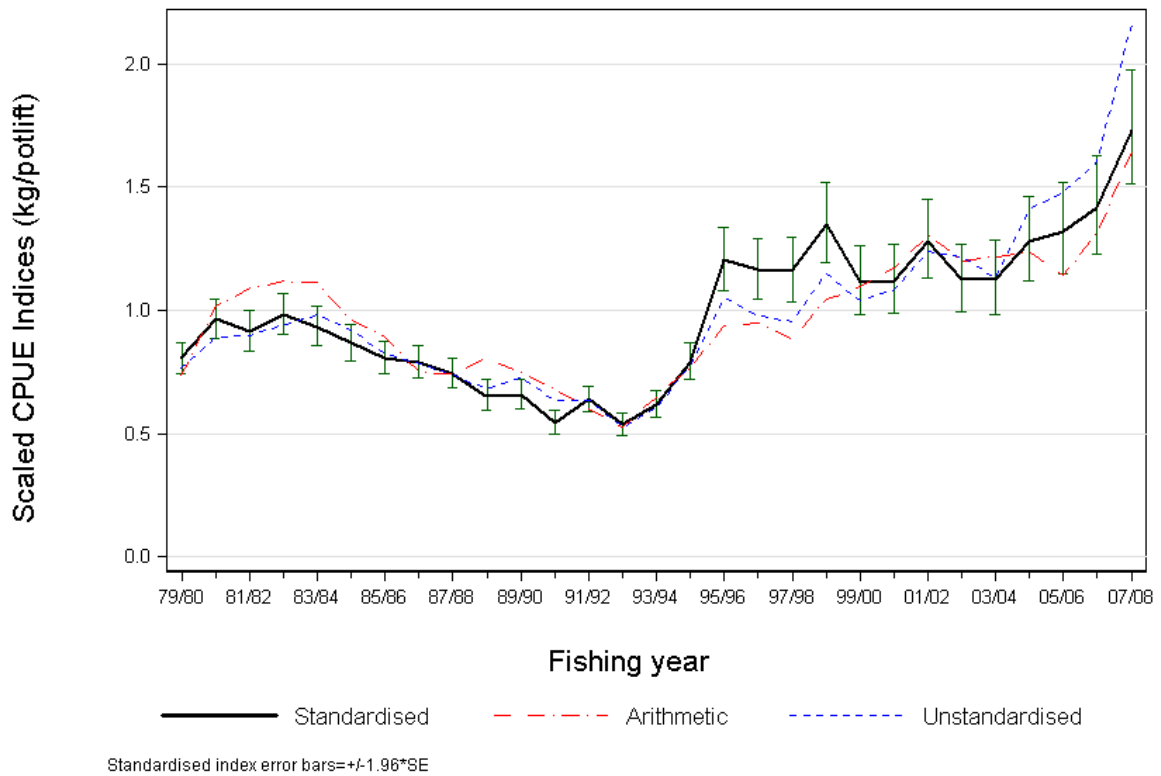


Figure 4: Annual CPUE indices for CRA 1: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.93 kg/potlift.

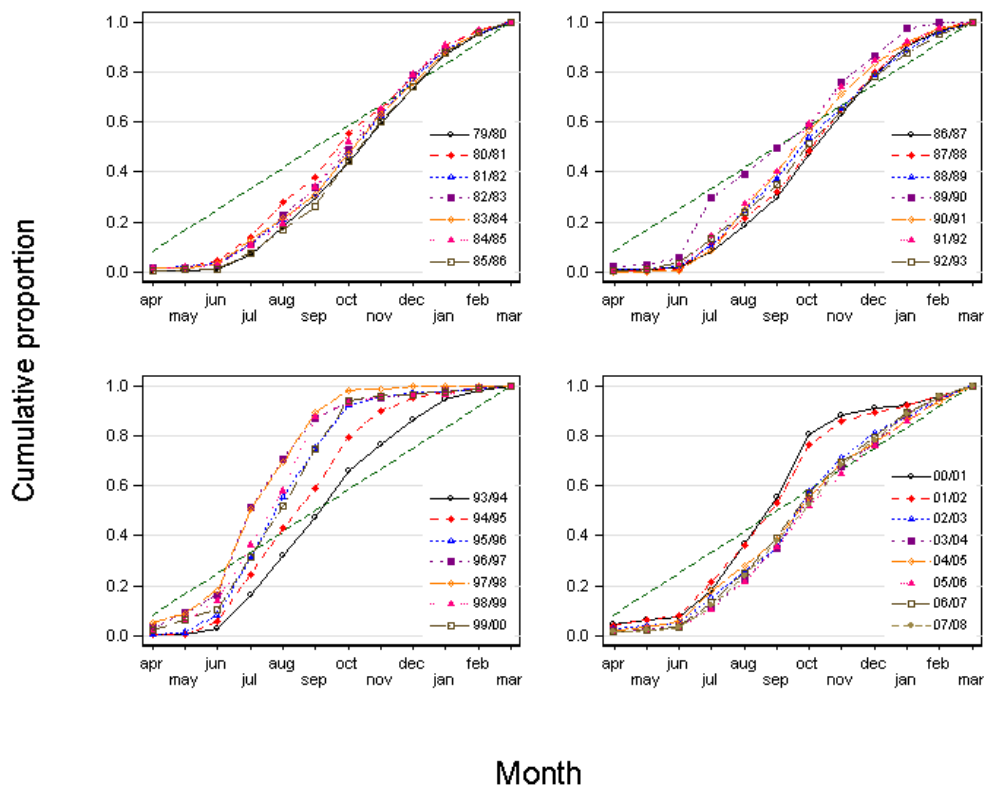


Figure 5: Cumulative catch percentages by fishing month for CRA 2, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

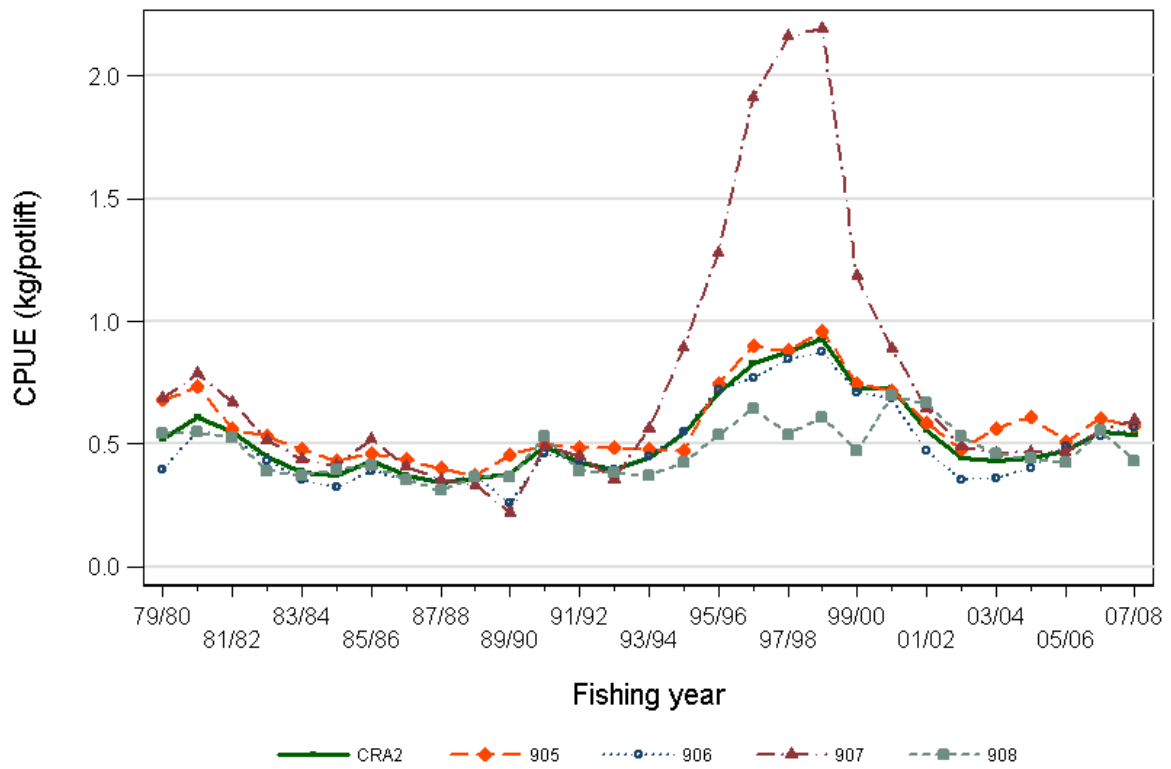


Figure 6: Arithmetic CPUE (total kg/total potlifts) for CRA 2 by fishing year and statistical area from 1979–80 to 2007–08.

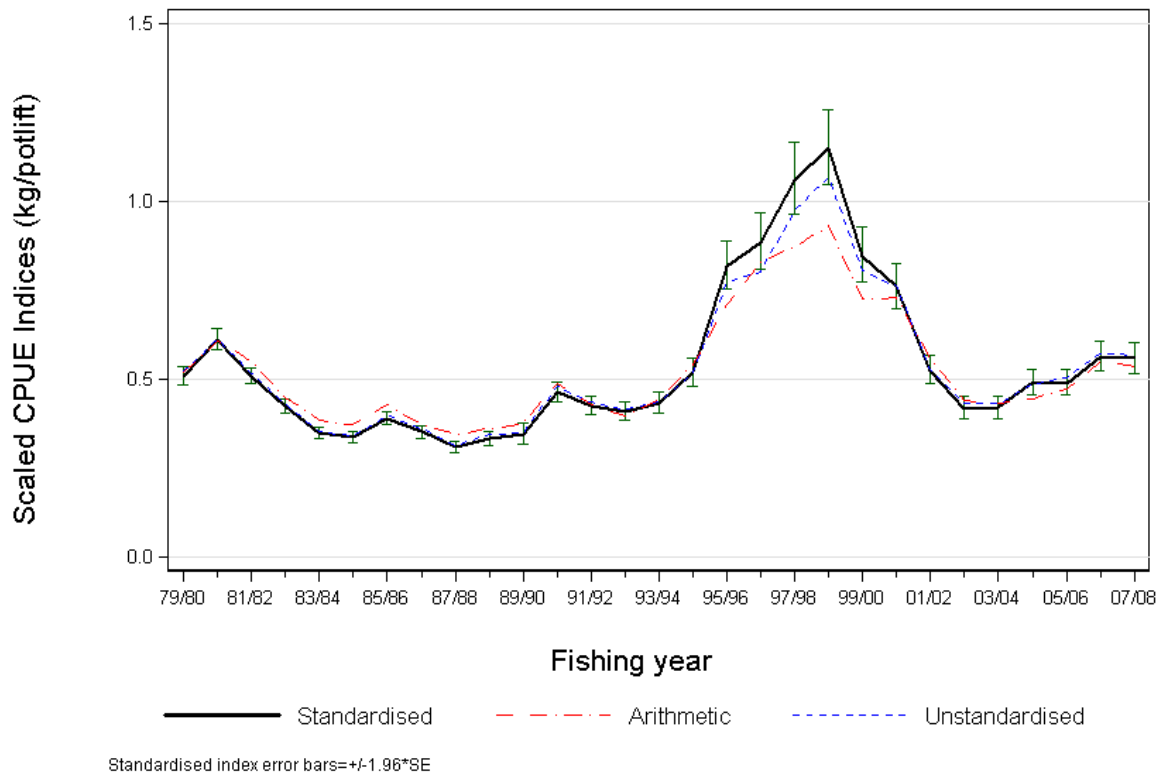


Figure 7: Annual CPUE indices for CRA 2: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) \pm 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.51 kg/potlift.

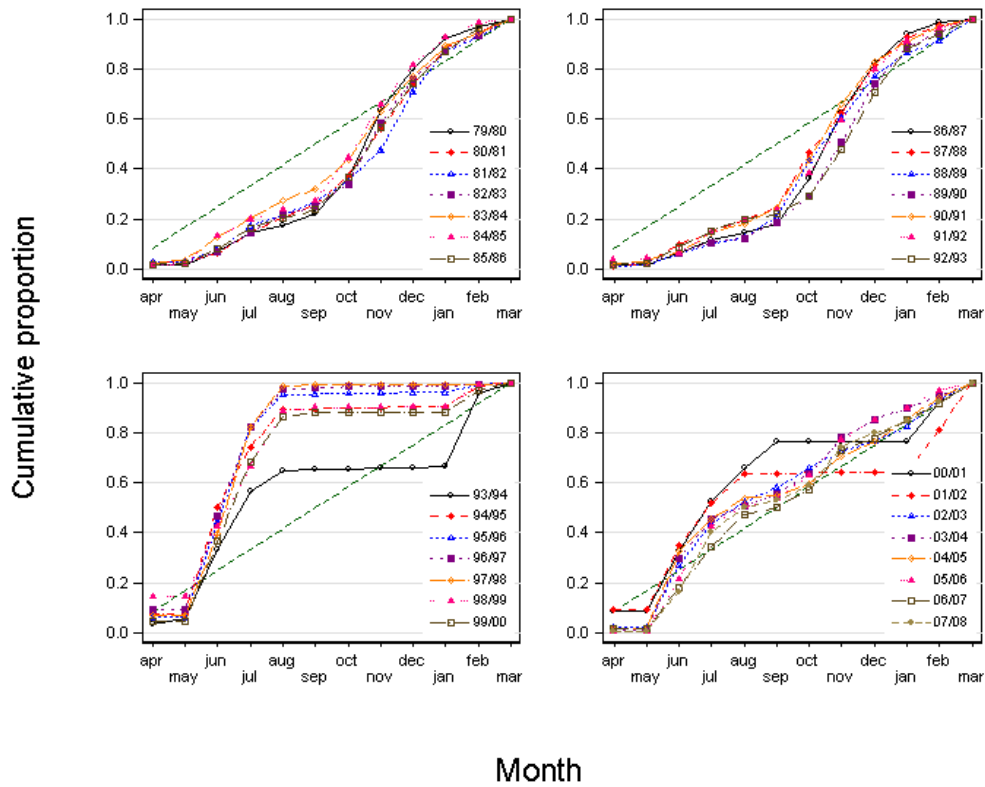


Figure 8: Cumulative catch percentages by fishing month for CRA 3, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

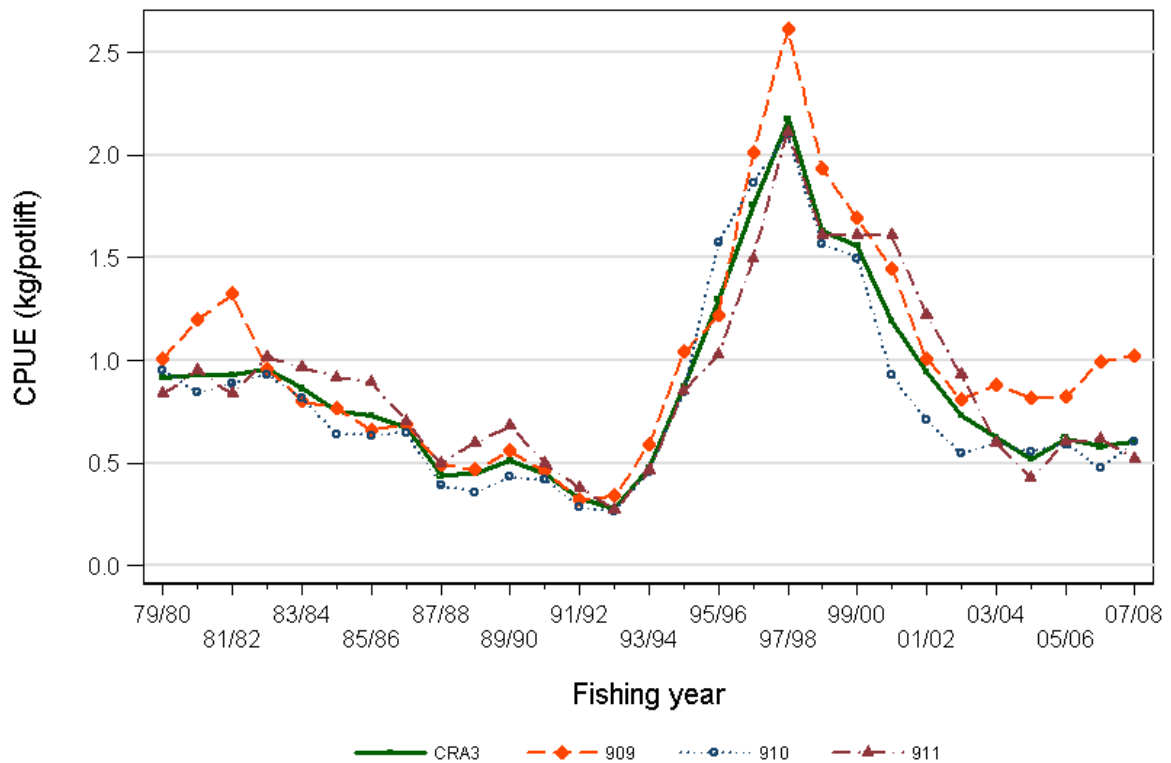


Figure 9: Arithmetic CPUE (total kg/total potlifts) for CRA 3 by fishing year and statistical area from 1979–80 to 2007–08.

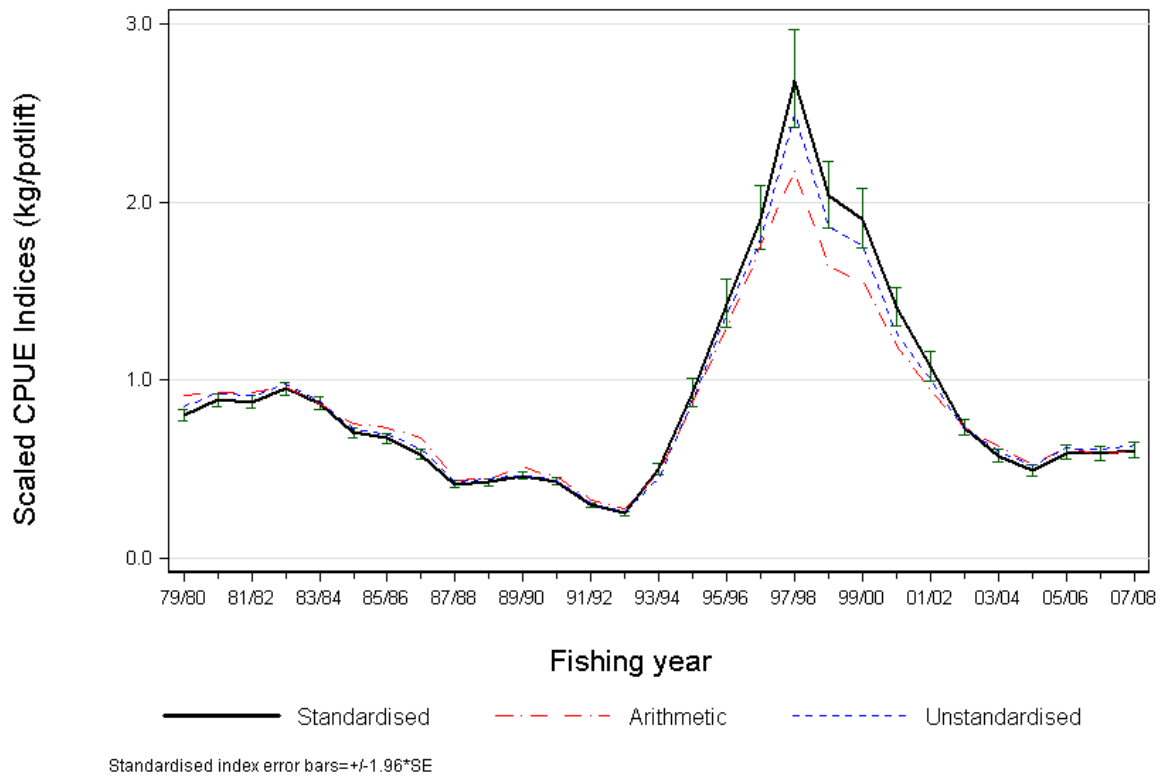


Figure 10: Annual CPUE indices for CRA 3: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.76 kg/potlift.

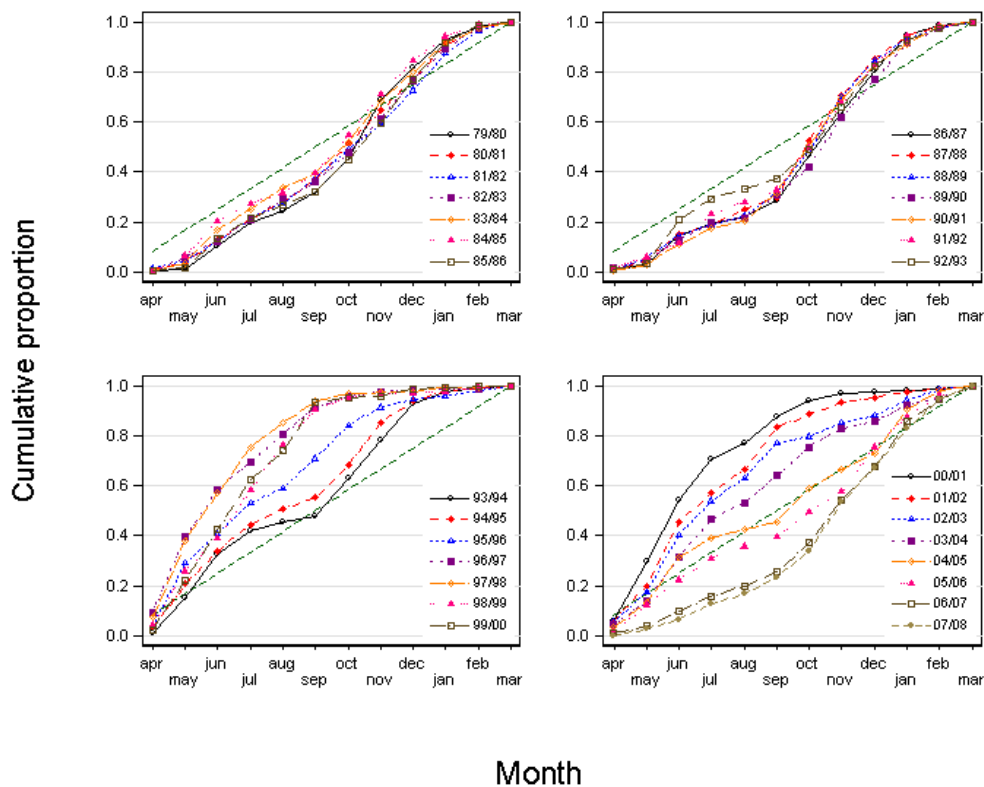


Figure 11: Cumulative catch percentages by fishing month for CRA 4, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

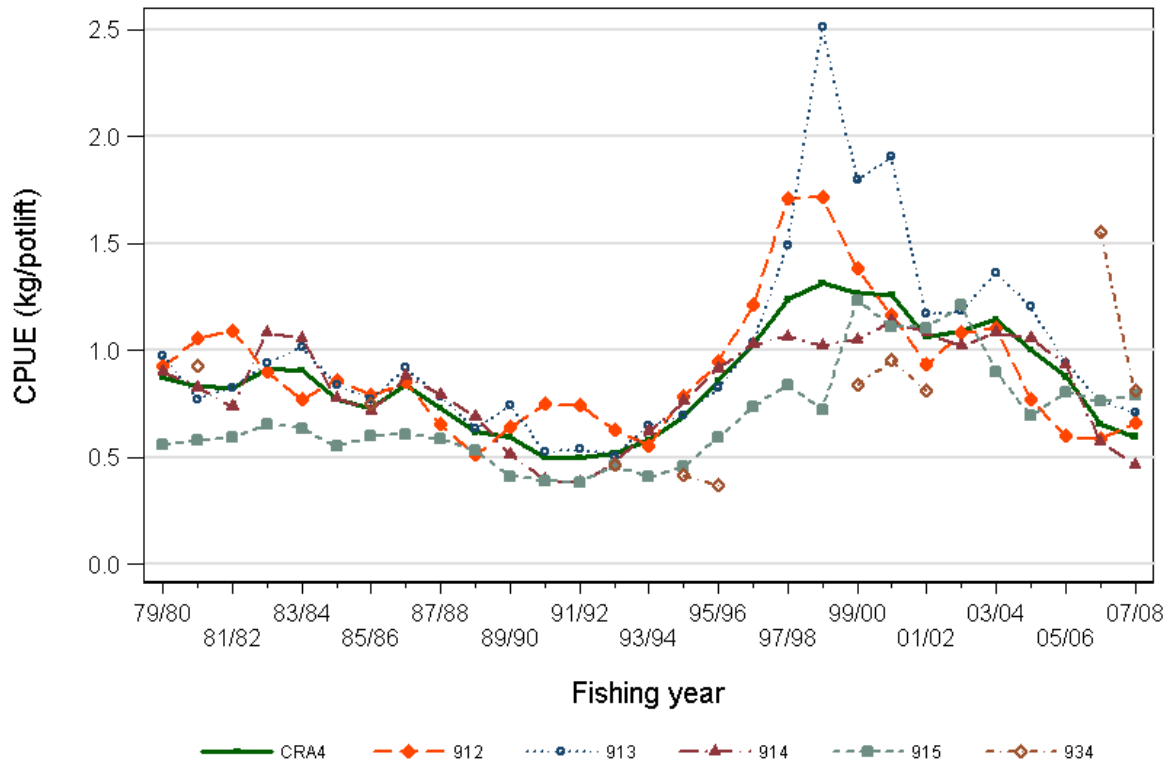


Figure 12: Arithmetic CPUE (total kg/total potlifts) for CRA 4 by fishing year and statistical area from 1979–80 to 2007–08.

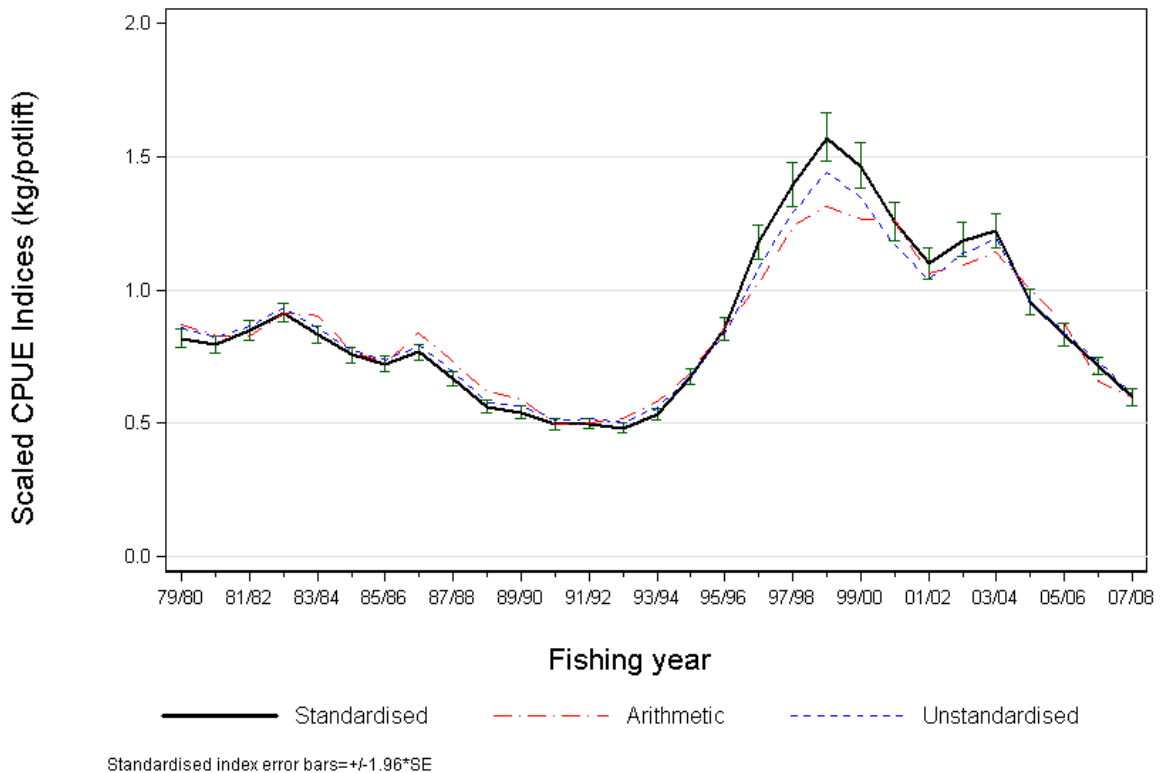


Figure 13: Annual CPUE indices for CRA 4: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.83 kg/potlift.

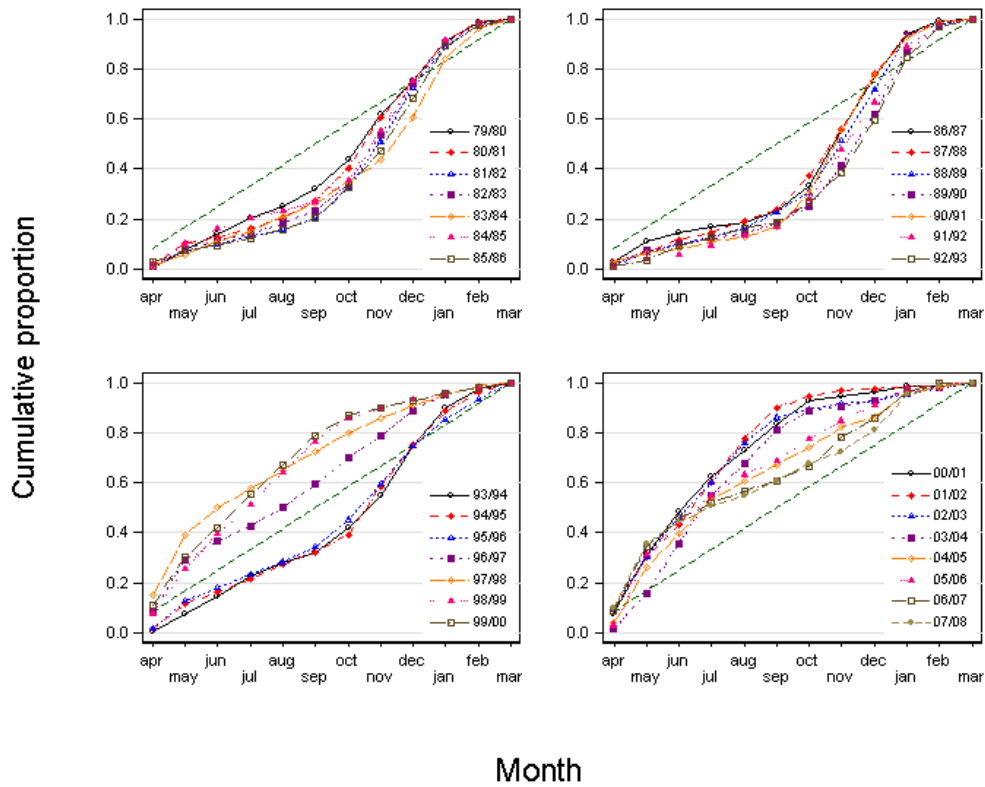


Figure 14: Cumulative catch percentages by fishing month for CRA 5, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

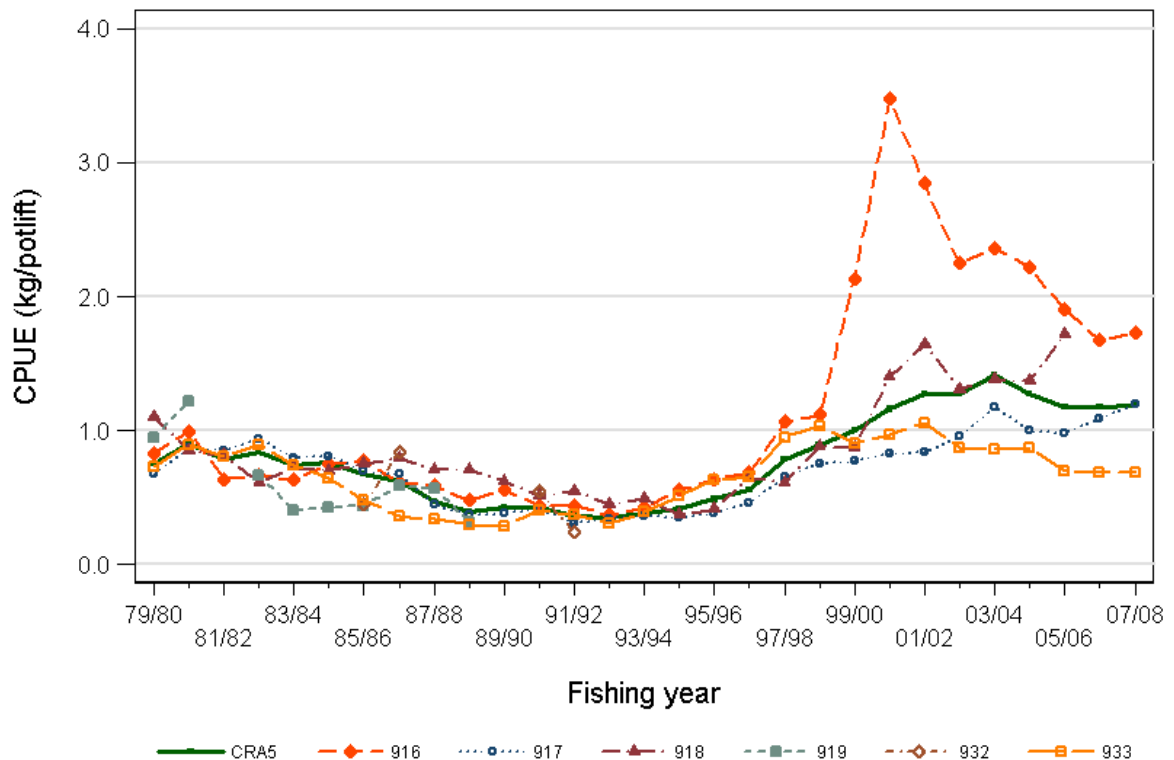


Figure 15: Arithmetic CPUE (total kg/total potlift) for CRA 5 by fishing year and statistical area from 1979–80 to 2007–08.

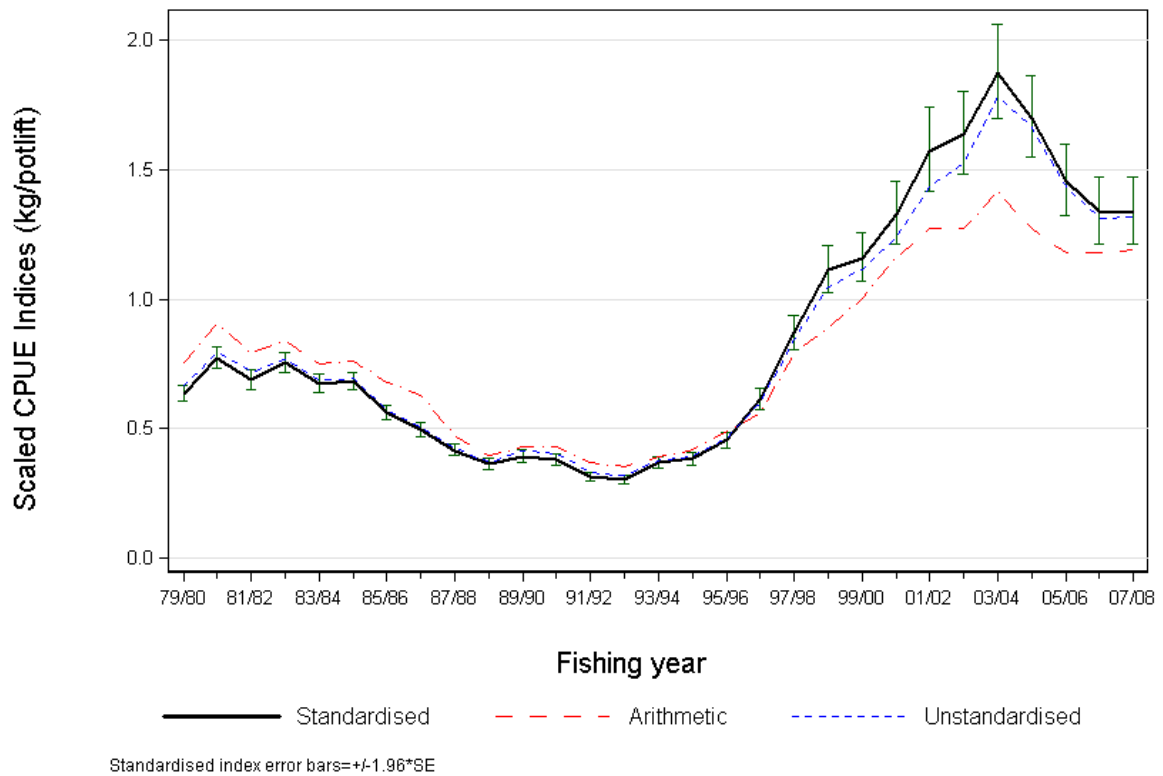


Figure 16: Annual CPUE indices for CRA 5: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.71 kg/potlift.

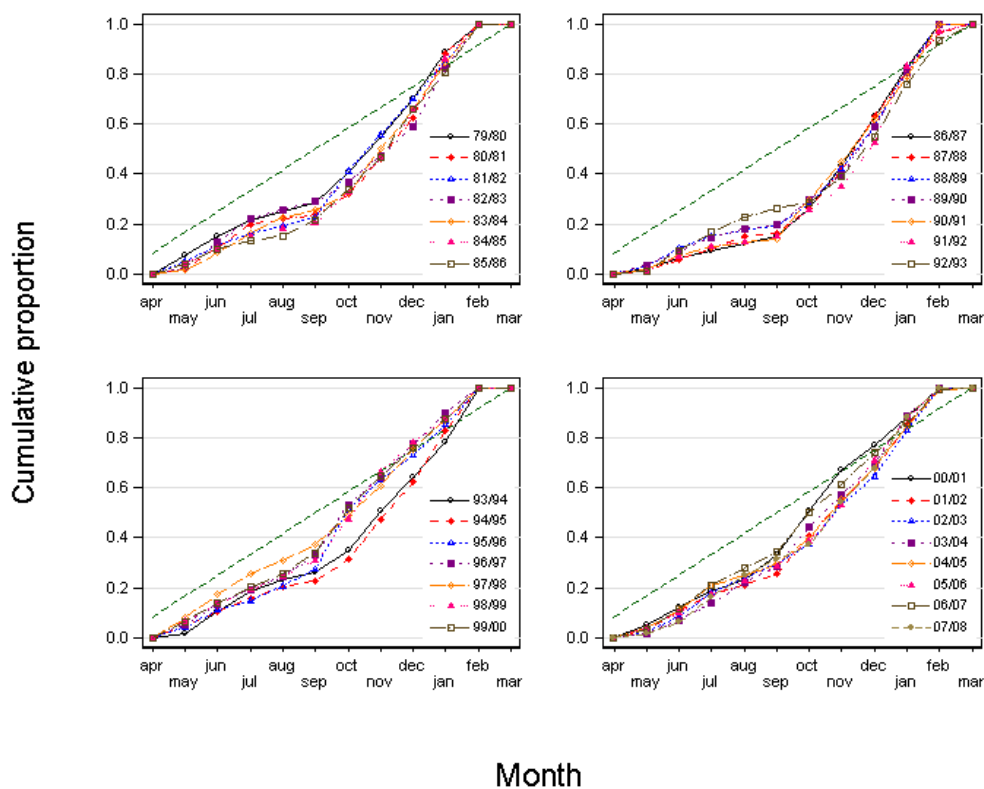


Figure 17: Cumulative catch percentages by fishing month for CRA 6, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

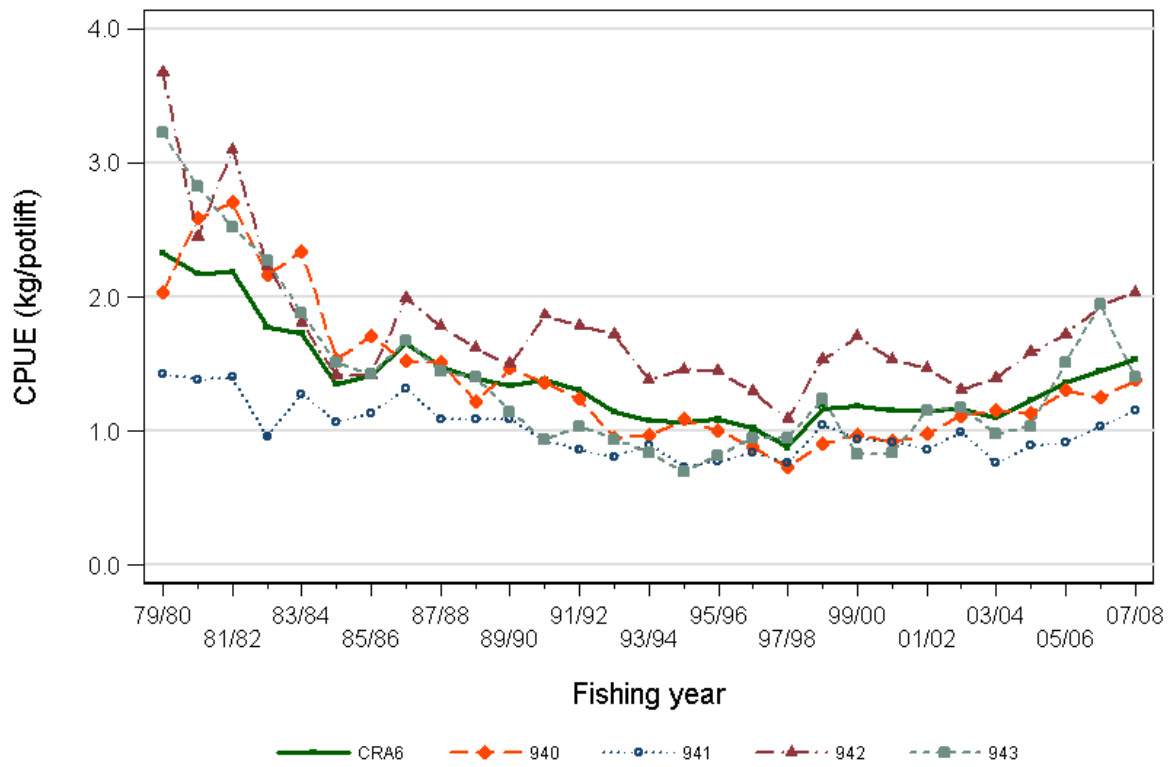


Figure 18: Arithmetic CPUE (total kg/total potlifts) for CRA 6 by fishing year and statistical area from 1979-80 to 2007-08.

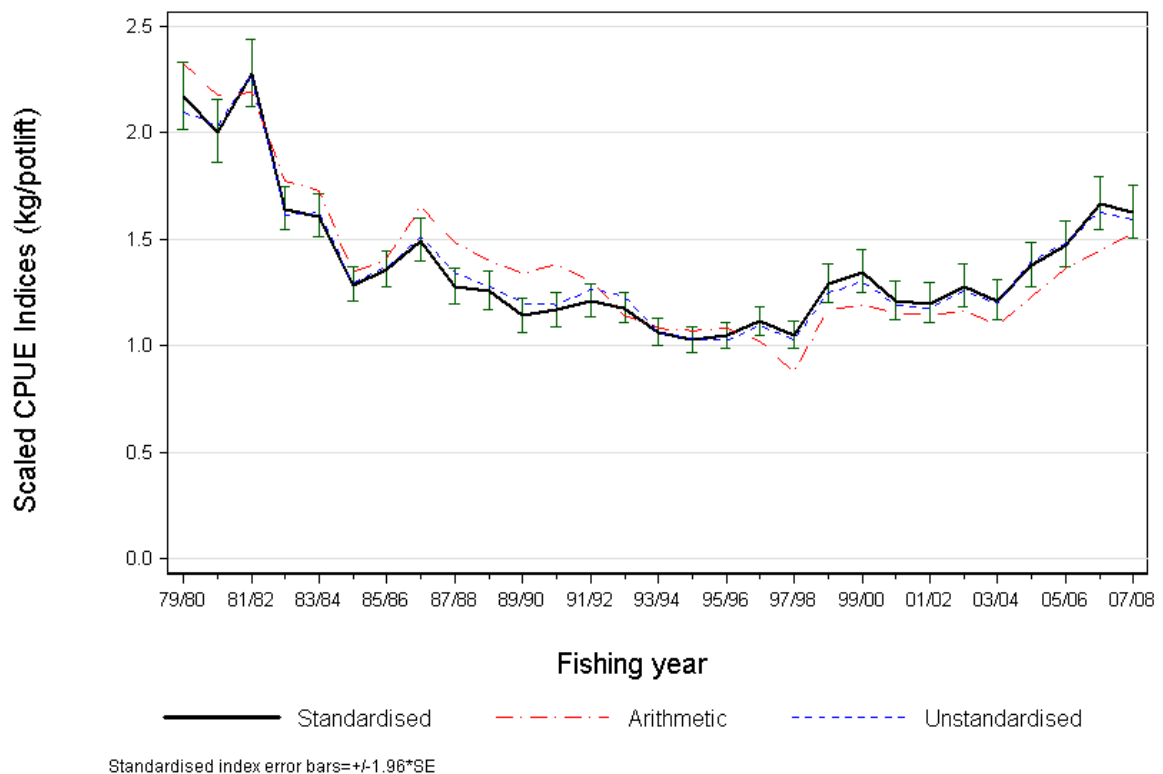


Figure 19: Annual CPUE indices for CRA 6: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979-80 to 2007-08. The geometric mean for each series = 1.34 kg/potlift.

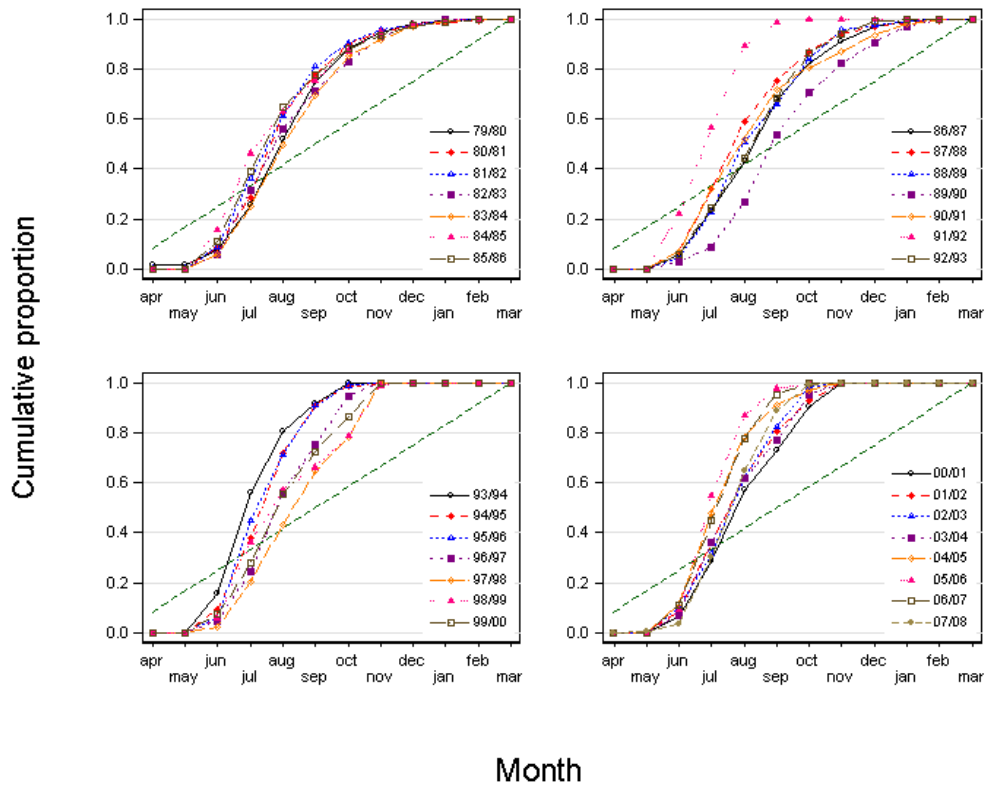


Figure 20: Cumulative catch percentages by fishing month for CRA 7, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

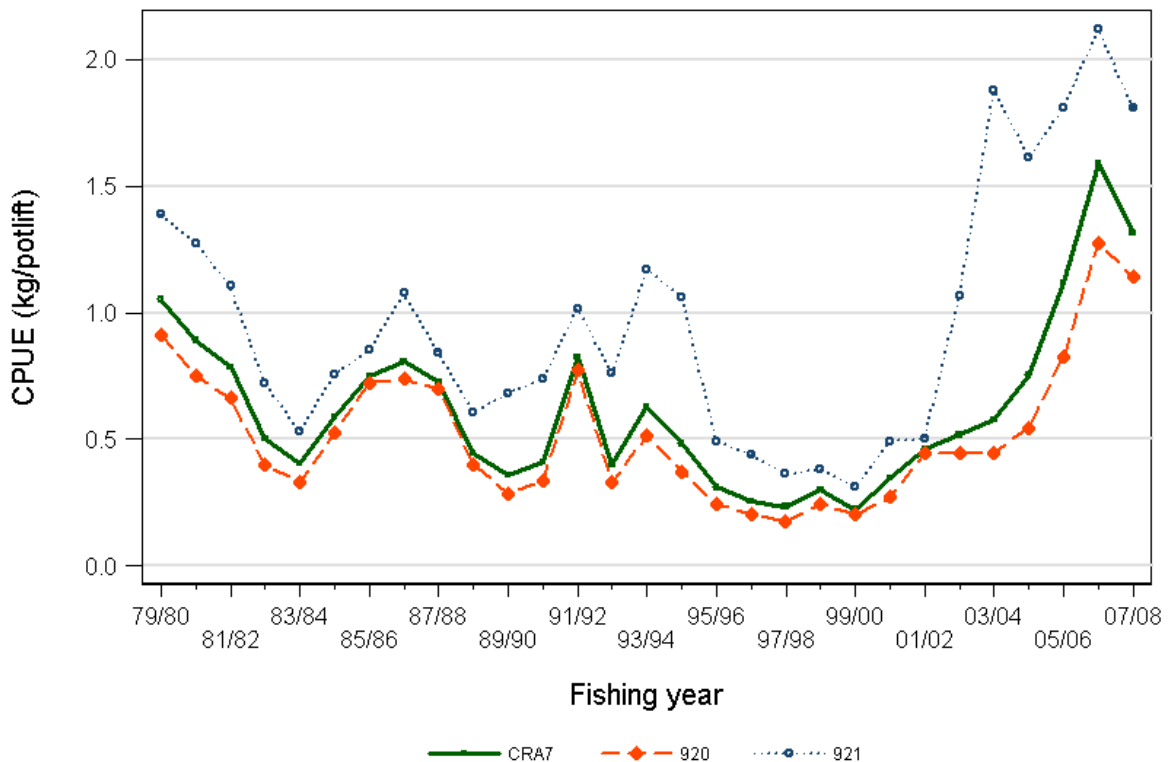


Figure 21: Arithmetic CPUE (total kg/total potlifts) for CRA 7 by fishing year and statistical area from 1979–80 to 2007–08.

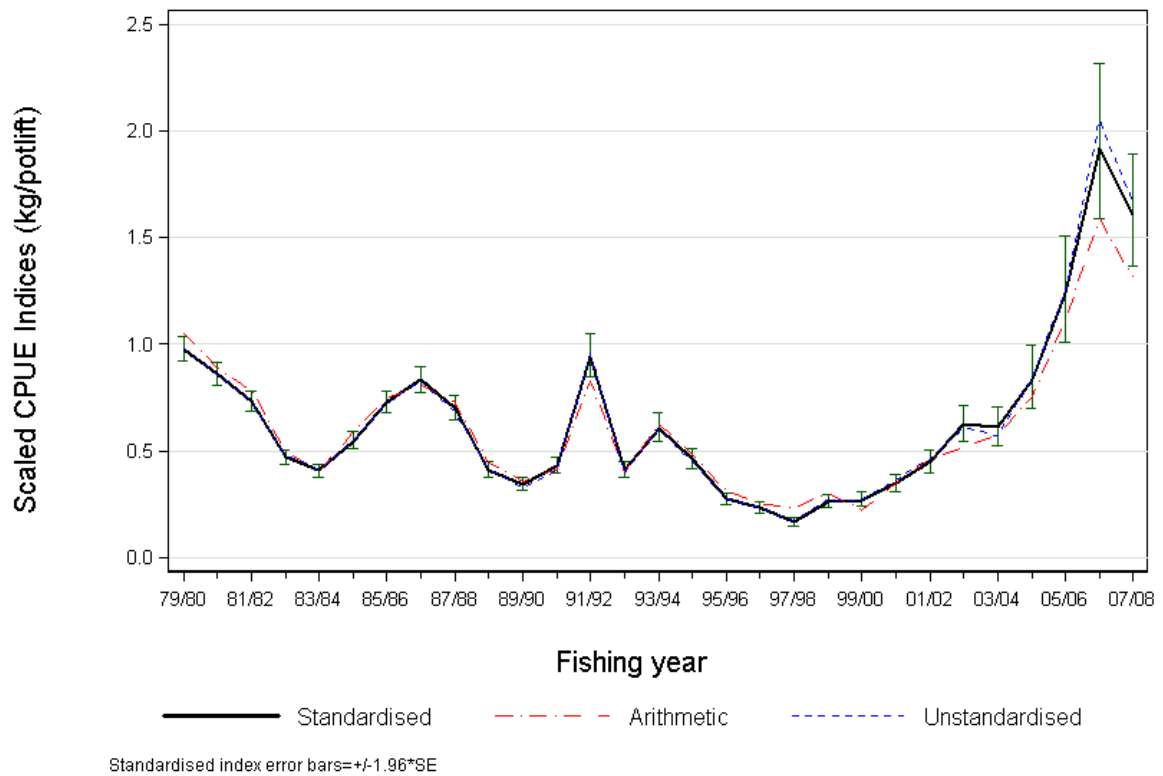


Figure 22: Annual CPUE indices for CRA 7: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 0.53 kg/potlift.

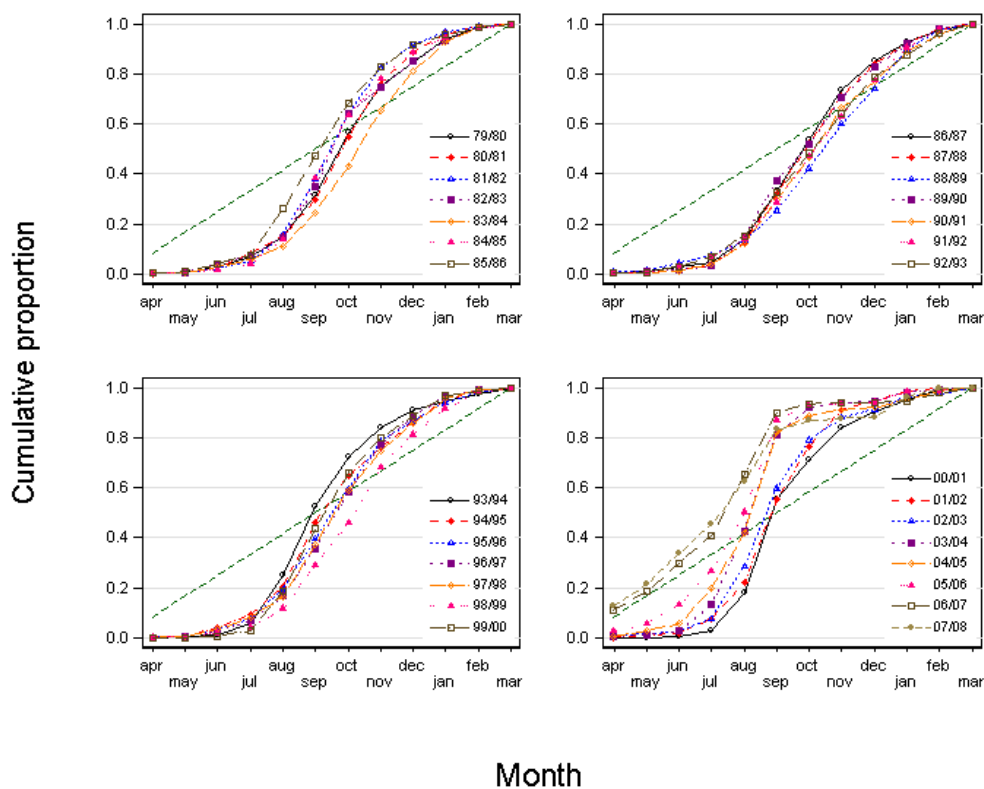


Figure 23: Cumulative catch percentages by fishing month for CRA 8, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

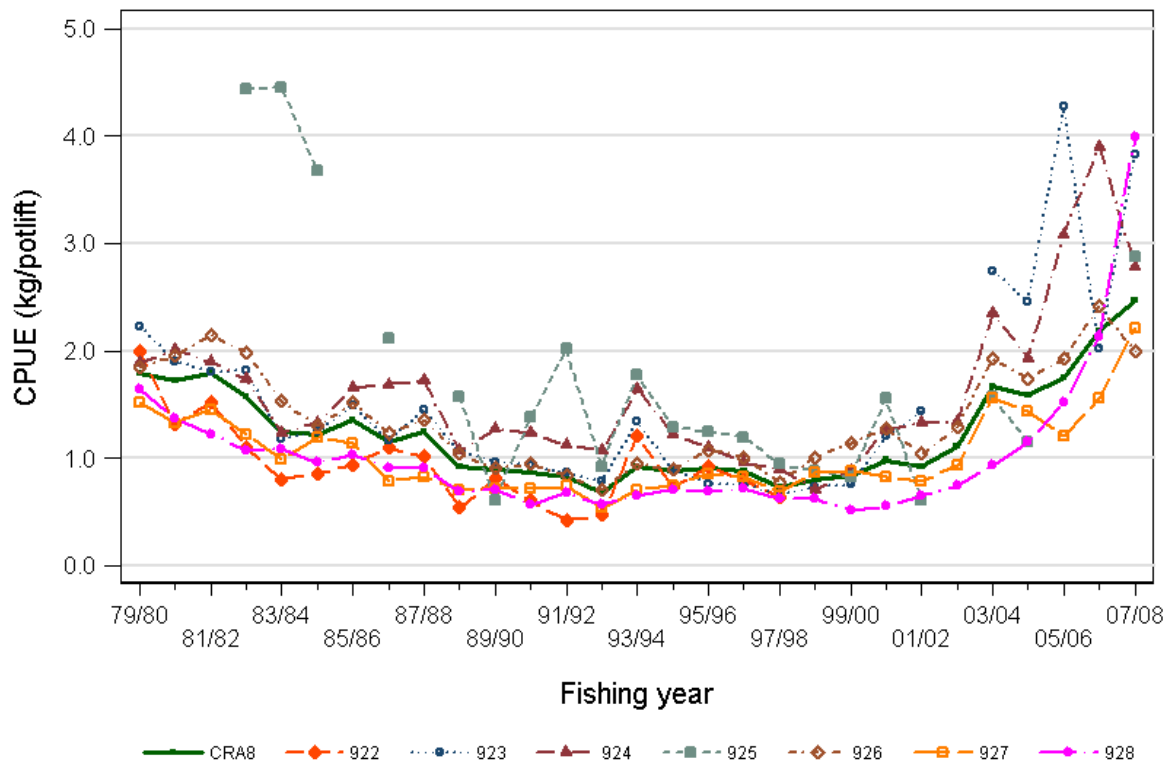


Figure 24: Arithmetic CPUE (total kg/total potlifts) for CRA 8 by fishing year and statistical area from 1979-80 to 2007-08.

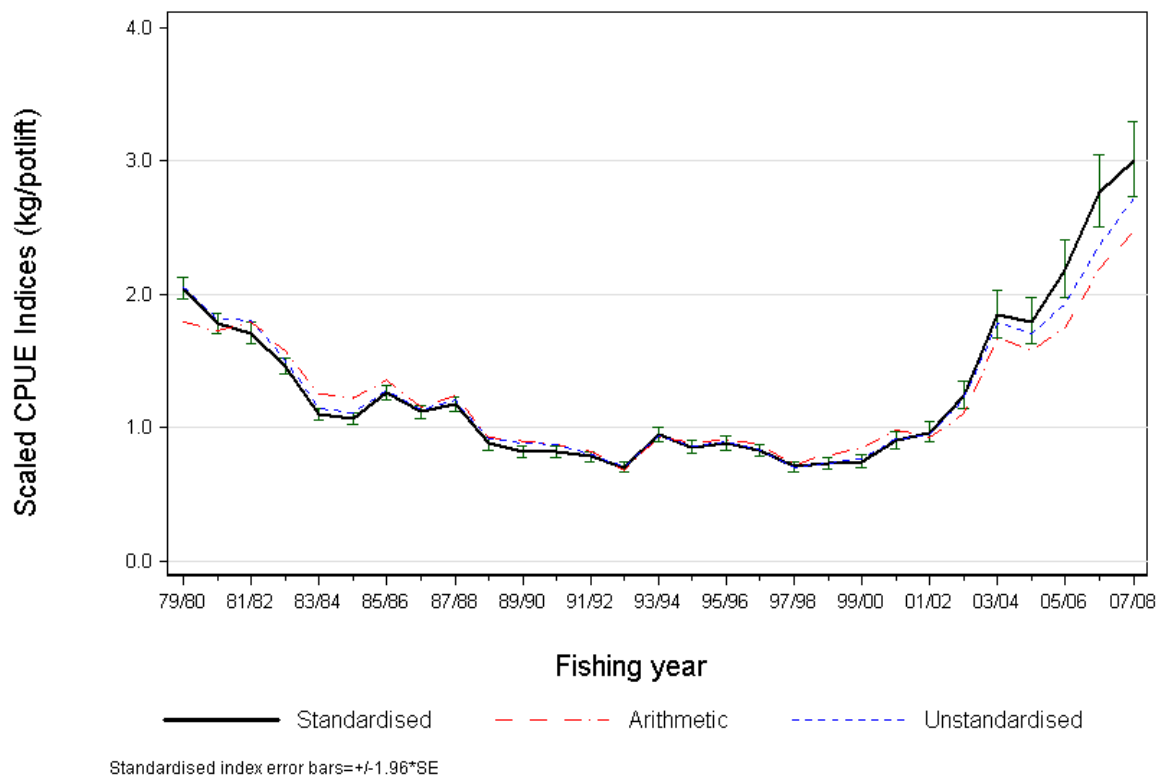


Figure 25: Annual CPUE indices for CRA 8: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. 1979-80 to 2007-08. The geometric mean for each series = 1.13 kg/potlift.

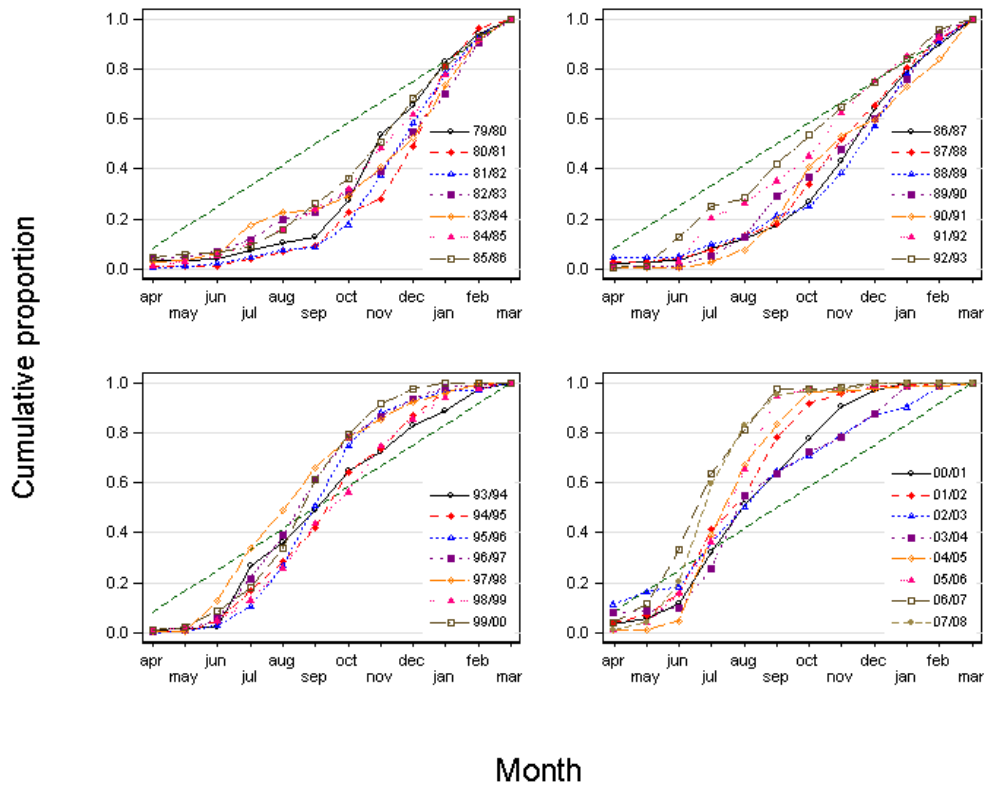


Figure 26: Cumulative catch percentages by fishing month for CRA 9, 1979–80 to 2007–08. Dotted line provides a reference equivalent to an equal distribution of catch across all months.

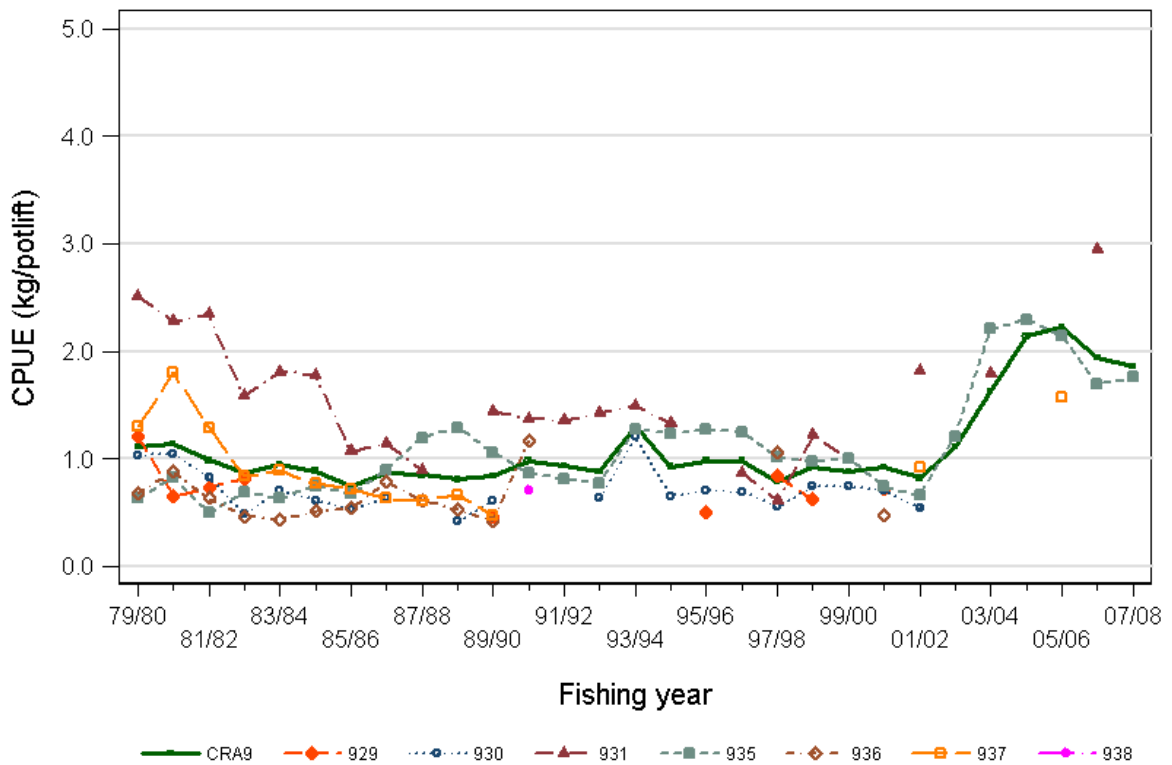


Figure 27: Arithmetic CPUE (total kg/total potlifts) for CRA 9 by fishing year and statistical area from 1979–80 to 2007–08.

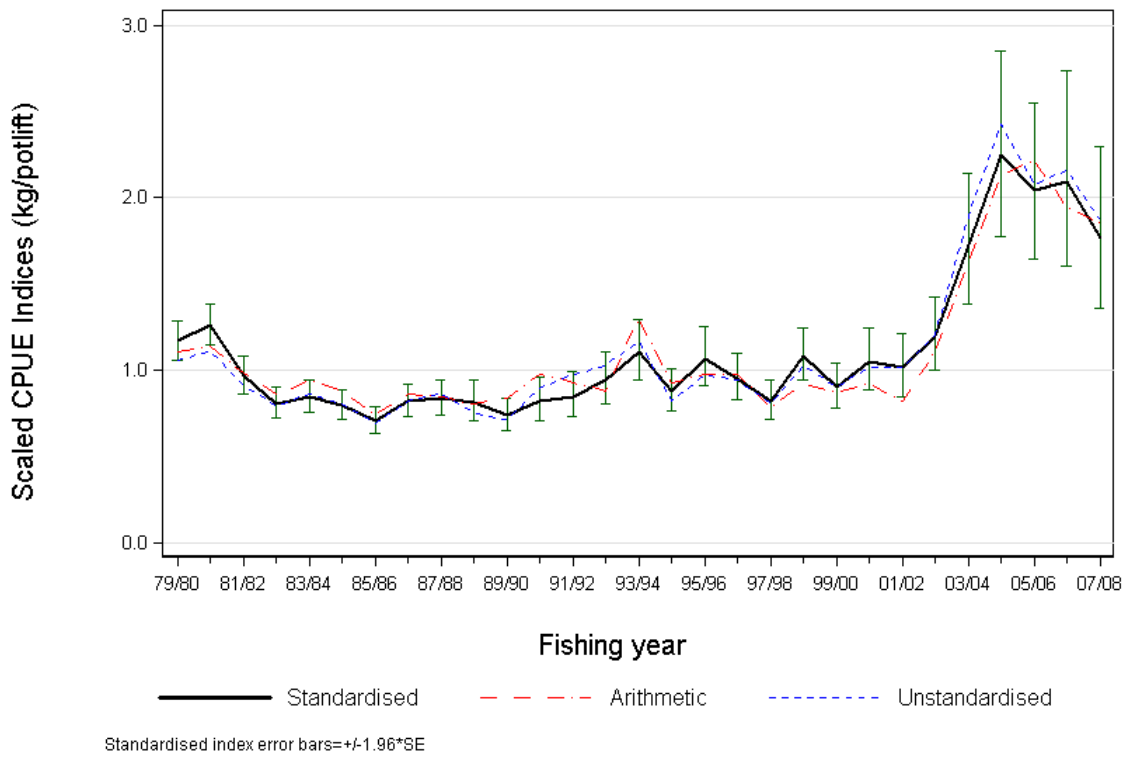


Figure 28: Annual CPUE indices for CRA 9: arithmetic (dashed line), unstandardised (dotted line), and standardised (bold line) ± 2 s.e. from 1979–80 to 2007–08. The geometric mean for each series = 1.03 kg/potlift.

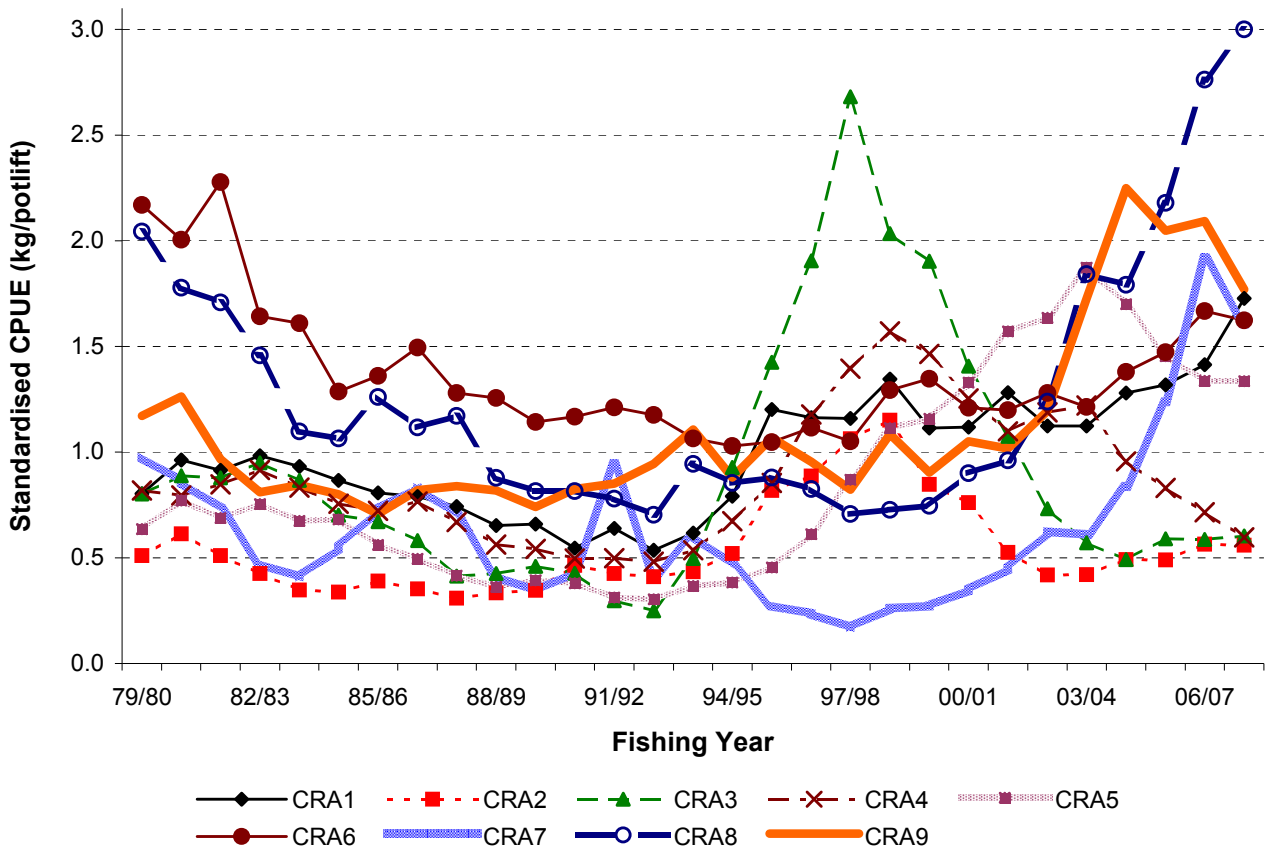


Figure 29: Comparison plot of standardised CPUE for all 9 CRA QMAs (Figure 1) from 1979–80 to 2007–08.

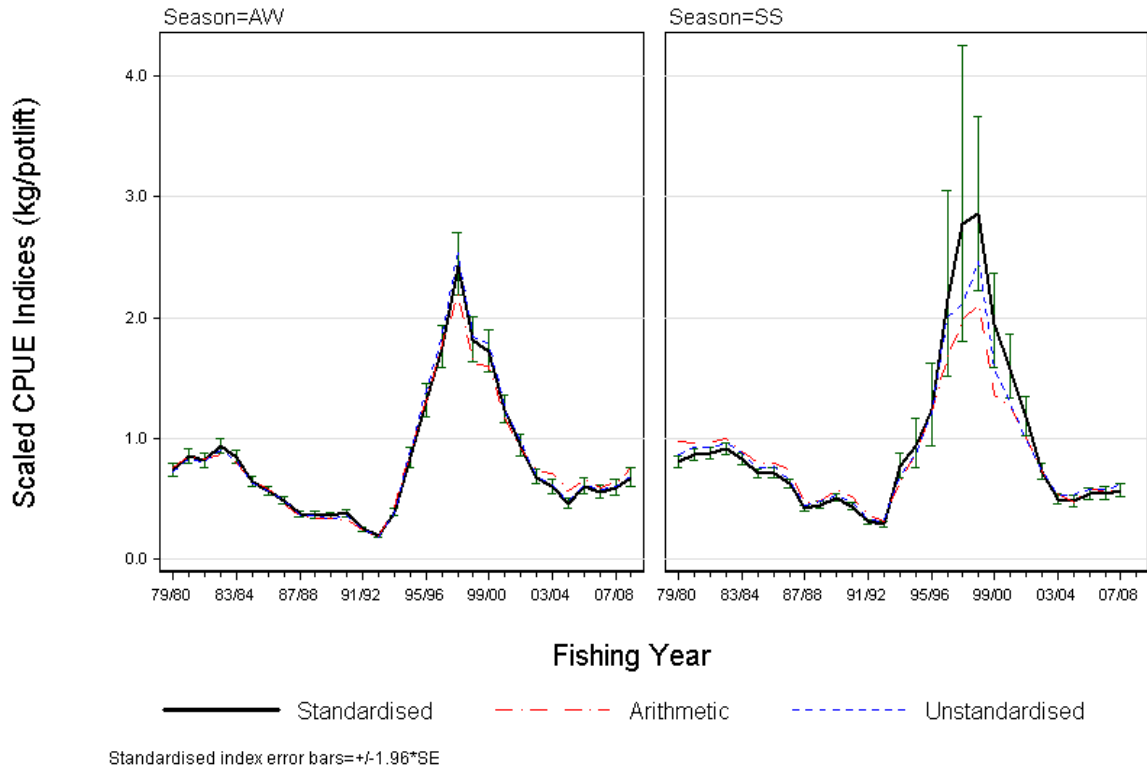


Figure 30: Standardised, unstandardised, and arithmetic CPUE indices (kg/potlift) by season and fishing year for CRA 3: 1979–80 to 2007–08 (final year for autumn/winter only). Vertical bars are 95% confidence intervals. The geometric mean for the autumn/winter series [left panel] = 0.68 kg/potlift and for the spring/summer [SS] series [right panel] = 0.78 kg/potlift.

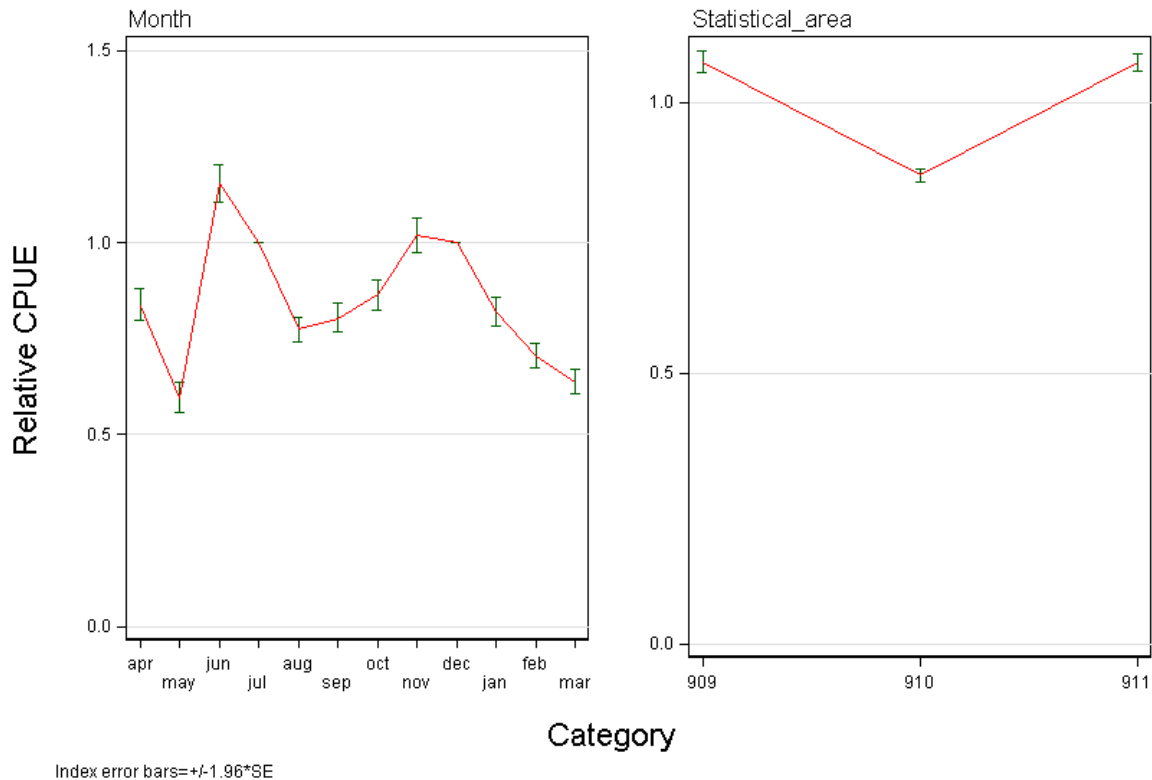


Figure 31: Coefficients for month and statistical area from the CRA 3 CPUE standardisation. The statistical area coefficients are in canonical form (Francis 1999). The coefficients for the reference months (July and December) equal 1.0 with s.e. of zero.

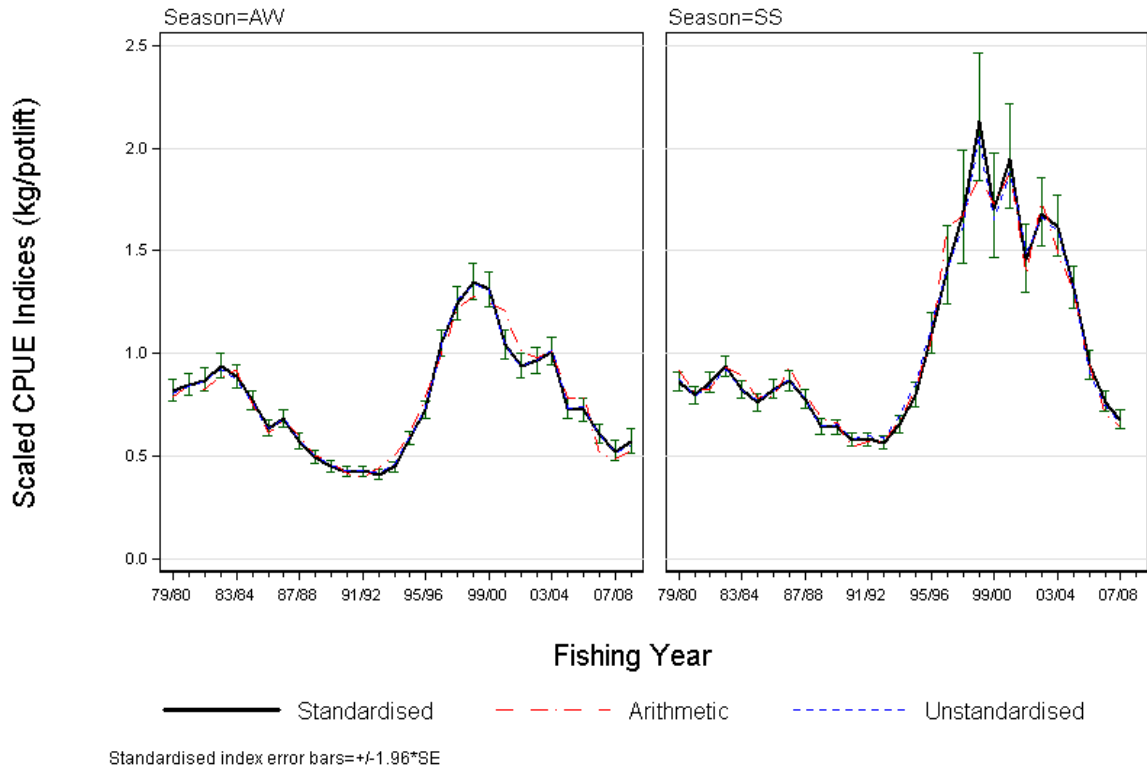


Figure 32: Standardised, unstandardised, and arithmetic CPUE indices (kg/potlift) by season and fishing year for CRA 4: 1979–80 to 2007–08 (final year for autumn/winter only). Vertical bars are 95% confidence intervals. The geometric mean for the autumn/winter series [left panel] = 0.73 kg/potlift and for the spring/summer [SS] series [right panel] = 0.97 kg/potlift.

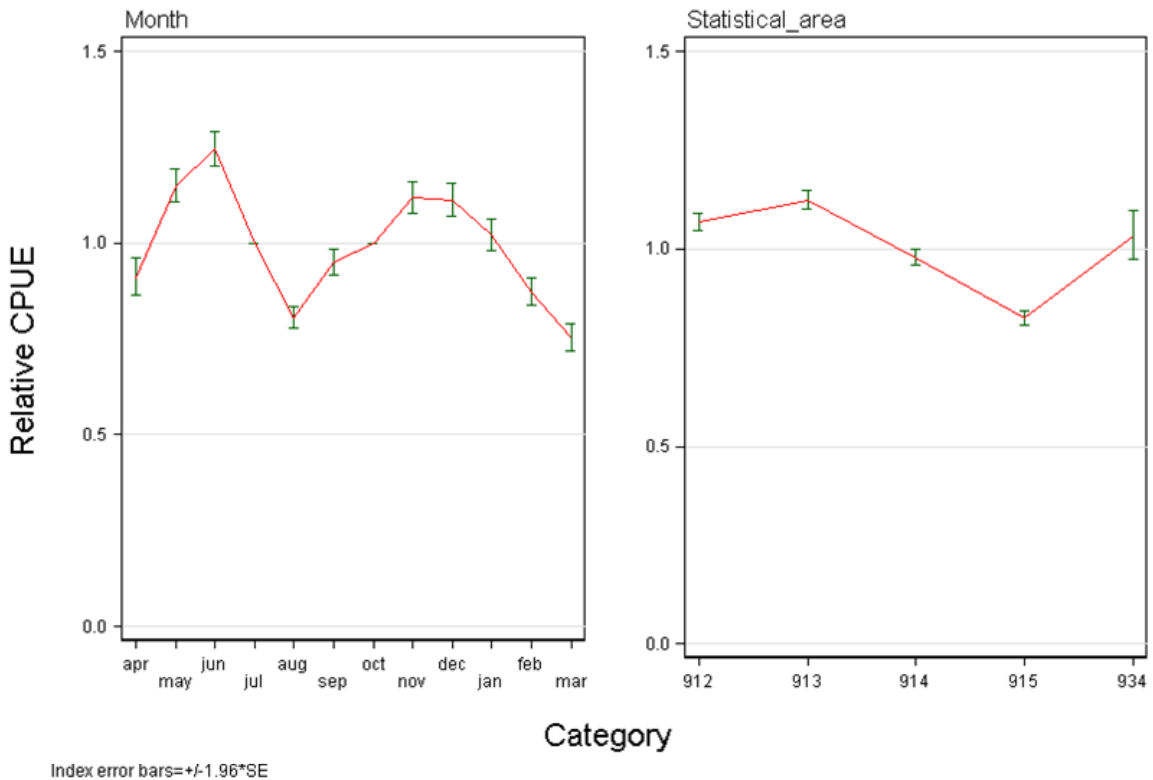


Figure 33: Coefficients for month and statistical area from the CRA 4 CPUE standardisation. The statistical area coefficients are in canonical form (Francis 1999). The coefficients for the reference months (July and October) equal 1.0 with s.e. of zero.

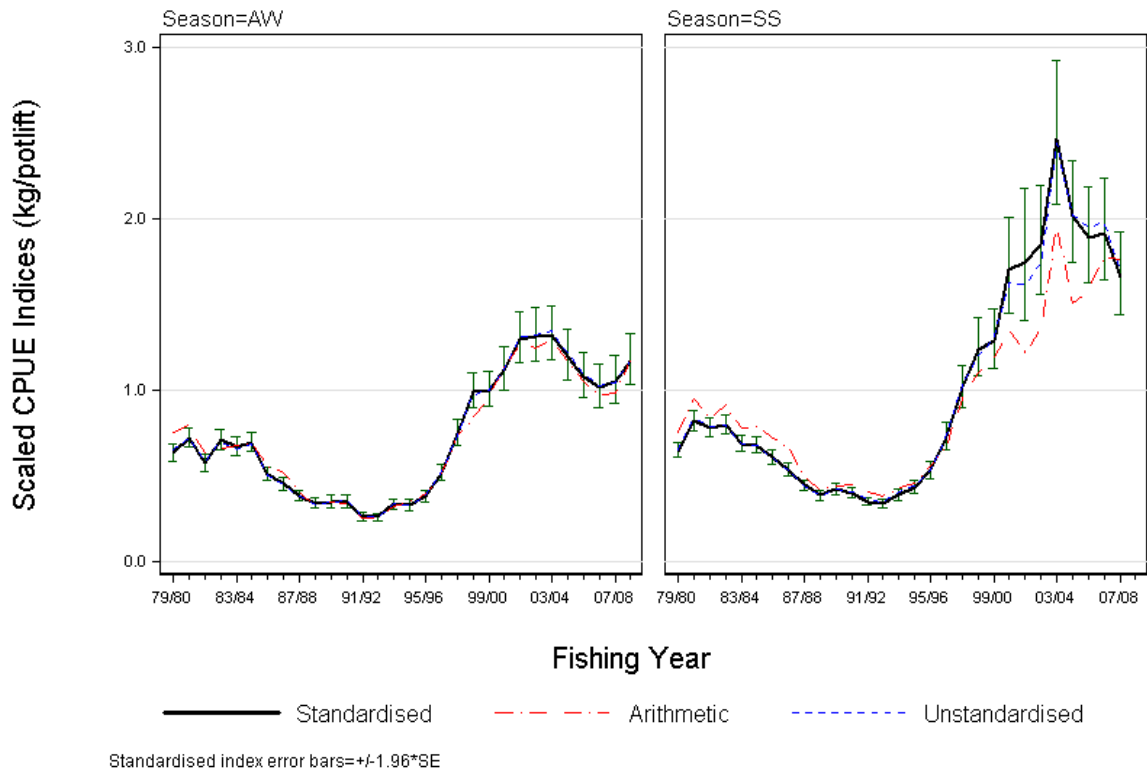


Figure 34: Standardised, unstandardised, and arithmetic CPUE indices (kg/potlift) by season and fishing year for CRA 5: 1979–80 to 2007–08 (final year for autumn/winter only). Vertical bars are 95% confidence intervals. The geometric mean for the autumn/winter series [left panel] = 0.64 kg/potlift and for the spring/summer [SS] series [right panel] = 0.82 kg/potlift.

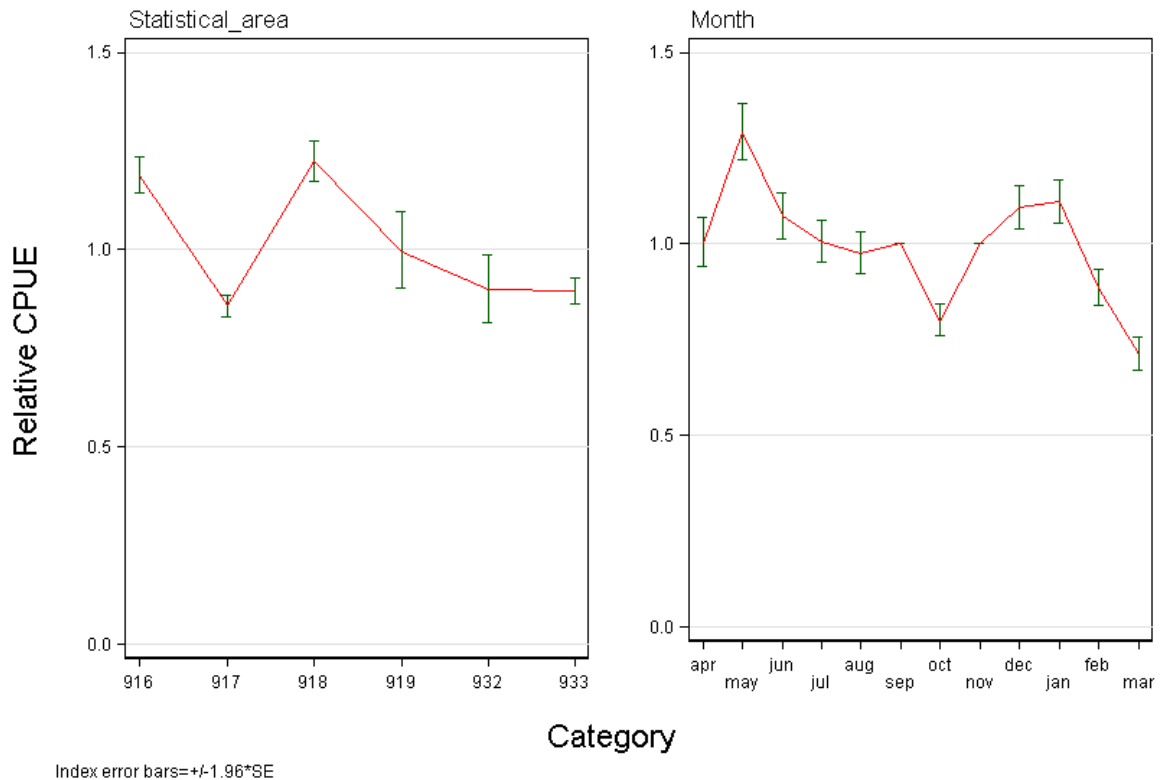


Figure 35: Coefficients for statistical area and month from the CRA 5 CPUE standardisation. The statistical area coefficients are in canonical form (Francis 1999). The coefficients for the reference months (September and November) equal 1.0 with s.e. of zero.

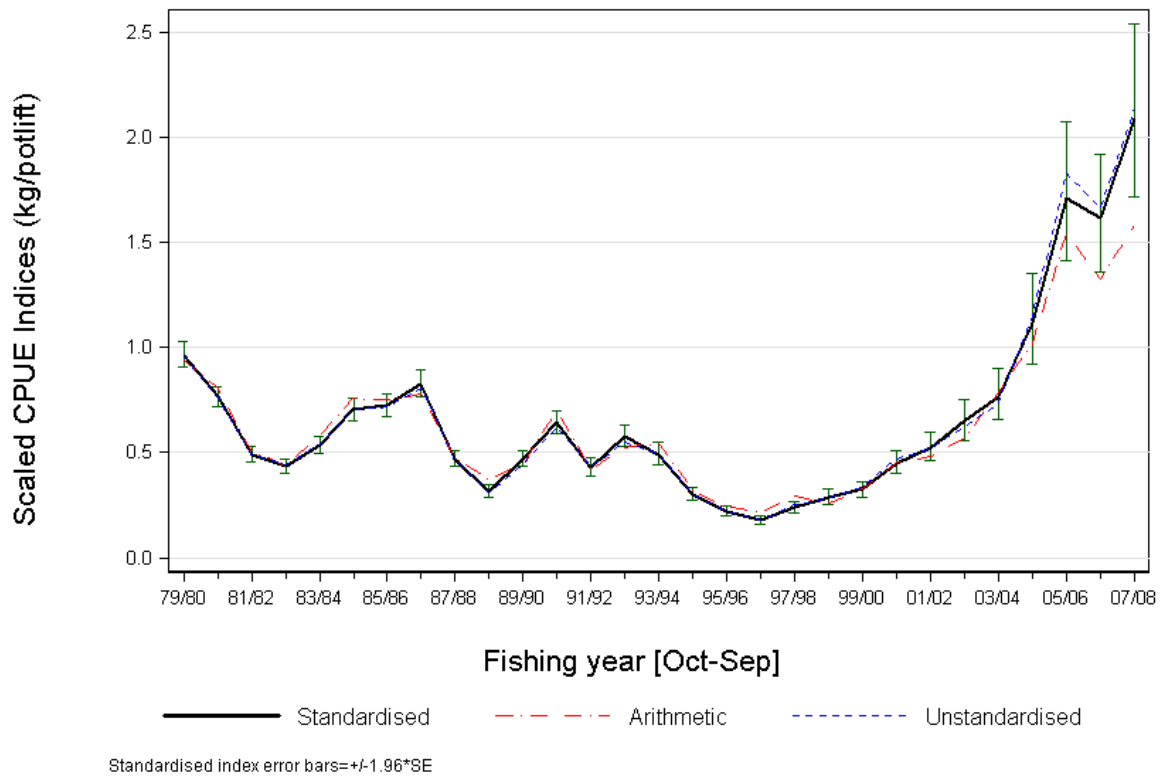


Figure 36: Standardised, unstandardised, and arithmetic CPUE indices (kg/potlift) by 1 October–30 September fishing year for CRA 7 from 1979–80 to 2007–08. Vertical bars are 95% confidence intervals. The geometric mean for all series = 0.55 kg/potlift.

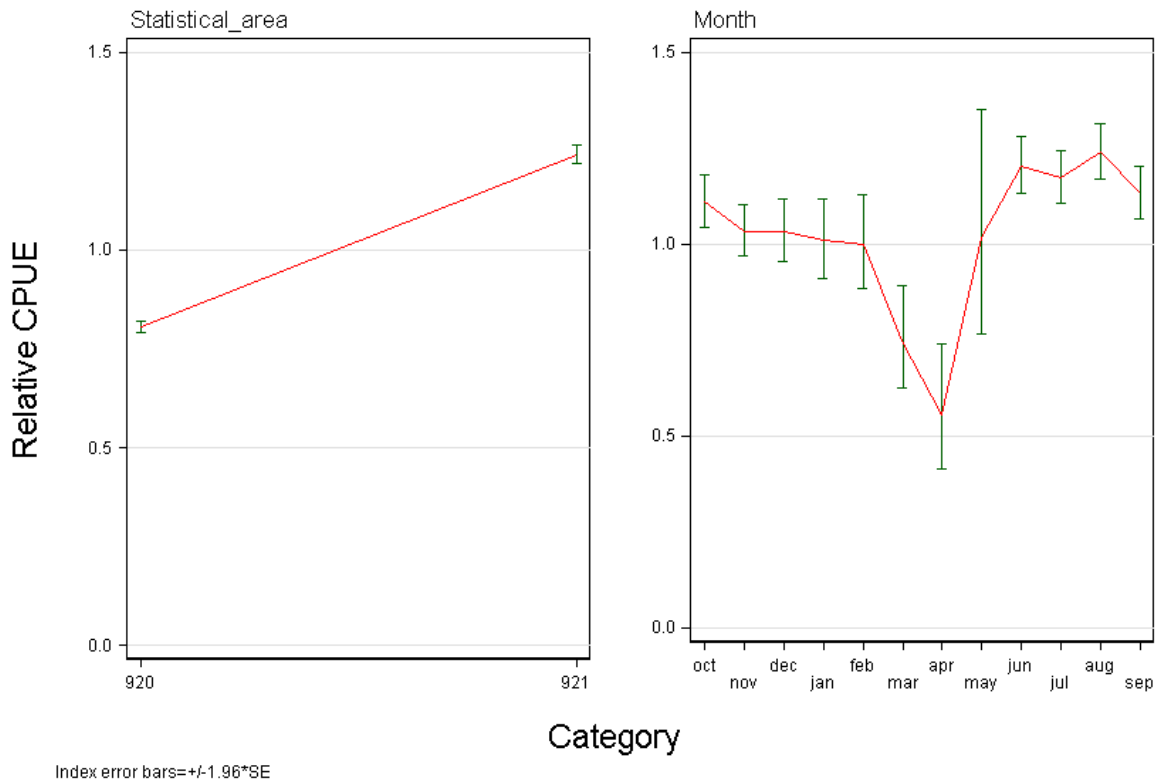


Figure 37: Coefficients for statistical area and month from the CRA 7 CPUE standardisation based on a 1 October–30 September fishing year. Both sets of coefficients are in canonical form (Francis 1999).

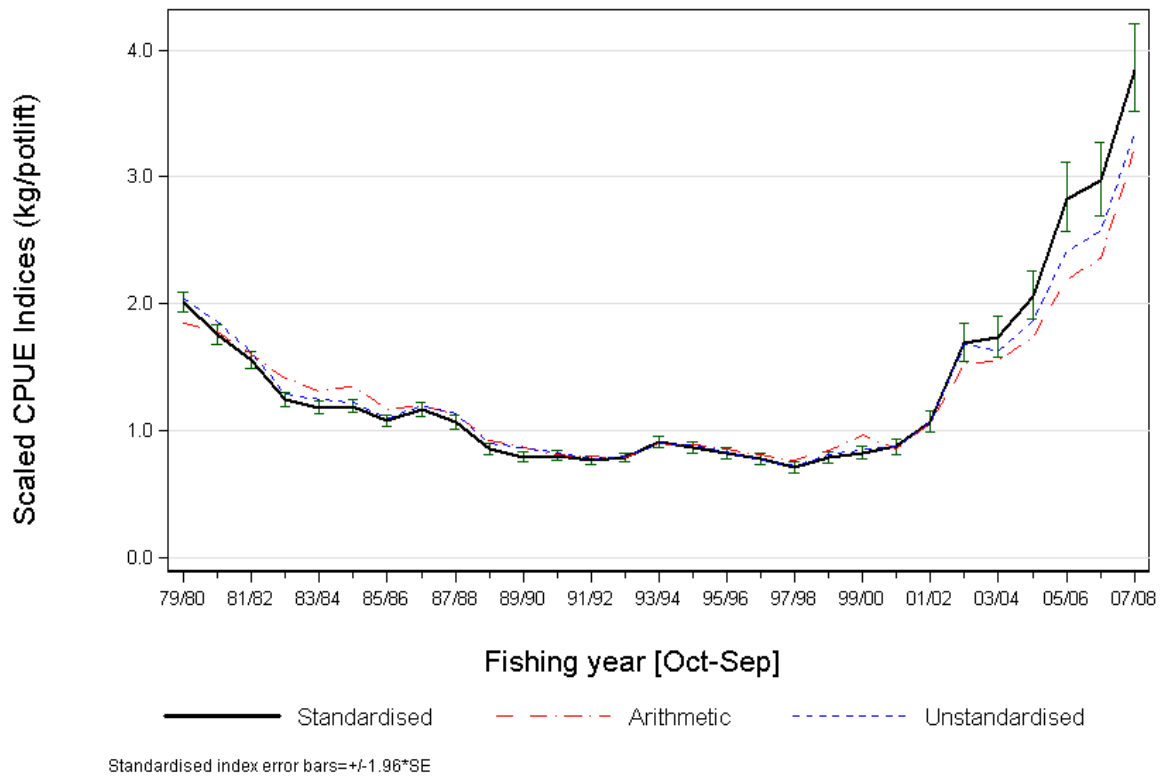


Figure 38: Standardised, unstandardised, and arithmetic CPUE indices (kg/potlift) by 1 October–30 September fishing year for CRA 8 from 1979–80 to 2007–08. Vertical bars are 95% confidence intervals. The geometric mean for all three series = 1.20 kg/potlift.

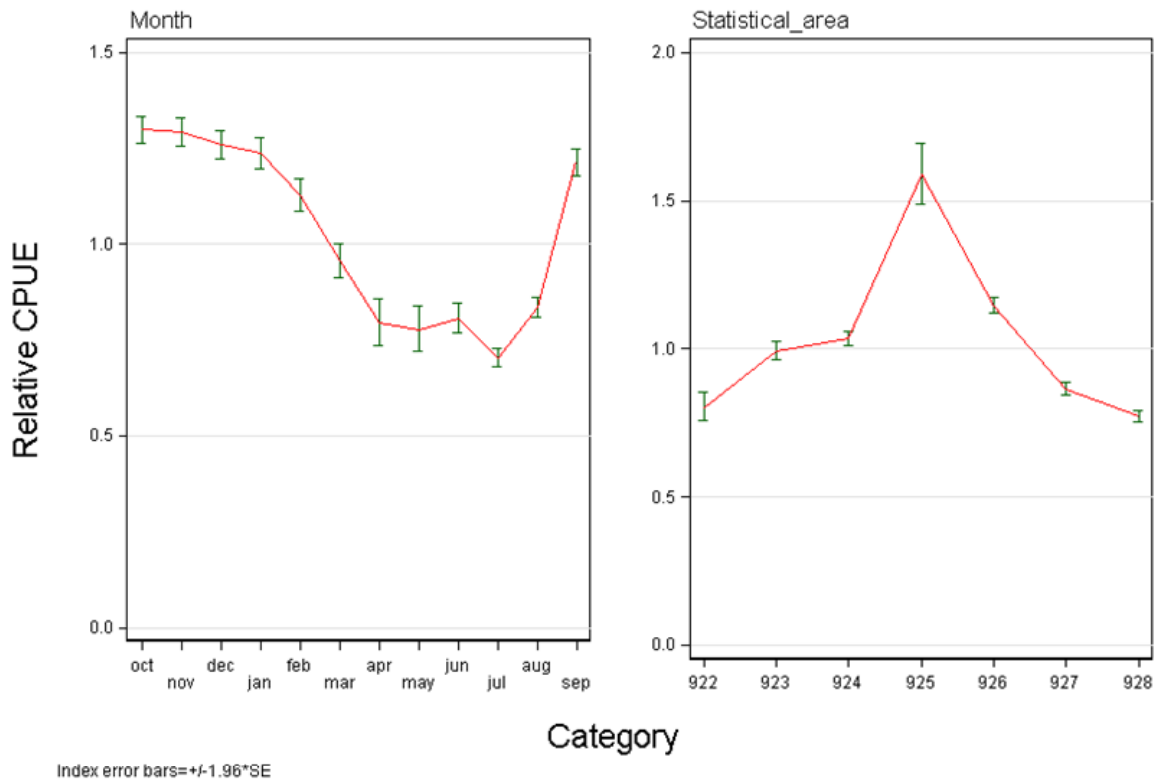


Figure 39: Coefficients for month and statistical area from the CRA 8 CPUE standardisation based on a 1 October–30 September fishing year. Both sets of coefficients are in canonical form (Francis 1999).