



Fisheries New Zealand

Tini a Tangaroa

Catches, size, and age structure of the 2023–24 hoki fishery and a summary of input data used for the 2025 stock assessment

New Zealand Fisheries Assessment Report 2025/42

S.L. Ballara,
V. McGregor-Tiatia,
A.M. Wieczorek
R.L. O'Driscoll

ISSN 1179-5352 (online)
ISBN 978-1-991407-06-1 (online)

September 2025



Te Kāwanatanga o Aotearoa
New Zealand Government

Disclaimer

This document is published by Fisheries New Zealand, a business unit of the Ministry for Primary Industries (MPI). The information in this publication is not government policy. While every effort has been made to ensure the information is accurate, the Ministry for Primary Industries does not accept any responsibility or liability for error of fact, omission, interpretation, or opinion that may be present, nor for the consequence of any decisions based on this information. Any view or opinion expressed does not necessarily represent the view of Fisheries New Zealand or the Ministry for Primary Industries.

Requests for further copies should be directed to:

Fisheries Science Editor
Fisheries New Zealand
Ministry for Primary Industries
PO Box 2526
Wellington 6140
NEW ZEALAND

Email: Fisheries-Science.Editor@mpi.govt.nz
Telephone: 0800 00 83 33

This publication is also available on the Ministry for Primary Industries websites at:
<http://www.mpi.govt.nz/news-and-resources/publications>
<http://fs.fish.govt.nz> go to Document library/Research reports

© Crown Copyright – Fisheries New Zealand

Please cite this report as:

Ballara, S.L.; McGregor-Tiatia, V.; Wieczorek, A.M.; O'Driscoll, R.L. (2025). Catches, size, and age structure of the 2023–24 hoki fishery and a summary of input data used for the 2025 stock assessment. *New Zealand Fisheries Assessment Report 2025/42*. 187 p.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
2. METHODS	6
2.1 Hoki fishery	6
2.1.1 Catch and effort information	6
2.1.2 CPUE analysis	8
2.1.3 Bycatch	8
2.2 Size and age composition of commercial catches	8
2.2.1 Spawning fisheries catch-at-age methods	8
2.2.2 Non-spawning fisheries direct ageing methods	9
3. RESULTS	11
3.1 Hoki fishery	11
3.1.1 Catch and effort information	11
3.1.2 CPUE analysis	14
3.1.3 Bycatch	16
3.2 Size and age composition of commercial catches	16
3.2.1 Spawning fisheries	16
3.2.2 Non-spawning fisheries	18
3.2.3 Comparison of size and age composition between fisheries	19
3.2.4 Comparison of gonad stages between fisheries	19
3.3 Hoki research	20
3.3.1 Trawl surveys	20
3.3.2 Acoustic surveys	20
4. DISCUSSION	21
5. FUTURE RESEARCH	22
6. FULFILMENT OF BROADER OUTCOMES	22
7. ACKNOWLEDGEMENTS	22
8. REFERENCES	24
9. TABLES	28
10. FIGURES	59
APPENDIX A: Unstandardised CPUE data	173
APPENDIX B: Species codes referred to in this document	187

PLAIN LANGUAGE SUMMARY

This report updates the catches, length-at-age and catch-at-age data for hoki in the 2023–24 fishing year. Data in this report were incorporated in the model for the hoki stock assessment in 2025.

The overall hoki catch in the 2023–24 fishing year was higher than the catch in 2022–23. Catch increased in Chatham Rise, west coast South Island, and east coast South Island, but decreased in Cook Strait and Sub-Antarctic. The catch-per-unit-effort indices varied by area but were all at or above the long-term average.

Most of the catch in 2023–24 was of hoki 45–90 cm in length from the 2007–22 year-classes. The most recent (2021 and 2022) year-classes appear to be lower than average.

EXECUTIVE SUMMARY

Ballara, S.L.¹; McGregor-Tiatia, V.¹; Wieczorek, A.M.¹; O'Driscoll, R.L.¹ (2025). Catches, size, and age structure of the 2023–24 hoki fishery and a summary of input data used for the 2025 stock assessment.

New Zealand Fisheries Assessment Report 2025/42. 187 p.

This report summarises catches by area and presents the length and age structure of hoki (*Macruronus novaezelandiae*) caught commercially during the 2023–24 (2024) fishing year. Catch-at-length and catch-at-age data from spawning and non-spawning fisheries are compared with those from previous years. Biomass indices from research surveys and results from other research on hoki in the most recent year are also briefly described. Data in this report were incorporated in the model for the hoki stock assessment in 2025.

The overall reported catch in 2023–24 of 107 036 t was 1480 t higher than that in 2022–23, and 2964 t lower than the TACC of 110 000 t. Total ACE available to fishers (allowing for carry forward) was 113 465 t. Relative to 2022–23, catches in 2023–24 increased in the Chatham Rise, west coast South Island (WCSI), and east coast South Island (ECSI), and decreased in Cook Strait and Sub-Antarctic. The Chatham Rise fishery caught 38 429 t in 2023–24, an increase of 1513 t, and was the largest New Zealand hoki fishery, contributing to about 35% of the total catch. The WCSI was the second largest fishery, with catches increasing from 2022–23 by 2152 t, to 32 469 t in 2023–24. The spawning catch from Cook Strait decreased by 1768 t to 11 943 t in 2023–24. The catch from the ECSI spawning fishery area in 2023–24 was 15 508 t, an increase of 4600 t from that in 2022–23 making it the third largest hoki fishery in 2023–24, and larger than Cook Strait. The catch from the Sub-Antarctic fishery decreased by 5137 t to 7753 t in 2023–24. Catches from Puysegur and from east coast North Island (ECNI) in 2023–24 both increased slightly from those in 2022–23, to 227 t and 706 t respectively. About 40 449 t of the overall catch in 2023–24 was from western areas and 66 586 t from eastern areas, both below the agreed catch split limits (45 000 t for the west and 65 000 t for the east), accounting for carry-forward. Recent trends in standardised catch-per-unit-effort (CPUE) varied by area but were all at or above the long-term average.

The WCSI, Chatham Rise, and Sub-Antarctic regions were split into sub-fisheries, with estimation of length and age frequencies by fishery. Cook Strait was treated as a single spawning fishery. Most of the catch in 2023–24 was of fish 45–90 cm length from the 2007–22 year-classes. The 2015 and 2014 year-classes were important in the sub-Antarctic sub-fisheries, and in spawning areas, but the 2016 and 2017 year-classes appeared low in all the main sub-fisheries. The 2019 and 2018 year-class appeared strong in all sub-fisheries, although were less abundant in Chatham Rise sub-fisheries. The 2021 and 2022 year-classes appear to be lower than average. The 2023 year-class was present at age 1 in the ECSI, WC.north, WC.south, Chatham Rise and SA.snares sub-fisheries.

Two new fishery-independent estimates of hoki abundance were available. The acoustic estimate from the WCSI survey in winter 2024 was slightly higher than in 2018 but still considerably lower than any estimates preceding 2018. The trawl estimate from the WCSI survey is not used in assessment, but the biomass in core strata in 2024 decreased from 2021 and was similar to that in 2018. Fish ranged from 30 to 110 cm, with two distinct length modes corresponded to ages 1 (2023 year-class) and 4 (2020 year-class) respectively. The sub-Antarctic trawl survey core biomass in November–December 2024 was 61.5% higher than that in 2022, and the highest estimate since 1993, with the abundance of hoki ages 3 and older increasing by 64.5%. Several modes were present in the hoki scaled length frequency distribution in 2024, including a small mode of age 1 fish (2023 year-class), but few age 2 fish (2022 year-class). The 2019 year-class was abundant in the sub-Antarctic survey at age 5.

¹ Earth Sciences New Zealand (ESNZ).

1. INTRODUCTION

This report provides data relevant to the 2025 stock assessment of hoki (*Macruronus novaezelandiae*). Catch statistics and data from commercial sampling carried out during the 2023–24 (2024) fishing year are presented, and results from other research programmes carried out since March 2024 are summarised, including results of trawl surveys of the WCSI in July–August and Sub-Antarctic November–December 2024. Details of the stock assessment model structure, results, and yield estimates for the hoki stock assessment carried out in 2025 are published separately by McGregor-Tiatia & Langley (in prep).

Project objectives

This report fulfils the final reporting requirement for objectives in Fisheries New Zealand research projects HOK2024-02, HOK2023-02, and MID2024-01.

HOK2024-02 Stock assessment of HOK 1 Objective 1: To perform a descriptive analysis of the commercial catch and effort data, trawl survey data, and observer data for hoki in New Zealand.

HOK2023-02 Land-based sampling of hoki Objective 1: To collect biological samples from commercial landings of hoki from Cook Strait and on the west coast of the South Island during winter 2024. Note: Otoliths were read and catch-at-age determined under MID2021-01 (variation) and MID2024-01.

MID2024-01 Routine age determination of middle depth and deepwater species from commercial fisheries and resource surveys Objective 1: To determine catch-at-age for commercial catches and resource surveys of specified middle depth and deepwater fish stocks.

Stock structure

The hoki catch is currently managed under a single TACC which can be caught in all areas of the 200 n. mile Exclusive Economic Zone (EEZ) excluding Quota Management Area (QMA) 10 (i.e., Fishstock HOK 1). However, since 1990 the Deepwater Working Group has assessed hoki as two stocks, ‘eastern’ and ‘western’ (Annala 1990 and subsequent Fisheries Plenary Reports). Hoki off the west coast of the North Island and South Island and in the area south of New Zealand, including Puysegur Bank, Stewart-Snares shelf, and Campbell Plateau, are assumed to be one stock unit: the ‘western stock’. The east coast of the South Island (ECNI), Mernoo Bank, Chatham Rise, Cook Strait, and the east coast of the North Island (ECNI) up to North Cape are assumed to contain the ‘eastern stock’. Immature hoki (2–4 years old) from both ‘stocks’ are assumed to occur together on the Chatham Rise and east coast of the South Island.

Livingston (1997) reviewed the two-stock hypothesis originally adopted in 1990 (Livingston 1990) with respect to data collected in 1990–97 and concluded that this hypothesis was still a valid interpretation for hoki. Morphometric and ageing studies (Horn & Sullivan 1996, Livingston & Schofield 1996, Horn & Sutton 2017) found consistent differences between adult hoki from the two main dispersal areas (Chatham Rise and Southern Plateau) and from the two main spawning grounds in Cook Strait and off the west coast South Island (WCSI), which suggested that there were two sub-populations of hoki. It is not known if differences between the two sub-populations are the result of genetic, environmental, or some other factors. The chemistry of otoliths from the WCSI and Cook Strait stocks was similar (Kalish et al. 1996), and no genetic differences were detected between spawning stocks (Smith et al. 1981, 1996). More recent genetic work to investigate stock structure indicated that there is little genetic differentiation between hoki within the New Zealand EEZ, but with differences detected between New Zealand and Tasmanian hoki (Koot et al. 2021).

Francis et al. (2011) described a pilot study aimed at determining whether analyses of stable isotopes and trace elements in otoliths could be used to test the stock structure hypothesis and the assumption of natal fidelity. However, none of the six trace elements or two stable isotopes considered unambiguously differentiated the two hoki stocks. Two earlier pilot studies appeared to provide weak

support for the hypothesis of natal fidelity for the western and eastern spawning stocks. Smith et al. (2001) found significant differences in gill raker counts, and Hicks & Gilbert (2002) found significant differences in measurements of otolith zones between samples of 3-year-old hoki from the 1997 year-class caught off the WCSI and in Cook Strait. However, when additional year-classes were sampled, differences were not always detected (Hicks et al. 2003).

Horn (2011) reviewed the published literature on natal fidelity in relationship to management of hoki. He concluded that, because hoki is an offshore species, widely dispersed in the non-spawning season, with multiple diffuse spawning areas, it is unlikely that hoki exhibit 100% natal fidelity. Even if natal fidelity is the preferred option for hoki from an evolutionary perspective, it is likely that some proportion of the population would stray. An independent review of the hoki assessment model, commissioned by Ministry for Primary Industries in February 2014, noted that “the extents of natal fidelity are important to identify” and recommended exploration of a range of model structures (Butterworth et al. 2017).

The hoki stock assessment model from 2006 to 2007 (Francis 2007, 2008) had two variants which were associated with different stock structure hypotheses. The ‘base case’ hypothesis assumed natal fidelity: a fish that was spawned in one area will grow up to spawn in the same area (i.e., a fish is ‘eastern’ or ‘western’ from birth). The alternative hypothesis does not assume natal fidelity, so fish spawned in one area can spawn in another area (i.e., a fish chooses to be ‘eastern’ or ‘western’ when it matures). Under both hypotheses, it was assumed that once a fish has spawned it shows site fidelity—it cannot later change spawning grounds. All model runs from 2008 to 2011 assumed natal fidelity because of technical problems concerning the definition of unfished biomass without this assumption (Francis 2009, McKenzie 2013). These problems were resolved, and model runs which do not assume natal fidelity were included as sensitivity runs from 2012 to 2018 (McKenzie 2013, 2015a, 2015b, 2016, 2017, 2018, 2019a, 2019b).

Issues associated with stock structure assumptions were again investigated in the 2019 assessment (Roberts 2019). A simplified western stock only model was constructed to assess the impact of the two-stock model data and assumptions. In this model the eastern areas and data were dropped. Instead of young juvenile western fish being on the Chatham Rise, where some are caught and some die, they directly recruit to the Sub-Antarctic, and henceforth spawn off the WCSI. Although this model neglected western catch on the Chatham Rise and processes between newly spawned fish and their arrival at the Sub-Antarctic, it reduced conflicts between eastern data and western biomass indices when western biomass was estimated in the model.

Dunn & Langley (2018) and Langley (2020) carried out reviews focused on how best to model within-stock fishery structure, migrations, and recruitment. The two-stock model remained the most likely assumption and was the assessment ‘base case’, with a one-stock model included as sensitivity in the 2022, 2023, 2024, and 2025 assessments (McGregor et al. 2023, 2024, McGregor & Langley 2025a, McGregor-Tiatia & Langley in prep). The 2023, 2024 and 2025 single-stock model retained the spatial, temporal, and fishery structure of the base model and separated maturity from migration to the spawning grounds (McGregor & Langley 2025a, McGregor-Tiatia & Langley in prep).

Description of the hoki fishery

Since the 1980s, the main fishery for hoki has operated from late June to late August off the WCSI, where hoki aggregate to spawn (Figure 1a). The spawning aggregations begin to concentrate at depths of 300–700 m around the Hokitika Canyon from late June and further north off Westport later in the season. Fishing in these areas continues into September in some years. In 1988, another fishery developed on large spawning aggregations of hoki in Cook Strait. The spawning season in Cook Strait runs from late June to mid-September, peaking in July and August.

Catches of spawning hoki are taken from other grounds off the ECSI, and late in the spawning season at Puysegur Bank. There are also anecdotal reports of spawning hoki being caught near the Snares Islands, Chatham Islands, and several locations off the ECNI. Catches from Puysegur are currently

low, but catches from the ECSI have increased since 2019 and are now higher than those from Cook Strait.

Outside the spawning season, when hoki disperse to their feeding grounds, substantial fisheries have developed since the early 1990s on the Chatham Rise and in the Sub-Antarctic. These fisheries usually operate at depths of 300–800 m. The Chatham Rise fishery generally has similar catches over all months except in July–September, when catches are lower due to the fishery moving to the spawning grounds. In the Sub-Antarctic, catches have typically peaked in April–June. Out-of-season catches are also taken from Cook Strait and ECNI, but these are small compared with spawning season catches.

From 1986 to 1990, surimi vessels dominated the catches and took about 60% of the annual WCSI catch. However, since 1991, the surimi component of catches has decreased and processing to head and gut or to fillet product has increased, as has ‘fresher’ catch for shore processing. The hoki fishery now operates throughout the year, producing high quality fillet product from both spawning and non-spawning fisheries. No surimi has been produced from hoki since 2002. Since 1998, twin-trawl rigs have operated in some hoki fisheries, and trawls made of spectra twine (a high strength twine with reduced diameter resulting in reduced drag and improved fuel efficiencies) were introduced from 2007–08 and are now commonly used throughout the fishery.

Between 2012–13 and 2017, Precision Seafood Harvest (PSH) technology was tested in the hoki fishery. This included a prototype trawl system called a Modular Harvest System (MHS) that aimed to target specific species and fish size, as well as enabling fish to be landed in much better condition than traditional trawls. Approval to use MHS gear in the hoki, hake (*Merluccius australis*), and ling (*Genypterus blacodes*) fisheries was granted in 2018. During the 2017–18 fishing year, seven vessels used the gear to target hoki and caught 9595 t (7% of the total hoki catch). The MHS catch increased to 17 127 t (14% of the total catch) in 2018–19 but has subsequently decreased due to a change in preference of product from fillet to block and unavailability of materials for MHS codends. In 2022–23 and 2023–24, only 781 t (0.7% of the total catch) and 32 t (0.03% of the total catch) was taken with MHS respectively, due to lack of availability/manufacturing of replacement parts (Charles Heaphy, Sealord, pers. comm.).

The fishing industry introduced a Code of Practice (COP) for hoki target trawling in 2001 with the aim to protect small fish (less than 60 cm). The main components of this COP were to restrict fishing in waters shallower than 450 m; a rule requiring vessels to ‘move on’ if there are more than 10% small hoki in the catch; and seasonal and area closures in spawning fisheries. The COP was superseded by Operational Procedures for Hoki Fisheries, introduced by the fishing industry from 1 October 2009. The Operational Procedures aim to manage and monitor fishing effort within four industry hoki management areas, where there are thought to be high abundances of juvenile hoki (Narrows Basin of Cook Strait, Canterbury Banks, Mernoo Bank, and Puysegur). These areas are closed to trawlers over 28 m targeting hoki, with increased monitoring when targeting species other than hoki. There is also a general recommendation that vessels move from areas where catches of juvenile hoki (now defined as less than 55 cm total length) comprise more than 20% of the hoki catch by number.

From 2018–19 to 2021–22, there was agreement from industry to close certain fishing grounds to target fishing for hoki to allow spawning to occur undisturbed at peak times (Operational Procedures version 18). Seasonal spawning closures were:

- WCSI inside the 25 nautical mile (n. mile) line: between 0000 h 18 July and 2400 h 24 July.
- WCSI outside the 25 n. mile closure, shallower than 800 m, between Kahurangi Point in the north and the boundary between Fishery Management Areas 5 and 7 in the south: between 0000 h 25 July and 2400 h 31 July.
- Cook Strait: Entire fishery between 0000 h 1 August and 2400 h 7 August.
- Pegasus: between 0000 h 1 September and 2400 h 7 September.

In 2022–23 and 2023–24 there were no seasonal spawning area closures.

Concerns with the reduced availability of hoki in the WCSI fishery during recent spawning seasons prompted agreement from fishing industry to voluntarily shelve 20 000 t of western ACE in 2018–19, leading to an effective lowering of the western catch limit in that year to 70 000 t. The TACC was further reduced to 115 000 t in 2019–20 when the annual catch was 107 700 t. In 2020–21, the TACC remained the same, but available ACE (allowing for shelving and carry-forward) was 52 984 t in the west and 60 899 t in the east, with an annual catch of 100 817 t. The TACC for 2021–22 was reduced to 110 000 t and there was also an industry agreement that in the 2021–22 fishing year, allowing for 10 000 t shelving, catches would be limited to 100 000 t (plus any carryover) with a catch split of 45 000 t from the western stock areas and 55 000 t for the eastern stock areas. Allowing for shelving and carryover, ACE available to fishers in 2022–23 was 108 110 t. In 2023–24, there was no shelving of ACE so the effective TACC remained at 110 000 t with the agreed west catch limit 45 000 t and the east catch limit 65 000 t. Allowing for uncaught ACE, carried forward from 2022–23, available ACE in 2023–24 was 113 465 t. In 2024–25, the TACC for HOK 1 remains at 110 000 t, with the same agreed catch split; allowing for carryover, available ACE in 2024–25 is 116 428 t.

Recent hoki research

The hoki stock assessment was updated in 2024 (McGregor & Langley 2025a). The base model had western and eastern stocks, with fish residing in four regions based on stock, time of year, age, maturity, and sex. An alternative model was presented that assumed a single stock but retained the spatial and temporal structure of the base model. Current combined (eastern and western) stock status in 2024 was estimated to be 45% B_0 (base model) or 46% B_0 (single stock model). The current eastern stock status (51% B_0) was estimated to be higher than that of the western stock (41% B_0). While this assessment was accepted as the current best understanding of the hoki fishery, issues to be further investigated were identified, particularly around spatial and movement hypotheses (McGregor & Langley 2025a).

McGregor & Langley (2025b) updated hoki length-weight parameters by sex and area. The current estimates of Francis (2003) used spawning datasets from of one WCSI survey (TAN0007) and one Cook Strait survey (TAN0111), with derived length-weight values $a = 0.00479$, $b = 2.89$; there are more data now available. Females appeared to be consistently heavier than males in spawning data, but the fitted models were not noticeably different. An improvement was seen from fitting separate models to three datasets: WCSI, Cook Strait-ECSI, and Sub-Antarctic-Chatham Rise, although the fitted length-weight curves were quite similar. New estimates of length-weight a and b values parameters were:

- Sub-Antarctic and Chatham Rise surveys (eastern and western stock non-spawning): $a = 0.00417$, $b = 2.92$
- WCSI spawning surveys (western stock spawning): $a = 0.00494$, $b = 2.89$
- Cook Strait-ECSI spawning surveys (eastern stock spawning): $a = 0.00416$, $b = 2.94$

These length-weight relationships were accepted by the Deepwater Working Group (DWWG) and used in the 2025 stock assessment and will be incorporated into composition data for the 2026 stock assessment.

McGregor & Langley (2025b) also updated growth parameters (von Bertalanffy L_∞ , k , and t_0) previously estimated by Horn & Sullivan (1996). New values were estimated for male and female east, west, and ‘both’ (aka Chatham Rise) from survey, observer, and land-based sampling data. Raw data showed that mean size at age was highest in mid-late 2000s for younger fish (less than around 8 years) in both stocks, although differences in the residuals by year were quite small. Initial models fitted to area showed that the larger fish go to spawn and this may affect the data – if more are from spawning grounds, the data will be weighted towards the larger fish. New proposed values for growth of hoki

were not accepted by the DWWG for the 2025 stock assessment, and further analyses of data and/or models was suggested.

Two new fishery-independent surveys of hoki abundance were carried out in the last twelve months: an acoustic and trawl survey of WCSI in July–August 2024 and a trawl survey of the Sub-Antarctic in November–December 2024. Results from these surveys are summarised in Section 3.3. Results of a trawl survey of the Chatham Rise in 2022 was published by Stevens et al. (2024).

2. METHODS

2.1 Hoki fishery

2.1.1 Catch and effort information

Catch and effort, daily processed, and landed data were extracted from the Fisheries New Zealand Enterprise Data Warehouse (EDW) as extract ‘16224_rerun_15334A’ on 4 November 2024 and consisted of all fishing and landing events associated with a set of fishing trips that reported a positive catch or landing of hoki, hake, or ling from fishing years 1989–90 to 2023–24. This included all fishing recorded on: Trawl Catch Effort and Processing Returns (TCEPRs); Trawl Catch Effort Returns (TCERs); Catch Effort and Landing Returns (CELRs); Lining Catch Effort Returns (LCER); Lining Trip Catch Effort Returns (LTCER); Netting Catch Effort Landing Returns (NCELR); digital monitoring of trawl commercial fishing (ERS-trawl); other digital monitoring commercial fishing (ERS-Lining, ERS-Netting, ERS-Other Lining, ERS-Potting, ERS-Seining, and ERS-Tuna Lining); and high seas versions of these forms. Catch and effort data for hoki from the Fisheries New Zealand observer sampling programme (administered by ESNZ in the *cod* database) were also extracted, on 7 January 2025. Data were analysed by fishing year (1 October to 30 September), referred to by the year-ending, for example, 1990 for the 1989–90 fishing year.

As part of Digital Monitoring of Commercial Fishing, the ERS (Electronic Reporting System) has been rolled out to replace legacy catch-and-effort paper-based reporting. On 1 October 2017, trawl vessels over 28 m started supplying fishing and related event data such as catch, effort, and landing data via the new ERS, and these data are now available from the EDW database. Because the ERS started in 2017–18, there were still a few trawl vessels over 28 m that reported on the legacy TCEPR form type; however, from 2018–19 most data were reported on the ERS.

TCEPR and TCER forms record tow-by-tow data with the estimated catch (by weight) of the top five species (TCEPRs) or the top eight species (TCERs) in each individual tow. The ERS-trawl form reports the top five QMS species and top three non-QMS species (although fishers are able to report more species on this form) and consequently should produce data closely comparable with that from the TCEPR and TCER paper forms for deepwater vessels. CELR forms record estimated daily catches for the top five species, which are further stratified by statistical area, method of capture, and target species. Green-weight data associated with landing events are reported on the bottom part of the CELR forms, or on Catch Landing Return (CLR) forms for fishing reported on TCEPRs and TCERs. Information on total harvest levels are provided via the Quota Management Report/Monthly Harvest Return (QMR/MHR) system, but only at the resolution of Quota Management Area.

Data were checked for errors, using simple checking and imputation algorithms similar to those used by Ballara et al. (2024). Data were also groomed for errors using simple checking and imputation algorithms developed in the statistical software package ‘R’ (R Core Team 2024). Individual tows were investigated, and errors were corrected using median imputation for start/finish latitude or longitude, fishing method, target species, tow speed, net depth, bottom depth, wingspread, duration, and headline height for each fishing day for a vessel. Range checks were defined for the remaining attributes to identify outliers in the data. The outliers were checked and corrected, if possible, with median imputation on larger ranges of data such as vessel, target species, and fishing method for a year or month, or the record was removed from the data set. Statistical areas were calculated from

positions where these were available. Transposition of some data was carried out (e.g., bottom depth and depth of net).

Deepwater commercial vessels were classified by fleet using data provided by Fisheries New Zealand. Vessel classifications are not recorded in either commercial or observer databases; they represent a set of classifications Fisheries New Zealand uses to differentiate the deepwater fleet based upon target species, areas fished, etc., rather than referring to nationality given that all vessels are now legally required to be New Zealand flagged. Classifications included:

- **BATM:** All Ukrainian/Russian crewed vessels (regardless of ownership) are referred to as BATMs, which is the specific class of factory trawler with a meal plant on board.
- **FOV:** All Korean/Japanese vessels are lumped together under the term FOV which is defined as “all foreign owned vessels excluding BATMs”. These vessels do not have a meal plant on board.
- **Domestic:** All New Zealand owned vessels except BATMs and FOVs. The domestic fleet includes vessels that vary in length, presence of meal plants, and onboard processing (fillet producing vessels vs. ice boats etc.). The domestic category was then further subdivided according to whether meal plants were on board or not.

The classification system is useful when categorising the fleet back to 2007–08. Further back in time the classification system breaks down due to the presence of vessels that do not fit neatly into one of these three categories.

Fishery stratification

Following the review of Langley (2020), the WCSI, Chatham Rise, and Sub-Antarctic regions were split into sub-fisheries, with estimation of catch and length and age frequencies produced for each sub-fishery (Table 1).

The WCSI (WC) region was split into three fisheries spatially: WC.north (north of 42.5° S); WC.inside (south of 42.5° S inside the 25-n. mile line); and WC.south (south of 42.5° S outside the 25-n. mile line) (Figure 1b) as fish size is smaller in the north, and substantially larger fish are caught inside the 25 nautical mile line. The WC.north sub-fishery has been the largest WCSI fishery in most years, with most of the recent declines in catch occurring in this fishery.

The Sub-Antarctic (SA) was structured spatially as: SA.auck (Auckland Islands); SA.snares (the Stewart-Snares shelf north of 49° S); and SA.suba (the remaining Sub-Antarctic area) (Figure 1c), based on fish size. The smallest hoki are on the Stewart-Snares shelf, medium-sized fish are around the Auckland Islands, and most of the catch in the rest of the Sub-Antarctic comprises large females. The SA.snares sub-fishery is the largest Sub-Antarctic fishery in most years.

The Chatham Rise (CR) region was structured using depth, with depth greater than or equal to 475 m defined as CR.deep, and shallower than 475 m as CR.shallow (Figure 1d), as larger fish are predominantly found in deeper water (Langley 2020). The CR.deep sub-fishery makes up most of the Chatham Rise catch in each year.

In the 2023 stock assessment, Cook Strait (CS) and ECSI (ES) (Figure 1e, original ECSI area) catches from spawning months (June–September) made up the Cook Strait spawning fishery for stock assessment (CS.spawn and ES.spawn), with catches from these areas outside spawning months included in the Chatham Rise fisheries (CS.nonspawn and ES.nonspawn).

In the 2024 and 2025 stock assessments the ECSI spawning area was redefined to a larger area (Figures 1d and 1e). ECSI catches from the three main spawning months (July–September) were considered as the ECSI spawning fishery; catches from this area outside these months were included in the Chatham Rise fisheries. The ECSI spawning area was redefined because it was found that the original ECSI area for months June to September (Figure 1e) misses out running ripe fish east and south of this area

– especially from shallower areas, although the extended area has a higher proportion of immature and resting fish. June catches were excluded from the extended ECSI spawning fishery as most observed female fish are immature, resting or ripening in June. Cook Strait catches from June–September made up the Cook Strait fishery, and catches from these areas outside the spawning months were included in the Chatham Rise fisheries.

In the 2023 stock assessment, Puysegur (PU) was defined as its own spawning fishery for catches from June–September; catches from Puysegur outside these spawning months were included in the SA.snares sub-fishery. In the 2024 and 2025 stock assessments, the Puysegur catches from June to September (PU.spawn) were included in the WC.north fishery; catches from Puysegur outside these spawning months (PU.nonspawn) were included in the SA.snares fishery (McGregor & Langley 2025a, McGregor-Tiatia & Langley in prep).

2.1.2 CPUE analysis

Unstandardised catch and effort were summarised from ERS-trawl and TCEPR data for the six largest hoki fishing areas (WCSI, Cook Strait, Chatham Rise, ECSI, Sub-Antarctic, and Puysegur) (Table A1 of Appendix A). Standardised CPUE analyses of tow-by-tow target hoki catches reported on TCEPR or ERS-trawl were carried out for the WCSI, Cook Strait, Chatham Rise, ECSI and Sub-Antarctic fisheries, and for individual sub-fisheries within these areas by McGregor-Tiatia et al. (2025). Standardised CPUE analyses were carried out only to explore trends in catch rate. CPUE indices are not believed to provide reliable estimates of hoki abundance and are not currently used in the hoki stock assessment.

2.1.3 Bycatch

Estimates of bycatch in the hoki fishery were determined from data collected by Fisheries New Zealand observers. For target hoki trawls, the observer data in 2023–24 represented about 84% of vessels, 19% of tows, and 23% of the total hoki catch (Table 2).

2.2 Size and age composition of commercial catches

Data to estimate length frequency distributions in 2023–24 were available from the at-sea Observer Programme (OP) (Table 2) and from land-based sampling of landed hoki from Cook Strait and WCSI (inside the 25-n. mile line) carried out for Fisheries New Zealand research project HOK2023-02. Hoki were measured by OP observers from 1899 target hoki tows, of which 690 came from the WCSI, 58 from Cook Strait, 264 from the ECSI (July–September), 685 from the Chatham Rise, 183 from the Sub-Antarctic, 15 from ECNI, and 4 from Puysegur. In Cook Strait and WCSI, 26 and 20 land-based samples, respectively, were collected by ESNZ. Table 3 describes the timing of 2023–24 sampling in the main areas.

2.2.1 Spawning fisheries catch-at-age methods

Length frequency distributions were estimated for each area as the weighted (by catch weight) average of individual length samples. Length frequency data were post-stratified by fishery. WCSI catch-at-age datasets per year were calculated in a consistent way (where data were available) for the three WCSI sub-fisheries: WC.north, WC.inside, and WC.south (Table 4). Each sub-fishery in each year was stratified by time (Table 5 for 2024 season stratification and Ballara et al. (2025), for other years) with adjacent strata combined if there were few length samples available. For all datasets, data from May to September were used with week 1 starting at 1 May. Observer tows for vessels ≥ 46 m inside the 25-n. mile line were not included because these records were assumed to have positional errors.

Data were also excluded from land-based length frequency distributions where vessels sorted their catch at sea. Where land-based samples included observed tows, only data from land-based samples were included. Land-based samples where area was defined as ‘WCSI’ (anywhere off the WCSI) rather than ‘WC25’ (inside the 25-n. mile line) were also excluded.

For Cook Strait, catch-at-age distributions by year were stratified by time and vessel size (Table 6). For all datasets, data from June to September were used, and each year was stratified by vessel size as vessel lengths < 40 m and ≥ 40 m, and time as June–July and August–September (see Table 7 for 2024 season stratification and Ballara et al. (2025) for other years). As for the WCSI, land-based data where vessels sorted their catch at sea were excluded and, where land-based samples included observed tows, only data from land-based samples were included.

For ECSI, catch-at-age distributions by year were calculated for years where there were at least 10 target hoki length frequencies collected during July to September and there were at least 100 otoliths in that year (Table 8). These were treated as one stratum and scaled to the July to September catch in that year. Catch-at-age was calculated for 2003, 2004, 2006, 2008, 2019, and 2022–2024 using the ECSI age-length key for that year applied to that year’s data.

For Puysegur, catch-at-age distributions by year were calculated for years where there were at least 10 target hoki length frequencies collected during August and September of that year (Table 9). These were also treated as one stratum and scaled to the June to September catch in that year. The WCSI age-length key for that year was applied to that year. Catch-at-age was calculated for 1990–1992, 1994–1997, and 2000–2005. Puysegur catch-at-age was not used in the hoki modelling in 2024 or 2025.

Catch-at-age from spawning fisheries was estimated using age-length keys derived from otolith ageing. A subsample of 743 target hoki otoliths from WCSI (650 from OP samples and 93 from land-based samples), 726 otoliths from Cook Strait (219 from OP samples and 507 from land-based samples), and 585 otoliths from ECSI were selected, prepared, and read using the validated technique of Horn & Sullivan (1996) as modified by Cordue et al. (2000) and described by Horn & Sutton (2017). The sub-sample was derived by randomly selecting a set number of otoliths from each of a series of 1-cm length/sex bins covering the bulk of the catch and then systematically selecting additional otoliths to ensure that the tails of the length distribution were represented. The chosen sample sizes approximated those necessary to produce mean weighted CVs of less than 20% across all age classes, in each of the spawning fisheries.

The length-weight relationship of Francis (2003) was used for all spawning fisheries (WCSI, Cook Strait, and ECSI). Age-length keys were constructed for each spawning area and applied to the total length frequency distribution to produce an age frequency distribution for the catch of each sex separately. For the spawning fisheries, catch-at-age estimates were determined using the ‘catch.at.age’ software (Bull & Dunn 2002). This software also incorporates data from otolith zone measurements using the consistency scoring method of Francis (2001) in the age-length key. For 1990–2000 age-length-key data there were no otolith ring measurements so average radii were applied as 2.23, 3.17, and 3.57 units for ages 1 to 3, respectively (Peter Horn, NIWA, pers. comm). The same age-length key was used for each sub-fishery within a year.

Catch-at-age was not calculated for the 1987–1989 seasons (WCSI) or 1988–1989 seasons (Cook Strait) because no commercial data were available in these years.

2.2.2 Non-spawning fisheries direct ageing methods

Catch-at-age in Chatham Rise and Sub-Antarctic sub-fisheries was estimated by sampling directly for age. This continued the approach used since 1998–99 for the Chatham Rise (Francis 2002) and since 2000–01 for the Sub-Antarctic (Ballara et al. 2003). Sampling directly for age is necessary because a

single age-length key is not appropriate in non-spawning fisheries. The sub-fisheries are spread over much of the year and there will be substantial fish growth. This means that for any given length the proportions-at-age will change throughout the fishery. To sample directly for age, observer coverage must be sufficient to provide a random sample of otoliths from the fishery. Francis (2002) suggested that even a sample size of 1200 otoliths may not be sufficient to achieve a target CV of 0.20 in some years.

Criteria for otolith selection involves choosing about 1200 otoliths for each area (1200–1250, depending on criteria), with more otoliths from larger catches and fewer from smaller catches, but most importantly covering all tows with catches greater than 1 t. If there are enough otoliths, otolith selection involves choosing 600 otoliths from each of CR.shallow and CR.deep and 400 otoliths from each of SA.auck, SA.snares and SA.suba. Otoliths categorised by observers as ‘non random’ are not used when there are sufficient ‘random’ otoliths. The proportion of catch by fishing method from the current year is also used to apportion otoliths between methods where possible.

In the 2023–24 Chatham Rise non-spawning season, 6851 otoliths were collected from 687 tows from target hoki tows. Of these, 6261 ‘random’ otoliths for catches greater than 1 t and within defined sub-fisheries were collected. As there were only 380 otoliths for CR.shallow, all of these otoliths were selected.

For CR.deep, ‘random’ otoliths were selected (at random) for age estimation as given below.

1. All otoliths from tows that caught less than 1 t of hoki were rejected.
2. For tows that caught 1–9 t of hoki, 1 otolith from each tow.
3. For tows that caught more than 9 t of hoki, 2 otoliths from each tow.

This selected 823 otoliths for CR.deep all from bottom trawls, with the proportion of CR.deep bottom trawl catch over 99%. There were no MW otoliths (0.4% of the CR.deep catch) available at time of otolith selection.

In the 2023–24 Sub-Antarctic non-spawning season, 1691 target hoki otoliths were collected from October–June, which included otoliths categorised by observers as ‘non random’. Hence there were 1620 ‘random’ target otoliths available for selection from 173 tows, of which 1250 were identified as catches greater than 1 t, not unsexed, and within defined sub-fisheries (316, 388, and 916 otoliths from SA.auck, SA.snares, and SA.suba respectively). All 316 SA.auck and 388 SA.snares of these target hoki otoliths were selected.

For SA.suba, otoliths were selected at random for age estimation as given below.

1. All otoliths from tows that caught less than 1 t of hoki were rejected.
2. For tows that caught 1–4.5 t of hoki, 2 otoliths from each tow.
3. For tows that caught 4.5–11 t of hoki, 4 otoliths from each tow.
4. For tows that caught 11–15 t of hoki, 6 otoliths from each tow.
5. For tows that caught more than 15 t of hoki, 8 otoliths from each tow.

This selected 502 otoliths from SA.suba. A total of 1192 otoliths were prepared and read after swaps for missing or mislabelled otoliths with 312, 384, and 496 from the SA.auck, SA.snares, and SA.suba sub-fisheries. The otoliths that were read included 98.3% otoliths from bottom trawls, and 1.7% otoliths from midwater tows (noting that greater than 99.5% of the commercial catch was from bottom tows).

The method to estimate catch-at-age for the Chatham Rise and Sub-Antarctic followed that of Francis (2002) as modified by Smith (2005). Catch-at-age for two Chatham Rise sub-fisheries (CR.shallow and CR.deep) and three Sub-Antarctic sub-fisheries (SA.snares, SA.auck, SA.suba) were estimated using the same stratification across all years, instead of annual stratification calculated using tree-based methods. There was no stratification within each sub-fishery and year. Data from October to September were used for the Chatham Rise sub-fisheries, and Sub-Antarctic non-spawning fisheries (Tables 10 and 11) for all years.

Age frequencies were only used for the hoki assessment where at least 100 otoliths were available in a sub-fishery and year. The estimated age frequencies by sex for the observed tows were obtained by scaling the otolith ages and sexes up by the estimated numbers of hoki of each sex caught in the tow and averaging over all tows. Finally, the number of fish caught was estimated from ERS-trawl data and catch-at-age frequencies were calculated as the weighted average, for each stratum, of the estimated age frequencies by sex. Only tows that caught at least 1 t of hoki were used. Numbers of fish were estimated from catch weights using the length-weight relationship of Francis (2003).

Estimates of catch-at-age before 1999–2000 in the Sub-Antarctic and up to 1997–98 on the Chatham Rise were based on an optimised length frequency model (OLF) described in detail by Hicks et al. (2002).

3. RESULTS

3.1 Hoki fishery

3.1.1 Catch and effort information

Total Allowable Commercial Catch (TACC)

The TACC for HOK 1 has been 110 000 t since 1 October 2021, with an agreed catch split arrangement of 65 000 t from eastern stock areas and 45 000 t from western stock areas. This TACC applied to all areas of the EEZ (except the Kermadec FMA which had a TACC of 10 t). With the allowance for other mortality at 1100 t and 20 t allowances for each of customary and recreational catch, the 2023–24 TAC was 111 140 t. The ACE that was available to fishers (following carryover) was 113 465 t (Table 12).

Vessels larger than 46 m in overall length may not fish inside the 12 n. mile Territorial Sea, and there are other various vessel size restrictions around some parts of the coast. Off the WCSI, a 25-n. mile line closes much of the hoki spawning area in the Hokitika Canyon and most of the area south to the Cook Canyon to vessels larger than 46 m overall length. In Cook Strait, the whole spawning area is closed to vessels over 46 m overall length. In November 2007, the Government closed 17 Benthic Protection Areas (BPAs) to bottom trawling and dredging, representing about 30% of the EEZ and including depths that are outside the depth range of hoki. There were no seasonal spawning closures in place for 2023–24 (see Section 1).

Catch history

The total annual catches of hoki within the EEZ from 1969 to 2023–24 are given in Tables 13 and 14. The hoki fishery was developed by Japanese and Soviet vessels in the early 1970s (Table 13). Catches peaked at nearly 100 000 t in 1977 but dropped to less than 20 000 t in 1978 when the EEZ was declared and quota limits were introduced (Table 13, Figure 2). From 1979 on, the hoki catch increased to about 50 000 t until an increase in the TACC from 1986 to 1990 saw the fishery expand to a catch in 1987–88 of about 255 000 t (Tables 13 and 14).

Reported annual catches ranged between 175 000 and 255 000 t from 1986–87 to 1996–97 and peaked again at 269 000 t in 1997–98, when the TACC was over-caught by 19 000 t (Table 14). Catches subsequently declined, tracking the TACC as it was reduced to address poor stock status, reaching a low of 89 000 t in 2008–09, then increasing again up to 161 500 t in 2014–15 following increases in the TACC as stock status improved (Table 14). The TACC was reduced to 150 000 t in 2015–16 and catches in the next four years were below this level (Table 14). The fishing industry voluntarily shelved 20 000 t of western ACE in 2018–19, leading to an effective lowering of the catch limit in that year to 130 000 t within an overall TACC of 150 000 t, and a western catch limit in that year to 70 000 t. The TACC was further reduced to 115 000 t in 2019–20 when the annual catch was 107 700 t. In 2020–21, the TACC remained the same, but available ACE (allowing for shelving and carry-forward) was 52 984 t in the west and 60 899 t for the east, with an annual catch of 100 817 t (Table 14 and 15). The

TACC for 2021–22 was reduced to 110 000 t and there was also an industry agreement that in the 2021–22 fishing year, allowing for 10 000 t shelving, catches would be limited to 100 000 t (plus any carryover) with a catch split of 45 000 t from the western stock areas and 55 000 t for the eastern stock areas. Allowing for shelving and carryover, ACE available to fishers in 2022–23 and 2023–24 was 109 165 t and 113 465 t respectively (Table 15).

Catches by area and fishery from 1989–90 are given in Tables 16 and 17 and Figures 3 and 4. The pattern of fishing has changed markedly since prior to 1989–90 when over 90% of the total catch was taken in the WCSI spawning fishery (Figure 3). This has been due to a combination of TACC changes and redistribution of fishing effort. The WCSI fishery accounted for 30% of the total hoki catch in 2023–24 and was the second largest hoki fishery in New Zealand behind the Chatham Rise (Table 16). The WC.north sub-fishery has been the largest WCSI sub-fishery in most years, with most of the recent declines occurring in this sub-fishery (Figure 4). Cook Strait catches peaked at 67 000 t in 1995–96, were relatively stable in the range 15 000 t to 25 000 t from 2004–05 to 2019–20, but have decreased to between 10 000 and 14 000 t in the last three years (Table 17). At the same time catches from the ECSI spawning fishery doubled from around 5000 t in 2011–12 to 2017–18 to around 10 000 t from 2018–19 to 2022–23, increasing further to over 15 000 t in 2023–24 (Table 16). The Chatham Rise was the largest hoki fishery in 2022–23 and 2023–24 contributing about 35% of the total catch. The CR.deep sub-fishery made up most of the Chatham Rise catch in each year (Table 17, Figure 4). Catches from the Sub-Antarctic peaked at over 30 000 t from 1999–2000 to 2001–02 but have been variable since, ranging between about 6000 t and 20 000 t over the past 21 years (Table 16). The SA.snares sub-fishery was the largest Sub-Antarctic sub-fishery in most years (Table 17). Catches from other areas are at relatively low levels (Table 16).

From 1999–2000 to 2001–02, there was a redistribution in catch from eastern stock areas (Chatham Rise, ECSI, ECNI, and Cook Strait) to western stock areas (WCSI, Puysegur, and Sub-Antarctic) (Figure 3). This was initially due to industry initiatives to reduce the catch of small fish in the area of the Mernoo Bank on the Chatham Rise, but from 1 October 2001, became part of an informal agreement with the Minister of Fisheries that 65% of the catch should be taken from the western fisheries to reduce pressure on the eastern stock. This arrangement ended following the 2003 hoki assessment in 2002–03, which indicated that the eastern hoki stock was less depleted than the western stock, and effort was shifted back into eastern areas, particularly Cook Strait. Since 2004–05 there has been a series of agreements, including limiting catch below the TACC and voluntary catch splits between western and eastern fishing grounds (Table 12). The split between eastern and western catches has been close to the agreed catches in most years. In 2022–23 and 2023–24, eastern and western catches (including carry-forward catch) were below agreed catch limits for both eastern and western stock areas. Figure 2 shows the reported landings and TACC for HOK 1, and Figure 3 shows the eastern and western catch components of this stock since 1989–90.

Overall 2023–24 catch

Estimated catches of 103 981 t were scaled up to the total monthly harvest return (MHR) catch of 107 036 t. The overall reported catch of 107 036 t was 1480 t higher than the reported catch in 2022–23, and 2964 t lower than the TACC of 110 000 t (Table 14). Relative to 2022–23, catches in 2023–24 increased in the Chatham Rise, WCSI, and ECSI and decreased in Cook Strait and Sub-Antarctic (Figure 3, Table 16). A high proportion of the hoki catch in 2023–24 was taken during the spawning season from June to September (Figure 5). Overall, about 40 449 t of the total catch in 2023–24 was taken from western stock areas, with 66 586 t from the eastern stock areas, both below agreed catch splits (Table 12, Figure 3).

Over 99% of the hoki catch was recorded on the ERS-trawl form, with less than 0.01% of the catch reported on other ERS forms (Figure 5). About 76% of the hoki catch off the WCSI and over 99% of hoki catch in Cook Strait taken by midwater trawling, whereas most catch from the Chatham Rise and Sub-Antarctic was taken by bottom trawling (Figures 6–11).

In 2023–24, 97% of the overall catch was taken from hoki target tows. Up until 2003–04, almost all the hoki catch was from target hoki tows. Hoki targeting then decreased from the Sub-Antarctic, WCSI, and Chatham Rise until 2008–09, when only 87% of the overall hoki catch was from tows targeting hoki (Figures 6–11). With the changes in TACC from 2009–10, hoki targeting has again increased and has been in the range of 95–97% for the last 13 years.

WCSI 2024 catch

The WCSI was the second largest fishery in 2023–24, ranking below the Chatham Rise for the second time since 2009–10, with catches increasing by 2152 t to 32 469 t in 2024 (2023–24) (Table 16). Catches from inside the 25-n. mile line made up 31% of the total WCSI catch in 2024, a decrease in proportion from 34% in 2023, and 10% lower than the peak of 41% of the catch taken from inside-the-line in 2004. Most (76%) of the WCSI catch in 2024 was taken by midwater trawl. Twin trawls accounted for about 27% of the bottom trawl catch and 6% of the WCSI catch overall (Figure 6). A low catch (650 kg) was reported on the ERS-potting form in WC.inside in 2024. Catches from the WC.north (6928 t) sub-fishery were lower than in 2023, and the lowest catch for this sub-fishery in the time series, whereas catches for the WC.inside (10 089 t) sub-fishery were similar to those in 2023 and catches from the WC.south (15 451 t) were higher than those in 2023 (Table 17, Figure 4). Peak catches on the WCSI spawning grounds were in July and August (Figures 12 and 13). From 2011 to 2019, fishing off the WCSI began in May (with most pre-June catch from inside the 25-n. mile line) and continued into September; but from 2020 to 2024 very little catch was taken in May. Target hoki trawls made up 98.6% of the hoki catch on the WCSI in 2024, with target hake, ling or barracouta trawls taking most of the rest of the hoki catch (see Figure 6). Since the 2008 season, the WCSI fleet fishing outside the 25-n. mile line has been made up of BATM vessels, domestic vessels with meal plants on board, and FOV vessels, with mainly domestic vessels without meal plants on board fishing inside the line (Figure 14).

Cook Strait 2024 catch

The catch from Cook Strait in 2024 (2023–24) was 11 943 t, a decrease of 1768 t from that in 2023 (Table 16, Figure 4). Peak catches were from mid-July to mid-September, with about 1200 t caught outside the spawning season (Table 17, Figures 12 and 13). Most catch (over 99%) was taken by target midwater trawls (Figure 7), with no MHS catch in 2024, and mainly from domestic vessels with no meal plants on board (Figure 14).

ECSI 2024 catch

The catch from the redefined ECSI spawning fishery area in 2024 (2023–24) was 15 508 t, an increase of 4600 t from that in 2023 (Table 16, Figure 4). This made it the third largest hoki fishery in 2023–24. The ECSI catch in September was the largest catch from any fishery in September 2024 (Figure 12). Catches were taken from July to September, with a peak in early September (Figure 13). Over 99% of the catch was taken by target hoki trawls and 62% of the catch was taken by bottom trawls (Figure 8), mainly from domestic vessels without meal plants on board (Figure 14).

Chatham Rise 2023–24 catch

The Chatham Rise fishery caught 38 429 t in 2023–24, an increase of 1513 t from 2022–23 and was the largest New Zealand hoki fishery (by nearly 6000 t) in 2023–24. This is the second time the Chatham Rise has been the largest fishery since 2009–10 (Table 16, Figure 4). Over 99% of the 2023–24 Chatham Rise catch was taken in bottom trawls (Figure 9). There was a decrease in catch from twin trawls, with this method accounting for 30% of the bottom trawl catch in 2023–24. Less than 0.5% of the Chatham Rise catch was taken by midwater trawls (Figure 9). Almost none of the Chatham Rise catch is now taken using the Modular Harvest System (MHS) (treated as a separate method to bottom trawls). The Chatham Rise fishery occurs mainly during October to June (Figures 12 and 13). Target hoki trawls accounted for 98.5% of the hoki catch in 2023–24 (Figure 9). Since the 2008 season, the Chatham Rise fleet has mainly been made up of domestic vessels with meal plants on board (Figure 14). The CR.deep sub-fishery accounted for 88% of the Chatham Rise catch in 2023–24 (Table 17).

Sub-Antarctic 2023–24 catch

The catch from the Sub-Antarctic decreased by 5137 t from 12 890 t in 2022–23 to 7753 t in 2023–24 (Table 16). Almost all of the catch (more than 99%) was taken in bottom trawls, of which 21% was from twin trawls. There was no MHS catch in 2023–24 (Figure 10). The percentage of catch from target hoki trawls increased to 81% in 2023–24 (Figure 10). Sub-fishery catches in the Sub-Antarctic decreased in 2023–24 with about half of the catch (48%) taken in SA.suba (3747 t), with 32% from SA.auck (2495 t), and 20% from SA.snares (1511 t) (Table 17, Figure 4). The 2023–24 Sub-Antarctic catch was taken throughout the year, but with relatively little catch in July and August 2024 (Figure 13). Since 2007–08, the Sub-Antarctic fleet has been mainly made up of domestic vessels with meal plants on board (Figure 14).

Other areas 2023–24 catch

Catches from Puysegur and from ECNI in 2023–24 both increased slightly from those in 2022–23, to 227 t and 706 t respectively (Table 16, Figures 5, and 11). There was limited fishing in Puysegur mainly in June and September, and small catches were taken throughout the year from the ECNI, with less catch during July–September (Figure 12). Very little catch was taken from the WCNI. Catches from Puysegur in recent years were taken mainly by domestic vessels with meal plants, whereas ECNI catches were taken mainly by domestic vessels without meal plants (Figure 14).

3.1.2 CPUE analysis

WCSI

Unstandardised catch rates are presented for both target hoki midwater and bottom trawls (Table A1). Midwater trawl catches accounted for 76% of the total spawning season catch in 2024, with almost all bottom trawl tows from outside the 25-n. mile line (Figure 6). Unstandardised midwater catch rates off the WCSI in 2024 decreased slightly from 2023, with a median catch rate in all midwater tows targeting hoki of 4.4 t per hour, and a median tow duration of 2.3 hours (Table A1). Midwater catch rates for WC.north and WC.inside decreased slightly from 2023, and increased for WC.south, and median tow duration increased slightly for WC.north and decreased for WC.south and WC.inside (Table A1). Bottom trawl catch rates for WC.north decreased from 2023, with median tow duration increasing, whereas bottom trawl catch rates for WC.south doubled from 2023, with median tow duration slightly decreasing (Table A1).

Overall, standardised CPUE indices generally showed a similar pattern to unstandardised catch rates (Table A2, Figure 15). Standardised CPUE indices for WC.north and WC.south sub-fisheries showed similar patterns to the overall WCSI CPUE, although WC.south showed a steeper increase to 2016, with a more gradual decline since then, and WC.inside fishery CPUE showed no trend (McGregor-Tiatia et al. 2025). WC.north CPUE catch-per-hour indices were used as a sensitivity run in the 2023 hoki assessment model (McGregor et al. 2024), but were not used in the 2024 or 2025 hoki assessment models (McGregor & Langley 2025a, McGregor-Tiatia & Langley in prep).

Cook Strait

Midwater trawl catches accounted for over 99% of the spawning season catch reported on ERS-trawl forms in 2024 (Figure 7). Unstandardised catch rates in Cook Strait continued to be high; the median catch rate in midwater tows targeting hoki increased from 12.3 t in 2022 to 25.9 t per hour in 2024 (Table A1). Standardised CPUE indices show no long-term trend but have increased from 2014 to 2021 with a slight decrease afterwards in 2022 and 2023, with a large increase in 2024 (Table A2, Figure 15). Catch rates may reflect a fishing strategy where vessels limit the size of catches to maintain fish quality. Cook Strait CPUE indices did not match Cook Strait acoustic survey trends (McGregor-Tiatia et al. 2025).

ECSI

Unstandardised catch rates are presented for both target hoki midwater and bottom trawls (Table A1). Bottom trawl catches accounted for 61% of the total spawning season catch in 2024, with midwater

tows accounting for the remaining catch. There were no MHS tows in 2023–24 (Figure 8). Spawning season catches from the ECSI were mainly reported on ERS-trawl forms (Figure 8). Unstandardised catch rates in ECSI continued to be high; the median catch rate in midwater tows targeting hoki increased from 6.3 t in 2023 to 7.8 t per hour, and bottom tows targeting hoki increased from 2.2 t in 2023 to 2.8 t per hour in 2024 (Table A1).

The standardised CPUE has increased since 2000 (Table A2, Figures 15). The standardised CPUE was close to the acoustic survey index for the top three catch cells (McGregor-Tiatia et al. 2025). There was a strong mismatch between the standardised CPUE for ECSI and the Cook Strait acoustic survey index, particularly with a decrease in the Cook Strait acoustic survey index since 2015 (McGregor-Tiatia et al. 2025).

Chatham Rise

Most of the 2023–24 Chatham Rise catch (over 99.5%) was taken in conventional bottom trawls, with midwater tows accounting for 0.4% of the catch. There were no MHS tows in 2023–24 (Figure 9). Most of the catch was reported on the ERS-trawl form (Figure 9). There has been a general increase in tow duration since the 1990s for bottom tows, with a median tow duration of 4.7 hours in 2023–24 (Table A1). The median non-standardised catch rate in hoki target trawls increased from 0.6 t per hour in 2002–03 to 1.7 t per hour in 2008–09 and has levelled off to 1.4–2.0 t per hour since 2009–10. The median unstandardised catch rate in bottom trawls targeting hoki overall and for CR.deep was 1.4 t per hour, which was lower than the catch rate in 2022–23 (Table A1).

Standardised CPUE analyses for CR.shallow and CR.deep sub-fisheries showed similar trends to the overall indices (Table A2, Figures 15). Chatham Rise CPUE indices did not match Chatham Rise trawl survey trends with biomass levels higher in earlier years and lower in later years for the Chatham Rise survey (McGregor-Tiatia et al. 2025).

Sub-Antarctic

Bottom trawl catches reported on ERS-trawl accounted for almost all (99.9%) of the catch taken in 2023–24 (Figure 10) in the Sub-Antarctic, with 0.1% of the catch taken by midwater trawls. The median unstandardised catch rate in bottom trawls targeting hoki has been relatively consistent for the past 10 years (1.0–1.4 t per hour since 2014–15) and was 1.3 t per hour in 2023–24 (Table A1). The median unstandardised catch rate in bottom trawls targeting hoki was 1.6 t per hour in SA.suba in 2023–24, higher than that in the CR.deep, but unstandardised catch rates were lower in SA.snares (at 0.7 t per hour) and SA.auck (1.1 t per hour).

Overall standardised CPUE generally decreased from 1996–97 to 2004–05, increased to much higher levels in 2009–10 to 2014–15, declined in 2015–16, then increased to 2023–24 (Table A2, Figure 15). CPUE analyses for the three Sub-Antarctic sub-fisheries had some differences in their overall indices: SA.snares generally declined over last 5 years; while SA.auck has trended up over the last 10 years (McGregor-Tiatia et al. 2025). Sub-Antarctic CPUE indices did not match the Sub-Antarctic trawl survey indices (biomass levels were higher in earlier years and lower in later years for the Sub-Antarctic survey), although the indices for the SA.auck and SA.snares.auck sub-fisheries matched the trawl survey index more closely during the middle part of the series (McGregor-Tiatia et al. 2025).

Puysegur

Spawning season catches from Puysegur were also mainly reported on ERS-trawl (Figure 11), but catch rate trends were not apparent given the lack of data in 2019–20 to 2023–24 (Table A1).

CPUE trends

Standardised CPUE indices for the WCSI, Chatham Rise, ECSI and Sub-Antarctic fisheries all decreased from 1991–92 to 2003–04 and have since increased (Figure 15). Recent trends in standardised CPUE have varied by area but are all at or above the long-term average. The sub-fisheries with the most similar CPUE trends were: SA.snares and CR.deep; and WC.south and SA.suba, and indices for the WC.inside and Cook Strait spawning sub-fisheries showed no trend (McGregor-Tiatia

et al. 2025). CPUE analyses are not used directly in the assessment, but can add to our understanding of the fisheries and dynamics.

3.1.3 Bycatch

The bycatch rate (defined as the percentage of the hoki catch) was estimated for the main bycatch species by fishery (Table 18). Other bycatch species were also taken, particularly in the non-spawning fisheries, but bycatch rates for these species were usually less than 1% of the hoki catch.

Overall, bycatch rates in the spawning areas in 2023–24 were low (less than 2%) for most species (Table 18). The WCSI bottom trawl fishery bycatch rates in 2023–24 were similar to those in 2022–23: bycatch rates of javelinfish and rattails increased; whereas hake, ling, gemfish, spiny dogfish and silver warehou decreased. WCSI midwater trawl bycatch rates in 2023–24 increased for barracouta, frostoffish, hake and ling, and decreased for jack mackerel and spiny dogfish, and remained similar for silver warehou. As in the past, there was very little bycatch in the midwater Cook Strait fishery. Bycatch rates increased for most main ECSI species, although decreased for rattails and silver warehou.

In the non-spawning fisheries, bycatch rates were generally higher than those for spawning fisheries (Table 18). The Chatham Rise bottom trawl fishery bycatch rates for most of the main species increased in 2023–24, except ling and silver warehou, which decreased. In the Sub-Antarctic, bycatch rates for pale ghost shark, hake, ling, and silver warehou increased, whereas javelinfish, rattails and spiny dogfish decreased.

Some of the apparent changes in bycatch rates may have been related to changes in observer coverage between years (e.g., Livingston et al. 2002), so the data should be treated with caution. There were changes in the proportion of catches reported as target hoki, so caution also needs to be exercised when interpreting the definition of the hoki target fishery. A more comprehensive analysis of catch and discards in the hoki, hake, and ling fishery from 1990–91 to 2016–17 was provided by Anderson et al. (2019), and was updated for 2002–03 to 2021–22 by Finucci et al. (2024).

3.2 Size and age composition of commercial catches

3.2.1 Spawning fisheries

West coast South Island

The OP data used to estimate WCSI catch-at-age were representative of the overall spatial, depth, and temporal distribution of the catch in the 2024 season (Figures 16 and 17). By fishery, number of observer tows sampled was low (less than 100) in some years for WC.south, and low for WC.inside in the 1999, 2008, and 2011–2014 seasons (Table 4).

The WCSI catch in 2024 was dominated by fish from 60 to 110 cm total length (TL) from the 2011 to 2020 year-classes (ages 4–13), with a few small very small (30–40 cm) fish from the 2023 year-class caught at age 1 (Figures 18–20). The WC.north length distribution of female and male hoki was made up of one mode; the largest fish centred at 75 cm with the peak comprising of fish from the 2017–2019 year-classes (ages 5–7) for the females and 2019 year-class (age 5) for the males. Fish from WC.south showed similar modes to WC.north, although the female peak at 75 cm was less pronounced, with another more pronounced peak at about 95 cm comprising the 2014 and 2015 year-classes (ages 9 and 10). WC.north and WC.south also had a few fish at 50 cm (2022 year-class at age 2) for both males and females, and fish at 30–40 cm (2023 year-class at age 1). WC.inside had a peak centred at 90 and 92 cm for males and females respectively, of fish from the 2013–2015 year-classes (ages 8–10), a less pronounced mode at 75 cm, and few fish younger than 5 years.

Previous comparisons showed that fishing inside the 25-n. mile line catches a higher proportion of larger fish (greater than 80 cm) than fisheries outside the line (Ballara & O'Driscoll 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2024, Ballara et al. 2024). This was seen again in 2024; the observer and land-based sampling data from the WC.inside sub-fishery had very few fish less than 80 cm, but many fish smaller than 80 cm were caught in the WC.north and WC.south sub-fisheries (Figure 20). The WC.north fishery had the highest proportion of small fish, especially males.

The mean length of hoki decreased as the 2024 spawning season progressed (Figure 21). The general pattern of declining mean length over the spawning season used to be a common feature of the fishery but was not observed between 1999 and 2006. The mean length-at-age for WCSI hoki aged 3–10 years increased from the start of the fishery to the mid-2000s but has since decreased (Figure 22). In 2024, female ages 2–4, 6, and 8–10, and male ages 3–4 and 6–10 showed a slight decrease in length at age.

From 2000 to 2004, the sex ratio of the WCSI catch was highly skewed, with many more females caught than males (Figure 23). In 2005 to 2011, as the catch of younger fish increased, the sex ratio reversed with more males than females caught. Since 2012, the proportion of females has increased again and the sex ratio of the WCSI catch in 2024 was 61% females in WC.north, and 54% females in WC.inside and 68% females in WC.south.

The percentage of hoki 90 cm and larger was lowest in the WC.north (range 5–25% from 1990 to 2024), with higher proportions of large fish in WC.south (range 15–55%) and in WC.inside (range 12–57%) (Figure 23). The percentage of large old fish increased from 2000 to 2004 for all WCSI sub-fisheries, then rapidly decreased to 2006, and since then has increased slowly, although decreased in 2024 (Figure 23). The percentage of small fish (less than 65 cm, which is approximately equivalent to ages 3 years and younger) by number in the catch showed the opposite trend to that for larger, older hoki, with an increase in young fish from 2002 to 2005 and subsequent decline, although increases were seen in the last few years for WC.north and WC.inside (Figure 23). In 2024, small fish declined in all WCSI sub-fisheries, although the WC.north fishery had the highest proportion of small fish, especially males, with 4% of hoki less than 65 cm; there were 2% and 0.2% of hoki less than 65 cm in WC.south and WC.inside respectively.

Cook Strait

In 2024, the OP data used to estimate catch-at-age were poorly representative of the overall distribution of the catch (Figure 24, see Tables 6–7) and catch by vessels < 40 m and vessels ≥ 40 m. However, land-based samples were well spread throughout the spawning season. A broad size range of hoki was caught in 2024, with most fish at ages 3–13 (2021 to 2011 year-classes) (Figures 25 and 26). Length frequency distributions by stratum showed that the size distribution of the catch was broadly similar between vessel classes and through the season (Figure 27), although there were more large fish in June–July. As for the WCSI, the mean length-at-age in the Cook Strait fishery increased until the mid-2000s and has subsequently declined (Figure 28), although there was an increase in mean length-at-age for most year-classes in 2024.

The sex ratio of the Cook Strait catch has fluctuated over time; females dominated from 2001 to 2005, but the fishery has been mostly male-dominated to 2022, and female-dominated since then (Figure 29). The apparent change in Cook Strait sex ratio may be related to a sampling bias, because there is some evidence that larger vessels catch a higher proportion of female hoki in Cook Strait (O'Driscoll et al. 2015). Males comprised 41% of the catch in 2024 (Figure 29), and about 16% of the catch was of fish less than 65 cm (Figure 29).

The catch-at-age data for the Cook Strait overall fishery in 2006 and 2011–2013 were not used in the 2025 hoki stock assessment model as they were not considered representative of the commercial catch due to low observer coverage (Fisheries New Zealand 2025).

East coast South Island

In 2024, the OP data used to estimate catch-at-age were reasonably representative of the overall distribution of the catch (Figure 30, see Table 8). A broad size range of hoki from 50 to 110 cm was caught in the ECSI in 2024, but there was a higher proportion of smaller, younger fish taken than in Cook Strait, with the main modes at ages 3–8 (2021 to 2016 year-classes) (Figures 31 and 32). Fish from the ECSI were similar in size to those observed in the Chatham Rise fisheries, although there were more larger fish on the ECSI. The ECSI catch was about 53% female and 44% was less than 65 cm.

Puysegur

In 2023–24, only two target hoki OP samples were collected during the spawning season, and so length and age frequencies were not calculated (Table 9). Length and age frequency distributions for other years are shown in Figures 33–34. In some years the larger fish showed a similar size distribution to the fish in the sub-fisheries SA.auck and SA.suba, and WC.inside, with smaller fish showing a similar distribution to SA.snares fish.

3.2.2 Non-spawning fisheries

Chatham Rise

The OP data used to estimate CR.deep catch-at-age were representative of the overall temporal spatial, and depth distribution of the catch in 2023–24 (Figure 35). Representation of OP data was lower for CR.shallow especially: in October and December 2023; for Statistical Areas 018, 019, 022, 408 and 409; for depths less than 400 m; and for vessels less than 60 m (Table 10, Figure 35).

The length frequency distributions in the CR.shallow and CR.deep sub-fisheries for both male and female hoki had modes at 50–90 cm, corresponding to fish from the 2022 to 2018 year-classes (Figures 36 and 37). The 2022 (age 1 at 45–55 cm), and the 2021 (age 2+) and 2020 (age 3+) year-classes at about 60 and 70 cm, respectively, made up a high proportion of the catch. Small numbers of the 2023 year-class (age 0+) were present in both fisheries at 30–40 cm. The CR.shallow sub-fishery had proportionally more small fish by number, with about 80% of the CR.shallow catch less than 65 cm, compared with 55% of the CR.deep catch (Figure 38). There was a lower proportion of large old fish (males and females) on the Chatham Rise than in other areas, with only 0.6% and 1.7% of the CR.shallow and CR.deep catch aged 9 years or older in 2023–24 (Figure 38).

Sub-Antarctic

The OP data used to estimate catch-at-age for the target hoki Sub-Antarctic sub-fisheries were not representative of the overall temporal distribution of the catch in 2023–24 mainly due to patchy coverage in each fishery (Figure 39). Representation of OP data was low in November–December 2023 and February and September 2024, in Statistical Area 026, and for depths of 300–400 m for SA.snares; October–December 2023, and September 2024, and for vessels <60 m (FOV vessels) for SA.auck; and November–December 2023 and September 2024, and for depths of 600–700 m for SA.suba (Table 11, Figure 39). Twin-trawl tows were not represented in any fishery (not shown).

The 2023–24 SA.snares and SA.auck sub-fisheries had a mode at 60–70 cm, corresponding to fish from the 2020 year-class, and the SA.suba sub-fishery had a large fish mode from 70–110 cm corresponding to fish from the 2009–2019 year-classes (Figures 40–41). SA.snares had proportionally less older fish than SA.auck especially for females over 70 cm (Figures 40–41). There was an increased proportion of hoki less than 80 cm from the 2018–2020 year-classes in the SA.auck and SA.snares sub-fisheries, and SA.snares also caught fish less than 60 cm from the 2021 and 2022 year-classes.

In 2023–24 about 28%, 7%, and 0.3% of the SA.snares, SA.auck, and SA.suba sub-fishery catches, respectively, were of fish less than 65 cm (Figure 42). The sex ratio of the SA.snares and SA.auck

catch was about even, with 48% and 52% female respectively, but SA.suba had a higher proportion (72%) of females (Figure 42).

Problems with estimation of catch-at-age in non-spawning fisheries

A key issue is whether OP coverage is representative of the catch. Observers collect otoliths from 10 fish out of the 50–150 sampled per tow for length measurement (and three otoliths per tow in the spawning fisheries) and in some years there is evidence for preferential selection of larger fish (e.g., Ballara & O'Driscoll 2018). In 2023–24, a rank sum test showed that otolith selection from the Chatham Rise deep fishery appeared unbiased, although the Sub-Antarctic sub-fisheries appeared biased with a tendency to choose larger fish particularly in SA.suba (Figure 43).

The criteria used to select otoliths for ageing based on catch size may also introduce bias, if otoliths are not selected in proportion to the catch and there is a relationship between catch size and fish size. This was not a major issue in 2023–24; the cumulative plots of selected otoliths were close to the cumulative plot of catches for all sub-fisheries except for SA.suba, and there was no clear relationship between mean length and catch size (Figure 44).

3.2.3 Comparison of size and age composition between fisheries

Length and age distributions from the main sub-fisheries in 2023–24 are compared in Figures 45 and 46. The catch in all areas was mainly fish of 45–90 cm length. The 2015 and 2014 year-classes were important at ages 8–9 in the sub-Antarctic sub-fisheries, and at ages 9–10 in spawning areas. The 2016 and 2017 year-classes appeared low in all the main sub-fisheries (ages 7+ and 6+ in non-spawning areas, and ages 8 and 7 in spawning areas). The 2019 and 2018 year-class (age 4+ and 5+ on non-spawning areas, and ages 5 and 6 in spawning areas) appeared strong in all sub-fisheries, although became less abundant in Chatham Rise sub-fisheries in 2023–24. The 2021 year-class was seen at age 3 in ECSI, Cook Strait, WC.north, and at age 2 in CR.deep appears widespread but appears lower than average. Catches of the 2022 year-class at age 3 in the spawning areas and non-spawning areas at age 2 also appear lower than average. The 2023 year-class was present in the catch at age 1 in the ECSI, WC.north and WC.south spawning areas and at age 0+ in non-spawning Chatham Rise and SA.snares sub-fisheries. Smaller hoki dominated length frequencies in both Chatham Rise sub-fisheries, WC.north, ECSI, and SA.snares fisheries. Chatham Rise fish were smaller and younger than ECSI fish, and ECSI fish were smaller and younger than Cook Strait fish. Larger female fish were more dominant in Cook Strait, WC.north, WC.south, WC.inside, ECSI, and the SA.auck and SA.suba sub-fisheries. There were few male hoki over 90 cm in any area, except for WC.south, WC.inside and SA.suba.

3.2.4 Comparison of gonad stages between fisheries

Spawning hoki are mainly found in WCSI, Cook Strait, Puysegur, and ECSI areas in the winter months May–September (Table 19). Outside the spawning season, WCSI, Cook Strait, ECSI, and Puysegur hoki were mainly immature, resting, or maturing. On the Chatham Rise and in the Sub-Antarctic, hoki were mainly immature or resting, although maturing fish were found in increasing numbers from June and July. Spawning in 2023–24 followed a similar pattern to that in other years (Table 19).

Some of the small fish on the WCSI were mature; 11% of the female fish less than 55 cm (i.e., mostly age 2) were in active spawning condition (ripe and running ripe) in 2024 in WC.north, compared with 38% of fish greater than 55 cm (Table 20). No small spawning fish were observed in WC.south or WC.inside in 2024. The spawning state of male hoki is not recorded by observers, but observations from research tows in other areas suggest that a higher proportion of small males than small females would be mature (R. O'Driscoll, ESNZ, personal observation).

3.3 Hoki research

3.3.1 Trawl surveys

Chatham Rise

No Chatham Rise trawl survey was carried out in January 2025. Results from the 2024 survey are described by Stevens et al. (2024).

WCSI

A seventh *Tangaroa* trawl survey off the WCSI was carried out from 21 July to 13 August 2024 (Devine et al. 2025), with previous surveys in 2000, 2012, 2013, 2016, 2018, and 2021. Hoki was not a target species for the 2016, 2018, and 2021 surveys, as this trawl survey is not thought to adequately monitor the abundance of hoki (O'Driscoll et al. 2015). There were no associated acoustic estimates of hoki abundance from the 2016 and 2021 WCSI trawl surveys.

A total of 64 successful random tows were completed in 13 strata north of Hokitika Canyon in 2024. Although not thought to be a good index of hoki abundance, the trawl biomass estimate from the core strata in 2024 decreased from 2021 and was similar to that in 2018 (Table 21). Fish ranged from 30 to 110 cm, with two distinct length modes at about 35 cm and 70–75 cm corresponded to ages 1 (2023 year-class) and 4 (2020 year-class) respectively (Figure 47). Most small hoki were in pre-spawning or spawning condition. Hoki mainly occurred deeper than 430 m, with largest catches in the 430–500 m depth range (Devine et al. 2025). There was a small amount of catch in exploratory strata. Catch rates in all strata were lower than in 2021 (Devine et al. 2025).

Sub-Antarctic

The survey in November–December 2024 was the 20th survey in the Sub-Antarctic time series using RV *Tangaroa* (1991–93, 2000–2009, 2011, 2012, 2014, 2016, 2018, 2020, 2022, 2024) (MacGibbon et al. 2025). A total of 73 of 78 planned phase one stations were completed, with 5 days lost to bad weather. All strata were covered including non-core strata, with a minimum of three stations per stratum, except for two stations in stratum 15 (E. Campbell Plateau, 600–800 m). Despite the lower number of stations, target CVs were still achieved for all target species (hoki, hake, ling). The estimate of total hoki abundance in core strata biomass was 80 044 t (CV 22.2%) in 2024, an increase of 61.5% from the previous (2022) survey, the highest estimate since 1993, and the fourth highest in the series (Table 22). The abundance of older hoki (ages 3 and older, 59 cm+) in core strata increased by 64.5% from 2022, with the inclusion of the 2021 year-class in this grouping.

Several modes were present in the hoki scaled length frequency distribution in 2024, including a small mode of 1+ fish (2023 year-class) at about 30–45 cm, but few 2+ fish of 45–55 cm (2022 year-class) (Figures 48 and 49). The abundance estimate for 1+ hoki was higher and 2+ hoki lower respectively than those in 2022. As in previous years, most 1+ fish were concentrated in strata 3A and 3B, on the Stewart-Snares shelf (MacGibbon et al. 2025). Older fish were caught across the survey area with the highest catch rates in the west. The 5+ fish (2019 year-class) were abundant, consistent with the large 3+ cohort seen in the 2022 survey. Most fish were between 3 and 10 years of age. There were few hoki larger than 100 cm (Figures 48 and 49).

3.3.2 Acoustic surveys

Cook Strait and ECSI

No Cook Strait or ECSI acoustic survey was carried out in winter 2024. Results from the 2023 survey are described by Escobar-Flores et al. (2024).

WCSI

An acoustic survey of the WCSI was carried out in July–August 2024 in conjunction with the trawl survey, with two acoustic snapshots carried out between 28 July and 8 August 2024 (Devine et al. 2025). The 2024 survey was the twelfth in a series of acoustic surveys of WCSI hoki spawning areas, with previous surveys covering 1988–2018.

The first acoustic snapshot covered the entire acoustic survey area (i.e., strata 1&2, 4, 5A, 5B, 6 and 7) with the second snapshot only covering the southern area (strata 5A, 5B, 6 and 7) where hoki schools have been found to be more abundant during previous and this survey. Acoustic estimates of hoki abundance were calculated using the same methods as for previous surveys in the time series, and gave a 2024 survey abundance index averaged over the two snapshots of 138 000 t. The 2024 acoustic estimate was slightly higher than that in 2018 (123 000 t) but overall, still considerably lower than any estimates preceding 2018 (e.g., 59% that of the 2013 survey; Table 23, Figure 50).

The 2024 acoustic survey weighting (expressed as a coefficient of variation, CV), which includes uncertainty associated with survey timing, sampling precision, mark identification, calibration, and target strength, was 53%. Spawning hoki aggregations were detected in the inner Hokitika Canyon with aggregations also observed on the slope south of Hokitika Canyon and in Cook Canyon (strata 6 and 7) (Figure 50). On average, across both snapshots, only 45% of the hoki abundance was from hoki schools, where marks were assumed to contain 100% hoki. Remaining abundance came from mixed species ‘fuzz’ marks. Only about 31% of the hoki from the WCSI in 2024 was from the area north of the Hokitika Canyon (Devine et al. 2025).

4. DISCUSSION

The overall reported catch of 107 036 t was 1480 t higher than the reported catch in 2022–23, and 2964 t lower than the TACC of 110 000 t. Total ACE available to fishers (allowing for carry forward) was 113 465 t. Relative to 2022–23, catches in 2023–24 increased in the Chatham Rise, WCSI, and ECSI and decreased in Cook Strait and Sub-Antarctic. The Chatham Rise fishery was the largest New Zealand hoki fishery (by nearly 6000 t) in 2023–24, for the second time since 2009–10. The ECSI spawning fishery has increased to over 15 000 t, making it the third largest hoki fishery in 2023–24. Overall, about 40 449 t and 66 586 t of the total catch in 2023–24 was taken from western and eastern stock areas, respectively.

The WCSI, Chatham Rise, and Sub-Antarctic fisheries were again split into sub-fisheries, with estimation of length and age frequencies by sub-fishery. The ECSI fishery was redefined in 2024, with the same definition used in 2025, to encompass a larger area with catches from July–September making up the spawning fishery, and catches from this area outside these months included in the Chatham Rise fisheries. Cook Strait catches from June–September made up the Cook Strait spawning fishery, and catches from outside the spawning months were included in the Chatham Rise fisheries. Consistent stratification was again used instead of annual stratification in each fishery. Recent trends in standardised CPUE have varied by area but are all at or above the long-term average.

Length and age frequency distributions from the commercial fishery showed that most of the catch in 2023–24 was of fish 45–90 cm length. The 2015 and 2014 year-classes were important in the sub-Antarctic sub-fisheries, and in spawning areas, but the 2016 and 2017 year-classes appeared low in all the main sub-fisheries. The 2019 and 2018 year-class appeared strong in all sub-fisheries, although became less abundant in Chatham Rise sub-fisheries in 2024. The 2021 and 2022 year-classes appear to be lower than average. The 2023 year-class is already present in the catch in the ECSI, WC.north, and WC.south spawning areas and non-spawning Chatham Rise and SA.snares sub-fisheries. Smaller hoki dominated length frequencies in both Chatham Rise sub-fisheries, WC.north, ECSI, and SA.snares fisheries. Larger female fish were more dominant in Cook Strait, WC.north, WC.south, WC.inside, ECSI, and the SA.auck and SA.suba sub-fisheries. There were few male hoki over 90 cm in any area.

Two new fishery-independent estimates of hoki abundance were available. The 2024 WCSI acoustic survey in July–August gave slightly higher abundance than that from the previous survey in 2018, but still considerably lower than any estimates preceding 2018. Biomass estimates from the associated trawl survey on the WCSI are not used in assessment, but biomass in core strata in 2024 decreased from 2021 and was similar to that in 2018. Fish ranged from 30 to 110 cm, with two distinct length modes corresponded to ages 1 (2023 year-class) and 4 (2020 year-class) respectively. The core biomass from the Sub-Antarctic trawl survey in November–December 2024 was 61.5% higher than that in 2022, and the highest estimate since 1993. Several modes were present in the hoki scaled age distribution in 2024, including a small mode of 1+ fish (2023 year-class), but few 2+ fish (2022 year-class). The 5+ fish (2019 year-class) were abundant, consistent with the large 3+ cohort seen in the 2022 survey.

5. FUTURE RESEARCH

Land-based sampling in Cook Strait and WCSI inside the line is important for the stock assessment, given the low observer coverage in these areas in some years, and especially as cameras have been placed on smaller vessels. Improved target hoki observer coverage for the Sub-Antarctic target hoki sub-fisheries and for the ECSI during the spawning season would also be valuable for the stock assessment. Age data from the ECSI in July to September is now included in the hoki model, so it is important for the stock assessment that observers collect adequate otoliths from this fishery.

The sub-Antarctic fishery definitions could be reviewed, with the potential to combine the SA.snare and SA.auck sub-fisheries. The appropriate observer coverage to provide consistent annual sampling from the Sub-Antarctic fisheries should be considered as part of this review.

6. FULFILMENT OF BROADER OUTCOMES

As required under Government Procurement rules², Fisheries New Zealand considered broader outcomes (secondary benefits such as environmental, social, economic or cultural benefits) that would be generated by this project.

This research aimed to ensure the long-term sustainability of hoki stocks, for the good of the wider community (including stakeholders and the public) and the marine ecosystems that hoki inhabit. As part of this project, the team has continued to build capacity and capability in fisheries science and stock assessment, by using both experienced researchers from ESNZ and independent consultants. This provides an exceptional level of expertise, befitting assessment of New Zealand's largest and most valuable finfish stock. By using a broader team approach, we promoted a more diverse use of staff; and importantly shared expertise and grew institutional knowledge of New Zealand fisheries and stock assessments amongst these staff. This will reduce the risk of such knowledge being lost in the future, and potentially benefit a wide range of future fisheries research projects. ESNZ staff working on this project were a combination of senior and mid-career scientists, more than half of whom were women. The project further fostered collaboration between ESNZ, the fishing industry, and other New Zealand research providers.

7. ACKNOWLEDGEMENTS

This work was funded by Fisheries New Zealand Research Projects HOK2024-02, HOK2023-02, MID2021-01, and MID2024-01. It also incorporated Fisheries New Zealand Research Project MID2021-02 for trawl and acoustic survey results. Thank you to Gretchen Skea (Fisheries New

² <https://www.procurement.govt.nz/procurement/principles-charter-and-rules/government-procurement-rules/planning-your-procurement/broader-outcomes/>

Zealand) for guiding and reviewing these projects. Thanks to the many scientific and industry staff who contributed to the collection of data used in this report. Thanks to Colin Sutton, Jason Hamill, Pame Olmedo Rojas, Niki Davey, Megan Carter, Louis Olsen, Paul Lambert and Angela Lambert (ESNZ) for collection of shed sampling data. Thanks to Keren Spong, Caoimhghin Ó Maolagáin, Colin Sutton, Niki Davey, Caroline Chin, Jason Hamill, Megan Carter and Tom Barnes (ESNZ) for processing and reading the otoliths. Thanks to Lydia Hayward, Caroline Wood, Shaun Carswell and Jeremy Yeoman for loading observer data. Thanks to Adam Langley for useful discussions, and to Darren Stevens (ESNZ) and Marianne Vignaux (Fisheries New Zealand) for reviewing and editing this report.

8. REFERENCES

- Anderson, O.F.; Edwards, C.T.T.; Ballara, S.L. (2019). Non-target fish and invertebrate catch and discards in New Zealand hoki, hake, ling, silver warehou, and white warehou trawl fisheries from 1990–91 to 2016–17. *New Zealand Aquatic Environment and Biodiversity Report No. 220*. 117 p.
- Annala, J.H. (comp.) (1990). Report from the Fishery Assessment Plenary, April–May 1990: stock assessments and yield estimates. 165 p. (Unpublished report held by ESNZ library, Wellington.)
- Ballara, S.L.; Grüss, A.; Escobar-Flores P.C.; O’Driscoll, R.L. (2024). Catches, size, and age structure of the 2022–23 hoki fishery and a summary of input data used for the 2024 stock assessment. *New Zealand Fisheries Assessment Report 2024/71*. 198 p.
- Ballara, S.L.; McGregor-Tiatia, V.L.; Escobar-Flores, P. (2025). Hoki data collation: A report to the 2025 Hoki Working Group on the hoki trawl and acoustic surveys, catches, CPUE, size, and age structure of the hoki fishery including the 2023–24 data update. Version 21.1, 19 March 2025. (Unpublished documents available from Fisheries New Zealand: 034-DWWG-2025, 036-DWWG-2025, 037-DWWG-2025, 041-DWWG-2025, 042-DWWG-2025, 0xx-DWWG-2025 section 2 CPUE Fisheries New Zealand Deepwater Working Group meeting at NIWA, Wellington, 19 March 2025.)
- Ballara, S.L.; O’Driscoll, R.L. (2014). Catches, size, and age structure of the 2011–12 hoki fishery, and a summary of input data used for the 2013 stock assessment. *New Zealand Fisheries Assessment Report 2014/05*. 117 p.
- Ballara, S.L.; O’Driscoll, R.L. (2015). Catches, size, and age structure of the 2013–14 hoki fishery, and a summary of input data used for the 2015 stock assessment. *New Zealand Fisheries Assessment Report 2015/57*. 122 p.
- Ballara, S.L.; O’Driscoll, R.L. (2016). Catches, size, and age structure of the 2014–15 hoki fishery, and a summary of input data used for the 2016 stock assessment. *New Zealand Fisheries Assessment Report 2016/40*. 122 p.
- Ballara, S.L.; O’Driscoll, R.L. (2017). Catches, size, and age structure of the 2015–16 hoki fishery, and a summary of input data used for the 2017 stock assessment. *New Zealand Fisheries Assessment Report 2017/31*. 119 p.
- Ballara, S.L.; O’Driscoll, R.L. (2018). Catches, size, and age structure of the 2016–17 hoki fishery, and a summary of input data used for the 2018 stock assessment. *New Zealand Fisheries Assessment Report 2018/38*. 125 p.
- Ballara, S.L.; O’Driscoll, R.L. (2019). Catches, size, and age structure of the 2017–18 hoki fishery, and a summary of input data used for the 2019 stock assessment. *New Zealand Fisheries Assessment Report 2019/48*. 140 p.
- Ballara, S.L.; O’Driscoll, R.L. (2020). Catches and size and age structure of the 2018–19 hoki fishery. *New Zealand Fisheries Assessment Report 2020/22*. 205 p.
- Ballara, S.L.; O’Driscoll, R.L. (2021). Catches and size and age structure of the 2019–20 hoki fishery, and a summary of input data used for the 2021 stock assessment. *New Zealand Fisheries Assessment Report 2021/67*. 168 p.
- Ballara, S.L.; O’Driscoll, R.L. (2022). Catches and size and age structure of the 2020–21 hoki fishery, and a summary of input data used for the 2022 stock assessment. *New Zealand Fisheries Assessment Report 2022/55*. 183 p.
- Ballara, S.L.; O’Driscoll, R.L. (2024). Catches and size and age structure of the 2021–22 hoki fishery, and a summary of input data used for the 2023 stock assessment. *New Zealand Fisheries Assessment Report 2024/16*. 184 p.
- Ballara, S.L.; O’Driscoll, R.L.; Phillips, N.L.; Livingston, M.E.; Smith, M.H.; Kim, S.W. (2003). Catches, size, and age structure of the 2001–02 hoki fishery, and a summary of input data used for the 2003 stock assessment. *New Zealand Fisheries Assessment Report 2003/42*. 77 p.

- Bull, B.; Dunn, A. (2002). Catch-at-age user manual v1.06.2002/09/12. NIWA Internal Report 114. 23 p. (Unpublished report held by ESNZ library, Wellington.)
- Butterworth, D.; Hillary, R.; Ianelli, J. (2017). Report on the review of the New Zealand hoki stock assessment model; 2014. *New Zealand Fisheries Science Review* 2017/1. 17 p.
- Cordue, P.L.; Ballara, S.L.; Horn P.L. (2000). Hoki ageing: recommendation of which data to routinely record for hoki otoliths. Final Research Report for Ministry of Fisheries Research Project MOF1999/01. (Unpublished report held by Fisheries New Zealand, Wellington.)
- Devine, J.A.; Ballara, S.L.; Wieczorek, A.M. (2025). Trawl survey for middle depth fish species off the west coast South Island, July–August 2024 (TAN2407). *New Zealand Fisheries Assessment Report* 2025/41. 93 p.
- Dunn, M.R.; Langley, A. (2018). A review of the hoki stock assessment in 2018. *New Zealand Fisheries Assessment Report* 2018/42. 55 p.
- Escobar-Flores, P.C.; O'Driscoll, R.L.; Ballara, S.L. (2024). Acoustic surveys of Cook Strait and east coast South Island hoki during winter 2023. *New Zealand Fisheries Assessment Report* 2024/67. 60 p.
- Finucci, B.; Anderson, O.F.; Edwards, C.T.T. (2024). Non-target fish and invertebrate catch and discards in New Zealand hoki, hake, ling, silver warehou, and white warehou trawl fisheries from 2002–03 to 2021–22. *New Zealand Aquatic Environment and Biodiversity Report* 330. 127 p.
- Fisheries New Zealand (2025). *Fisheries Assessment Plenary, May 2025: stock assessments and stock status*. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1955 p.
- Francis, R.I.C.C. (2001). Improving the consistency of hoki age estimation. *New Zealand Fisheries Assessment Report* 2001/12. 18 p.
- Francis, R.I.C.C. (2002). Estimating catch at age in the Chatham Rise hoki fishery. *New Zealand Fisheries Assessment Report* 2002/9. 22 p.
- Francis, R.I.C.C. (2003). Analyses supporting the 2002 stock assessment of hoki. *New Zealand Fisheries Assessment Report* 2003/5. 34 p.
- Francis, R.I.C.C. (2007). Assessment of hoki (*Macruronus novaezelandiae*) in 2006. *New Zealand Fisheries Assessment Report* 2007/15. 99 p.
- Francis, R.I.C.C. (2008). Assessment of hoki (*Macruronus novaezelandiae*) in 2007. *New Zealand Fisheries Assessment Report* 2008/4. 109 p.
- Francis R.I.C.C. (2009). Assessment of hoki (*Macruronus novaezelandiae*) in 2008. *New Zealand Fisheries Assessment Report* 2009/7. 80 p.
- Francis, R.I.C.C.; Neil, H.L.; Horn, P.L.; Gillanders, B.; Marriott, P.; Vorster, J. (2011). A pilot study to evaluate the utility of otolith microchemistry for determining natal fidelity in New Zealand hoki. Final Research Report for Ministry of Fisheries Research Project HOK2006/05 Objective 1. 24 p. (Unpublished report held by Fisheries New Zealand, Wellington.)
- Hicks, A.C.; Cordue, P.L.; Bull, B. (2002). Estimating proportion at age and sex in the commercial catch of hoki (*Macruronus novaezelandiae*) using length frequency data. *New Zealand Fisheries Assessment Report* 2002/43. 51 p.
- Hicks, A.C.; Gilbert, D.J. (2002). Stock discrimination of hoki (*Macruronus novaezelandiae*) based on otolith ring measurements. *New Zealand Fisheries Assessment Report* 2002/2. 31 p.
- Hicks, A.C.; Smith, P.J.; Horn, P.L.; Gilbert, D.J. (2003). Differences in otolith measurements and gill raker counts between the two major spawning stocks of hoki (*Macruronus novaezelandiae*) in New Zealand. *New Zealand Fisheries Assessment Report* 2003/7. 23 p.
- Horn, P.L. (2011). Natal fidelity: a literature review in relation to the management of the New Zealand hoki (*Macruronus novaezelandiae*) stocks. *New Zealand Fisheries Assessment Report* 2011/34. 18 p.

- Horn, P.L.; Sullivan, K.J. (1996). Validated ageing methodology using otoliths, and growth parameters for hoki (*Macruronus novaezelandiae*) in New Zealand waters. *New Zealand Journal of Marine and Freshwater Research* 30: 161–174.
- Horn, P.L.; Sutton, C.P. (2017). Age determination protocol for hoki (*Macruronus novaezelandiae*). *New Zealand Fisheries Assessment Report 2017/13*. 22 p.
- Kalish, J.M.; Livingston, M.E.; Schofield, K.A. (1996). Trace elements in the otoliths of New Zealand blue grenadier (*Macruronus novaezelandiae*) as an aid to stock discrimination. *Marine and Freshwater Research* 47: 537–542.
- Koot, E.; Wu, C.; Ruza, I.; Hilario, E.; Storey, R.; Wells, R.; Chagne, D.; Wellenreuther, M. (2021). Genome-wide analysis reveals the genetic stock structure of hoki (*Macruronus novaezelandiae*). *Evolutionary Applications* 14: 2848–2863.
- Langley, A.D. (2020). Review of the 2019 hoki stock assessment. *New Zealand Fisheries Assessment Report 2020/28*. 56 p.
- Livingston, M.E. (1990). Stock structure of New Zealand hoki (*Macruronus novaezelandiae*). *New Zealand Fisheries Assessment Research Document 90/8*. 21 p.
- Livingston, M.E. (1997). The stock structure of hoki: hypotheses and assumptions revised. (Unpublished report presented to the Hoki Working Group 1997, held by Fisheries New Zealand, Wellington.)
- Livingston, M.E.; Clark, M.R.; Baird, S-J. (2002). Trends in bycatch of major fisheries in depths over 200 m on the Chatham Rise, for fishing years 1989/90 to 1998/99. Final Research Report for Ministry of Fisheries Research Project ENV1999/05. (Unpublished report held by Fisheries New Zealand, Wellington.)
- Livingston, M.E.; Schofield, K.A. (1996). Stock discrimination of hoki (*Macruronus novaezelandiae*, Merluccidae) in New Zealand waters using morphometrics. *New Zealand Journal of Marine and Freshwater Research* 30: 197–208.
- MacGibbon, D.J.; Ballara, S.L.; Escobar-Flores, P.C.; Barnes, T.C. (2025). Trawl survey of hoki and middle-depth species in the Southland and Sub-Antarctic areas, November–December 2024 (TAN2413). Draft New Zealand Fisheries Assessment Report 2025/xx. nnn p.
- McGregor, V.L.; Dunn, M.R.; Langley, A.D.; Dunn, A. (2023). Assessment of hoki (*Macruronus novaezelandiae*) in 2022. *New Zealand Fisheries Assessment Report 2023/40*. 232 p.
- McGregor, V.L.; Langley, A.D. (2025a). Assessment of hoki (*Macruronus novaezelandiae*) in 2024. *New Zealand Fisheries Assessment Report 2025/14*. 266 p.
- McGregor, V.L.; Langley, A.D. (2025b). Estimation of biological parameters to support the hoki (*Macruronus novaezelandiae*) stock assessment. Draft New Zealand Fisheries Assessment Report 2025/x. xx p
- McGregor, V.L.; Langley, A.D.; Dunn, A; Dunn, M.R. (2024). Assessment of hoki (*Macruronus novaezelandiae*) in 2023. *New Zealand Fisheries Assessment Report 2024/32*. 233 p.
- McGregor-Tiatia, V.L.; Ballara, S.L.; Langley, A.D. (2025). Catch per unit effort analyses of hoki (*Macruronus novaezelandiae*) in 2025. Draft New Zealand Fisheries Assessment Report year/xx. Xx p.
- McGregor-Tiatia, V.L.; Langley, A.D. (in prep). Assessment of hoki (*Macruronus novaezelandiae*) in 2025. New Zealand Fisheries Assessment Report xxxx/xx. nnn p.
- McKenzie, A. (2013). Assessment of hoki (*Macruronus novaezelandiae*) in 2012. *New Zealand Fisheries Assessment Report 2013/27*. 65 p.
- McKenzie, A. (2015a). Assessment of hoki (*Macruronus novaezelandiae*) in 2013. *New Zealand Fisheries Assessment Report 2015/08*. 73 p.
- McKenzie, A. (2015b). Assessment of hoki (*Macruronus novaezelandiae*) in 2014. *New Zealand Fisheries Assessment Report 2015/09*. 68 p.
- McKenzie, A. (2016). Assessment of hoki (*Macruronus novaezelandiae*) in 2015. *New Zealand Fisheries Assessment Report 2016/01*. 88 p.

- McKenzie, A. (2017). Assessment of hoki (*Macruronus novaezelandiae*) in 2016. *New Zealand Fisheries Assessment Report 2017/11*. 80 p.
- McKenzie, A. (2018). Assessment of hoki (*Macruronus novaezelandiae*) in 2017. *New Zealand Fisheries Assessment Report 2018/40*. 101 p.
- McKenzie, A. (2019a). Assessment of hoki (*Macruronus novaezelandiae*) in 2018. *New Zealand Fisheries Assessment Report 2019/22*. 67 p.
- McKenzie, A. (2019b). Assessment of hoki (*Macruronus novaezelandiae*) in 2019. *New Zealand Fisheries Assessment Report 2019/68*. 99 p.
- O'Driscoll, R.L.; Ballara, S.L.; Bagley, N.W. (2015). Review of performance of west coast South Island trawl/acoustic survey of deepwater stocks Final Research Report for Ministry for Primary Industries Research Project SEA2014/10. 86 p. (Unpublished report held by Fisheries New Zealand.)
- R Core Team (2024). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna. <http://www.R-project.org>.
- Roberts, J. (2019). Exploration of hoki life history to inform migration/maturation in the stock assessment model. Deepwater Fisheries Assessment Working Group document 2019_32, 7 March 2019. (Unpublished report held by Fisheries New Zealand, Wellington.)
- Smith, M.H. (2005). Direct estimation of year-class frequencies for the non-spawning hoki fisheries with estimates of the coefficients of variation. *New Zealand Fisheries Assessment Report 2005/14*. 26 p.
- Smith, P.J.; Bull, B.; McVeagh, S.M. (2001). Evaluation of meristic characters for determining hoki stock relationships. Final Research Report for Ministry of Fisheries Research Project HOK1999/05 Objective 1. (Unpublished report held by Fisheries New Zealand, Wellington.)
- Smith, P.J.; McVeagh, S.M.; Ede, A. (1996). Genetically isolated stocks of orange roughy (*Hoplostethus atlanticus*), but not of hoki (*Macruronus novaezelandiae*), in the Tasman Sea and southwest Pacific Ocean around New Zealand. *Marine Biology* 125: 783–793.
- Smith, P.J.; Patchell, G.; Benson, P.G. (1981). Genetic tags in the New Zealand hoki *Macruronus novaezelandiae*. *Animal Blood Groups and Biochemical Genetics* 12: 37–45.
- Stevens, D.W.; Ballara, S.L.; Maurice, A.; Escobar-Flores, P.C.; Yeoman, J. (2024). Trawl survey of hoki and middle depth species on the Chatham Rise, January 2024 (TAN2401). *New Zealand Fisheries Assessment Report 2024/77*. 118 p.

9. TABLES

Table 1: Hoki region, sub-fishery descriptions, and stock assessment areas.

Region	Sub-fishery	Description	Stock assessment area
WCSI	WC.north	Oct–Sep, location based, see Figure 1	fishery_WC_north
	WC.south	Oct–Sep, location based, see Figure 1	fishery_WC_south
	WC.inside	Oct–Sep, location based, see Figure 1	fishery_WC_inside
Cook Strait	CS.spawn	Jun–Sep	fishery_CS_spwn
	CS.nonspawn	Oct–May, bottom depth <475 m or no depth	fishery_CR_shallow
	CS.nonspawn	Oct–May, bottom depth ≥475 m	fishery_CR_deep
Chatham Rise	CR.shallow	Chatham Rise Oct-Sep, bottom depth <475 m, see Figure 1	fishery_CR.shallow
	CR.deep	Chatham Rise Oct-Sep, bottom depth ≥475 m, see Figure 1	fishery_CR.deep
ECSI	ES.spawn	Jul–Sep	fishery_ES_spwn
	ES.shallow	Oct–Jun, bottom depth <475 m	fishery_CR_shallow
	ES.deep	Oct–Jun, bottom depth ≥475 m	fishery_CR.deep
Sub-Antarctic	SA.snares	Oct–Sep, location based, see Figure 1	fishery_SA_snares
	SA.auck	Oct–Sep, location based, see Figure 1	fishery_SA_auck
	SA.suba	Oct–Sep, location based, see Figure 1	fishery_SA_suba
Puysegur	PU.spawn	Jun–Sep	fishery_WC_north
	PU.nonspawn	Oct–May	fishery_SA_snares
ECNI	EN.shallow	Oct–Sep, bottom depth <475 m	fishery_CR_shallow
	EN.deep	Oct–Sep, bottom depth ≥475 m	fishery_CR_deep
WCNI	WCNI	fishery_WC_north	fishery_WC_north
NA	NA	Oct–Sep	fishery_CR_deep

Table 2: Target hoki observer coverage in 2023–24 by region or sub-fishery, for combined trawl methods for target hoki tows. Number of tows in this table are an initial summary and may not reflect number of tows in later tables and figures where data were removed for different reasons (e.g., land-based samples that included observed tows, only data from land-based samples were included; assumed positional errors for observer tows for vessels ≥ 46 m inside the 25-n. mile line; etc).

(a) By region

Area	Number of vessels			Number of tows			Catch (t)		
	All	Observed	Percent	All	Observed	Percent	All	Observed	Percent
Chatham Rise	18	16	88.9	4 853	685	14.1	37 889	5 705	15.1
Cook Strait	8	3	37.5	571	58	10.2	11 923	1 774	14.9
ECNI	7	4	57.1	217	15	6.9	418	71	17.0
ECSI	14	7	50.0	1 210	264	21.8	15 507	3 631	23.4
Puysegur	4	2	50.0	10	4	40.0	23	12	54.1
Sub-Antarctic	15	10	66.7	754	183	24.3	6 254	1 847	29.5
WCSI	27	21	77.8	2 472	690	27.9	31 968	11 059	34.6
All areas combined	38	32	84.2	10 087	1 899	18.8	103 981	24 099	23.2

(b) By sub-fishery

Area	Number of vessels			Number of tows			Catch (t)		
	All	Observed	Percent	All	Observed	Percent	All	Observed	Percent
SA.auck	8	5	62.5	215	37	17.2	1 629	383	23.5
SA.snares	13	9	69.2	169	44	26.0	935	341	36.5
SA.suba	11	7	63.6	370	102	27.6	3 689	1 123	30.4
CR.shallow	13	8	61.5	557	38	6.8	4 316	405	9.4
CR.deep	18	16	88.9	4 296	647	15.1	33 573	5 300	15.8
ecsi	14	7	50.0	1 210	264	21.8	15 507	3 631	23.4
ecni	7	4	57.1	217	15	6.9	418	71	17.0
CS.nonspawn	4	1	25.0	147	8	5.4	1 239	69	5.6
CS.spawn	7	3	42.9	424	50	11.8	10 684	1 704	16.0
WC.north	17	13	76.5	570	223	39.1	6 714	3 234	48.2
WC.south	15	11	73.3	1 008	332	32.9	15 347	6 017	39.2
WC.inside	10	10	100.0	894	135	15.1	9 907	1 807	18.2
PU.spawn	2	-	-	5	-	-	12	-	-
PU.nonspawn	2	-	-	5	-	-	11	-	-
Other	-	2	-	-	4	-	-	12	-
All areas combined	38	32	84.2	10 087	1 899	18.8	103 981	24 099	23.2

Table 3: Number of 2023–24 hoki target length frequency samples and aged otoliths by observer trips and land-based sampling programme, and monthly timing. Length frequency samples with errors, missing data, or outside the sample period (e.g., non-spawning season in a spawning area) were removed. – no data.

(a) WCSI observer and land-based samples. 11 observer programme length frequency samples were excluded (7 due to overlap with land-based samples; 4 from large vessels inside the 25-n.mile line, which may have position errors).

Trip	Month	Number of length frequencies				Number of otoliths
		WC.north	WC.south	WC.inside	Total	
1	Jul	-	1	-	1	-
2	May/Jun/Jul/Aug	11	55	-	66	81
3	Jul/Aug	7	45	-	52	46
4	Jul/Aug	12	4	-	16	19
5	Jun/Jul	7	54	-	61	80
6	Jun/Jul	2	13	-	15	18
7	Jun/Jul	-	-	27	27	34
8	Aug	-	-	1	1	3
9	Jun/Jul/Aug	16	29	-	45	61
10	Jul/Aug	15	-	-	15	13
11	Jul/Aug	14	64	-	78	-
12	Jul/Aug	17	1	-	18	24
13	Aug	-	-	5	5	-
14	Jul/Aug	18	22	-	40	48
15	Jul/Aug	48	-	-	48	56
16	Jul/Aug	15	-	-	15	19
17	Jul/Aug	-	-	14	14	-
18	Jul/Aug	-	-	7	7	-
19	Jul/Aug	-	-	19	19	-
20	Aug/Sep	-	-	14	14	-
21	Jul/Aug	2	21	-	23	34
22	Aug/Sep	-	-	22	22	26
23	Jul/Aug	6	21	-	27	44
24	Aug	19	1	-	20	27
25	Aug	-	-	15	15	17
26	Aug	7	-	-	7	-
27	Aug	7	1	-	8	-
Total observer		223	332	124	679	650
Land-based	Jun	-	-	4	4	20
Land-based	Jul	-	-	7	7	33
Land-based	Aug	-	-	8	8	32
Land-based	Sep	-	-	1	1	8
Total land-based		-	-	20	20	93
Total		223	332	144	699	743

(b) Cook Strait observer and land-based samples. 16 observed tows that overlapped with a land-based sample were excluded.

Trip	Month	Number of	
		Length frequencies	Otoliths
1	Jul/Aug	31	219
2	Sep	1	-
3	Sep	2	-
Total observer		34	219
Land-based	Jun	3	67
Land-based	Jul	11	210
Land-based	Aug	7	143
Land-based	Sep	5	87
Total land-based		26	507
Total		60	726

(c) ECSI spawning observer data (Jul–Sep)

Trip	Month	Number of	
		Length frequencies	Otoliths
1	Jul	15	57
2	Jul	24	64
3	Jul	15	47
4	Jul/Aug	27	69
5	Jul	13	38
6	Jul/Aug/Sep	97	259
7	Jul	2	9
8	Aug/Sep	14	42
9	Aug/Sep	11	-
10	Aug	2	-
11	Sep	14	-
12	Sep	5	-
13	Sep	24	-
Total		263	585

(d) Chatham Rise observer data. Chatham Rise includes ECSI non-spawning data. – no data.

Trip	Month	Number of length frequencies		Number of otoliths	
		CR.shallow	CR.deep	CR.shallow	CR.deep
1	Oct	-	4	-	5
2	Oct	-	5	-	5
3	Oct	1	13	7	14
4	Nov	2	11	20	17
5	Dec/Jan	-	86	-	107
6	Dec	-	15	-	13
7	Jan	-	2	-	-
8	Dec/Jan	2	59	20	68
9	Dec/Jan	-	9	-	17
10	Dec/Jan	-	3	-	1
11	Dec/Jan	-	9	-	11
12	Jan/Feb	12	7	119	8
13	Jan/Feb/Mar/Apr	4	80	36	93
14	Feb/Mar	-	7	-	11
15	Feb/Mar	1	7	10	8
16	Feb/Mar	6	55	60	84
17	Mar/Apr	2	63	18	68
18	Mar	-	3	-	3
19	Mar	-	4	-	7
20	May	-	2	-	2
21	Apr/May	2	79	20	97
22	Apr/May	-	21	-	12
23	May/Jun	-	43	-	61
24	Jun	-	5	-	8
25	Jun	-	16	-	22
26	May/Jun	6	36	47	43
27	May	-	2	-	3
28	Jun	-	1	-	-
Total		38	646	357	788

(e) Sub-Antarctic observer data

Trip	Month	Number of length frequencies				Number of otoliths			
		SA.snares	SA.auck	SA.suba	Total	SA.snares	SA.auck	SA.suba	Total
1	Oct	5	1	13	19	40	-	58	98
2	Oct/Nov	1	1	-	2	-	10	-	10
3	Nov	1	-	-	1	10	-	-	10
4	Dec	1	1	2	4	10	4	5	19
5	Mar	-	-	3	3	-	-	15	15
6	Jan	2	6	20	28	20	50	78	148
7	Jan	5	-	-	5	50	-	-	50
8	Jan/Feb/Mar	6	1	25	32	60	8	132	200
9	Jan	3	-	-	3	30	-	-	30
10	Jan	3	2	2	7	25	-	-	25
11	Jan	-	2	3	5	-	21	22	43
12	Feb	-	-	2	2	-	-	8	8
13	Mar	3	-	6	9	10	-	38	48
14	Mar/Apr	3	4	3	10	20	39	14	73
15	Mar/Apr	4	1	7	12	39	10	36	85
16	May/Jun	2	9	11	22	20	90	68	178
17	May	1	9	5	15	10	80	22	112
18	Jun	2	-	-	2	20	-	-	20
19	May	2	-	-	2	20	-	-	20
Total		44	37	102	183	384	312	496	1 192

Table 4: Number of target hoki length frequencies by WCSI sub-fisheries for 1990–2024. Year defined as May–Sep. See Figure 1b for WCSI sub-fishery definitions. – indicates no samples.

Year	Number of observed samples			Number of land-based samples	
	WC.north	WC.south	WC.inside	WC.inside	
1990	242	255	–	–	
1991	389	204	–	–	
1992	223	147	2	–	
1993	246	54	–	–	
1994	546	58	–	–	
1995	200	140	10	–	
1996	263	211	4	–	
1997	287	89	–	–	
1998	301	174	5	–	
1999	331	172	–	–	
2000	359	199	1	10	
2001	352	173	58	55	
2002	380	200	5	70	
2003	417	120	–	25	
2004	304	228	35	24	
2005	154	331	–	21	
2006	127	188	–	11	
2007	257	58	–	10	
2008	177	42	–	7	
2009	210	50	8	10	
2010	245	18	–	11	
2011	179	75	–	–	
2012	314	72	24	–	
2013	595	293	17	–	
2014	510	224	42	–	
2015	532	206	57	10	
2016	373	161	44	14	
2017	376	84	94	12	
2018	477	280	109	10	
2019	248	244	97	20	
2020	390	227	96	20	
2021	270	240	96	21	
2022	323	261	117	21	
2023	268	375	75	22	
2024	223	332	124	20	

Table 5: Stratification for the 2024 WCSI sub-fisheries for target hoki length samples showing number of samples, number of males and females measured, and observed and commercial catches (t) by year. n, number of observed length frequencies, N, number of land-based samples.

WC.north

Stratum	Week number	Observer catch	Commercial catch	n	No. males	No. females
1	1–10	51.7	133.0	8	371	401
2	11	96.5	213.2	14	646	742
3	12	641.5	959.5	46	1 855	2 621
4	13	702.6	1 090.5	38	1 590	2 246
5	14	535.8	1 203.0	28	1 186	1 410
6	15	662.5	1 451.1	39	1 211	2 870
7	16	316.7	989.9	17	453	1 401
8	17–22	226.9	888.0	33	857	1 426
Total	1–22	3 234.3	6 928.2	223	8 169	13 117

WC.south

Stratum	Week number	Observer catch	Commercial catch	n	No. males	No. females
1	1–7	69.1	514.0	19	780	1 134
2	8	62.6	195.2	15	714	996
3	9	168.5	285.8	21	1 017	1 315
4	10	323.5	491.7	33	1 475	1 735
5	11	404.3	1 060.5	35	1 707	1 900
6	12	695.3	1 638.0	45	1 585	2 663
7	13	1 326.0	2 837.9	53	1 624	3 266
8	14	1 981.6	4 271.4	69	2 109	4 255
9	15	436.3	910.0	25	593	1 598
10	16	312.1	943.2	10	313	698
11	17–22	238.2	2 307.0	7	98	529
Total	1–22	6 017.5	15 454.7	332	12 015	20 089

WC.inside

Stratum	Week number	Observer/land-based catch	Commercial catch	N	n	No. males	No. females
1	1–9	222.4	1 375.9	4	9	640	1 085
2	10	276.8	1 014.3	2	17	1 226	872
3	11–12	114.3	1 867.9	3	3	407	502
4	13	145.4	739.6	2	7	377	760
5	14	300.6	1 228.4	2	20	1 190	1 170
6	15	239.1	1 195.8	2	13	776	719
7	16	273.0	737.3	2	12	579	833
8	17	390.8	1 150.7	1	23	919	1 587
9	18–22	288.7	774.2	2	20	906	1 431
Total	1–22	2 251.1	10 084.2	20	124	7 020	8 959

*** Definition of week numbers and week dates**

Week	Dates	Week	Dates	Week	Dates
1	1–7 May	9	26 Jun–2 Jul	17	21–27 Aug
2	8–14 May	10	3–9 Jul	18	28 Aug–3 Sep
3	15–21 May	11	10–16 Jul	19	4–10 Sep
4	22–28 May	12	17–23 Jul	20	11–17 Sep
5	29 May–4 Jun	13	24–30 Jul	21	18–24 Sep
6	5–11 Jun	14	31 Jul–6 Aug	22	25–30 Sep
7	12–18 Jun	15	7–13 Aug		
8	19–25 Jun	16	14–20 Aug		

Table 6: Number of Cook Strait target hoki land-based and observed length frequencies by stratum. Strata for each year are two-month blocks for each vessel size. Year defined as Jun–Sep. – indicates no data.

(a) Cook Strait vessels < 40 m. * Length and age data not calculated.

Season	Catches (t)		Land-based samples		Observer tows	
	Jun-Jul	Aug-Sep	Jun-Jul	Aug-Sep	Jun-Jul	Aug-Sep
1988*	-	-	1	8	-	1
1989*	-	-	4	9	-	-
1990	5 396.3	6 671.0	4	4	-	1
1991	12 033.0	13 600.5	9	8	-	-
1992	9 901.2	11 891.4	15	16	-	-
1993	9 264.6	10 050.7	28	30	-	-
1994	8 602.0	18 910.7	12	25	2	1
1995	9 489.5	15 893.4	11	11	-	-
1996	14 652.0	24 758.5	9	10	-	4
1997	13 302.5	18 864.9	13	19	-	-
1998	10 323.3	18 866.7	13	20	22	51
1999	7 383.0	15 205.8	10	19	17	53
2000	8 483.1	18 629.1	12	18	10	33
2001	7 958.7	14 943.8	11	23	2	75
2002	3 950.8	7 615.5	10	25	15	23
2003	7 370.1	12 209.1	8	17	6	23
2004	5 950.6	15 890.3	9	14	29	36
2005	2 761.6	7 218.8	6	17	7	23
2006*	2 274.1	5 394.7	7	16	-	31
2007	2 187.4	4 402.7	8	18	-	23
2008	1 670.7	5 163.1	9	22	-	42
2009	1 839.0	4 569.6	9	22	5	20
2010	2 547.2	3 904.1	5	12	6	42
2011*	2 166.5	4 355.1	-	-	-	45
2012	1 276.8	4 050.7	-	-	13	47
2013*	1 963.3	3 074.2	-	-	-	29
2014	2 697.1	4 107.8	8	11	6	-
2015	2 371.8	4 072.6	11	11	-	9
2016	2 796.5	4 144.3	7	10	4	22
2017	2 603.1	3 275.8	9	11	8	29
2018	2 661.0	4 054.5	10	9	34	38
2019	4 157.5	3 520.1	11	9	24	48
2020	2 368.0	1 129.2	12	8	12	6
2021	1 252.4	811.2	14	6	-	5
2022	910.4	747.1	13	7	1	29
2023	465.3	727.4	10	10	-	10
2024	354.5	434.8	6	6	-	-

Table 6: (continued)

(b) Cook Strait vessels $\geq 40\text{m}$. * Length and age data not calculated.

Season	Catches (t)		Land-based samples		Observer tows	
	Jun-Jul	Aug-Sep	Jun-Jul	Aug-Sep	Jun-Jul	Aug-Sep
1988*	-	-	-	1	-	-
1989*	-	-	1	2	-	-
1990	750.9	1 857.0	3	2	-	-
1991	1 121.4	2 405.1	1	1	-	-
1992	1 596.6	1 119.5	1	1	-	-
1993	382.9	2 022.6	-	4	2	-
1994	2 945.4	5 140.2	2	7	10	-
1995	3 801.6	5 734.2	12	13	-	-
1996	7 850.6	11 959.6	11	12	4	9
1997	8 296.8	15 363.4	8	8	-	-
1998	6 130.9	9 668.4	10	8	15	37
1999	5 426.6	11 587.2	7	8	-	53
2000	3 353.6	8 806.7	7	11	-	10
2001	3 107.4	6 410.4	5	9	3	31
2002	3 092.5	6 960.7	5	10	9	-
2003	6 609.2	8 150.9	8	15	-	4
2004	6 092.3	10 884.3	13	11	9	-
2005	4 882.5	8 169.2	12	15	-	14
2006*	4 890.7	7 276.7	-	-	7	-
2007	5 092.2	6 113.9	-	-	15	10
2008	3 696.4	5 056.3	-	-	29	27
2009	3 101.3	5 326.2	1	-	62	6
2010	3 411.5	5 834.7	2	3	67	19
2011*	3 434.5	1 690.3	-	-	-	21
2012*	1 191.8	6 356.1	-	-	15	-
2013*	3 830.9	6 397.3	-	-	2	6
2014	2 605.3	5 185.5	2	7	54	32
2015	3 233.1	6 484.1	6	5	8	-
2016	2 605.7	5 885.4	3	8	9	-
2017	2 201.1	4 637.9	4	5	2	33
2018	5 671.2	5 673.3	4	8	9	-
2019	6 299.0	4 995.3	6	6	-	-
2020	5 687.3	5 918.4	6	6	7	15
2021	5 103.6	3 876.4	8	4	46	-
2022	3 499.7	3 178.3	7	5	44	15
2023	4 569.7	6 251.7	7	7	51	34
2024	4 204.6	5 708.7	8	6	25	9

Table 7: Stratification for the 2024 Cook Strait CS.spawn sub-fishery for target hoki length samples showing number of samples, number of males and female measured, and observed and commercial catches (t) by year. Strata are two-month blocks for each vessel size class. . n, number of observed length frequencies, N, number of land-based samples.

Stratum	Stratum label	Observer/land-based catch	Commercial catch	N	n	No. males	No. females
1	Small.JunJul	225.7	354.5	6	-	662	603
2	Small.AugSep	179.7	434.8	6	-	484	780
3	Big.JunJul	2 221.6	4 204.6	8	25	2 106	2 072
4	Big.AugSep	1 094.7	5 708.7	6	9	585	1 620
Total	Jun-Sep	3 721.7	10 702.6	26	34	3 837	5 075

Table 8a: ECSI number of available target hoki observer length frequencies and otoliths. Total length frequencies and otoliths are in bold where there are at least 100 otoliths. – indicates no data.

Year	Number of length frequencies				Number of aged otoliths			
	Jul	Aug	Sep	Total	Jul	Aug	Sep	Total
1999	28	-	1	29	76	-	3	79
2000	-	-	4	4	-	-	8	8
2001	5	-	-	5	14	-	-	14
2002	16	1	-	17	50	3	-	53
2003	-	1	54	55	-	3	160	163
2004	25	52	51	128	83	202	183	468
2005	-	7	2	9	-	50	20	70
2006	34	1	16	51	137	3	83	223
2007	1	-	-	1	5	-	-	5
2008	-	7	32	39	-	14	99	113
2009	-	-	17	17	-	-	20	20
2010	-	2	1	3	-	1	6	7
2011	-	2	24	26	-	4	10	14
2012	-	9	20	29	-	39	52	91
2013	7	3	56	66	17	-	44	61
2014	-	-	9	9	-	-	9	9
2015	-	-	21	21	-	-	17	17
2016	-	-	9	9	-	-	18	18
2017	-	-	19	19	-	-	10	10
2018	2	9	53	64	8	-	54	62
2019	39	44	28	111	168	128	32	328
2020	62	1	44	107	-	-	-	-
2021	46	33	-	79	-	-	-	-
2022	34	18	43	95	36	37	228	301
2023	48	97	70	215	147	428	242	817
2024	120	66	77	263	355	155	75	585

Table 8b: ECSI observer and commercial catches (t), number of samples (n) and number of males and females measured for each year (June–September) used in the length frequency distributions in Figure 31.

Year	Observer catch	Commercial catch	n	No. males	No. females
2003	796.2	9 833.0	55	2 106	3 708
2004	1 353.2	7 879.5	128	5 177	8 537
2006	884.4	2 155.9	51	2 598	3 227
2008	282.6	5 312.9	39	1 455	2 660
2019	1 819.9	10 624.7	111	4 703	7 360
2022	1 710.1	9 694.0	95	4 040	5 602
2023	3 005.4	10 908.2	209	8 496	13 041
2024	3 621.0	15 508.2	263	12 426	15 205

Table 9a: Puysegur catches (t) and observer number of target hoki length frequencies. Length frequencies used are in bold. – indicates no data.

Year	Catch (t)					Number of length frequencies				
	Jun	Jul	Aug	Sep	Total	Jun	Jul	Aug	Sep	Total
1990	15.4	0.7	7 117.8	115.1	7 249.0	-	-	17	-	17
1991	847.2	1 211.4	1 844.5	946.4	4 849.4	-	23	8	5	36
1992	1 346.8	2 296.4	869.3	243.7	4 756.2	10	63	11	-	84
1993	620.8	207.4	796.9	57.1	1 682.3	1	1	9	-	11
1994	81.9	55.7	111.0	2 100.2	2 348.7	-	-	-	22	22
1995	66.7	-	176.7	551.6	795.0	-	-	-	11	11
1996	140.8	452.4	120.3	1 500.4	2 213.9	-	-	-	30	30
1997	181.2	350.0	484.7	4 525.9	5 541.8	-	-	-	15	15
1999	104.7	345.2	31.6	1 751.7	2 233.3	5	-	-	1	6
2000	275.8	224.8	113.8	1 854.2	2 468.6	5	-	-	16	21
2001	496.6	113.3	1 000.0	4 142.5	5 752.4	2	-	-	30	32
2002	305.9	74.5	1 662.6	2 771.5	4 814.4	-	-	3	26	29
2003	254.0	21.2	4 450.9	862.2	5 588.3	-	-	14	1	15
2004	51.1	24.7	627.9	20.6	724.3	-	2	16	-	18
2005	23.3	208.6	4 052.3	1 162.2	5 446.4	-	-	35	3	38
2006	30.4	398.7	624.1	157.3	1 210.6	-	8	8	-	16
2010	46.7	20.1	24.1	15.1	106.0	1	1	-	-	2
2012	855.6	15.8	-	22.7	894.1	21	-	-	-	21
2013	267.3	27.4	33.4	131.5	459.6	9	-	-	-	9
2014	203.7	33.0	6.3	157.1	400.1	7	-	-	-	7
2016	268.2	2.2	346.9	311.0	928.3	5	-	-	1	6
2017	196.7	1.6	594.5	134.3	927.1	-	-	-	1	1
2018	364.7	8.6	482.3	90.9	946.5	5	1	2	2	10
2019	310.8	51.1	396.6	268.1	1 026.5	2	1	7	-	10
2020	57.7	29.5	0.8	168.6	256.6	-	1	-	-	1
2021	78.6	2.2	4.8	153.2	238.9	5	-	-	-	5
2024	-	-	2.7	191.9	194.6	-	-	1	1	2

Table 9b: Puysegur observer and commercial catches (t), number of samples (n) and number of males and females measured for each year (June–September) used in the length frequencies in Figure 33.

Year	Observer catch	Commercial catch	n	No. males	No. females
1990	290.3	7 249.0	17	913	1 017
1991	207.2	4 849.4	13	537	749
1992	90.6	4 756.2	11	215	955
1994	599.5	2 348.7	22	1 066	1 354
1995	163.4	795.0	11	632	472
1996	448.6	2 216.5	30	1 989	1 190
1997	397.0	5 529.6	15	996	515
2000	462.0	2 468.7	16	999	995
2001	543.2	5 752.4	30	1 947	1 285
2002	521.6	4 814.4	29	1 428	1 557
2003	503.6	5 588.4	15	744	758
2004	323.0	724.3	16	657	1 033
2005	1 038.0	5 446.4	38	992	2 758

Table 10: Data used for estimation of length frequencies and for direct ageing in Chatham Rise fisheries. Commercial catch is for all target species, and length frequency and otolith data are target hoki only. See Figure 1 for sub-fishery definitions.

(a) Chatham Rise CR.shallow sub-fishery. Year defined as October–September.

Length frequencies:

Fishing year	Number of length frequencies	Number of measured		Catch (t)	
		Males	Females	Observed	Commercial
2001	57	2 931	3 457	468.0	10 966.8
2002	41	2 157	2 446	297.4	6 754.7
2003	31	1 373	2 103	157.5	9 809.0
2004	24	837	1 296	148.1	5 389.3
2005	32	1 726	1 940	249.0	4 097.3
2006	55	3 399	2 283	547.8	8 762.3
2007	11	463	552	121.9	3 646.8
2008	5	260	274	27.3	3 384.7
2009	4	196	238	43.6	4 587.0
2010	29	1 585	1 552	409.1	4 395.0
2011	36	2 062	2 158	302.1	6 008.7
2012	14	691	749	95.9	4 254.3
2013	55	2 600	3 337	388.8	4 119.9
2014	38	1 328	2 141	353.3	2 581.7
2015	53	2 272	2 372	588.4	3 523.1
2016	33	1 494	1 752	225.3	6 064.1
2017	19	827	1 137	209.6	4 816.5
2018	20	975	1 270	136.2	4 908.2
2019	18	882	941	115.2	4 181.8
2020	25	984	1 321	255.3	2 659.8
2021	30	1 428	1 511	314.8	2 326.1
2022	14	597	804	137.2	2 559.9
2023	40	1 987	2 232	433.7	3 786.3
2024	38	1 557	2 270	405.4	4 716.3

Direct ageing data:

Fishing year	Mean length (cm)	Number of tows		Number of otoliths	
		Commercial	Sampled for otoliths	Male	Female
2001	64.22	2 907	49	64	94
2002	63.66	2 062	36	49	61
2003	68.01	2 818	28	39	52
2004	59.01	1 916	23	40	52
2005	62.23	1 662	31	85	86
2006	63.85	2 089	54	108	93
2007	63.36	1 590	11	33	22
2008	62.69	1 946	5	6	6
2009	69.00	1 346	3	13	10
2010	61.55	1 280	29	59	60
2011	61.33	1 500	29	49	62
2012	68.26	1 298	7	14	18
2013	67.53	1 503	53	50	55
2014	64.55	1 319	38	37	51
2015	67.74	1 264	46	108	142
2016	70.49	1 309	33	62	62
2017	61.15	1 059	19	39	61
2018	62.42	1 413	18	38	46
2019	64.86	1 356	16	26	28
2020	-	-	-	-	-
2021	65.41	2 396	21	94	107
2022	63.59	2 262	10	39	40
2023	62.87	2 507	36	138	219
2024	62.13	2 971	37	158	198

Table 10: (continued)

(b) Chatham Rise CR.deep sub-fishery. Year defined as October–September.

Length frequencies:

Fishing year	Number of length frequencies	Number of measured		Catch (t)	
		Males	Females	Observed	Commercial
2001	444	15 319	30 778	2 109.2	34 275.7
2002	281	9 488	19 780	1 523.7	28 317.3
2003	142	5 280	9 796	583.1	25 097.5
2004	80	2 447	5 269	412.6	20 018.5
2005	224	9 989	15 103	1 604.2	23 158.4
2006	222	10 475	13 676	1 756.5	22 524.6
2007	231	9 991	14 053	1 934.7	30 071.9
2008	297	14 096	20 003	2 666.8	29 794.0
2009	137	6 196	7 969	1 530.6	31 239.6
2010	257	10 995	15 323	2 652.6	32 211.0
2011	272	12 915	15 717	2 544.6	31 462.6
2012	277	10 633	17 282	2 785.7	32 352.5
2013	508	20 228	31 256	4 295.9	29 459.4
2014	520	19 155	33 664	4 622.6	29 690.4
2015	200	8 271	11 657	2 102.6	35 407.6
2016	227	9 212	14 735	1 826.5	28 869.1
2017	221	9 417	13 491	2 046.6	33 403.7
2018	213	8 366	13 552	2 239.3	29 326.8
2019	234	10 140	12 990	2 118.1	28 838.9
2020	340	12 278	21 404	3 026.0	24 190.3
2021	810	32 392	45 080	8 875.1	29 713.2
2022	581	23 736	34 418	5 593.9	32 992.8
2023	586	23 345	35 691	5 861.9	38 297.3
2024	647	24 422	38 576	5 299.7	33 712.8

Direct ageing data:

Fishing Year	Mean length (cm)	Number of tows		Number of otoliths	
		Commercial	Sampled for otoliths	Male	Female
2001	71.28	8 527	395	367	814
2002	72.45	7 444	266	244	539
2003	69.95	7 604	131	123	292
2004	68.80	6 163	76	110	200
2005	65.83	4 960	185	393	558
2006	68.30	4 360	205	277	413
2007	67.08	4 864	218	457	634
2008	67.43	4 254	285	416	607
2009	65.43	4 421	132	427	561
2010	67.10	4 524	254	417	526
2011	66.70	3 869	205	419	463
2012	71.24	4 040	191	350	596
2013	70.60	3 928	470	374	574
2014	70.73	3 933	491	373	656
2015	68.20	4 358	163	331	447
2016	71.46	4 114	213	355	523
2017	66.64	4 297	210	410	529
2018	65.59	4 087	179	372	535
2019	69.20	3 930	225	369	457
2020	69.55	3 499	304	405	841
2021	68.77	3 891	640	387	565
2022	68.29	4 688	457	455	614
2023	66.61	4 764	512	309	484
2024	66.18	4 774	571	303	472

Table 11: Data used for estimation of length frequencies and for direct ageing in Sub-Antarctic fisheries. Commercial catch is for all target species, and length frequency and otolith data are target hoki only. Year defined as October–September. See Figure 1 for sub-fishery definitions.

(a) Sub-Antarctic SA.auck sub-fishery:

Length frequencies:

Fishing year	Number of length frequencies	Number of measured		Catch (t)	
		Males	Females	Observed	Commercial
2001	53	2 369	2 670	252.8	11 391.3
2002	13	439	784	34.6	9 018.2
2003	89	3 324	6 437	628.1	7 919.7
2004	59	2 043	4 289	190.9	4 777.6
2005	6	267	365	41.4	2 653.9
2006	15	783	713	182.7	1 231.9
2007	14	439	977	116.5	1 777.3
2008	87	4 449	4 909	520.7	2 800.7
2009	26	1 583	1 814	194.7	2 200.6
2010	27	1 342	1 830	277.7	2 527.2
2011	51	2 443	2 647	391.3	3 272.1
2012	31	1 238	2 040	357.5	2 973.2
2013	82	3 445	4 338	904.7	4 256.5
2014	69	2 865	3 002	638.1	5 784.2
2015	21	566	1 371	111.3	4 574.6
2016	49	1 403	3 239	430.7	2 406.2
2017	32	1 133	2 589	377.2	2 489.5
2018	136	5 295	6 899	1 023.1	3 693.3
2019	28	859	1 356	159.4	2 436.0
2020	46	1 778	2 422	453.0	3 013.2
2021	139	5 482	7 778	1 306.5	4 104.4
2022	46	2 085	2 176	376.0	3 052.5
2023	71	2 991	4 159	708.4	5 064.6
2024	37	1 600	1 750	383.4	2 495.4

Direct ageing data:

Fishing year	Mean length (cm)	Number of tows		Number of otoliths	
		Commercial	Sampled for otoliths	Male	Female
2001	80.13	3 020	45	61	69
2003	87.01	2 357	84	82	174
2004	86.87	1 716	55	52	116
2006	73.89	848	15	82	66
2007	83.01	1 150	12	38	106
2008	76.21	1 358	58	212	230
2009	75.07	1 106	24	67	71
2011	77.00	940	49	149	173
2012	81.38	893	17	41	107
2013	79.97	1 077	80	130	175
2014	76.27	1 179	62	132	165
2015	84.72	1 120	13	39	73
2016	84.10	865	48	133	333
2017	79.93	864	14	39	97
2018	71.05	1 727	107	108	201
2019	74.96	1 616	26	48	75
2020	78.77	1 443	39	141	187
2021	76.09	1 554	111	173	230
2022	70.22	1 890	35	152	177
2023	72.67	2 300	37	140	208
2024	77.41	1 448	33	151	161

Table 11: (continued)

(b) Sub-Antarctic SA.snares sub-fishery:

Length frequencies:

Fishing year	Number of length frequencies	Number of measured		Catch (t)	
		Males	Females	Observed	Commercial
2001	105	5 074	4 967	888.8	11 637.1
2002	28	935	1 442	125.3	6 948.3
2003	37	1 618	2 278	200.2	3 120.1
2004	14	642	906	151.1	2 170.2
2005	2	118	106	10.8	2 190.7
2006	38	2 018	2 002	501.5	4 573.9
2007	63	2 833	3 475	575.1	5 202.8
2008	59	3 384	3 575	748.3	4 374.7
2009	81	4 717	4 795	1 115.2	6 280.9
2010	55	2 728	3 425	660.8	8 197.2
2011	93	5 175	4 410	1 552.0	7 723.4
2012	73	4 011	3 897	1 551.8	10 781.1
2013	172	9 218	7 478	1 756.5	7 312.6
2014	74	3 391	3 225	591.0	7 026.4
2015	72	3 346	3 789	749.4	8 790.5
2016	38	1 556	2 204	319.0	2 588.7
2017	22	816	1 172	168.8	5 752.5
2018	145	7 123	6 977	1 411.6	4 731.4
2019	63	2 551	2 797	576.9	4 117.8
2020	103	3 911	5 218	861.5	3 813.8
2021	118	4 660	6 574	1 197.7	3 492.9
2022	86	3 788	4 672	935.0	2 663.4
2023	49	2 249	2 240	428.8	2 540.3
2024	44	2 106	2 080	341.0	1 511.3

Direct ageing data:

Fishing year	Mean length (cm)	Number of tows		Number of otoliths	
		Commercial	Sampled for otoliths	Male	Female
2001	76.04	2 604	83	116	123
2006	69.53	1 270	37	169	188
2007	74.51	1 595	62	262	326
2008	77.62	1 091	57	239	235
2009	72.41	1 353	81	311	305
2010	69.27	1 578	49	171	233
2011	69.02	1 411	83	360	297
2012	69.79	1 452	65	305	292
2013	73.17	1 391	151	305	249
2014	65.44	1 367	58	122	115
2015	70.71	1 485	57	180	224
2016	72.83	723	36	116	191
2017	69.59	1 132	18	70	82
2018	64.08	1 031	107	192	155
2019	66.14	932	61	163	178
2020	67.27	848	83	273	379
2021	69.27	924	78	157	223
2022	68.77	683	55	178	234
2023	69.33	649	32	154	150
2024	71.45	606	40	200	184

Table 11: (continued)

(c) Sub-Antarctic SA.suba sub-fishery:

Length frequencies:

Fishing year	Number of length frequencies	Number of measured		Catch (t)	
		Males	Females	Observed	Commercial
2001	120	2 386	9 781	1 123.0	7 039.5
2002	192	3 231	15 495	1 538.8	14 207.4
2003	37	914	2 320	92.1	9 152.5
2004	21	521	1 603	74.8	4 674.6
2005	10	203	878	65.6	1 399.3
2008	7	149	550	46.5	1 525.3
2009	40	699	3 309	381.0	1 325.5
2010	56	1 273	4 779	573.8	1 549.6
2011	4	103	296	16.1	1 656.6
2012	14	236	1 052	130.1	1 988.4
2013	22	245	1 718	268.7	2 518.0
2014	39	698	3 007	456.2	7 114.8
2015	4	112	192	23.0	3 012.7
2016	13	225	888	102.4	1 643.9
2017	15	369	1 390	234.7	4 914.3
2018	152	3 918	11 406	2 024.6	7 009.1
2019	35	663	2 256	320.0	2 489.4
2020	35	647	2 211	273.8	1 211.2
2021	47	1 018	3 338	330.7	1 538.4
2022	71	1 822	5 102	811.5	2 624.7
2023	155	3 897	11 685	1 413.6	5 285.0
2024	102	2 515	6 513	1 122.7	3 746.3

Direct ageing data:

Fishing year	Mean length (cm)	Number of tows		Number of otoliths	
		Commercial	Sampled for otoliths	Male	Female
2001	88.51	1 774	112	75	255
2002	90.20	3 371	161	88	402
2003	89.92	2 074	36	28	84
2009	90.98	454	38	47	203
2012	89.25	387	13	18	83
2016	89.81	243	13	31	88
2018	87.91	917	141	98	382
2019	85.19	388	33	38	148
2020	87.03	257	28	42	181
2021	89.12	292	34	80	259
2022	88.18	372	69	102	329
2023	83.64	726	125	138	356
2024	84.78	440	100	146	350

Table 12: Reported catch from QMS (MHR excluding ET), TACC for HOK 1, and actual and catch limits for HOK 1, HOK 1W, and HOK 1E, total available ACE (total catch available) including voluntary catch splits and industry shelving agreements from 2001–12 to 2024–25. Values are in tonnes. Catch limits, total available HOK 1 ACE and industry shelving of ACE columns are from table 5 in the hoki chapter of Fisheries New Zealand (2025). Eastern actual catches are the sum of Chatham Rise, Cook Strait, ECSI and ECNI catches and western actual catches are the sum of Sub-Antarctic, Puysegur, and WCSI catches.

Year	TACC	Reported Catch (t)	Actual catches (t)		Catch limit (t)		Total available HOK 1 ACE	Industry shelving of ACE
			Eastern	Western	Eastern	Western		
2001–02	200 000	195 501	67 512	129 713	70 000	130 000	199 402	–
2002–03	200 000	184 659	84 618	100 700	70 000	130 000	203 943	–
2003–04	180 000	135 784	77 817	58 558	70 000	110 000	180 000	–
2004–05	100 000	104 364	59 347	45 195	60 000	40 000	100 000	–
2005–06	100 000	104 385	57 381	47 929	60 000	40 000	100 251	–
2006–07	100 000	101 009	59 601	42 129	60 000	40 000	100 493	–
2007–08	90 000	89 318	59 378	30 351	65 000	25 000	90 000	–
2008–09	90 000	88 805	58 206	31 069	65 000	25 000	90 682	–
2009–10	110 000	107 209	58 326	49 820	60 000	50 000	111 872	–
2010–11	120 000	118 805	56 605	63 098	60 000	60 000	124 666	–
2011–12	130 000	130 108	58 500	74 234	60 000	70 000	135 770	–
2012–13	130 000	131 576	60 469	73 194	60 000	70 000	135 650	–
2013–14	150 000	146 344	56 344	92 233	60 000	90 000	153 959	–
2014–15	160 000	161 528	64 736	98 228	60 000	100 000	167 572	–
2015–16	150 000	136 719	60 745	77 435	60 000	90 000	150 000	–
2016–17	150 000	141 567	61 402	81 555	60 000	90 000	161 205	–
2017–18	150 000	135 419	63 321	72 262	60 000	90 000	166 075	–
2018–19	150 000	122 460	65 663	56 792	60 000	90 000	164 730	20 000 (from West)
2019–20	115 000	107 737	55 420	52 310	60 000	55 000	115 000	–
2020–21	115 000	100 819	56 086	44 726	60 000	55 000	122 259	20 000 (split evenly)
2021–22	110 000	91 664	51 152	40 505	65 000	45 000	110 000	10 000 (from East)
2022–23	110 000	105 555	62 185	43 367	60 000	40 000	119 165	10 000 (from East/West)
2023–24	110 000	107 036	66 586	40 449	65 000	45 000	113 465	–
2024–25	110 000	-	-	-	65 000	45 000	116 428	–

Table 13: Reported trawl catches (t) by fleet from 1969 to 1987–88, 1969–1983 by calendar year, 1983–84 to 1987–88 by fishing year (Oct–Sept). Source - FSU data.

Year	USSR	Japan	South	New Zealand		Total
				Domestic	Chartered	
1969	–	95	–	–	–	95
1970	–	414	–	–	–	414
1971	–	411	–	–	–	411
1972	7 300	1 636	–	–	–	8 936
1973	3 900	4 758	–	–	–	8 658
1974	13 700	2 160	–	125	–	15 985
1975	36 300	4 748	–	62	–	41 110
1976	41 800	24 830	–	142	–	66 772
1977	33 500	54 168	9 865	217	–	97 750
1978*	2 028†	1 296	4 580	678	–	8 581
1979	4 007	8 550	1 178	2 395	7 970	24 100
1980	2 516	6 554	–	2 658	16 042	27 770
1981	2 718	9 141	2	5 284	15 657	32 802
1982	2 251	7 591	–	6 982	15 192	32 018
1983	3 853	7 748	137	7 706	20 697	40 141
1983–84	4 520	7 897	93	9 229	28 668	50 407
1984–85	1 547	6 807	35	7 213	28 068	43 670
1985–86	4 056	6 413	499	8 280	80 375	99 623
1986–87	1 845	4 107	6	8 091	153 222	167 271
1987–88	2 412	4 159	10	7 078	216 680	230 339

* Catches for foreign licensed and New Zealand chartered vessels from 1978 to 1984 are based on estimated catches from vessel logbooks. Few data are available for the first 3 months of 1978 because these vessels did not begin completing these logbooks until 1 April 1978.

† Soviet hoki catches are taken from the estimated catch records and differ from official MAF statistics. Estimated catches are used because of the large amount of hoki converted to meal and not recorded as processed fish.

Table 14: Reported catch (t) from QMS, estimated catch (t) and TACC (t), for HOK 1 from 1986–87 to present. Reported catches are from the QMR and MHR systems. Estimated catches include TCEPR and CELR data (from 1989–90), LCER data (from 2003–04), NCELR data (from 2006–07), TCER and LTCER data (from 2007–08), ‘ERS – Trawl’ data (from 2017–18), and ‘ERS – Netting’, ‘ERS-lining’, ‘ERS - Other Lining’, ‘ERS – Potting’, ‘ERS – Seining’, and ‘ERS - Tuna Lining’ data (from 2018–19).

Year	Estimated catch	Reported catch (MHR)		TACC
		Exclude HOK ET	Include HOK ET	
1986–87	158 000	–	175 000	250 000
1987–88	216 200	–	255 000	250 000
1988–89	208 500	–	210 000	250 000
1989–90	203 535	208 851	208 851	251 884
1990–91	207 620	212 720	212 720	201 897
1991–92	205 575	212 167	212 167	201 897
1992–93	185 704	191 994	191 994	202 155
1993–94	182 997	192 384	192 385	202 155
1994–95	171 850	176 787	176 788	220 350
1995–96	197 818	209 639	209 639	240 000
1996–97	232 917	246 754	246 756	250 000
1997–98	259 478	269 232	269 239	250 000
1998–99	237 899	244 527	244 528	250 000
1999–00	243 400	242 420	242 423	250 000
2000–01	230 625	229 858	229 862	250 000
2001–02	200 055	195 501	195 506	200 000
2002–03	182 563	184 659	184 668	200 000
2003–04	133 765	135 784	135 786	180 000
2004–05	102 885	104 364	106 189	100 000
2005–06	101 984	104 385	105 965	100 000
2006–07	97 790	101 009	102 861	100 000
2007–08	87 815	89 318	91 045	90 000
2008–09	87 598	88 805	89 475	90 000
2009–10	105 105	107 209	107 209	110 000
2010–11	115 782	118 805	118 805	120 000
2011–12	126 184	130 108	130 108	130 000
2012–13	127 968	131 576	132 619	130 000
2013–14	143 705	146 344	146 344	150 000
2014–15	156 663	161 528	161 528	160 000
2015–16	136 087	136 719	136 722	150 000
2016–17	138 325	141 567	141 570	150 000
2017–18	131 533	135 419	135 420	150 000
2018–19 ²	116 672	122 460	122 460	150 000
2019–20	102 599	107 737	107 737	115 000
2020–21 ²	97 513	100 819	100 819	115 000
2021–22 ²	90 174	91 664	91 664	110 000
2022–23 ²	102 582	105 555	105 555	110 000
2023–24 ²	103 981	107 036	107 036	110 000
2024–25	–	–	–	110 000

1. Discrepancies between QMS data and estimated catches from 1986 to 1990 arose from incorrect surimi conversion factors. The estimated catch in those years was corrected from conversion factors measured each year by Ministry observers on the WCSI fishery. Since 1990 the current conversion factor of 5.8 was used, and the total catch reported to the QMS is considered to be more representative of the true level of catch. From 2000–01 MHR catches were shown including and excluding HOK ET catches (catches outside the EEZ).
2. In 2018–19 20 000 t of western ACE was voluntarily shelved by the fishing industry so the effective TACC was 130 000 t. In 2020–21, 20 000 t of ACE (equally split between west and east) was voluntarily shelved by the fishing industry so the effective TACC was 95 000 t (excluding carry-forward catch). In 2021–22, 10 000 t of eastern ACE was voluntarily shelved by the fishing industry so the effective TACC was 100 000 t. In 2022–23, 10 000 t of ACE was voluntarily shelved by the fishing industry with an effective TACC of 100 000 t by shelving 10 000 t HOK 1 ACE [HOK1 West catch limit: 40 000 t (i.e., reduced from 45 000; HOK1 East catch limit: 60 000 t (i.e., reduced from 65 000). In 2023–24, there was no shelving of ACE so the effective TACC remained at 110 000 t (plus any uncaught ACE carried forward from 2022–23), with the West catch limit 45 000 t and the East catch limit 65 000 t.

Table 15: TACC, voluntary catch limits (prior to shelving), total ACE generated, and industry shelving agreements by year (t). The voluntary eastern and western catch limits represent the limits prior to any shelving of ACE. From plenary 2025 report (Fisheries New Zealand, 2025).

Year	TACC	Eastern catch limit	Western catch limit	Total HOK 1 ACE generated ¹	Industry shelving of ACE
2001–02	200 000	70 000	130 000	200 000	–
2002–03	200 000	70 000	130 000	203 943	–
2003–04	180 000	70 000	110 000	180 000	–
2004–05	100 000	60 000	40 000	100 000	–
2005–06	100 000	60 000	40 000	100 251	–
2006–07	100 000	60 000	40 000	100 493	–
2007–08	90 000	65 000	25 000	90 000	–
2008–09	90 000	65 000	25 000	90 682	–
2009–10	110 000	60 000	50 000	111 872	–
2010–11	120 000	60 000	60 000	124 666	–
2011–12	130 000	60 000	70 000	135 770	–
2012–13	130 000	60 000	70 000	135 650	–
2013–14	150 000	60 000	90 000	153 959	–
2014–15	160 000	60 000	100 000	167 572	–
2015–16	150 000	60 000	90 000	150 000	–
2016–17	150 000	60 000	90 000	161 205	–
2017–18	150 000	60 000	90 000	166 075	–
2018–19	150 000	60 000	90 000	164 730	20 000 (from western)
2019–20	115 000	60 000	55 000	115 000	–
2020–21	115 000	60 000	55 000	122 259	20 000 (split evenly eastern/western)
2021–22	110 000	65 000	45 000	110 000	10 000 (from east)
2022–23	110 000	65 000	45 000	119 165	10 000 (from eastern/western)
2023–24	110 000	65 000	45 000	113 465	–
2024–25	110 000	65 000	45 000	116 428	–

¹ Total ACE comprises the TACC plus any underfishing ACE generated pursuant to the ACE carry-forward provisions set out in section 67A of the Fisheries Act 1996. In the year immediately following a TACC decrease, section 67A precludes the allocation of any underfishing ACE.

Table 16: Estimated total catch (t) (scaled to reported QMR or MHR) of hoki by area 1989–90 to 2023–24. Null is catch with no location information. – No catches.

Fishing year	Spawning fisheries					Non-spawning fisheries			Total catch
	WCSI	Puysegur	Cook Strait	ECSI	Sub-Antarctic	Chatham Rise	ECNI	WCNI	Other
1989–90	160 436	7 404	14 741	1 079	11 747	12 368	901	113	64
1990–91	129 243	4 876	29 243	2 580	16 764	28 905	937	158	14
1991–92	101 531	4 848	24 872	2 540	30 695	46 503	1 063	49	66
1992–93	96 600	2 206	22 240	1 061	24 862	43 436	1 399	35	154
1993–94	115 882	2 385	37 321	1 573	11 636	21 637	1 760	21	169
1994–95	80 379	1 101	40 452	3 214	13 413	35 798	2 272	58	101
1995–96	72 907	2 418	67 638	3 745	13 089	46 177	2 795	568	300
1996–97	91 387	5 871	65 077	5 053	21 785	52 383	4 592	90	514
1997–98	106 294	2 150	51 857	4 621	25 140	74 052	4 722	83	311
1998–99	94 523	2 891	45 244	3 258	23 774	72 326	2 314	62	134
2000–01	102 716	2 880	43 203	4 091	33 770	54 271	1 387	98	4
2001–02	102 235	6 798	36 297	4 799	30 076	47 459	2 035	147	14
2002–03	92 719	5 322	23 976	5 526	30 175	36 596	1 147	39	1
2003–04	73 858	5 948	36 712	9 833	20 199	36 638	929	532	10
2004–05	45 112	1 158	41 034	7 879	11 635	27 910	880	126	48
2005–06	33 111	5 548	24 833	4 837	6 244	29 080	522	37	152
2006–07	38 989	1 437	21 803	2 156	6 732	32 567	686	8	10
2007–08	33 328	408	20 113	2 973	7 661	35 846	667	8	5
2008–09	20 931	308	18 470	5 313	8 708	34 930	640	17	1
2009–10	20 548	233	17 535	3 480	9 807	36 585	588	25	3
2010–11	36 349	272	17 880	1 999	12 275	37 808	618	7	–
2011–12	48 373	1 176	14 937	2 157	12 655	37 915	1 588	2	3
2012–13	54 532	1 308	15 859	4 424	15 743	37 353	858	31	–
2013–14	56 218	955	19 396	5 477	14 098	34 371	1 051	9	1
2014–15	69 400	778	18 400	3 627	19 927	32 875	1 326	9	1
2015–16	78 700	1 875	20 100	4 250	16 378	39 444	766	11	5
2016–17	68 869	1 056	18 378	5 311	6 639	35 529	888	20	29
2017–18	65 828	1 211	16 111	5 442	13 178	38 955	827	6	9
2018–19	55 532	1 133	21 473	4 948	15 431	35 755	1 141	4	3
2019–20	46 460	1 268	20 348	10 625	9 061	33 513	1 177	4	4
2020–21	43 920	349	16 907	9 738	8 038	27 931	844	6	2
2021–22	35 139	448	12 524	9 665	9 136	33 150	746	7	3
2022–23	31 596	566	10 151	9 694	8 340	30 685	623	6	3
2023–24	30 316	160	13 711	10 908	12 890	36 916	650	2	1
	32 468	227	11 943	15 508	7 753	38 429	706	–	1

Table 17: Estimated total catch (t) scaled to total reported catch of hoki by region and sub-fishery, 1989–90 to 2023–24. There may be instances where sub-fishery catches do not add up to fishery total catches in Table 15 due to catch with no location or depth information.

Fishing year	WCSI fisheries			Cook Strait fisheries		Chatham Rise fisheries		Sub-Antarctic fisheries		
	WC	WC	WC	CS	CS	CR	CR	SA	SA	SA
	north	inside	south	nonspawn	spawn	shallow	deep	auck	snare	suba
1989–90	78 955	1 765	79 716	65	14 675	3 168.8	9 198.7	660	9 491	1 596
1990–91	72 351	1 180	55 711	83	29 160	4 183.0	24 721.9	1 748	8 217	6 798
1991–92	64 421	754	36 355	364	24 509	10 934.0	35 569.3	2 496	16 948	11 252
1992–93	83 763	1 039	11 799	519	21 721	8 557.9	34 878.2	3 635	13 734	7 492
1993–94	95 942	1 647	18 293	1 719	35 602	4 669.2	16 967.3	865	8 525	2 246
1994–95	54 155	2 384	23 840	5 534	34 918	4 599.0	31 199.4	2 089	6 948	4 375
1995–96	42 756	4 244	25 907	8 358	59 279	9 411.0	36 766.1	1 666	9 044	2 379
1996–97	62 155	7 991	21 242	9 194	55 883	9 034.0	43 348.6	6 573	11 139	4 074
1997–98	71 329	7 769	27 202	6 850	45 007	16 498.7	57 553.4	9 149	9 728	6 263
1998–99	50 492	7 218	36 827	5 636	39 608	20 242.6	52 083.6	7 983	10 580	5 211
1999–00	64 628	14 136	23 952	3 919	39 283	15 074.5	39 196.0	13 985	13 409	6 377
2000–01	43 404	21 574	37 257	3 877	32 420	11 988.7	35 470.4	11 391	11 645	7 039
2001–02	45 597	21 825	25 298	2 357	21 620	7 134.6	29 461.7	9 018	6 949	14 209
2002–03	37 982	16 479	19 401	2 373	34 339	10 211.6	26 426.4	7 921	3 126	9 152
2003–04	14 334	18 784	11 995	2 217	38 817	5 703.8	22 206.3	4 778	2 170	4 687
2004–05	15 758	7 893	9 459	1 801	23 032	4 434.0	24 646.3	2 654	2 191	1 399
2005–06	17 783	5 220	15 985	1 966	19 836	9 170.7	23 396.2	1 232	4 616	883
2006–07	23 678	3 109	6 541	2 316	17 796	3 932.3	31 913.2	1 780	5 231	651
2007–08	16 935	914	3 082	2 884	15 586	3 867.4	31 062.9	2 801	4 382	1 525
2008–09	16 692	1 151	2 705	2 698	14 836	4 692.4	31 892.4	2 201	6 281	1 326
2009–10	31 060	2 933	2 357	2 183	15 697	4 742.6	33 065.8	2 527	8 198	1 550
2010–11	35 453	7 509	5 411	3 290	11 646	6 200.6	31 714.0	3 272	7 726	1 657
2011–12	35 554	8 487	10 492	2 983	12 875	4 481.7	32 871.3	2 973	10 781	1 988
2012–13	35 180	6 858	14 181	4 130	15 266	4 268.4	30 102.2	4 257	7 323	2 518
2013–14	44 026	10 355	15 019	3 805	14 596	2 779.5	30 095.1	5 784	7 028	7 115
2014–15	49 839	13 388	15 477	3 938	16 162	3 700.0	35 743.7	4 575	8 790	3 013
2015–16	37 372	16 171	15 333	2 946	15 432	6 380.0	29 149.1	2 406	2 589	1 644
2016–17	32 367	16 764	16 706	3 372	12 739	5 025.5	33 929.2	2 494	5 762	4 923
2017–18	18 401	17 087	20 045	3 413	18 059	5 296.6	30 458.3	3 693	4 730	7 008
2018–19	14 339	14 990	17 134	1 377	18 972	4 325.0	29 188.2	2 440	4 126	2 494
2019–20	17 945	13 728	12 250	1 806	15 101	2 823.2	25 108.2	3 013	3 814	1 211
2020–21	12 176	9 985	12 981	1 481	11 044	2 434.2	30 716.2	4 104	3 493	1 539
2021–22	10 168	9 748	11 682	1 816	8 335	2 643.9	28 040.9	3 052	2 663	2 625
2022–23	7 730	10 321	12 267	1 697	12 014	3 231.2	33 684.5	5 065	2 540	5 285
2023–24	6 928	10 089	15 451	1 241	10 703	4 716.3	33 712.8	2 495	1 511	3 746

Table 18: Bycatch rates in tonnes (% in parentheses) for vessels with Observer Programme observers in the hoki fishery where tows targeted hoki, 1990–91 to 2022–24. –, less than 0.1 t; *, bycatch rates were not calculated where observed hoki catch was less than 0.5 t.; (*), % less than 0.01 percent of hoki catch. Species chosen were the top eight by observed catch in an area. Species codes are defined in Appendix B.

(a) Cook Strait June–September (midwater trawls). No data 1995 and 1997.

Year	Catch in t (% of hoki catch)								
	HOK	CDL	CSQ	LIN	RAT	SCH	SPD	SWA	Other
1993	107	-	-	* (0.04)	-	-	1 (0.57)	-	* (0.07)
1994	495	-	-	6 (1.30)	* (0.07)	* (0.01)	1 (0.23)	-	1 (0.26)
1996	734	-	-	2 (0.30)	* (0.04)	-	13 (1.80)	-	1 (0.12)
1998	3 415	*	-	7 (0.20)	* (0.01)	*	54 (1.59)	-	13 (0.38)
1999	3 513	-	-	16 (0.45)	* (0.01)	2 (0.06)	76 (2.17)	*	6 (0.17)
2000	3 017	*	-	9 (0.31)	*	* (0.01)	103 (3.42)	-	2 (0.07)
2001	4 089	*	-	15 (0.36)	* (0.01)	1 (0.02)	84 (2.06)	1 (0.03)	6 (0.14)
2002	1 991	-	-	6 (0.30)	*	* (0.01)	44 (2.22)	*	3 (0.13)
2003	2 416	-	-	5 (0.21)	*	* (0.01)	104 (4.3)	*	2 (0.1)
2004	2 482	-	*	4 (0.16)	*	* (0.01)	39 (1.55)	*	5 (0.21)
2005	2 176	-	-	4 (0.18)	*	1 (0.05)	38 (1.74)	2 (0.09)	7 (0.33)
2006	1 080	-	-	2 (0.18)	*	* (0.02)	15 (1.40)	*	2 (0.15)
2007	2 102	*	-	10 (0.47)	* (0.01)	* (0.01)	84 (3.99)	2 (0.08)	6 (0.27)
2008	3 437	-	3 (0.09)	8 (0.22)	2 (0.05)	* (0.01)	63 (1.83)	1 (0.04)	4 (0.11)
2009	2 290	-	* (0.01)	3 (0.11)	1 (0.03)	* (0.01)	27 (1.17)	*	2 (0.09)
2010	3 353	*	*	4 (0.12)	3 (0.09)	*	27 (0.82)	*	6 (0.19)
2011	1 590	1 (0.05)	1 (0.04)	* (0.02)	* (0.01)	* (0.01)	13 (0.82)	2 (0.12)	* (0.03)
2012	1 551	*	1 (0.08)	4 (0.25)	3 (0.18)	* (0.01)	27 (1.73)	7 (0.47)	6 (0.39)
2013	956	*	* (0.01)	3 (0.27)	* (0.05)	* (0.02)	6 (0.65)	* (0.04)	2 (0.16)
2014	2 537	*	6 (0.26)	7 (0.29)	3 (0.13)	1 (0.03)	24 (0.93)	6 (0.22)	14 (0.56)
2015	320	-	* (0.09)	1 (0.16)	*	* (0.02)	2 (0.76)	-	* (0.04)
2016	2 139	-	*	9 (0.42)	1 (0.03)	* (0.01)	9 (0.43)	* (0.01)	2 (0.11)
2017	2 054	-	* (0.02)	3 (0.13)	* (0.01)	* (0.01)	9 (0.45)	* (0.01)	1 (0.07)
2018	2 291	*	1 (0.03)	13 (0.55)	1 (0.05)	* (0.01)	14 (0.60)	*	4 (0.19)
2019	4 153	*	3 (0.06)	10 (0.25)	* (0.01)	* (0.01)	21 (0.50)	* (0.01)	3 (0.08)
2020	5 213	*	*	12 (0.24)	*	* (0.01)	7 (0.13)	9 (0.17)	3 (0.05)
2021	2 059	*	*	7 (0.33)	*	* (0.01)	4 (0.21)	* (0.02)	2 (0.08)
2022	3 955	11 (0.29)	1 (0.03)	9 (0.24)	1 (0.03)	1 (0.01)	10 (0.26)	* (0.01)	6 (0.14)
2023	4 140	*	* (0.01)	10 (0.24)	1 (0.01)	* (0.01)	13 (0.31)	2 (0.06)	2 (0.05)
2024	3 525	10 (0.29)	1 (0.02)	4 (0.12)	* (0.01)	1 (0.02)	24 (0.69)	1 (0.04)	3 (0.09)

(b) Puysegur June–September (Bottom and midwater trawls). No data 1998, 2008, 2009, 2015, 2022 or 2023.

Year	Catch in t (% of hoki catch)								
	HOK	CSQ	HAK	LIN	RCO	SND	SPD	SWA	Other
1991	986	-	3 (0.35)	25 (2.52)	2 (0.24)	2 (0.15)	1 (0.07)	1 (0.07)	14 (1.45)
1992	1 027	1 (0.09)	27 (2.62)	431 (41.93)	16 (1.56)	4 (0.39)	4 (0.35)	2 (0.21)	53 (5.19)
1993	231	-	2 (1.03)	60 (25.88)	2 (0.76)	* (0.19)	* (0.06)	* (0.18)	5 (2.17)
1994	938	* (0.02)	* (0.05)	8 (0.84)	5 (0.51)	* (0.02)	6 (0.63)	7 (0.79)	10 (1.04)
1995	226	* (0.02)	* (0.08)	8 (3.72)	* (0.13)	-	* (0.02)	* (0.03)	1 (0.38)
1996	719	* (0.03)	2 (0.24)	33 (4.57)	3 (0.46)	* (0.01)	2 (0.26)	3 (0.46)	5 (0.76)
1997	545	*	* (0.05)	8 (1.45)	* (0.04)	-	3 (0.64)	4 (0.79)	10 (1.75)
1999	226	-	4 (1.87)	25 (10.86)	6 (2.62)	1 (0.43)	9 (3.97)	6 (2.45)	14 (6.01)
2000	562	* (0.04)	* (0.05)	26 (4.6)	1 (0.09)	2 (0.33)	7 (1.28)	26 (4.63)	16 (2.89)
2001	710	-	5 (0.66)	21 (2.96)	2 (0.27)	* (0.06)	6 (0.79)	232 (32.74)	23 (3.22)
2002	572	-	* (0.08)	20 (3.57)	1 (0.15)	* (0.05)	1 (0.24)	44 (7.73)	9 (1.54)
2003	531	2 (0.34)	2 (0.31)	30 (5.60)	* (0.04)	1 (0.18)	2 (0.33)	17 (3.13)	19 (3.62)
2004	562	-	* (0.06)	33 (5.81)	1 (0.16)	2 (0.37)	2 (0.28)	14 (2.48)	18 (3.18)
2005	1 237	-	1 (0.06)	20 (1.60)	1 (0.08)	* (0.01)	11 (0.88)	1 (0.09)	17 (1.41)
2006	372	5 (1.43)	2 (0.63)	104 (27.95)	1 (0.31)	7 (1.87)	1 (0.27)	* (0.08)	26 (7.02)
2007	10	* (0.15)	* (0.19)	4 (38.46)	* (0.38)	-	* (0.51)	* (0.58)	2 (17.23)
2010	31	* (0.64)	* (0.55)	* (0.66)	-	* (0.48)	* (0.05)	1 (3.59)	* (0.70)
2011	1	-	-	-	-	-	-	-	* (10.00)
2012	300	6 (2.04)	6 (2.03)	19 (6.19)	*	2 (0.59)	* (0.03)	5 (1.56)	10 (3.30)
2013	231	4 (1.86)	3 (1.19)	14 (6.26)	* (0.01)	10 (4.40)	* (0.20)	9 (3.9)	18 (7.70)
2014	69	3 (4.21)	1 (0.99)	6 (9.05)	*	1 (1.76)	* (0.58)	* (0.01)	4 (5.31)
2016	163	7 (4.58)	1 (0.32)	7 (4.52)	* (0.04)	15 (9.03)	* (0.13)	1 (0.33)	8 (4.94)
2017	5	-	-	* (0.21)	-	-	-	-	* (1.67)
2018	219	12 (5.46)	3 (1.20)	96 (43.75)	* (0.19)	7 (3.17)	* (0.12)	* (0.14)	17 (7.60)
2019	467	* (0.04)	10 (2.22)	49 (10.58)	* (0.08)	* (0.1)	* (0.05)	1 (0.20)	29 (6.26)
2020	33	* (0.85)	- (1.52)	3 (9.39)	* (0.15)	3 (7.74)	-	* (0.48)	3 (8.15)
2021	65	2 (3.71)	1 (1.00)	16 (24.30)	-	11 (17.68)	* (0.50)	* (0.01)	8 (12.12)
2024	10	-	* (0.99)	5 (45.33)	* (0.02)	2 (22.96)	* (1.08)	* (0.11)	1 (8.33)

(c) WCSI June–September (bottom trawl)

Year	Catch in t (% of hoki catch)								
	HOK	HAK	JAV	LIN	RAT	SKI	SPD	SWA	Other
1991	1 046	25 (2.42)	1 (0.05)	56 (5.35)	2 (0.21)	1 (0.08)	8 (0.75)	67 (6.44)	48 (4.63)
1992	516	7 (1.26)	1 (0.10)	44 (8.44)	2 (0.42)	1 (0.20)	5 (0.90)	9 (1.75)	56 (10.89)
1993	3 424	82 (2.4)	1 (0.03)	79 (2.30)	6 (0.16)	7 (0.20)	30 (0.87)	79 (2.29)	58 (1.68)
1994	1 503	52 (3.43)	4 (0.24)	56 (3.73)	4 (0.29)	2 (0.16)	28 (1.88)	23 (1.54)	73 (4.86)
1995	179	24 (13.19)	1 (0.36)	30 (16.63)	3 (1.84)	* (0.03)	7 (3.64)	9 (5.26)	33 (18.38)
1996	360	48 (13.32)	* (0.04)	31 (8.73)	2 (0.65)	1 (0.30)	43 (11.95)	26 (7.23)	28 (7.65)
1997	1	* (16.54)	* (0.31)	-	* (4.68)	-	-	-	* (58.81)
1998	678	73 (10.76)	3 (0.44)	46 (6.75)	5 (0.71)	*	15 (2.23)	19 (2.78)	32 (4.70)
1999	2 668	247 (9.24)	20 (0.73)	160 (6.00)	25 (0.93)	* (0.01)	67 (2.52)	85 (3.17)	113 (4.24)
2000	3 033	438 (14.45)	17 (0.56)	122 (4.01)	26 (0.87)	1 (0.02)	35 (1.14)	84 (2.78)	179 (5.89)
2001	1 462	54 (3.71)	4 (0.28)	66 (4.49)	6 (0.39)	1 (0.10)	13 (0.89)	57 (3.90)	41 (2.78)
2002	7 612	595 (7.82)	33 (0.43)	308 (4.05)	52 (0.68)	8 (0.11)	80 (1.05)	60 (0.79)	310 (4.07)
2003	2 609	213 (8.18)	17 (0.67)	139 (5.34)	19 (0.72)	16 (0.59)	28 (1.06)	49 (1.88)	147 (5.62)
2004	2 035	335 (16.48)	32 (1.56)	270 (13.28)	20 (1.00)	60 (2.94)	28 (1.40)	182 (8.94)	269 (13.20)
2005	1 507	74 (4.88)	5 (0.35)	126 (8.34)	5 (0.32)	42 (2.78)	23 (1.54)	74 (4.92)	86 (5.73)
2006	2 242	102 (4.55)	26 (1.14)	141 (6.31)	17 (0.74)	27 (1.22)	50 (2.23)	70 (3.14)	135 (6.04)
2007	1 375	71 (5.15)	12 (0.90)	38 (2.76)	11 (0.82)	2 (0.12)	7 (0.52)	42 (3.02)	71 (5.20)
2008	1 297	23 (1.75)	8 (0.59)	43 (3.35)	6 (0.43)	1 (0.07)	28 (2.13)	36 (2.79)	36 (2.80)
2009	60	30 (49.94)	2 (2.66)	2 (3.63)	* (0.54)	* (0.35)	4 (6.87)	* (0.35)	5 (7.98)
2010	3 888	67 (1.72)	14 (0.35)	132 (3.40)	9 (0.22)	3 (0.08)	73 (1.88)	41 (1.06)	63 (1.63)
2011	2 961	194 (6.57)	18 (0.62)	154 (5.20)	21 (0.72)	20 (0.68)	49 (1.64)	75 (2.55)	112 (3.79)
2012	5 284	169 (3.2)	21 (0.40)	217 (4.10)	16 (0.31)	3 (0.05)	136 (2.57)	61 (1.15)	95 (1.81)
2013	6 874	865 (12.58)	98 (1.42)	449 (6.53)	82 (1.19)	9 (0.13)	158 (2.3)	102 (1.48)	399 (5.81)
2014	4 996	559 (11.18)	67 (1.35)	278 (5.57)	50 (1.00)	33 (0.66)	55 (1.11)	96 (1.93)	325 (6.51)
2015	4 785	390 (8.16)	73 (1.52)	282 (5.89)	66 (1.37)	27 (0.56)	48 (1.00)	59 (1.23)	284 (5.94)
2016	6 751	184 (2.73)	58 (0.86)	266 (3.94)	64 (0.95)	23 (0.34)	56 (0.84)	198 (2.93)	257 (3.81)
2017	8 340	760 (9.12)	51 (0.61)	376 (4.51)	85 (1.02)	67 (0.80)	80 (0.96)	60 (0.71)	384 (4.60)
2018	9 159	812 (8.87)	133 (1.46)	395 (4.31)	115 (1.26)	87 (0.95)	84 (0.92)	66 (0.72)	563 (6.15)
2019	6 533	260 (3.98)	35 (0.54)	289 (4.42)	39 (0.60)	172 (2.63)	26 (0.40)	97 (1.48)	222 (3.40)
2020	10 315	371 (3.60)	29 (0.28)	377 (3.66)	44 (0.43)	238 (2.31)	15 (0.14)	120 (1.16)	201 (1.95)
2021	4 872	386 (7.93)	14 (0.28)	160 (3.28)	19 (0.38)	132 (2.72)	4 (0.07)	34 (0.71)	127 (2.61)
2022	6 144	371 (6.03)	17 (0.27)	266 (4.33)	23 (0.38)	180 (2.93)	26 (0.43)	125 (2.04)	243 (3.96)
2023	3 550	364 (10.26)	17 (0.48)	118 (3.34)	38 (1.07)	132 (3.73)	6 (0.17)	44 (1.23)	196 (5.51)
2024	4 687	245 (5.23)	28 (0.59)	142 (3.03)	59 (1.25)	124 (2.64)	3 (0.06)	23 (0.50)	170 (3.63)

Table 18: (continued)

(d) WCSI June–September (midwater trawls)

Year	Catch in t (% of hoki catch)								
	HOK	BAR	FRO	HAK	JMA	LIN	SPD	SWA	Other
1991	27 366	36 (0.13)	283 (1.03)	1 547 (5.65)	197 (0.72)	185 (0.68)	35 (0.13)	392 (1.43)	167 (0.61)
1992	18 089	56 (0.31)	173 (0.96)	145 (0.80)	83 (0.46)	97 (0.54)	94 (0.52)	147 (0.81)	143 (0.79)
1993	15 720	67 (0.43)	82 (0.52)	289 (1.84)	16 (0.10)	104 (0.66)	27 (0.17)	61 (0.39)	66 (0.42)
1994	31 080	29 (0.09)	253 (0.81)	166 (0.53)	128 (0.41)	111 (0.36)	187 (0.60)	595 (1.91)	243 (0.78)
1995	25 541	30 (0.12)	188 (0.74)	817 (3.20)	261 (1.02)	191 (0.75)	186 (0.73)	152 (0.60)	177 (0.69)
1996	17 316	85 (0.49)	111 (0.64)	1 360 (7.85)	157 (0.91)	247 (1.43)	272 (1.57)	445 (2.57)	320 (1.85)
1997	14 180	10 (0.07)	192 (1.35)	647 (4.56)	89 (0.63)	129 (0.91)	59 (0.42)	420 (2.96)	86 (0.60)
1998	18 147	15 (0.09)	85 (0.47)	1 008 (5.56)	20 (0.11)	282 (1.55)	230 (1.27)	427 (2.35)	243 (1.34)
1999	14 768	12 (0.08)	203 (1.37)	781 (5.29)	21 (0.14)	130 (0.88)	151 (1.03)	136 (0.92)	129 (0.87)
2000	15 536	2 (0.01)	155 (1.00)	643 (4.14)	6 (0.04)	168 (1.08)	76 (0.49)	291 (1.87)	150 (0.97)
2001	14 818	90 (0.61)	269 (1.82)	459 (3.10)	3 (0.02)	192 (1.30)	69 (0.46)	216 (1.46)	171 (1.15)
2002	9 171	38 (0.42)	215 (2.35)	869 (9.48)	1 (0.01)	207 (2.26)	39 (0.43)	55 (0.60)	264 (2.88)
2003	7 539	73 (0.97)	166 (2.20)	315 (4.18)	2 (0.03)	50 (0.66)	13 (0.17)	47 (0.62)	85 (1.12)
2004	6 384	63 (0.98)	213 (3.33)	482 (7.55)	63 (0.99)	236 (3.70)	22 (0.35)	87 (1.36)	184 (2.89)
2005	5 671	221 (3.89)	262 (4.63)	271 (4.78)	8 (0.14)	155 (2.73)	15 (0.27)	25 (0.44)	179 (3.16)
2006	7 283	35 (0.48)	152 (2.09)	302 (4.14)	3 (0.05)	91 (1.25)	12 (0.17)	26 (0.36)	67 (0.92)
2007	8 445	26 (0.3)	176 (2.08)	41 (0.49)	1 (0.01)	41 (0.49)	23 (0.27)	39 (0.46)	66 (0.78)
2008	6 478	6 (0.09)	158 (2.44)	24 (0.37)	1 (0.02)	29 (0.45)	20 (0.31)	17 (0.26)	75 (1.15)
2009	8 733	3 (0.03)	106 (1.21)	37 (0.43)	24 (0.28)	64 (0.74)	21 (0.25)	58 (0.66)	161 (1.85)
2010	7 731	*	17 (0.22)	18 (0.23)	*	30 (0.39)	6 (0.08)	24 (0.31)	47 (0.61)
2011	6 595	25 (0.39)	15 (0.22)	37 (0.56)	* (0.01)	35 (0.54)	13 (0.19)	23 (0.35)	45 (0.69)
2012	13 150	2 (0.01)	43 (0.33)	132 (1.00)	1 (*)	117 (0.89)	108 (0.82)	29 (0.22)	74 (0.56)
2013	24 970	3 (0.01)	162 (0.65)	647 (2.59)	18 (0.07)	372 (1.49)	91 (0.37)	44 (0.17)	235 (0.94)
2014	26 989	7 (0.03)	295 (1.09)	476 (1.76)	*	331 (1.23)	89 (0.33)	50 (0.18)	274 (1.01)
2015	33 042	164 (0.50)	312 (0.94)	435 (1.32)	62 (0.19)	388 (1.17)	98 (0.30)	75 (0.23)	290 (0.88)
2016	21 974	10 (0.05)	292 (1.33)	486 (2.21)	20 (0.09)	435 (1.98)	58 (0.27)	51 (0.23)	243 (1.11)
2017	13 230	95 (0.72)	94 (0.71)	224 (1.70)	4 (0.03)	211 (1.60)	51 (0.39)	15 (0.11)	160 (1.21)
2018	15 756	221 (1.41)	338 (2.14)	751 (4.77)	130 (0.83)	442 (2.80)	96 (0.61)	9 (0.06)	372 (2.36)
2019	14 394	52 (0.36)	397 (2.76)	512 (3.56)	126 (0.87)	378 (2.63)	61 (0.42)	4 (0.03)	295 (2.05)
2020	13 768	9 (0.06)	156 (1.14)	267 (1.94)	3 (0.03)	275 (2.00)	45 (0.33)	20 (0.14)	313 (2.27)
2021	11 702	19 (0.16)	188 (1.60)	124 (1.06)	17 (0.15)	191 (1.63)	28 (0.24)	7 (0.06)	231 (1.97)
2022	14 576	78 (0.54)	303 (2.08)	249 (1.71)	72 (0.49)	262 (1.80)	53 (0.36)	9 (0.06)	299 (2.05)
2023	15 052	16 (0.1)	138 (0.92)	284 (1.89)	236 (1.57)	323 (2.14)	28 (0.19)	5 (0.03)	328 (2.18)
2024	13 594	276 (2.03)	158 (1.17)	272 (2.00)	29 (0.21)	301 (2.21)	12 (0.09)	3 (0.02)	507 (3.73)

Table 18: (continued)

(e) ECSI, July–September

year	Catch in t (% of hoki catch)								
	HOK	GSP	HAK	JAV	LIN	RAT	SPD	SWA	Other
1992	635	-	9 (1.41)	8 (1.25)	36 (5.74)	27 (4.18)	2 (0.37)	14 (2.21)	43 (6.72)
1993	236	-	1 (0.46)	4 (1.57)	2 (0.69)	6 (2.60)	* (0.17)	8 (3.54)	6 (2.37)
1994	272	-	8 (2.95)	* (0.02)	24 (8.78)	22 (8.18)	9 (3.47)	1 (0.29)	85 (31.23)
1995	367	-	8 (2.24)	5 (1.39)	27 (7.28)	18 (4.96)	1 (0.26)	17 (4.63)	12 (3.25)
1996	517	-	42 (8.13)	35 (6.85)	29 (5.58)	88 (16.95)	8 (1.58)	78 (15.17)	55 (10.71)
1997	256	-	4 (1.68)	5 (2.12)	4 (1.55)	10 (3.87)	3 (1.08)	-	6 (2.49)
1998	298	-	6 (2.12)	44 (14.77)	8 (2.62)	24 (8.21)	3 (1.15)	36 (12.00)	20 (6.84)
1999	199	1 (0.35)	4 (1.76)	6 (2.94)	12 (6.24)	27 (13.69)	6 (3.00)	1 (0.30)	20 (10.25)
2000	14	2 (13.77)	1 (6.20)	3 (21.01)	1 (4.78)	1 (9.77)	* (0.57)	2 (11.52)	5 (34.5)
2001	200	* (0.14)	2 (0.81)	2 (1.09)	4 (1.91)	1 (0.68)	-	4 (2.06)	7 (3.50)
2002	505	4 (0.71)	4 (0.88)	16 (3.09)	9 (1.78)	16 (3.25)	14 (2.84)	1 (0.24)	16 (3.15)
2003	1 142	7 (0.58)	35 (3.04)	48 (4.20)	17 (1.48)	88 (7.70)	16 (1.42)	97 (8.47)	52 (4.56)
2004	2 055	26 (1.28)	22 (1.06)	82 (4.00)	67 (3.27)	177 (8.61)	28 (1.34)	97 (4.70)	105 (5.10)
2005	319	1 (0.38)	1 (0.31)	9 (2.92)	3 (0.91)	10 (3.13)	1 (0.32)	3 (1.09)	3 (1.04)
2006	1 149	6 (0.52)	11 (0.93)	39 (3.39)	15 (1.34)	65 (5.63)	17 (1.45)	78 (6.75)	21 (1.85)
2007	14	* (1.60)	* (0.60)	1 (7.52)	* (1.31)	* (2.68)	* (0.07)	* (0.26)	* (2.39)
2008	437	8 (1.84)	19 (4.25)	51 (11.62)	11 (2.61)	64 (14.69)	4 (0.83)	33 (7.48)	31 (7.07)
2009	364	3 (0.87)	1 (0.25)	7 (1.83)	2 (0.64)	12 (3.26)	1 (0.32)	1 (0.16)	4 (1.16)
2010	56	2 (2.67)	1 (0.94)	39 (68.52)	1 (2.45)	43 (76.97)	1 (1.37)	1 (1.06)	9 (16.03)
2011	444	2 (0.37)	2 (0.44)	5 (1.07)	1 (0.26)	11 (2.38)	1 (0.23)	5 (1.05)	7 (1.49)
2012	902	4 (0.44)	4 (0.44)	33 (3.65)	5 (0.58)	83 (9.20)	2 (0.24)	64 (7.06)	15 (1.64)
2013	2 053	2 (0.11)	12 (0.59)	21 (1.03)	15 (0.75)	69 (3.38)	18 (0.90)	151 (7.38)	14 (0.67)
2014	82	2 (2.33)	4 (4.52)	9 (10.39)	2 (2.98)	10 (12.66)	* (0.27)	17 (20.98)	5 (5.78)
2015	825	3 (0.37)	8 (0.94)	8 (0.95)	4 (0.51)	8 (1.02)	3 (0.33)	31 (3.77)	10 (1.23)
2016	271	1 (0.34)	3 (0.94)	11 (4.11)	3 (1.16)	11 (4.02)	4 (1.34)	21 (7.92)	8 (2.86)
2017	671	1 (0.10)	4 (0.54)	5 (0.79)	5 (0.71)	16 (2.34)	1 (0.18)	50 (7.45)	8 (1.19)
2018	3 327	11 (0.33)	28 (0.85)	52 (1.55)	28 (0.84)	82 (2.46)	13 (0.40)	152 (4.56)	50 (1.50)
2019	3 547	21 (0.59)	16 (0.46)	64 (1.80)	61 (1.71)	209 (5.88)	72 (2.02)	154 (4.35)	63 (1.78)
2020	3 158	16 (0.51)	16 (0.5)	99 (3.13)	46 (1.44)	174 (5.52)	58 (1.85)	185 (5.84)	56 (1.77)
2021	2 027	15 (0.72)	11 (0.53)	99 (4.86)	49 (2.44)	239 (11.8)	78 (3.83)	80 (3.94)	49 (2.40)
2022	2 975	7 (0.23)	11 (0.36)	46 (1.56)	33 (1.11)	82 (2.77)	62 (2.09)	153 (5.14)	34 (1.15)
2023	4 734	20 (0.41)	17 (0.36)	105 (2.21)	69 (1.46)	383 (8.09)	140 (2.96)	283 (5.98)	77 (1.64)
2024	6 057	27 (0.45)	21 (0.34)	136 (2.24)	110 (1.81)	336 (5.54)	227 (3.75)	191 (3.15)	111 (1.84)

(f) Chatham Rise (excludes ECSI from July–September) (bottom trawl)

year	Catch in t (% of hoki catch)								
	HOK	GSP	HAK	JAV	LIN	RAT	SPD	SWA	Other
1991	3 330	33 (1.00)	133 (3.98)	142 (4.26)	157 (4.71)	101 (3.02)	24 (0.72)	210 (6.29)	528 (15.85)
1992	4 218	24 (0.56)	50 (1.19)	62 (1.48)	108 (2.55)	102 (2.43)	3 (0.06)	14 (0.33)	302 (7.16)
1993	252	-	46 (18.11)	11 (4.40)	7 (2.88)	3 (1.33)	* (0.13)	* (0.18)	45 (17.87)
1994	3 255	6 (0.19)	42 (1.28)	76 (2.34)	89 (2.74)	86 (2.63)	7 (0.22)	14 (0.44)	259 (7.95)
1995	1 331	-	20 (1.49)	56 (4.20)	41 (3.06)	34 (2.57)	7 (0.51)	5 (0.34)	83 (6.26)
1996	2 997	-	70 (2.35)	68 (2.27)	103 (3.44)	107 (3.58)	40 (1.34)	49 (1.65)	150 (4.99)
1997	771	* (0.01)	82 (10.64)	32 (4.18)	45 (5.81)	80 (10.39)	4 (0.47)	116 (14.99)	100 (13.01)
1998	5 115	-	101 (1.97)	252 (4.92)	178 (3.47)	279 (5.46)	64 (1.25)	57 (1.11)	547 (10.70)
1999	7 655	61 (0.79)	89 (1.16)	340 (4.44)	261 (3.41)	302 (3.95)	127 (1.66)	84 (1.10)	540 (7.06)
2000	3 444	66 (1.91)	61 (1.77)	214 (6.22)	102 (2.96)	155 (4.5)	135 (3.93)	124 (3.61)	398 (11.57)
2001	4 067	117 (2.87)	123 (3.04)	342 (8.42)	211 (5.19)	290 (7.13)	92 (2.25)	210 (5.16)	598 (14.7)
2002	4 235	114 (2.68)	91 (2.14)	370 (8.74)	215 (5.08)	370 (8.74)	107 (2.52)	49 (1.16)	590 (13.94)
2003	2 065	98 (4.76)	55 (2.65)	388 (18.77)	190 (9.22)	261 (12.63)	37 (1.78)	63 (3.04)	452 (21.9)
2004	1 345	43 (3.21)	33 (2.44)	171 (12.72)	95 (7.03)	94 (6.98)	32 (2.35)	149 (11.1)	295 (21.95)
2005	4 729	103 (2.18)	51 (1.08)	520 (10.99)	175 (3.70)	330 (6.98)	105 (2.23)	131 (2.76)	553 (11.69)
2006	4 537	93 (2.05)	43 (0.96)	358 (7.89)	117 (2.58)	255 (5.62)	78 (1.71)	217 (4.79)	463 (10.21)
2007	5 518	69 (1.25)	80 (1.46)	499 (9.05)	155 (2.80)	165 (2.98)	39 (0.71)	195 (3.53)	388 (7.03)
2008	5 330	54 (1.01)	60 (1.13)	360 (6.75)	111 (2.07)	268 (5.02)	70 (1.31)	122 (2.28)	493 (9.26)
2009	4 374	25 (0.57)	49 (1.12)	349 (7.97)	94 (2.15)	278 (6.36)	44 (1.01)	71 (1.62)	214 (4.89)
2010	5 727	38 (0.66)	73 (1.27)	509 (8.88)	135 (2.36)	412 (7.19)	47 (0.82)	243 (4.25)	359 (6.27)
2011	5 981	49 (0.82)	52 (0.87)	381 (6.36)	143 (2.39)	310 (5.19)	46 (0.76)	217 (3.63)	358 (5.98)
2012	7 321	65 (0.89)	39 (0.53)	298 (4.07)	181 (2.47)	281 (3.84)	105 (1.44)	183 (2.50)	442 (6.04)
2013	9 864	114 (1.15)	102 (1.03)	736 (7.46)	379 (3.84)	771 (7.82)	82 (0.83)	286 (2.90)	990 (10.04)
2014	8 769	82 (0.93)	87 (1.00)	437 (4.98)	348 (3.97)	454 (5.18)	229 (2.61)	372 (4.24)	864 (9.85)
2015	4 820	72 (1.49)	114 (2.37)	573 (11.88)	258 (5.35)	407 (8.45)	93 (1.93)	214 (4.45)	555 (11.51)
2016	7 281	74 (1.02)	85 (1.16)	647 (8.88)	292 (4.01)	556 (7.63)	132 (1.82)	202 (2.77)	602 (8.27)
2017	8 012	80 (1.00)	82 (1.02)	783 (9.77)	293 (3.66)	667 (8.33)	198 (2.47)	30 (0.37)	713 (8.90)
2018	6 211	67 (1.08)	115 (1.85)	956 (15.40)	297 (4.78)	495 (7.96)	193 (3.11)	290 (4.67)	581 (9.35)
2019	5 360	54 (1.00)	48 (0.9)	352 (6.57)	177 (3.31)	298 (5.55)	161 (3.01)	466 (8.70)	371 (6.93)
2020	5 945	63 (1.06)	31 (0.52)	276 (4.65)	167 (2.81)	246 (4.14)	78 (1.32)	144 (2.42)	432 (7.26)
2021	13 841	107 (0.77)	94 (0.68)	770 (5.56)	387 (2.79)	527 (3.80)	218 (1.57)	470 (3.4)	961 (6.94)
2022	9 654	98 (1.02)	66 (0.69)	621 (6.44)	308 (3.19)	445 (4.61)	343 (3.55)	373 (3.87)	777 (8.05)
2023	8 766	70 (0.79)	62 (0.71)	373 (4.26)	282 (3.21)	387 (4.41)	205 (2.34)	755 (8.61)	511 (5.83)
2024	10 780	117 (1.09)	88 (0.82)	670 (6.22)	337 (3.13)	673 (6.24)	363 (3.36)	843 (7.82)	962 (8.93)

Table 18: (continued)

(g) Sub-Antarctic (bottom trawls)

Year	Catch in t (% of hoki catch)								
	HOK	GSP	HAK	JAV	LIN	RAT	SPD	SWA	Other
1991	1 974	14 (0.69)	204 (10.35)	17 (0.86)	91 (4.61)	14 (0.72)	3 (0.16)	* (0.02)	205 (10.38)
1992	3 450	9 (0.25)	332 (9.62)	47 (1.36)	248 (7.18)	39 (1.13)	15 (0.43)	9 (0.27)	229 (6.63)
1993	2 566	4 (0.15)	509 (19.86)	30 (1.17)	224 (8.74)	21 (0.83)	8 (0.29)	5 (0.19)	133 (5.17)
1994	1 118	12 (1.07)	31 (2.73)	11 (0.95)	98 (8.73)	10 (0.91)	12 (1.10)	11 (0.97)	54 (4.80)
1995	877	4 (0.46)	22 (2.50)	14 (1.59)	57 (6.54)	12 (1.38)	15 (1.67)	*	58 (6.59)
1996	742	-	27 (3.66)	9 (1.16)	95 (12.81)	15 (2.06)	5 (0.65)	8 (1.12)	72 (9.65)
1997	66	-	8 (11.93)	4 (6.08)	3 (4.75)	3 (4.42)	* (0.32)	*	20 (30.27)
1998	1 893	-	127 (6.72)	66 (3.48)	190 (10.04)	59 (3.13)	20 (1.08)	3 (0.16)	141 (7.43)
1999	4 727	20 (0.41)	133 (2.82)	74 (1.57)	256 (5.42)	77 (1.64)	20 (0.43)	26 (0.56)	226 (4.77)
2000	5 020	77 (1.54)	212 (4.23)	186 (3.70)	336 (6.69)	65 (1.3)	47 (0.94)	158 (3.15)	285 (5.67)
2001	2 752	38 (1.37)	87 (3.15)	77 (2.78)	370 (13.43)	50 (1.82)	58 (2.11)	160 (5.80)	206 (7.48)
2002	3 889	45 (1.17)	154 (3.96)	308 (7.93)	193 (4.97)	94 (2.41)	97 (2.50)	35 (0.91)	280 (7.19)
2003	2 003	53 (2.63)	81 (4.06)	99 (4.92)	363 (18.10)	47 (2.36)	80 (4.00)	21 (1.05)	174 (8.67)
2004	548	34 (6.19)	37 (6.68)	36 (6.58)	309 (56.33)	16 (2.83)	171 (31.27)	54 (9.78)	65 (11.84)
2005	391	10 (2.48)	24 (6.13)	71 (18.22)	189 (48.33)	15 (3.74)	6 (1.54)	5 (1.17)	45 (11.47)
2006	1 170	12 (1.00)	14 (1.18)	29 (2.51)	118 (10.10)	14 (1.23)	63 (5.38)	68 (5.78)	106 (9.02)
2007	1 225	14 (1.14)	16 (1.31)	50 (4.09)	225 (18.38)	18 (1.48)	85 (6.92)	82 (6.67)	160 (13.06)
2008	2 670	69 (2.58)	100 (3.76)	176 (6.58)	1 002 (37.52)	28 (1.06)	30 (1.11)	9 (0.32)	294 (11.02)
2009	2 890	53 (1.82)	93 (3.21)	127 (4.39)	359 (12.42)	40 (1.38)	83 (2.86)	52 (1.79)	178 (6.15)
2010	2 905	56 (1.94)	64 (2.20)	147 (5.06)	232 (7.98)	85 (2.93)	68 (2.34)	26 (0.88)	183 (6.29)
2011	2 014	31 (1.52)	34 (1.67)	61 (3.04)	208 (10.34)	58 (2.87)	105 (5.20)	58 (2.86)	194 (9.65)
2012	2 141	25 (1.18)	46 (2.14)	64 (2.97)	404 (18.86)	48 (2.25)	46 (2.15)	1 (0.06)	121 (5.66)
2013	6 059	66 (1.08)	58 (0.96)	197 (3.25)	647 (10.67)	129 (2.13)	132 (2.17)	226 (3.74)	259 (4.28)
2014	5 327	76 (1.43)	81 (1.52)	225 (4.23)	593 (11.14)	149 (2.81)	240 (4.51)	58 (1.10)	385 (7.23)
2015	2 454	30 (1.23)	27 (1.12)	130 (5.30)	296 (12.07)	119 (4.86)	185 (7.54)	115 (4.70)	209 (8.52)
2016	1 739	33 (1.88)	87 (4.99)	105 (6.05)	470 (27.02)	41 (2.33)	53 (3.03)	16 (0.91)	215 (12.34)
2017	1 241	30 (2.43)	26 (2.10)	53 (4.23)	211 (17.02)	39 (3.10)	130 (10.45)	49 (3.95)	220 (17.75)
2018	7 741	168 (2.17)	188 (2.43)	558 (7.20)	1 335 (17.24)	368 (4.75)	337 (4.35)	460 (5.95)	747 (9.65)
2019	1 636	45 (2.77)	32 (1.95)	169 (10.33)	305 (18.63)	110 (6.70)	195 (11.93)	396 (24.22)	319 (19.50)
2020	3 099	78 (2.52)	54 (1.75)	193 (6.23)	512 (16.53)	130 (4.19)	158 (5.08)	224 (7.21)	441 (14.22)
2021	4 363	67 (1.54)	101 (2.32)	320 (7.35)	561 (12.85)	132 (3.03)	171 (3.92)	114 (2.62)	378 (8.67)
2022	3 697	54 (1.45)	74 (2.01)	307 (8.3)	837 (22.64)	149 (4.02)	267 (7.21)	546 (14.77)	379 (10.25)
2023	5 159	59 (1.14)	53 (1.02)	431 (8.35)	239 (4.64)	182 (3.53)	185 (3.58)	153 (2.97)	292 (5.65)
2024	3 118	50 (1.62)	49 (1.56)	195 (6.25)	262 (8.39)	104 (3.34)	99 (3.17)	96 (3.07)	268 (8.59)

Table 19: Proportion of observed female hoki gonad stages by month and overall areas for all years combined (1990–2024) and for the 2023–24 fishing year. Stage 1, immature and resting; Stage 2, maturing; Stage 3, mature/ripe; Stage 4, running ripe; Stage 5, spent.

All areas combined

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.83	0.06	0.01	-	0.10	135 928	0.78	0.16	0.02	0.01	0.02	2 688
Nov	0.90	0.07	-	-	0.02	144 750	0.91	0.07	-	-	0.02	1 622
Dec	0.93	0.05	-	-	0.02	157 698	0.94	0.05	-	-	0.01	9 642
Jan	0.95	0.04	-	-	0.01	121 797	0.91	0.07	-	-	0.02	8 741
Feb	0.94	0.05	0.01	-	0.01	98 003	0.88	0.07	-	-	0.04	4 612
Mar	0.94	0.06	-	-	0.01	86 310	0.97	0.02	-	-	0.01	11 055
Apr	0.91	0.08	0.01	-	-	116 021	0.87	0.13	-	-	-	6 485
May	0.77	0.17	0.04	0.01	0.02	168 852	0.78	0.21	-	-	-	7 442
Jun	0.38	0.43	0.14	0.03	0.03	182 219	0.38	0.47	0.11	0.02	0.02	8 630
Jul	0.08	0.53	0.27	0.07	0.06	530 189	0.06	0.50	0.30	0.08	0.07	26 413
Aug	0.05	0.40	0.35	0.10	0.10	643 971	0.04	0.36	0.41	0.09	0.10	23 100
Sep	0.44	0.17	0.15	0.07	0.17	188 465	0.25	0.18	0.29	0.12	0.16	6 423

WCSI

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.39	0.51	0.03	0.01	0.07	504	-	-	-	-	-	-
Nov	0.92	0.04	-	0.01	0.03	173	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
Jan	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-
May	0.06	0.47	0.36	0.07	0.04	8 579	-	0.73	0.23	0.03	-	64
Jun	0.11	0.56	0.23	0.05	0.05	79 509	0.08	0.68	0.16	0.04	0.04	3 800
Jul	0.05	0.53	0.29	0.08	0.06	450 363	0.03	0.50	0.28	0.10	0.08	18 660
Aug	0.04	0.40	0.35	0.10	0.10	546 474	0.02	0.39	0.39	0.10	0.10	17 300
Sep	0.16	0.26	0.25	0.13	0.19	50 664	-	0.42	0.33	0.12	0.13	568

Cook Strait

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.87	-	-	-	0.13	15	-	-	-	-	-	-
Nov	0.74	0.20	-	0.02	0.04	46	-	-	-	-	-	-
Dec	0.96	0.04	-	-	-	1 556	0.99	0.01	-	-	-	323
Jan	0.65	0.33	0.01	-	0.01	946	1.00	-	-	-	-	221
Feb	0.57	0.41	0.02	-	-	1 275	-	-	-	-	-	-
Mar	0.94	0.05	-	-	-	1 333	-	-	-	-	-	-
Apr	0.75	0.14	0.02	0.01	0.08	1 952	-	-	-	-	-	-
May	0.39	0.40	0.07	0.01	0.13	5 591	-	-	-	-	-	-
Jun	0.04	0.51	0.28	0.06	0.11	8 325	-	-	-	-	-	-
Jul	0.03	0.48	0.36	0.09	0.04	30 146	-	0.63	0.21	0.06	0.09	1 878
Aug	0.02	0.37	0.39	0.13	0.09	56 974	-	0.59	0.24	0.07	0.10	702
Sep	0.08	0.30	0.28	0.17	0.17	18 777	0.51	0.07	0.13	0.15	0.15	341

Table 19: (continued)

Chatham Rise, excludes ECSI Jul-Sep

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.87	0.06	0.01	-	0.06	71 754	0.85	0.06	0.04	0.03	0.02	1 099
Nov	0.91	0.07	-	-	0.02	104 949	1.00	-	-	-	-	888
Dec	0.94	0.04	-	-	0.02	117 906	0.96	0.03	-	-	0.01	8 115
Jan	0.97	0.02	-	-	-	83 668	0.93	0.05	-	-	0.02	4 668
Feb	0.96	0.03	-	-	0.01	64 482	0.99	0.01	-	-	-	3 157
Mar	0.96	0.04	-	-	0.01	47 271	1.00	-	-	-	-	8 541
Apr	0.94	0.05	-	-	-	76 858	0.87	0.13	-	-	-	6 040
May	0.89	0.10	-	-	0.01	97 957	0.79	0.20	-	-	-	6 093
Jun	0.80	0.18	0.01	-	0.01	54 916	0.74	0.22	0.03	-	0.01	3 266
Jul	0.65	0.29	0.05	-	-	7 949	-	-	-	-	-	-
Aug	0.86	0.13	-	-	0.01	1 168	0.64	0.32	0.04	-	-	25
Sep	0.88	0.04	-	-	0.08	15 568	-	-	-	-	-	-

ECSI (Jul–Sep)

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
Jan	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-
Jul	0.31	0.55	0.13	0.01	0.01	28 187	0.16	0.45	0.38	-	0.01	5 871
Aug	0.18	0.50	0.21	0.04	0.06	25 602	0.10	0.22	0.51	0.09	0.09	4 893
Sep	0.37	0.18	0.17	0.07	0.21	49 293	0.20	0.16	0.32	0.14	0.18	4 543

Sub-Antarctic

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.78	0.05	-	-	0.16	57 704	0.73	0.24	0.01	-	0.02	1 566
Nov	0.89	0.08	-	-	0.03	35 550	0.80	0.15	0.01	-	0.04	734
Dec	0.88	0.08	-	-	0.03	36 318	0.77	0.22	-	-	0.01	1 090
Jan	0.92	0.06	0.01	-	0.01	36 602	0.88	0.09	-	-	0.03	3 686
Feb	0.90	0.08	0.01	-	0.01	31 763	0.64	0.23	-	-	0.13	1 403
Mar	0.91	0.08	-	-	0.01	36 691	0.85	0.12	-	-	0.03	2 103
Apr	0.84	0.13	0.02	0.01	-	36 152	0.96	0.04	-	-	-	445
May	0.71	0.22	0.05	0.01	0.02	54 091	0.79	0.21	-	-	-	1 194
Jun	0.38	0.49	0.09	0.03	0.02	34 795	0.39	0.47	0.13	-	0.01	1 560
Jul	0.47	0.47	0.03	0.01	0.01	5 957	-	-	-	-	-	-
Aug	0.78	0.10	0.03	0.01	0.07	4 335	-	-	-	-	-	-
Sep	0.84	0.04	0.01	-	0.11	41 548	0.78	0.15	0.07	-	-	296

Table 19: (continued)

Puysegur

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.80	0.11	0.02	-	0.07	5 108	0.91	-	-	-	0.09	23
Nov	0.73	0.04	-	0.01	0.21	1 302	-	-	-	-	-	-
Dec	0.98	0.01	-	-	0.01	688	-	-	-	-	-	-
Jan	0.93	0.05	-	-	0.02	187	-	-	-	-	-	-
Feb	1.00	-	-	-	-	69	-	-	-	-	-	-
Mar	0.98	0.02	-	-	-	144	-	-	-	-	-	-
Apr	0.99	0.01	-	-	-	415	-	-	-	-	-	-
May	0.73	0.26	-	-	-	1 553	0.65	0.35	-	-	-	91
Jun	0.50	0.45	0.05	-	-	3 883	-	-	-	-	-	-
Jul	0.09	0.90	0.02	-	-	7 054	-	-	-	-	-	-
Aug	0.11	0.43	0.26	0.08	0.12	8 849	0.03	0.03	0.66	0.24	0.05	38
Sep	0.48	0.13	0.13	0.06	0.19	11 883	0.36	0.19	0.27	0.04	0.14	619

ECNI

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.92	0.02	-	-	0.07	803	-	-	-	-	-	-
Nov	0.94	0.04	-	-	0.03	2 504	-	-	-	-	-	-
Dec	0.98	-	-	-	0.02	1 149	0.99	0.01	-	-	-	114
Jan	0.72	-	-	-	0.28	366	1.00	-	-	-	-	166
Feb	0.93	0.07	-	-	-	414	1.00	-	-	-	-	52
Mar	0.98	0.02	-	-	-	771	0.98	0.01	-	-	-	411
Apr	0.89	0.10	-	-	-	470	-	-	-	-	-	-
May	0.84	0.15	-	-	0.01	870	-	-	-	-	-	-
Jun	0.73	0.26	0.01	-	-	685	1.00	-	-	-	-	4
Jul	0.70	0.25	0.02	-	0.03	523	0.75	0.25	-	-	-	4
Aug	0.83	0.14	0.02	0.01	-	87	-	-	-	-	-	-
Sep	0.93	0.02	-	-	0.04	326	1.00	-	-	-	-	56

WCNI

	All years combined						2023–24 fishing year					
	1	2	3	4	5	Number	1	2	3	4	5	Number
Oct	0.80	0.10	-	-	0.10	10	-	-	-	-	-	-
Nov	1.00	-	-	-	-	3	-	-	-	-	-	-
Dec	1.00	-	-	-	-	39	-	-	-	-	-	-
Jan	1.00	-	-	-	-	26	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	0.79	0.21	-	-	-	123	-	-	-	-	-	-
May	0.86	0.12	-	-	0.02	191	-	-	-	-	-	-
Jun	0.17	0.82	-	-	-	80	-	-	-	-	-	-
Jul	0.56	0.44	-	-	-	9	-	-	-	-	-	-
Aug	-	1.00	-	-	-	3	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-

Table 20: Percentage of female hoki by gonad stages on the WCSI for female fish less than or equal to 55 cm and female fish greater than 55 cm for the 2024 spawning season by sub-fishery and data source.

(a) WC.north observer data

		Females $\leq$ 55 cm		Females $>$ 55 cm	
		Number	Percent	Number	Percent
1	Immature and resting	25	71.4	413	3.2
2	Maturing	6	17.1	7 009	53.6
3	Mature/Ripe	4	11.4	3 956	30.2
4	Running ripe	-	-	990	7.6
5	Spent	-	-	714	5.5
Total		35		13 082	

(b) WC.south observer data

		Females $\leq$ 55 cm		Females $>$ 55 cm	
		Number	Percent	Number	Percent
1	Immature and resting	132	94.3	431	2.2
2	Maturing	7	5	9 951	49.9
3	Mature/Ripe	-	-	6 350	31.8
4	Running ripe	-	-	1 438	7.2
5	Spent	1	0.7	1 779	8.9
Total		140		19 949	

(c) WC.inside observer data

		Females $\leq$ 55 cm		Females $>$ 55 cm	
		Number	Percent	Number	Percent
1	Immature and resting	-	-	135	2.1
2	Maturing	-	-	1 848	28.8
3	Mature/Ripe	-	-	2 259	35.2
4	Running ripe	-	-	1 326	20.7
5	Spent	-	-	841	13.1
Total		-		6 409	

(d) WC.inside land-based data

		Females $\leq$ 55 cm		Females $>$ 55 cm	
		Number	Percent	Number	Percent
1	Immature and resting	-	-	0	0
2	Maturing	-	-	917	35.9
3	Mature/Ripe	-	-	1 231	48.2
4	Running ripe	-	-	129	5.1
5	Spent	-	-	276	10.8
Total		-		2 553	

Table 21: WCSI trawl series relative biomass estimates, coefficients of variation comparisons for the core strata (300–650 m), all strata (200–800 m), deep strata (200–1000 m), and deep strata including exploratory tows for species for which the 2024 survey was optimised. -, area not sampled in this year.

Year	Core		All		Deep		Deep plus EX	
	Biomass	CV	Biomass	CV	Biomass	CV	Biomass	CV
2000	5 385	(20.6)	-	-	-	--	-	-
2012	32 495	(24.2)	32 602	(24.1)	-	--	-	-
2013	14 184	(26.9)	14 357	(26.5)	-	--	-	-
2016	7 734	(35.7)	7 797	(35.4)	7 830	(35.3)	-	-
2018	2 484	(14.2)	2 636	(13.6)	2 661	(13.5)	-	-
2021	10 962	(52.9)	11 070	(52.4)	11 083	(52.3)	11 289	(51.3)
2024	2 749	(38.0)	2 996	(35.1)	3 014	(34.9)	3 214	(32.9)

Table 22: Sub-Antarctic trawl series relative biomass estimates (t) and coefficient of variation (% in parentheses) for hoki for the core strata (300–800 m) and all strata (300–1000 m) from the surveys of the summer Sub-Antarctic trawl surveys November–December 1991–1993, 2000–2009, 2011, 2012, 2014, 2016, 2018, 2020, 2022, and 2024. Biomass estimates from 2016 are scaled to account for missing strata. 1+, 2+, and 3++ hoki based on length cutoffs for hoki aged 1 year, 2 years and 3 plus years and older respectively.

Year	1+ core hoki	2+ core hoki	3 ++ core hoki	Core total	All
1991	742 (86.4)	2 455 (34.9)	78 434 (6.6)	81 631 (6.8)	81 816 (6.8)
1992	213 (65.8)	420 (84.7)	87 421 (6.1)	88 053 (6.1)	88 384 (6.1)
1993	1 158 (97.8)	3 863 (48.5)	95 608 (9.0)	100 629 (9.2)	101 112 (9.2)
2000	58 (99.4)	82 (55.9)	55 523 (12.6)	55 663 (12.6)	56 407 (12.5)
2001	167 (55.5)	396 (40.8)	37 582 (15.7)	38 145 (15.5)	39 397 (15.0)
2002	46 (57.0)	2 419 (51.2)	37 425 (14.2)	39 890 (13.8)	40 503 (13.6)
2003	1 773 (28.4)	116 (28.9)	12 429 (14.3)	14 318 (12.9)	14 724 (12.6)
2004	1 116 (57.7)	2 939 (31.3)	13 538 (9.3)	17 593 (11.8)	18 114 (11.6)
2005	370 (48.5)	1 677 (24.6)	18 393 (13.8)	20 440 (12.8)	20 680 (12.7)
2006	52 (47.7)	705 (24.7)	13 112 (11.4)	14 336 (10.7)	14 747 (10.5)
2007	1 032 (54.2)	1 949 (40.7)	42 895 (16.9)	45 876 (15.8)	46 003 (15.7)
2008	975 (48.0)	1 567 (36.7)	44 439 (14.5)	46 981 (13.9)	48 341 (13.6)
2009	655 (51.1)	10 996 (65.0)	53 366 (12.5)	65 017 (16.2)	66 158 (16.0)
2011	16 (95.0)	1 832 (22.5)	44 221 (15.2)	46 070 (14.7)	46 757 (14.5)
2012	957 (43.9)	250 (56.5)	54 533 (15.4)	55 739 (15.2)	56 131 (15.1)
2014	266 (67.7)	1 991 (45.4)	29 072 (12.7)	31 329 (12.9)	31 727 (12.8)
2016	2 294 (98.3)	811 (32.5)	30 699 (13.0)	37 992 (17.0)	-
2018	52 (43.5)	970 (34.8)	30 076 (11.4)	31 098 (11.3)	31 476 (11.2)
2020	4 431 (47.4)	2 200 (36.4)	31 220 (12.4)	37 851 (12.3)	37 992 (12.3)
2022	52 (43.2)	1 050 (18.6)	48 456 (9.1)	49 557 (9.0)	50 273 (8.9)
2024	189 (47.0)	136 (33.7)	79 719 (22.2)	80 044 (22.2)	80 631 (22.0)

Table 23: Acoustic abundance (thousands) indices and overall CV (expressed as proportion) for WCSI acoustic surveys.

	Year											
	1988	1989	1990	1991	1992	1993	1997	2000	2012	2013	2018	2024
Abundance	266	165	169	227	229	380	445	263	283	233	123	138
CV	0.60	0.38	0.40	0.73	0.49	0.38	0.60	0.28	0.34	0.35	0.46	0.53

10. FIGURES

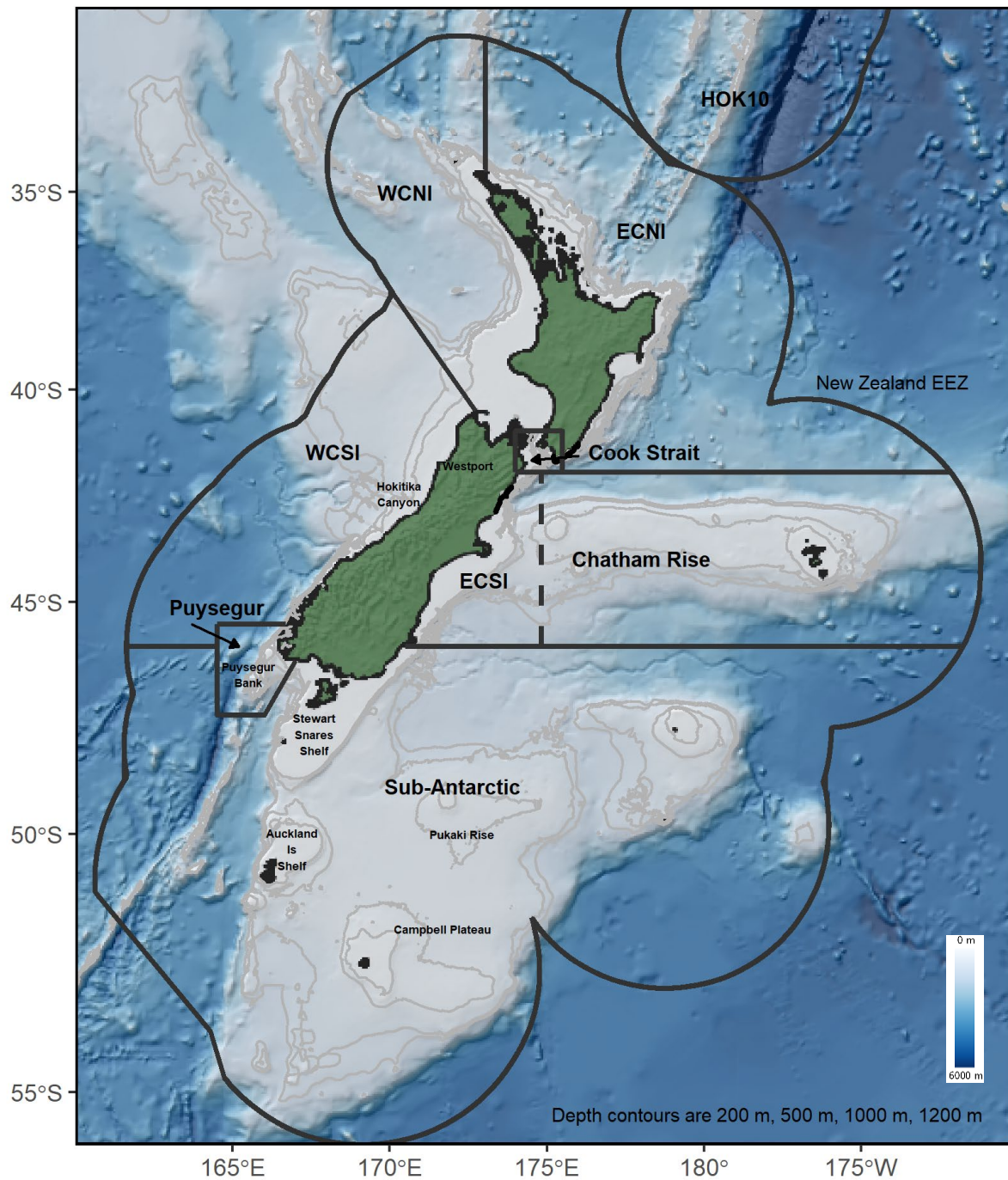


Figure 1a: Hoki areas. Note data from the ECSI area are separated in July–September only; from October to June ECSI data are included as part of the Chatham Rise area.

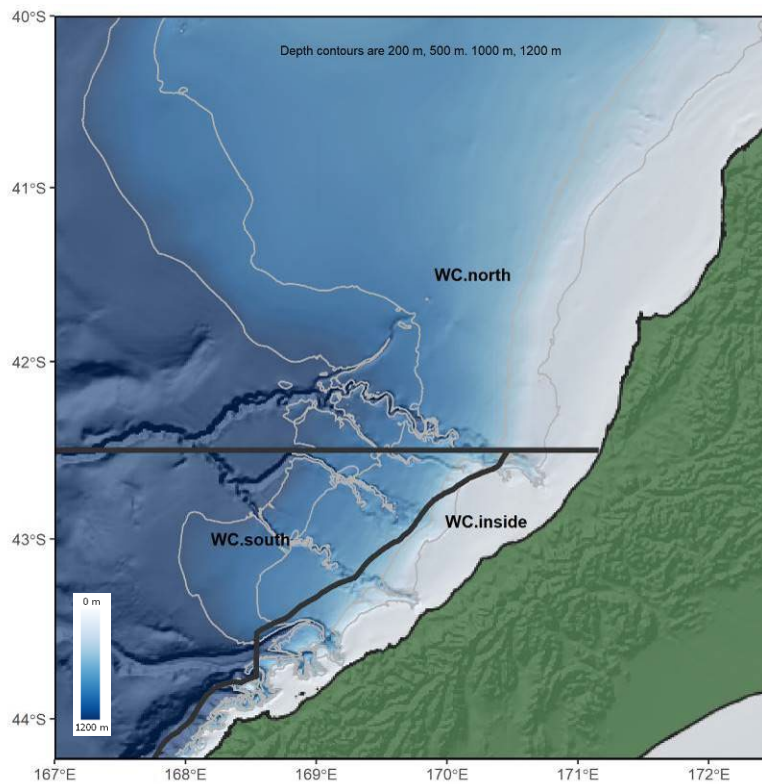


Figure 1b: Hoki WCSI fisheries.

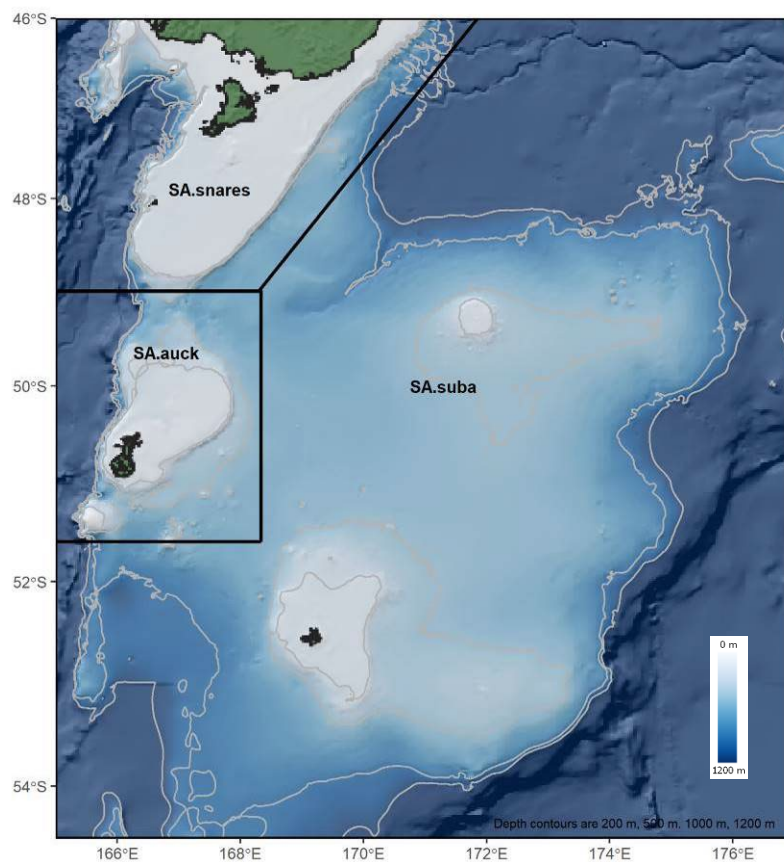


Figure 1c: Hoki Sub-Antarctic fisheries.

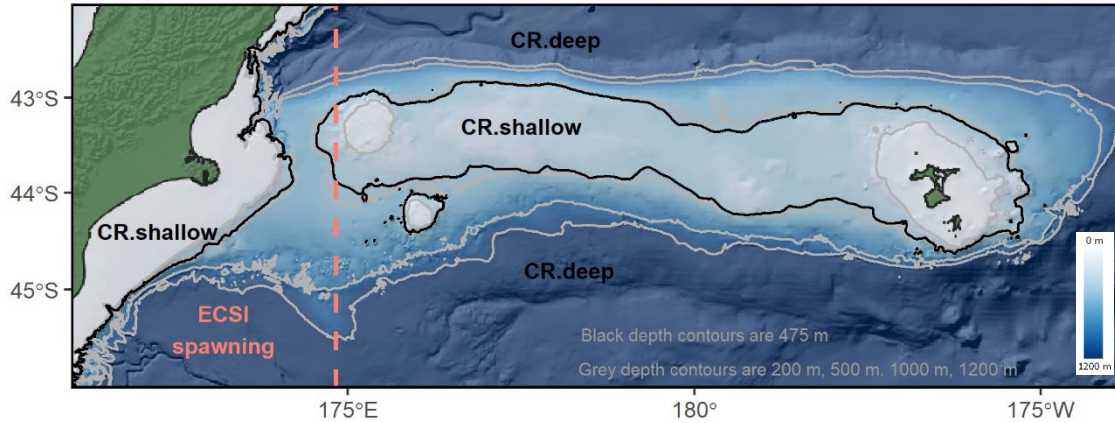


Figure 1d: Hoki Chatham Rise fisheries. Note data from the ECSI area are separated in July–September only; from October to June ECSI data are included as part of the Chatham Rise area.

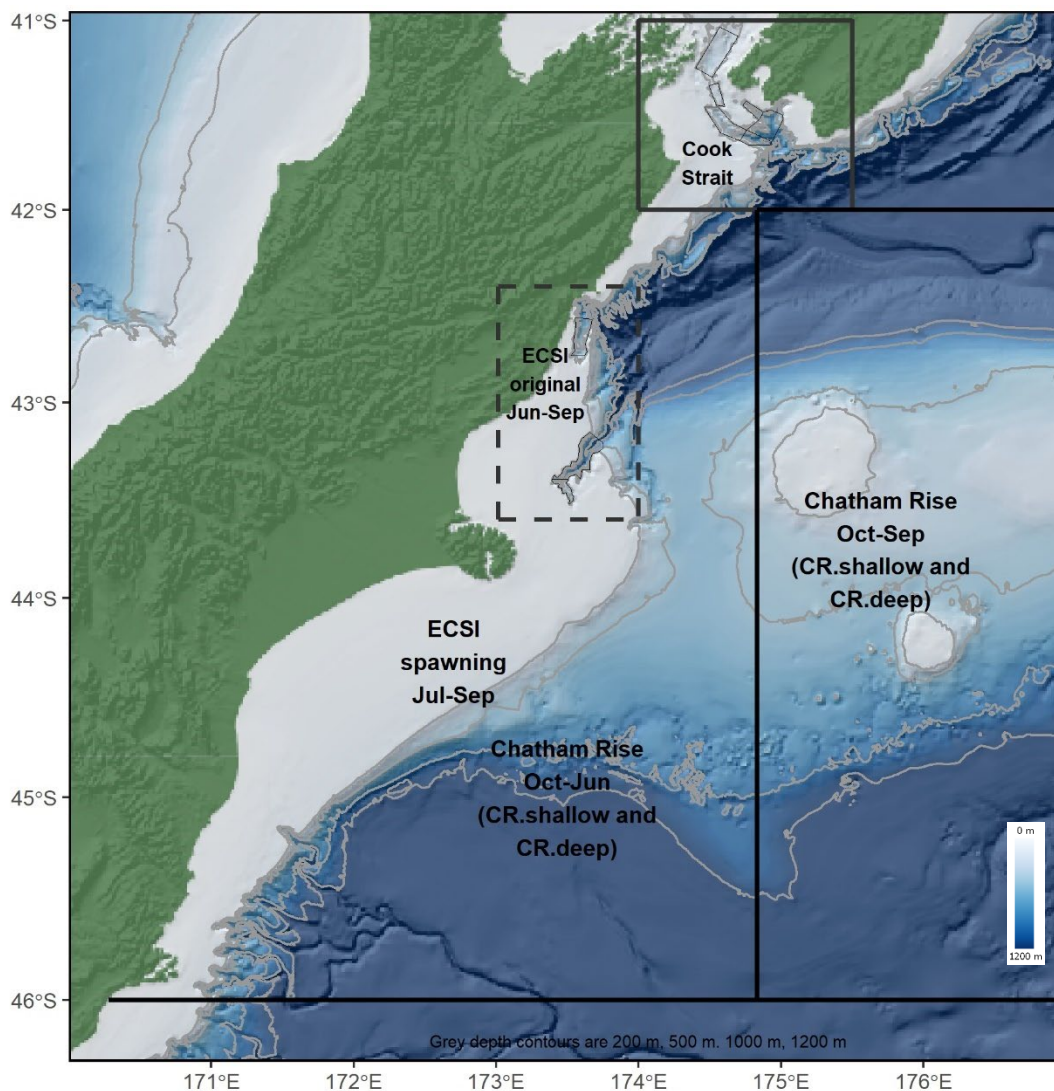


Figure 1e: Hoki ECSI fishery. The dashed line shows ECSI area prior to the 2024 stock assessment. The area to the west of longitude 174°48' and between latitudes 42° and 46° shows the extended ECSI area used in the 2024 and stock assessments. Note data from the ECSI area are for July–September only; from October to June ECSI data are included as part of Chatham Rise CR.shallow and CR.deep fisheries.

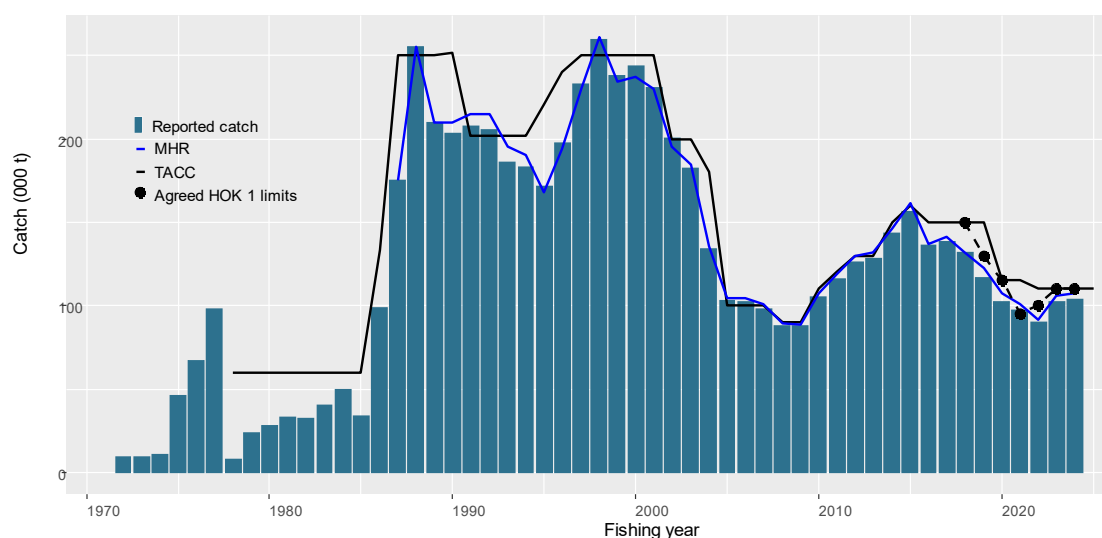


Figure 2: Total New Zealand hoki catch (thousands of tonnes) estimated from reported landings for calendar years 1972 to 1983 and fishing years 1983–84 (1984) to 2023–24 (2024) and TACC to 2024–25. Agreed catch limits are shown from 2017–18.

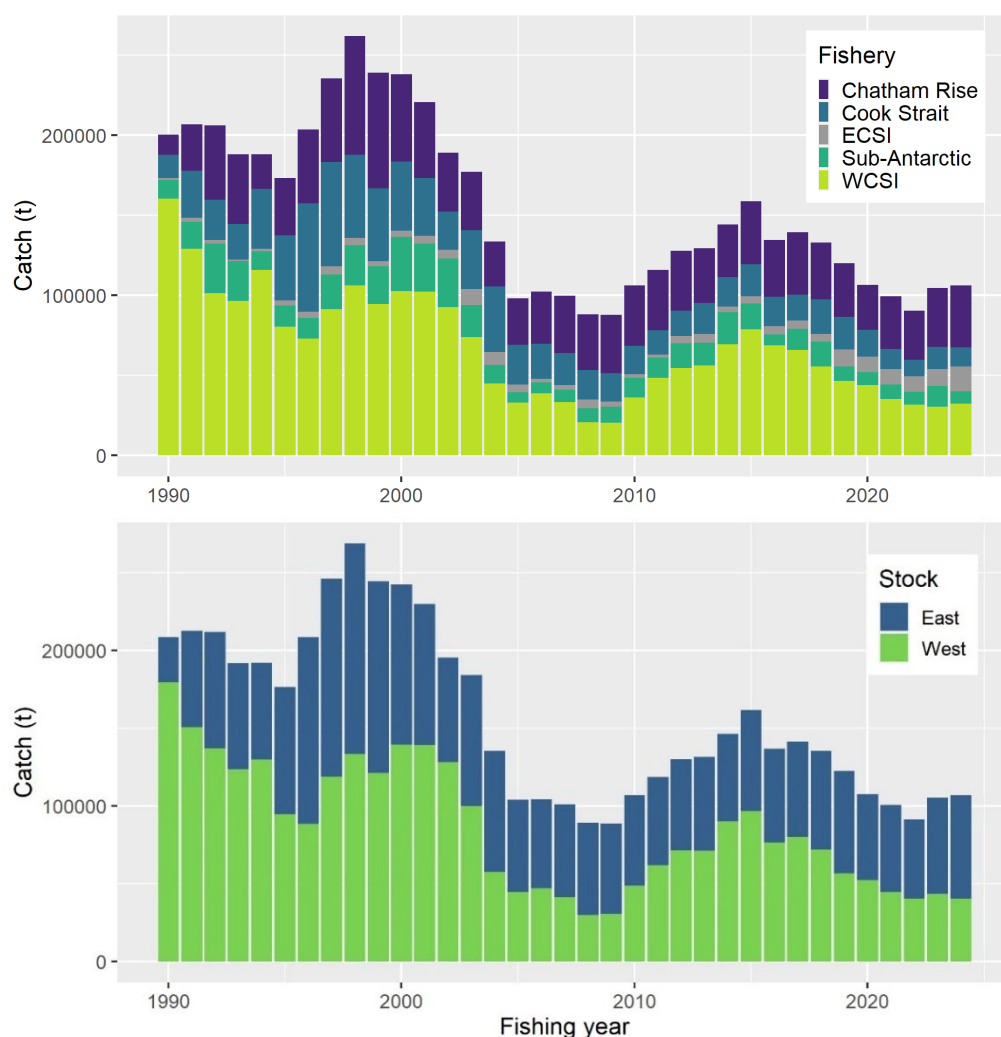


Figure 3: Estimated total catch (t) of hoki by fishing region (upper panel) and 'stock' area (lower panel) from 1988–89 (1989) to 2023–24 (2024). "Eastern" regions include Chatham Rise, east coast South Island (ECSI), Cook Strait, and east coast North Island (ECNI). "Western" regions include west coast South Island (WCSI), Sub-Antarctic, and Puysegur.

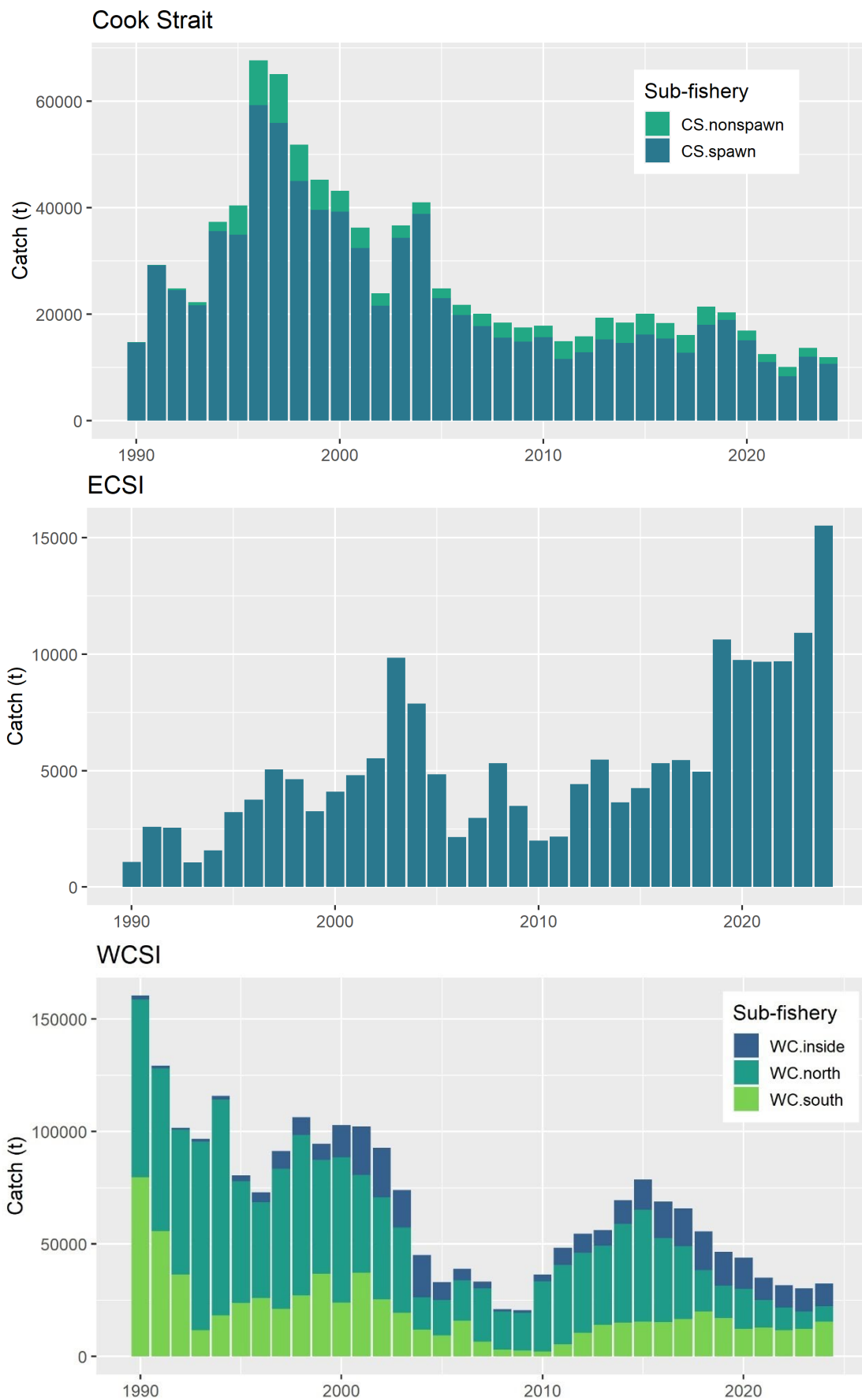


Figure 4: Estimated total catch (t) of hoki fishing by region and sub-fishery from 1989–90 (1990) to 2023–24 (2024).

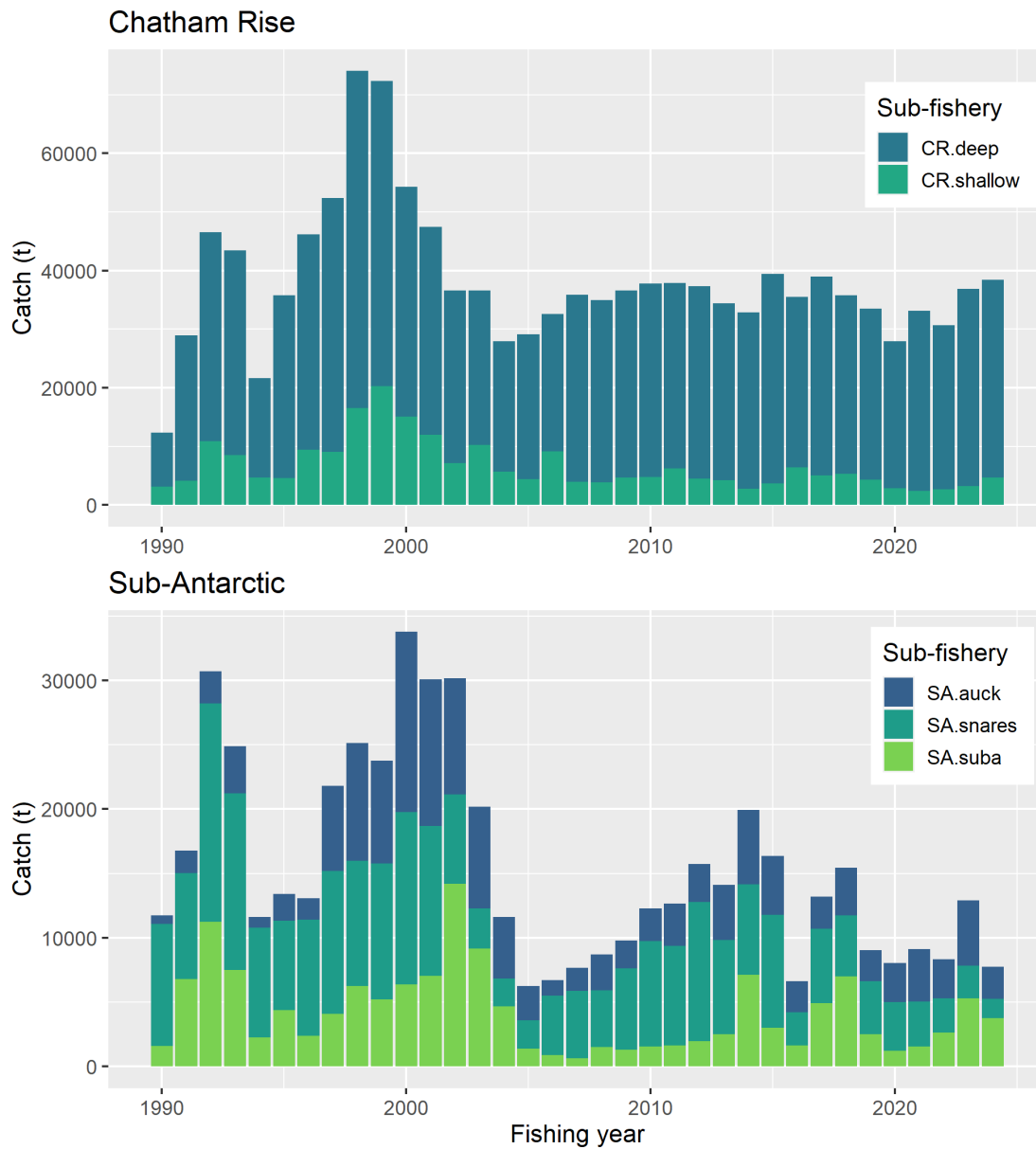


Figure 4: continued.

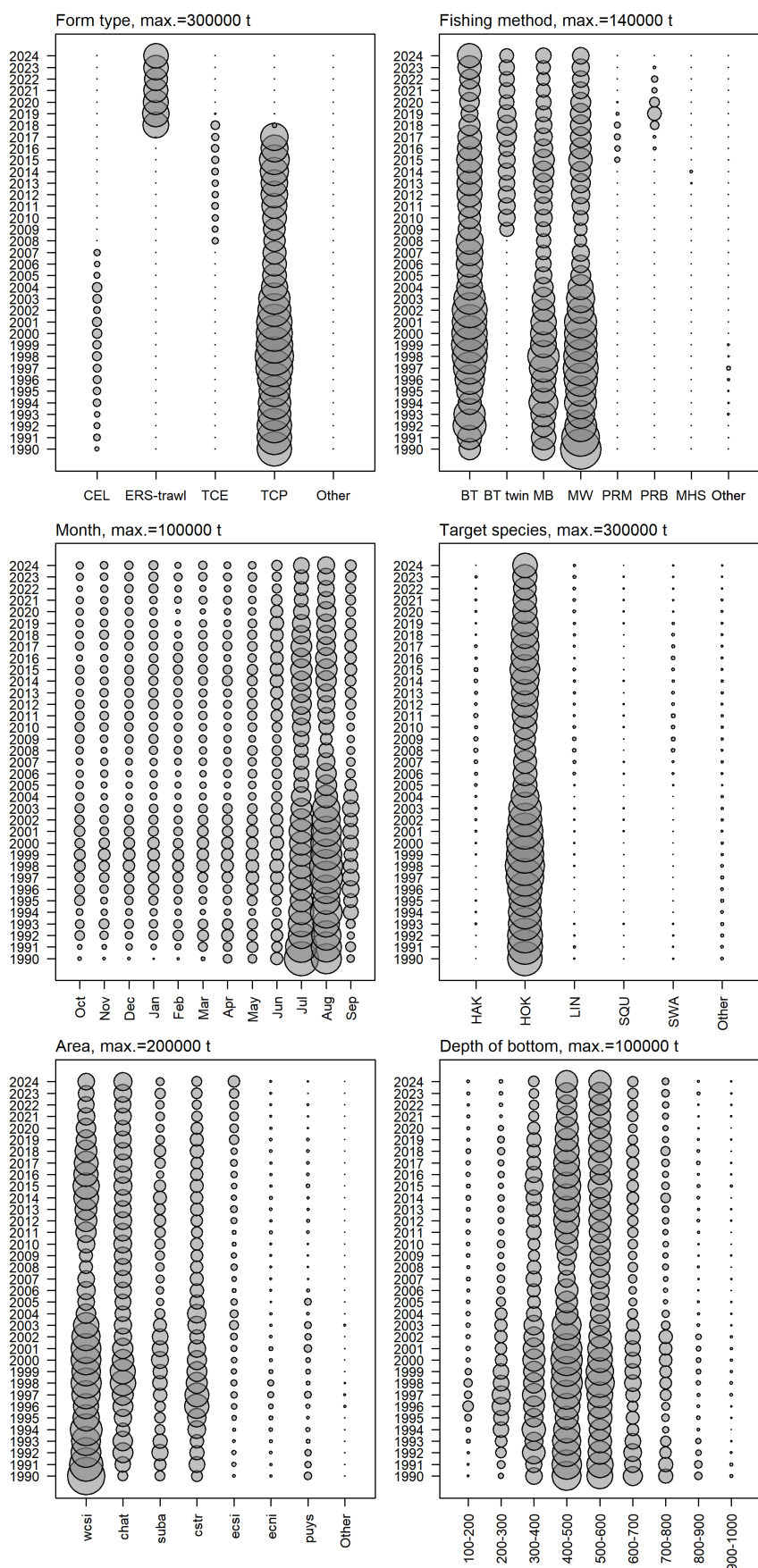


Figure 5: Distribution of the overall hoki catch by form type, fishing method, month, target species, area, and bottom depth (m) for the 1989–90 to 2023–24 fishing years. Species codes are defined in Appendix B.

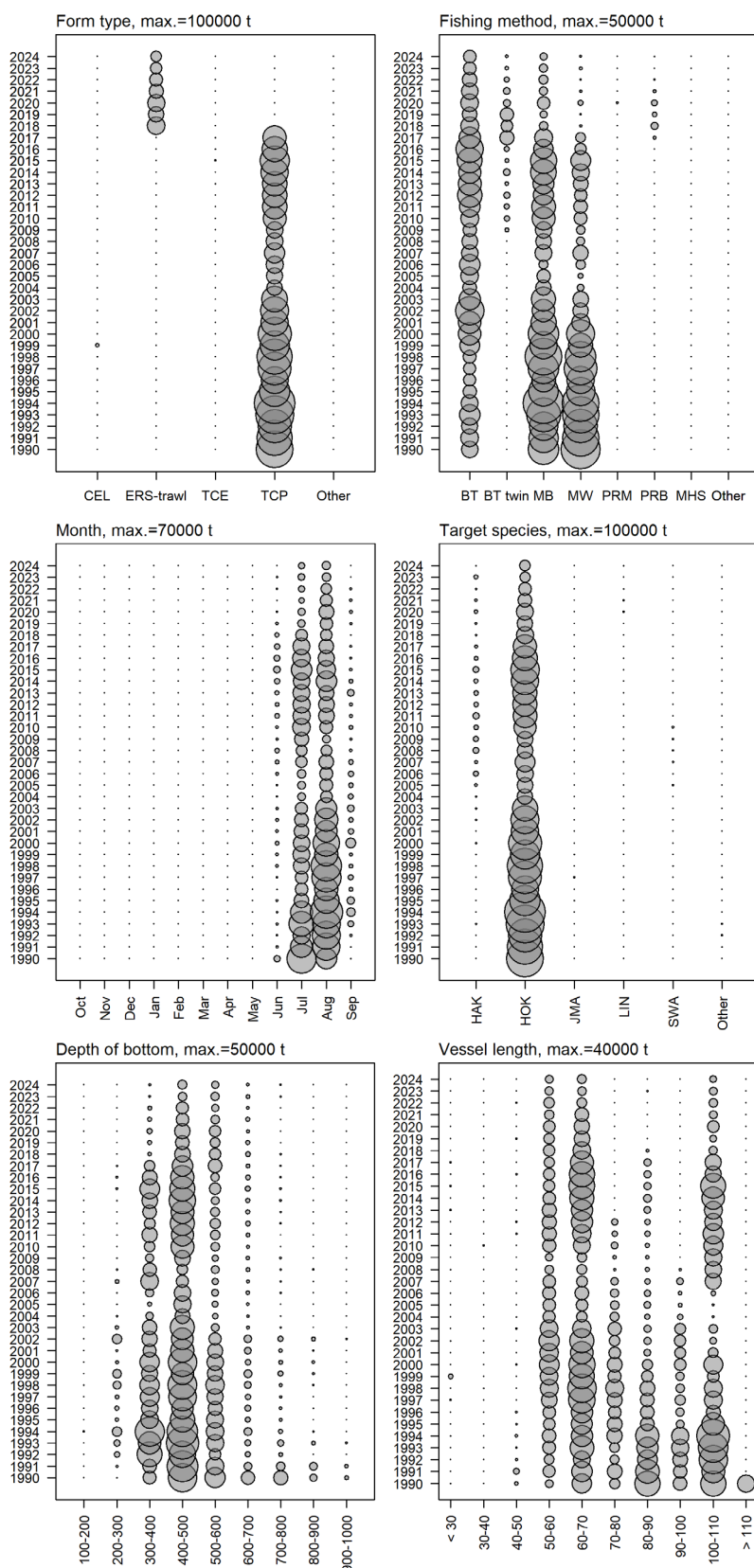


Figure 6a: Distribution of the WCSI WC.north sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. BT is bottom trawl; BT twin is bottom twin trawl; MB is midwater trawl within 5 m of the seabed; MW is midwater trawl; PRM (modular harvesting system midwater tow); PRB (modular harvesting system bottom tow); MHS (modular harvesting system tow, MW or BT unknown). Species codes are defined in Appendix B.

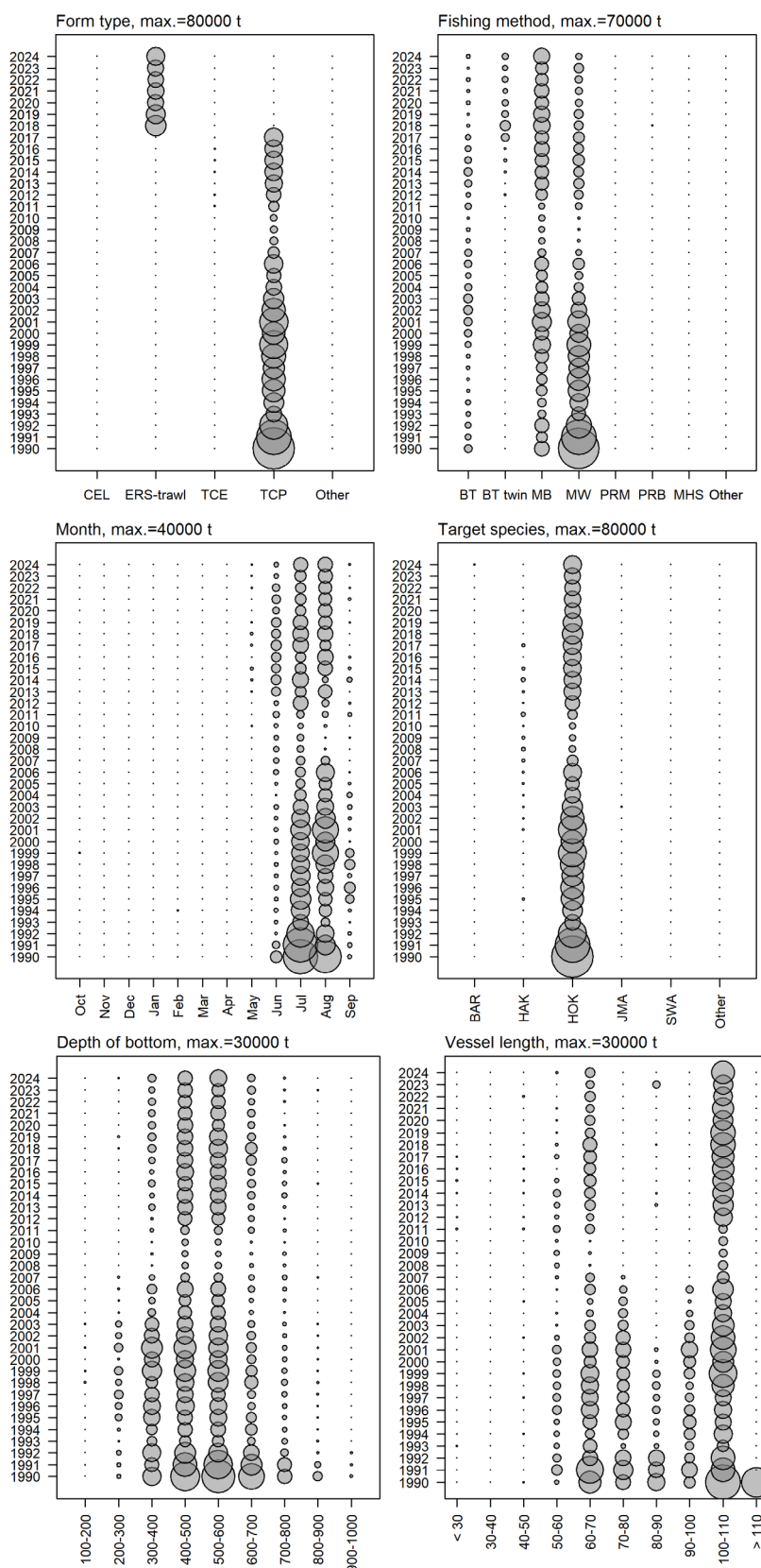


Figure 6b: Distribution of the WCSI WC.south sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

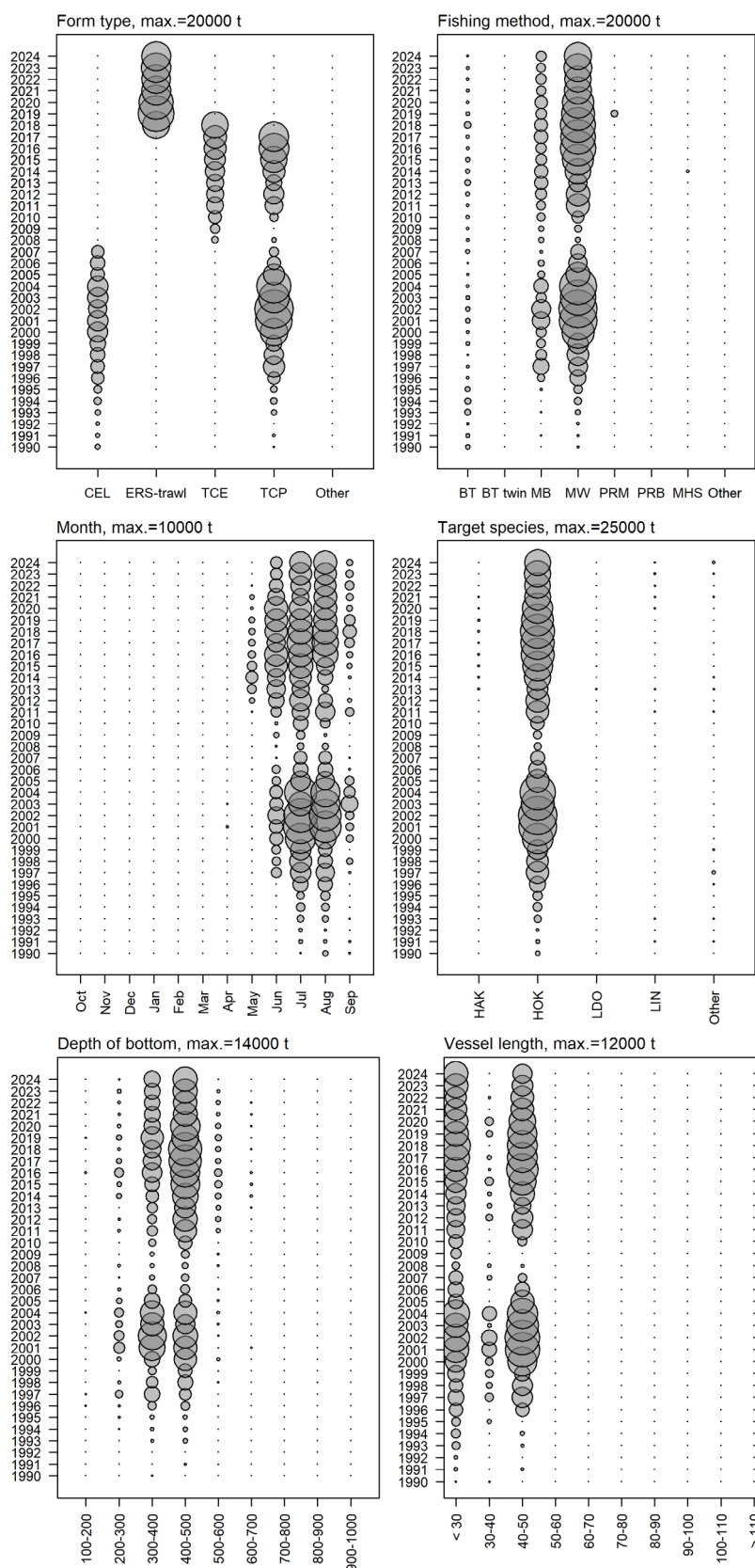


Figure 6c: Distribution of the WCSI WC inside sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

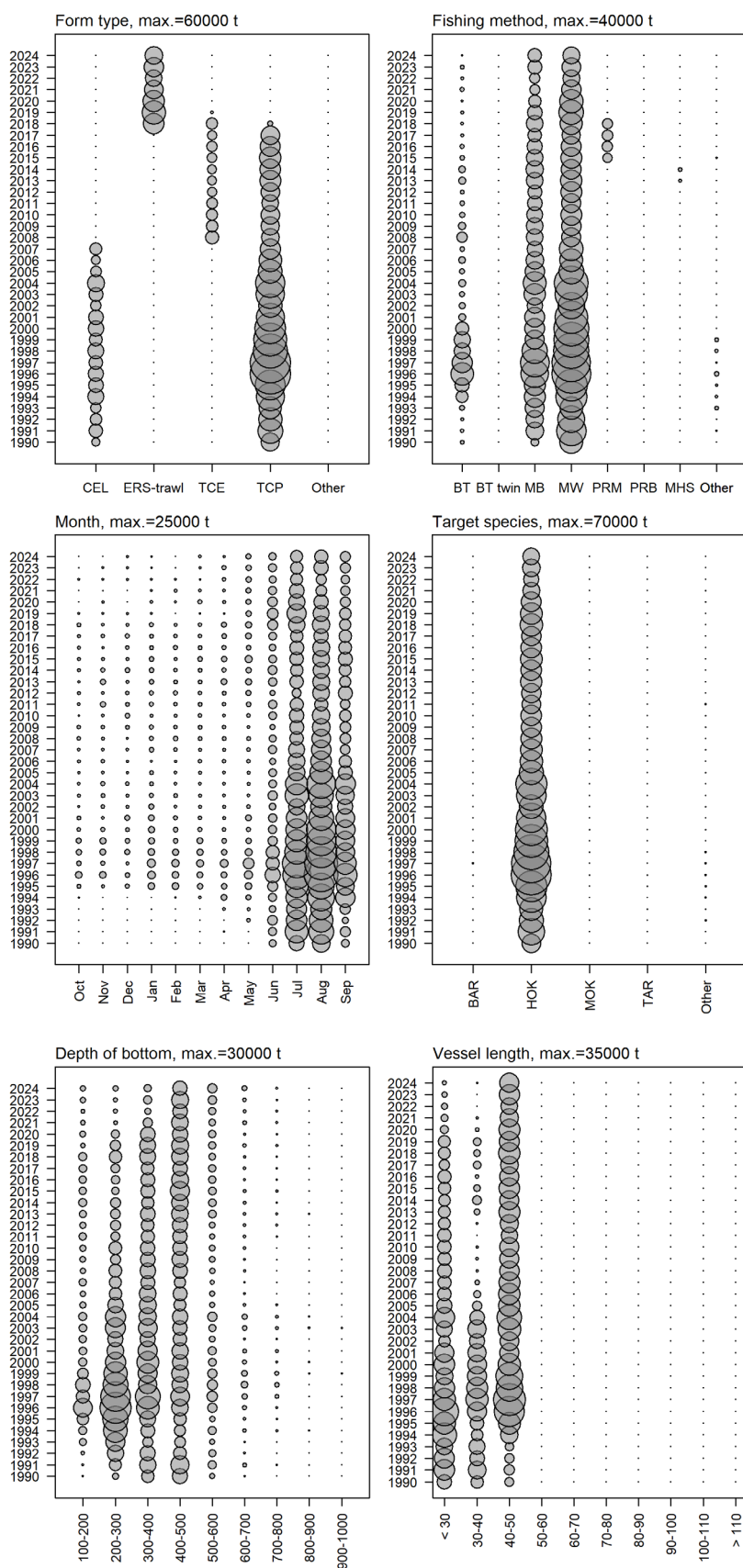


Figure 7: Distribution of the Cook Strait overall hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

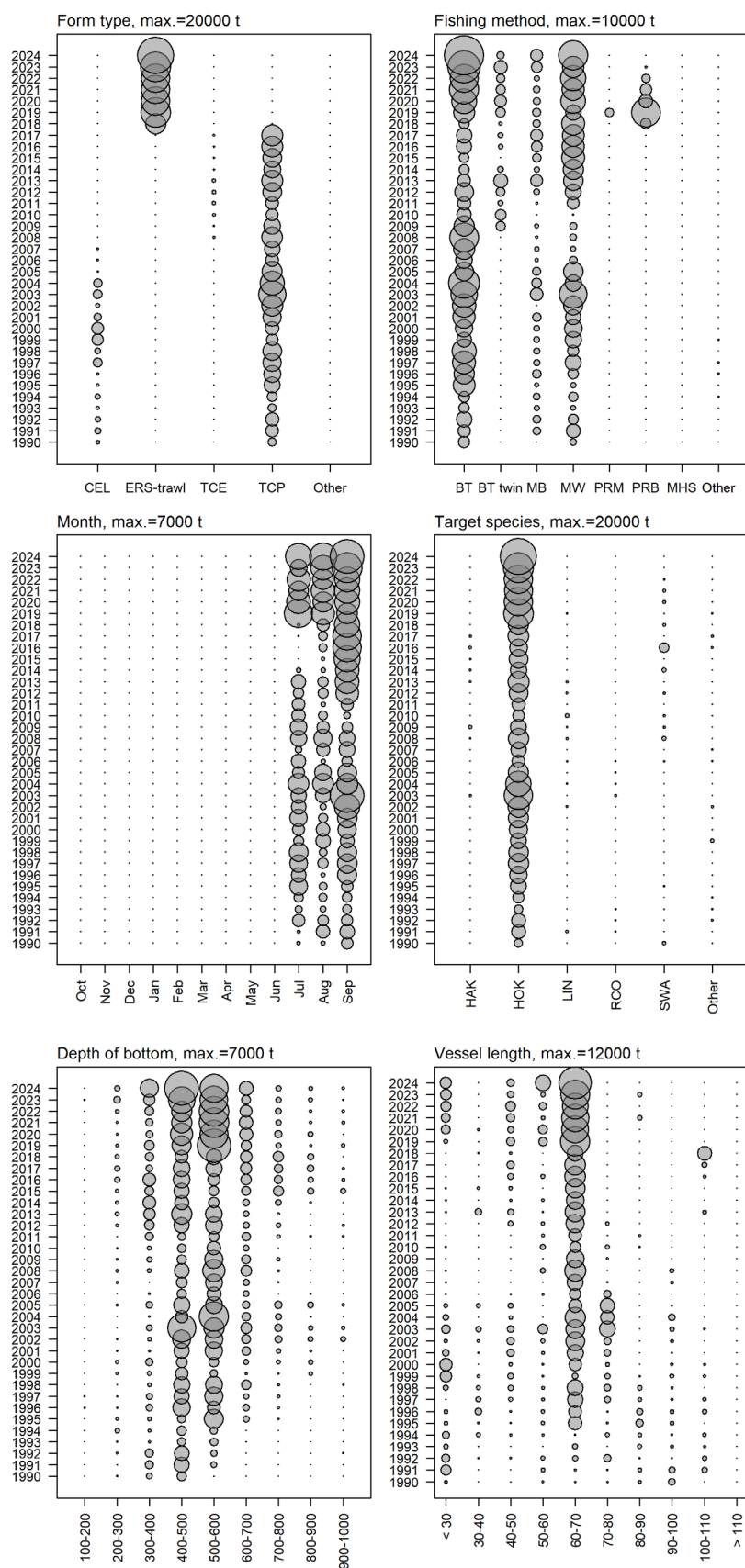


Figure 8: Distribution of the ECSI spawning hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Spawning fishery period defined as Jul–Sep. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

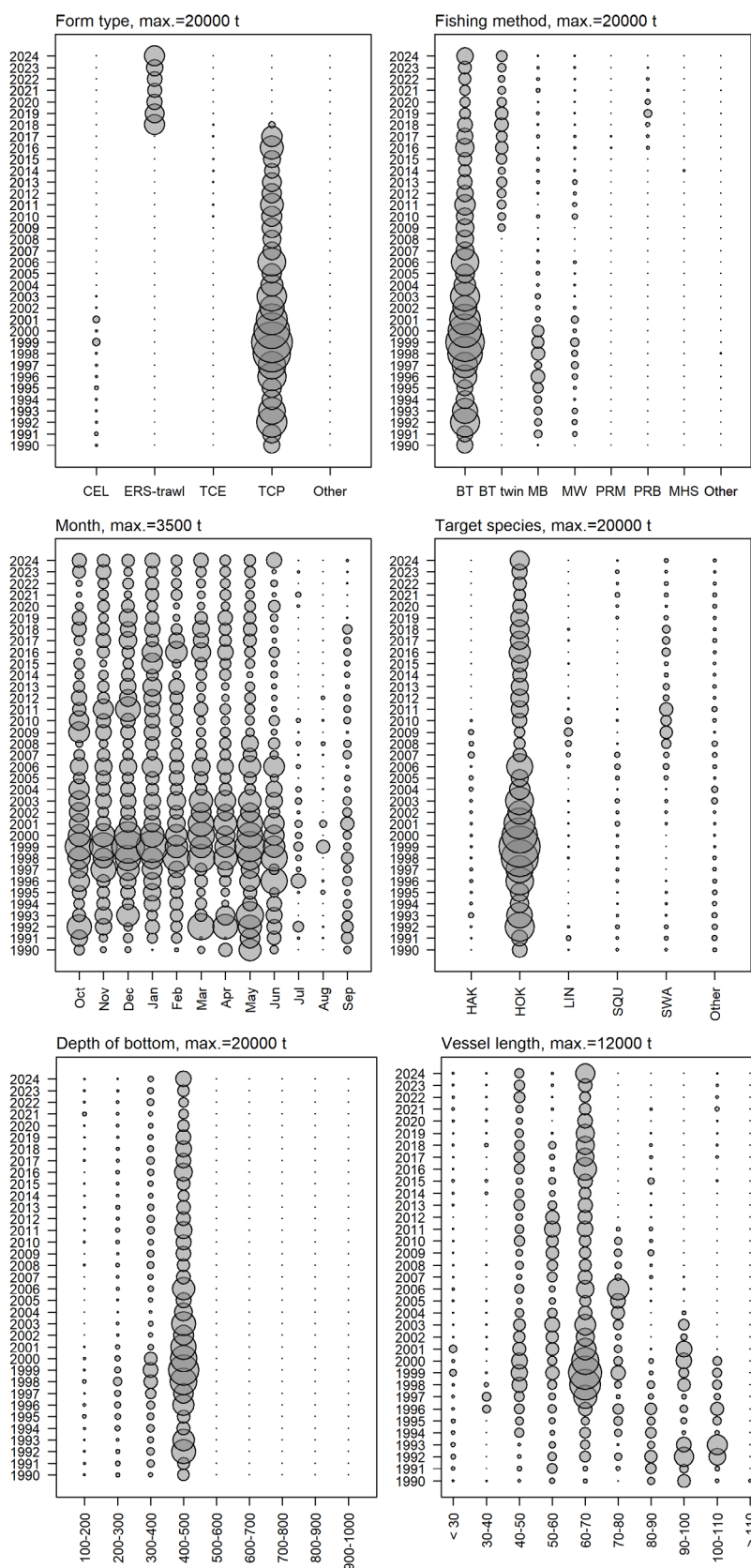


Figure 9a: Distribution of the Chatham Rise CR.shallow sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

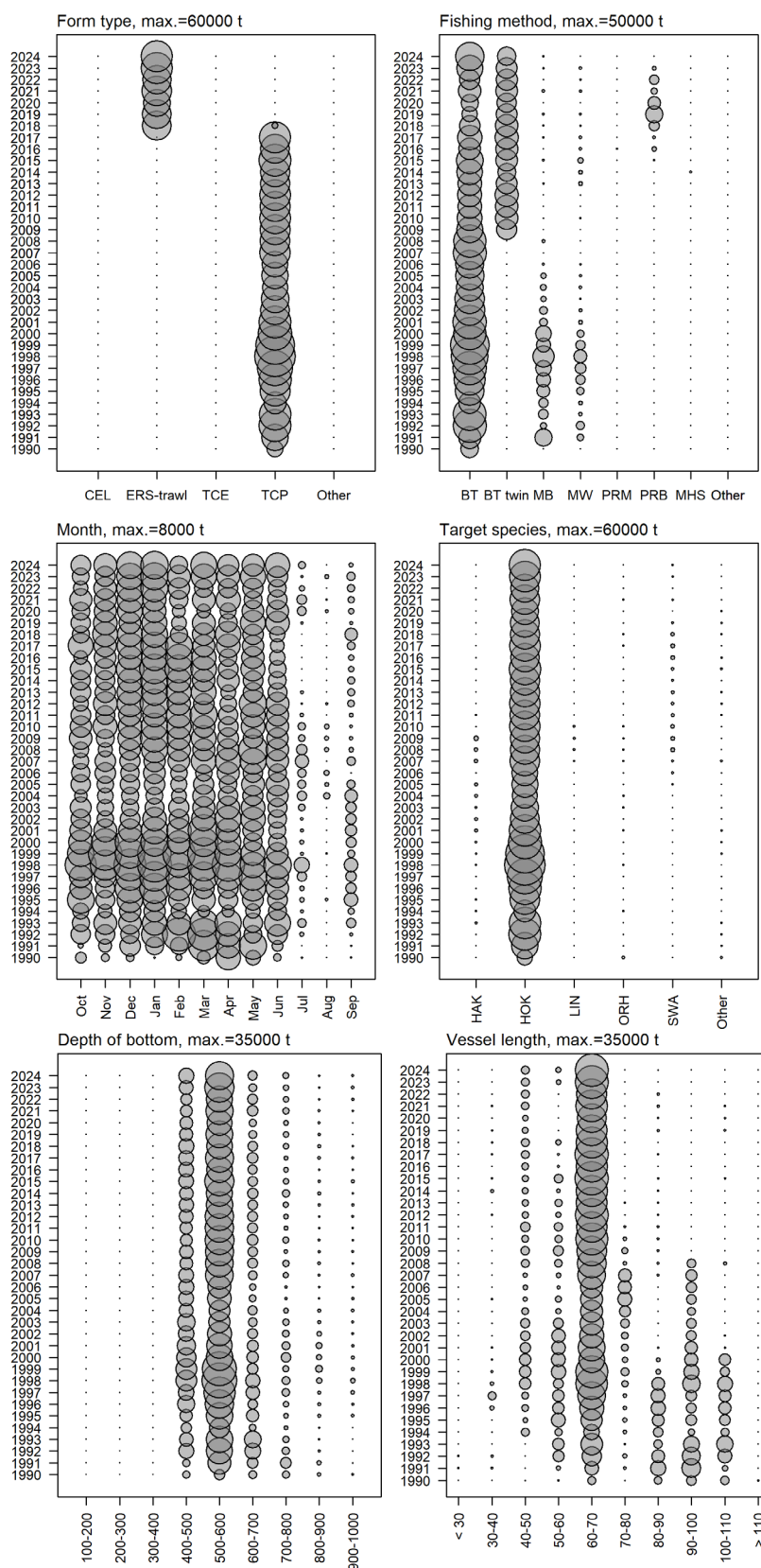


Figure 9b: Distribution of the Chatham Rise CR.deep sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

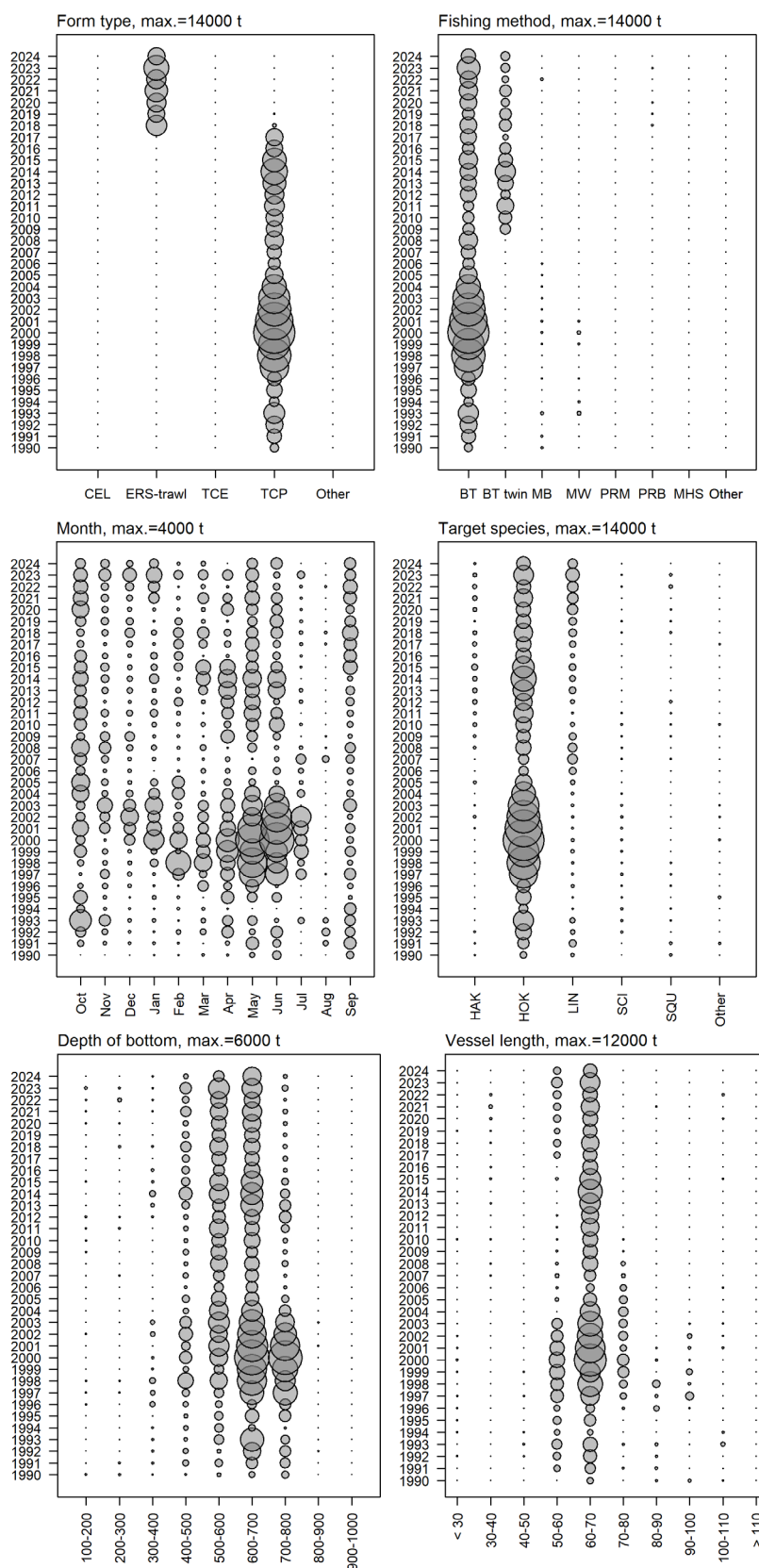


Figure 10a: Distribution of the Sub-Antarctic SA.auck sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

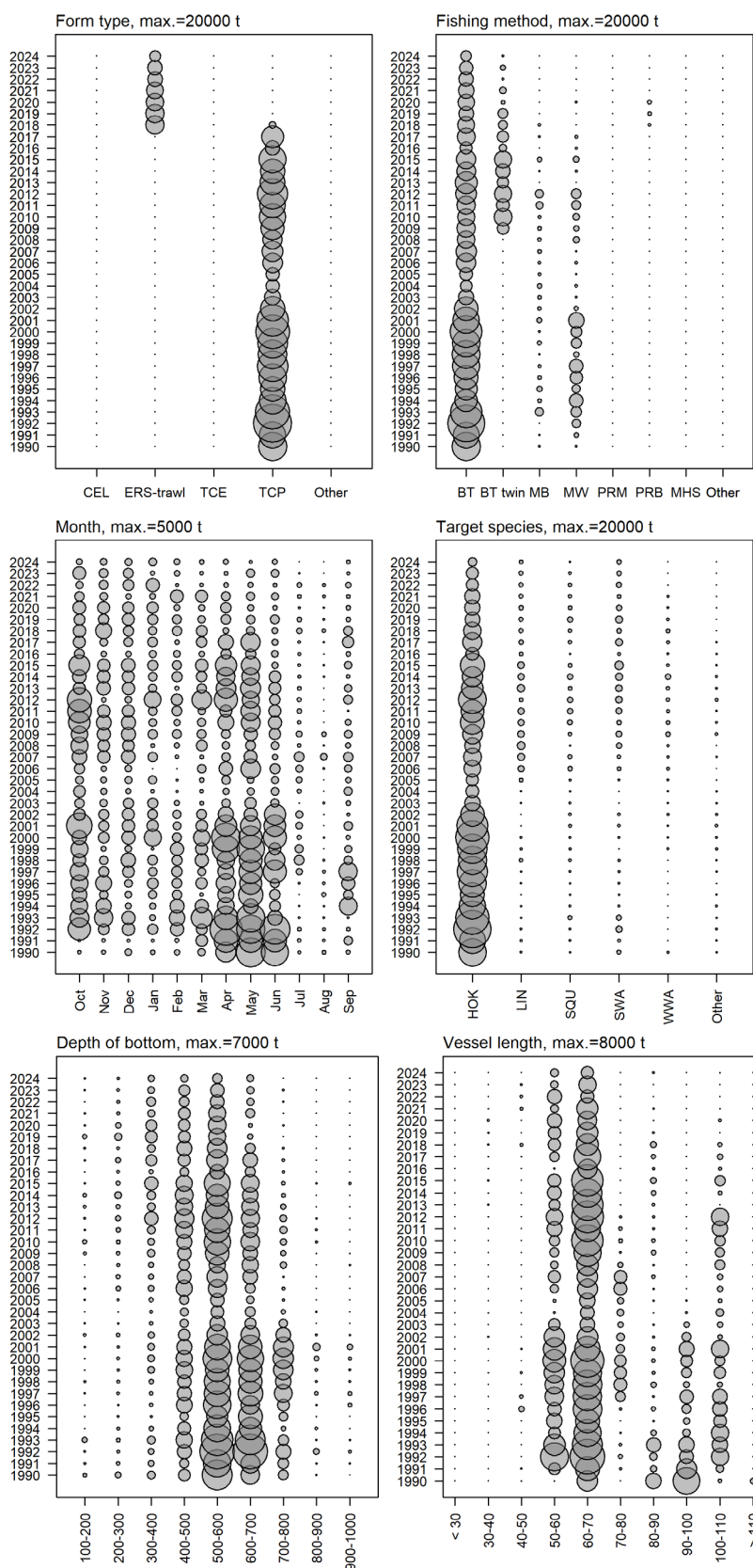


Figure 10b: Distribution of the Sub-Antarctic SA.snARES sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

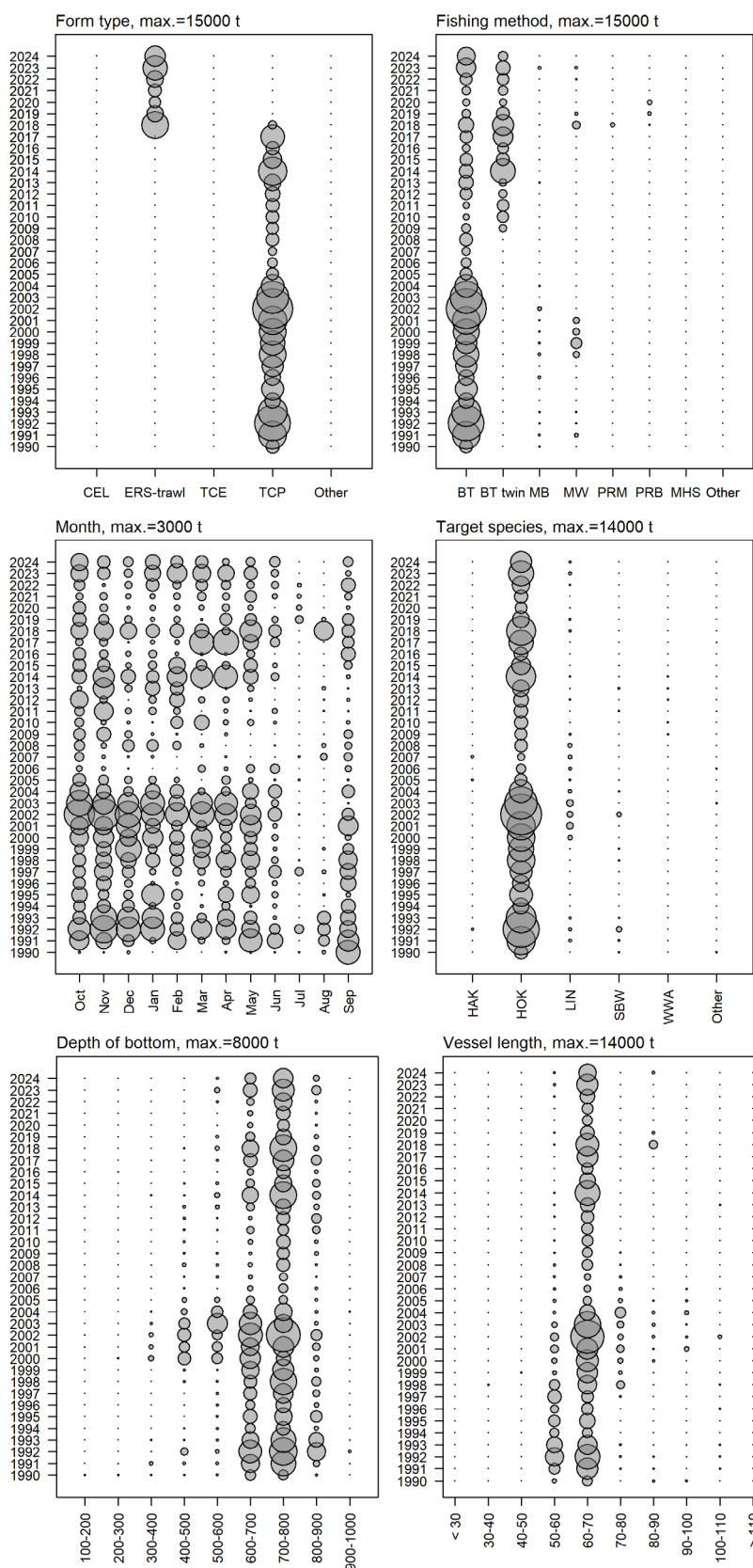


Figure 10c: Distribution of the Sub-Antarctic SA.suba sub-fishery hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

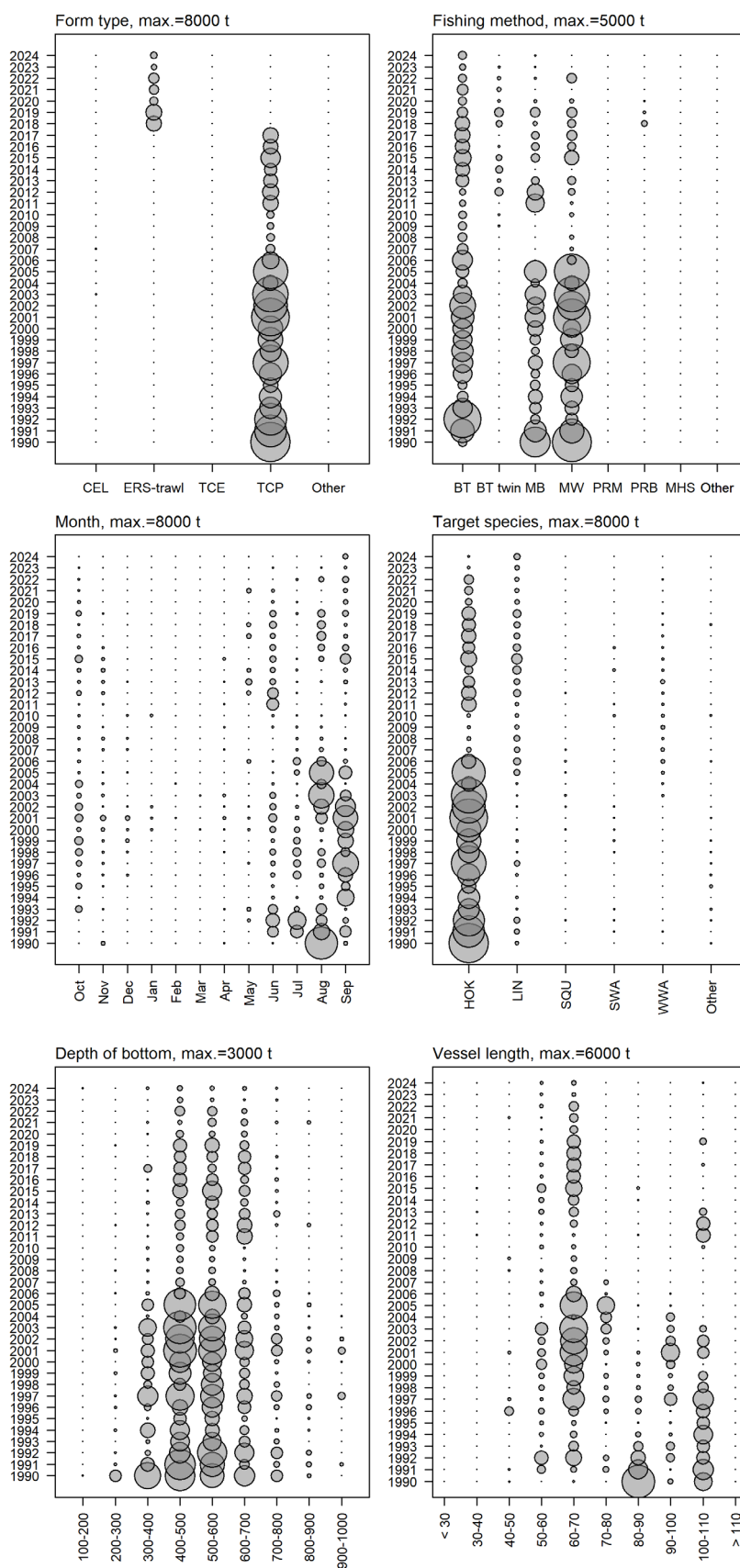


Figure 11: Distribution of the Puysegur hoki catch by form type, fishing method, month, target species, bottom depth (m), and vessel length (m) for the 1989–90 to 2023–24 fishing years. Fishing methods are defined in Figure 6a. Species codes are defined in Appendix B.

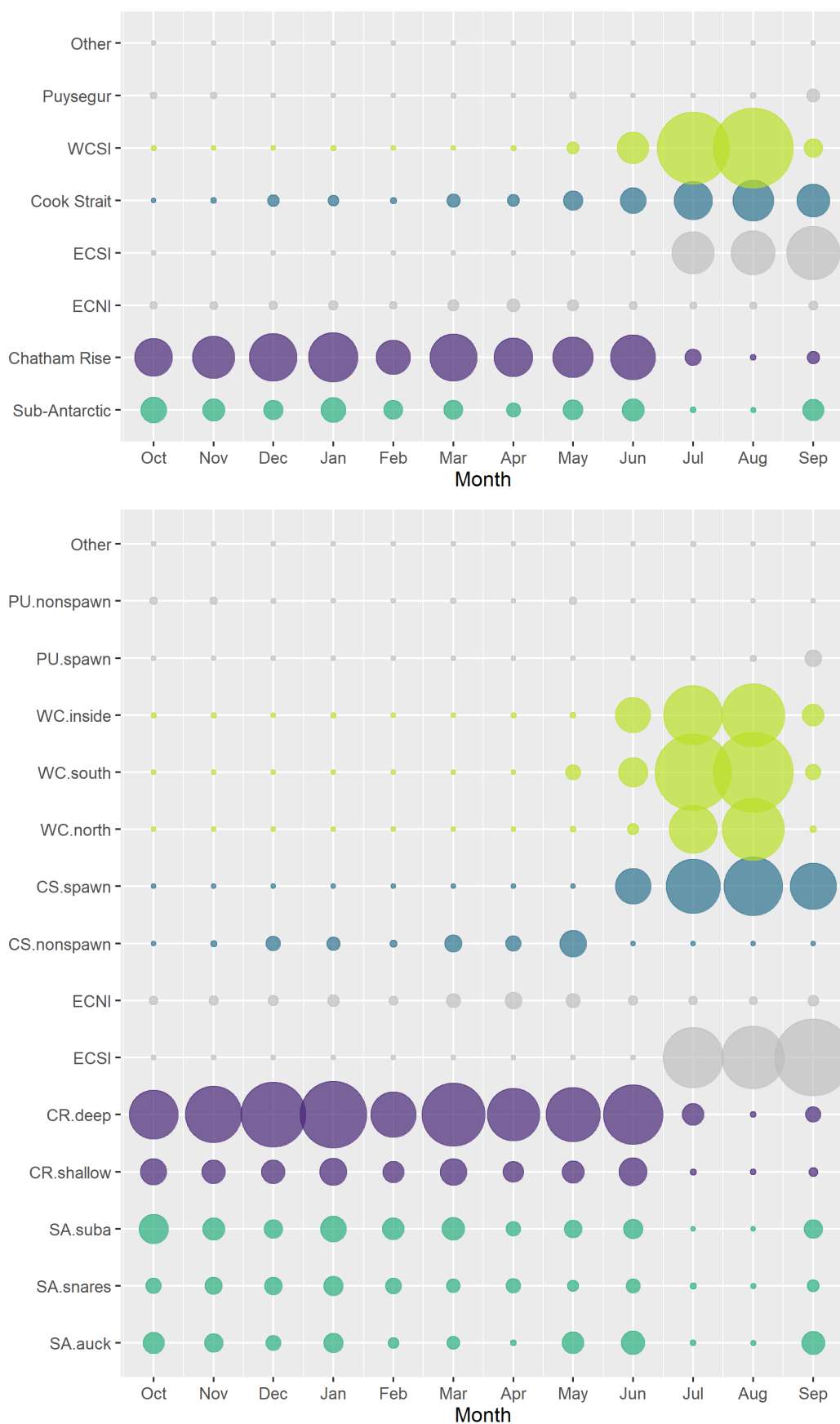


Figure 12: Hoki catch by month and region or sub-fishery for the 2023–24 fishing year (maximum circle size is 20 000 t). See Table 1 and Figure 1 for definitions of sub-fisheries.

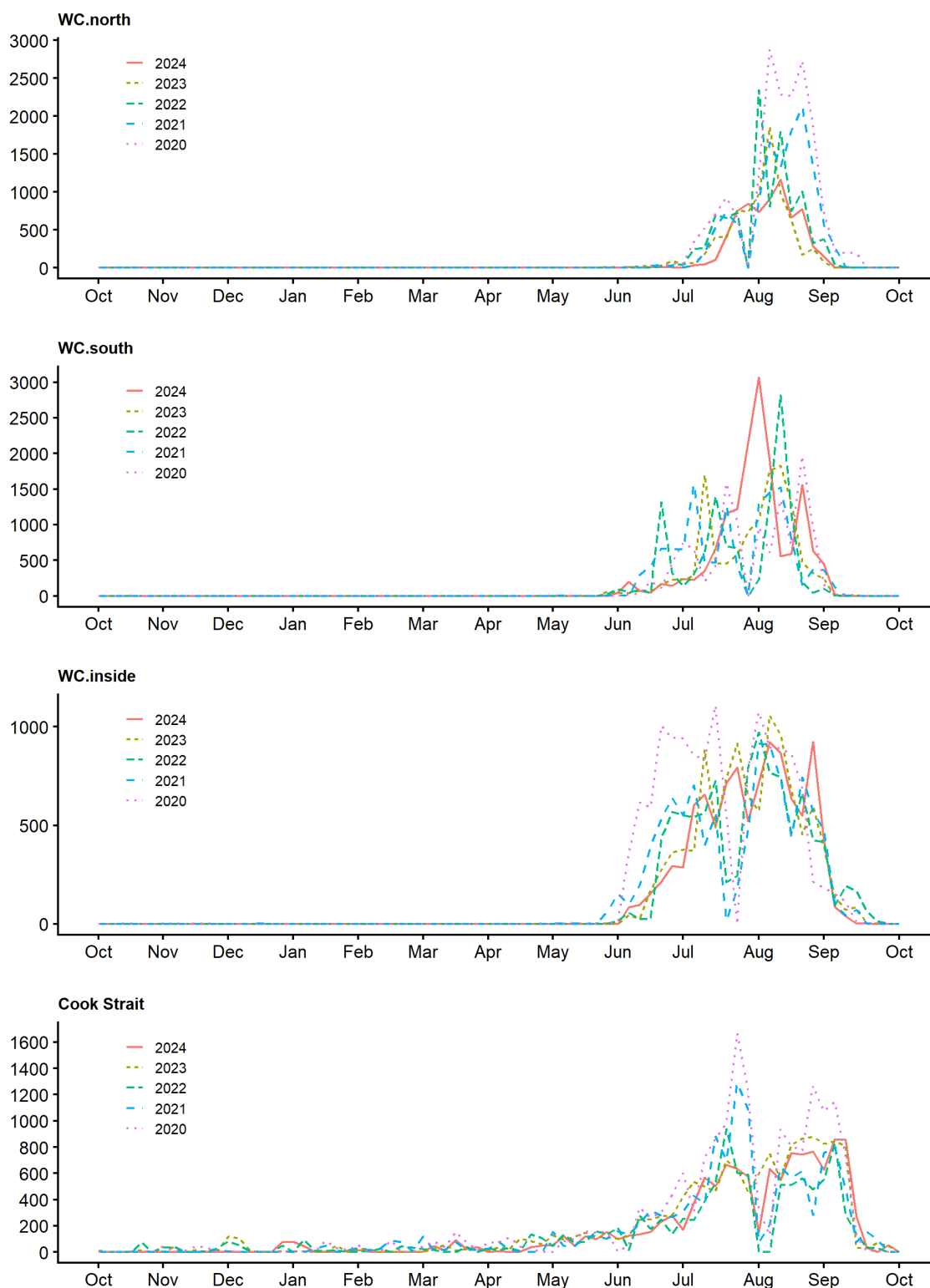


Figure 13: Hoki catches by day of fishing year for WCSI overall and sub-fisheries WC.north, WC.south, and WC.inside in each of past five years (2024 is 2023–24 fishing year).

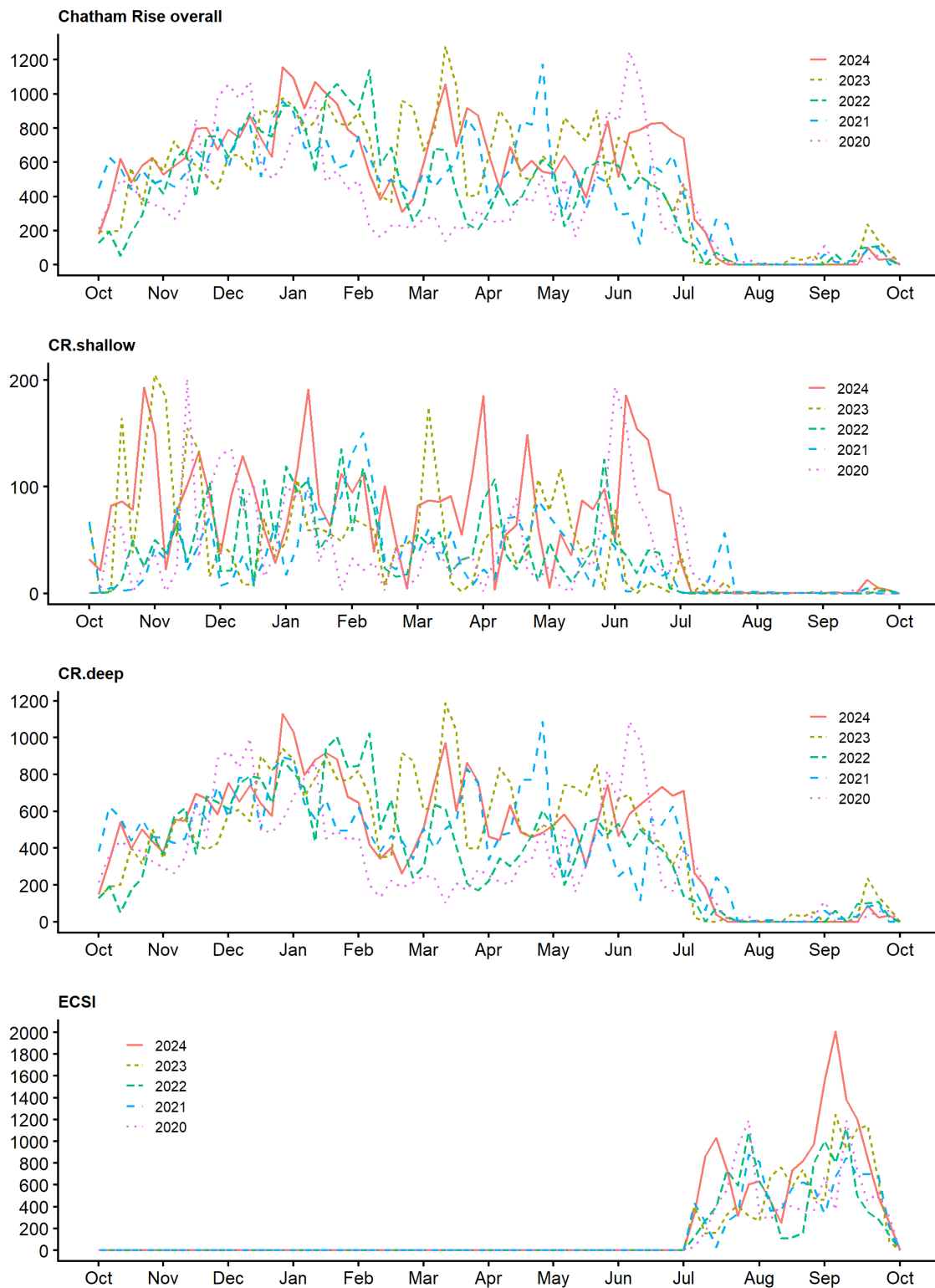


Figure 13: continued for ECSI and for Chatham Rise overall and sub-fisheries CR.shallow and CR.deep

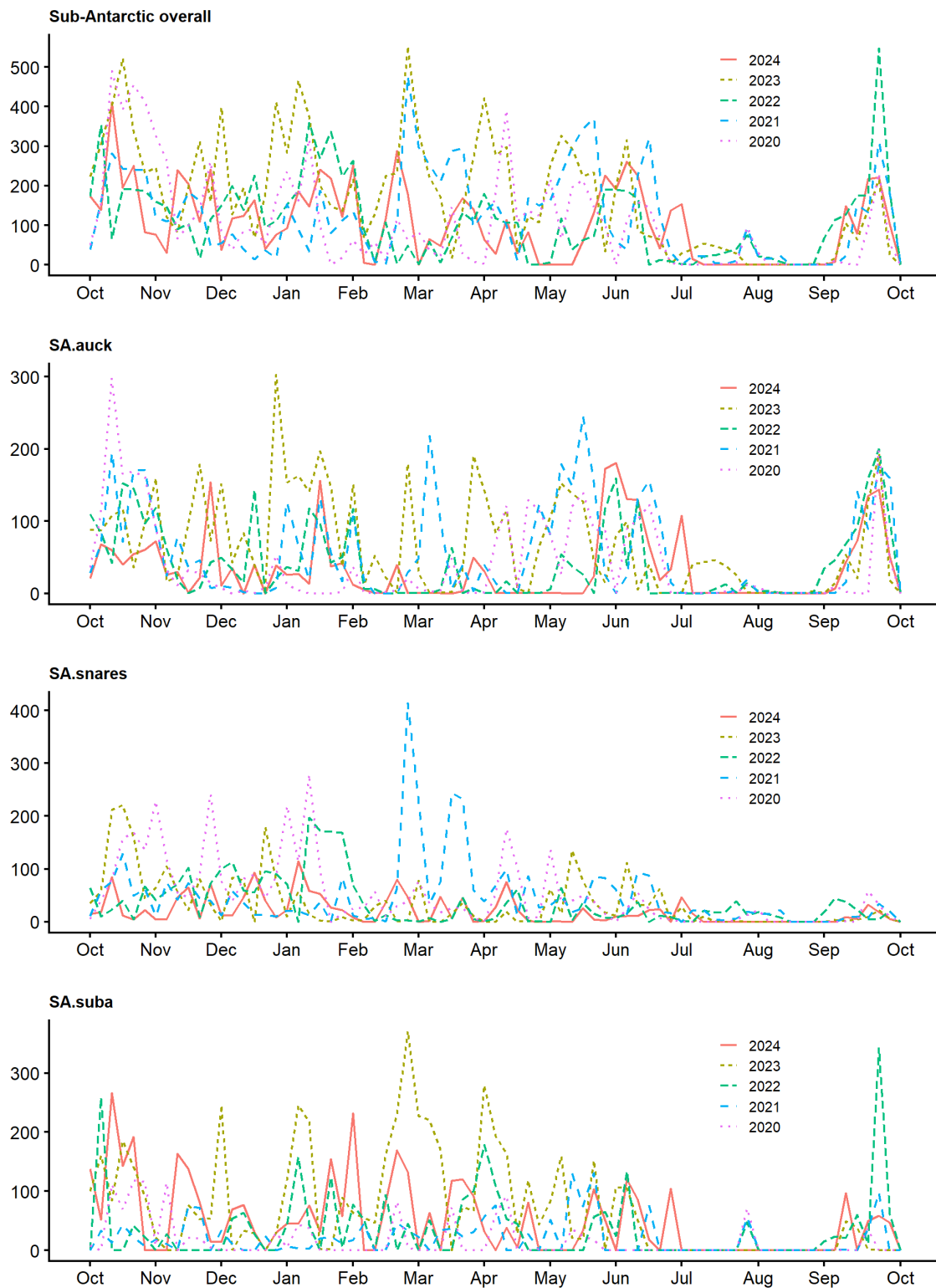


Figure 13: continued for Sub-Antarctic overall and sub-fisheries SA.auck, SA.snares and SA.suba.

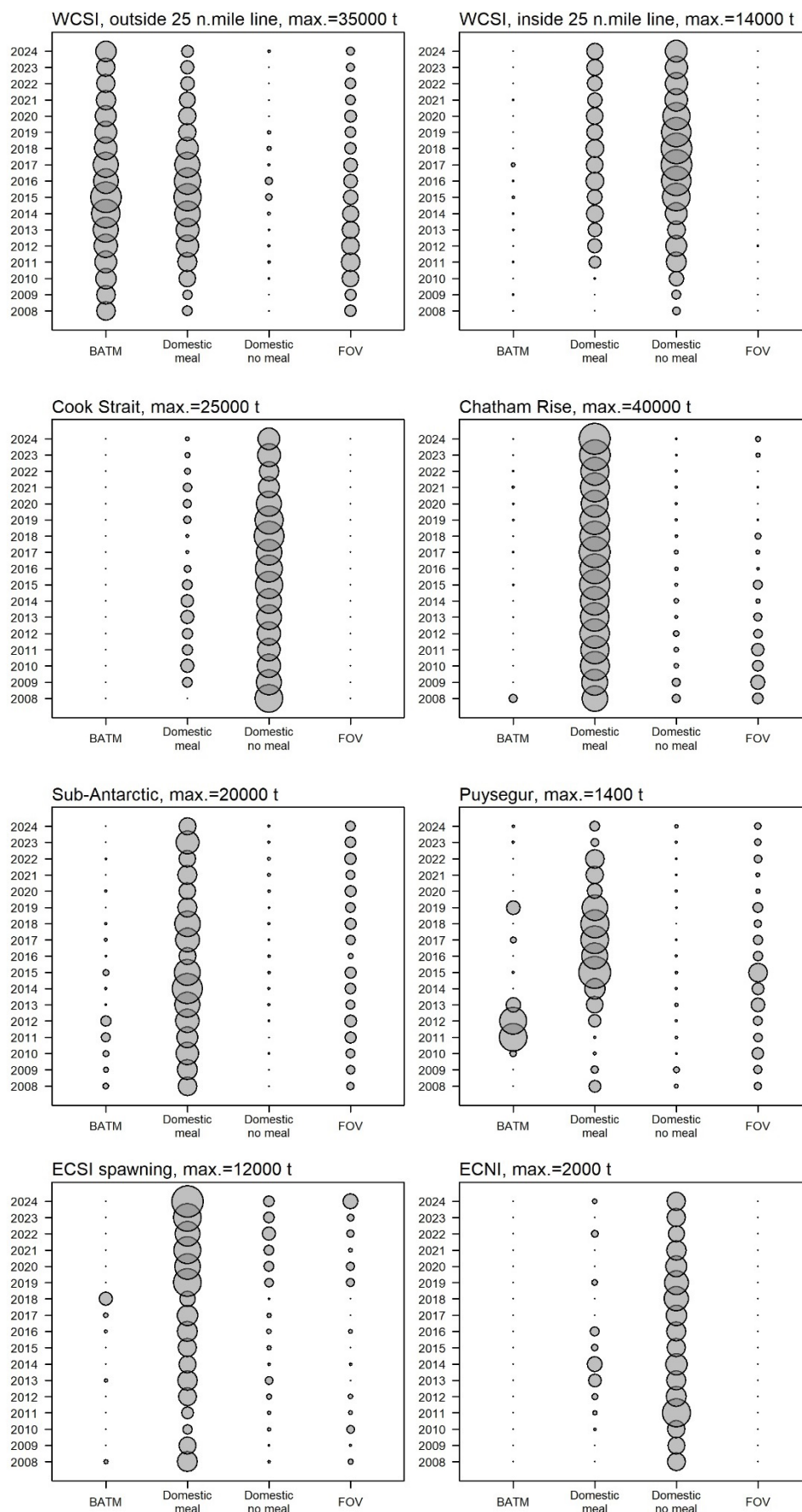


Figure 14: Distribution of hoki catch by fleet for the 2007–08 to 2023–24 fishing years. See Section 2.1.1 for fleet definitions.

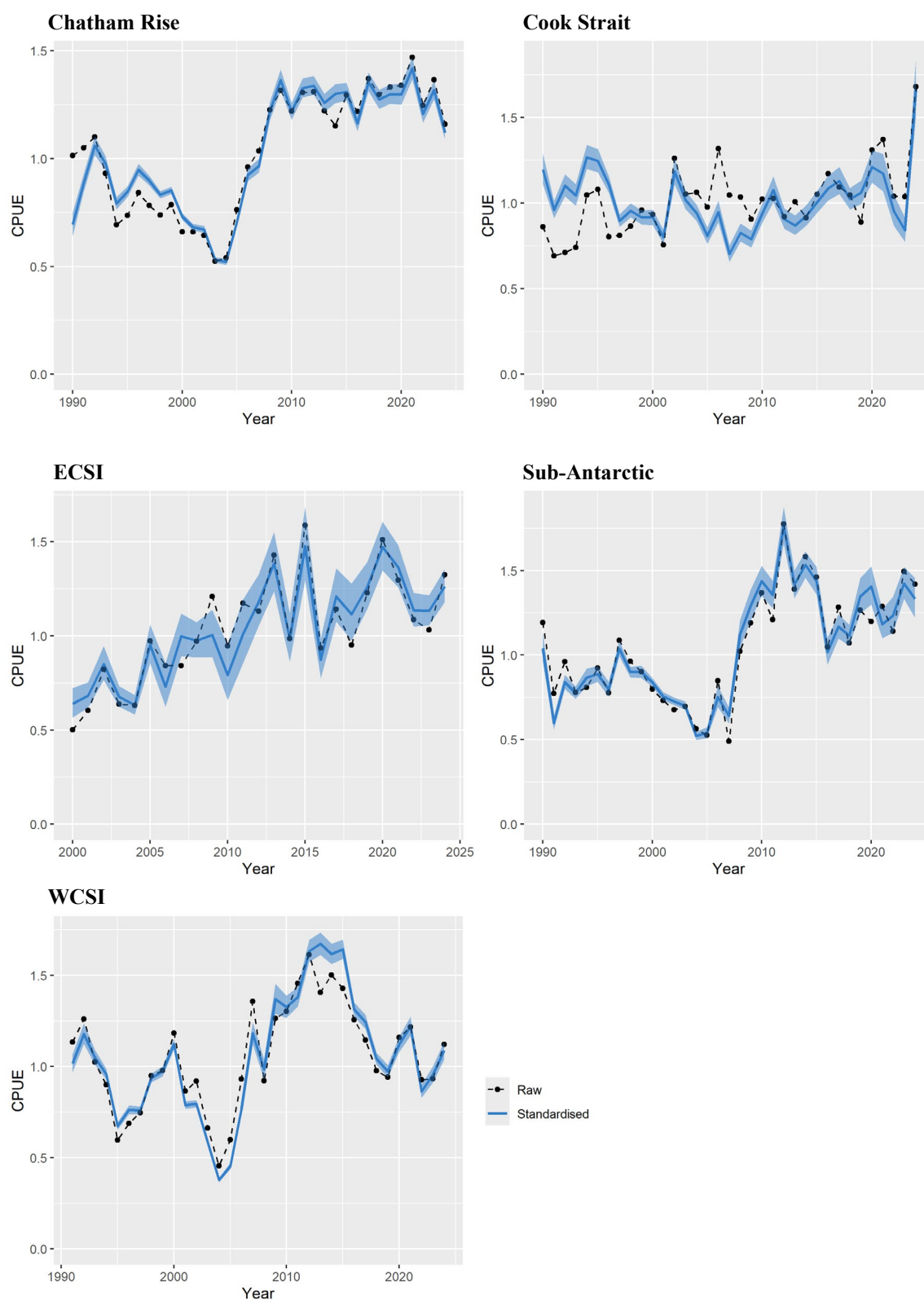


Figure 15: Model catch and unstandardised geometric and standardised CPUE indices for core vessel data for main regions. The dependent variable was the log-transformed estimated catch-per-tow. Dataset definitions in McGregor-Tiatia et al. (2025).

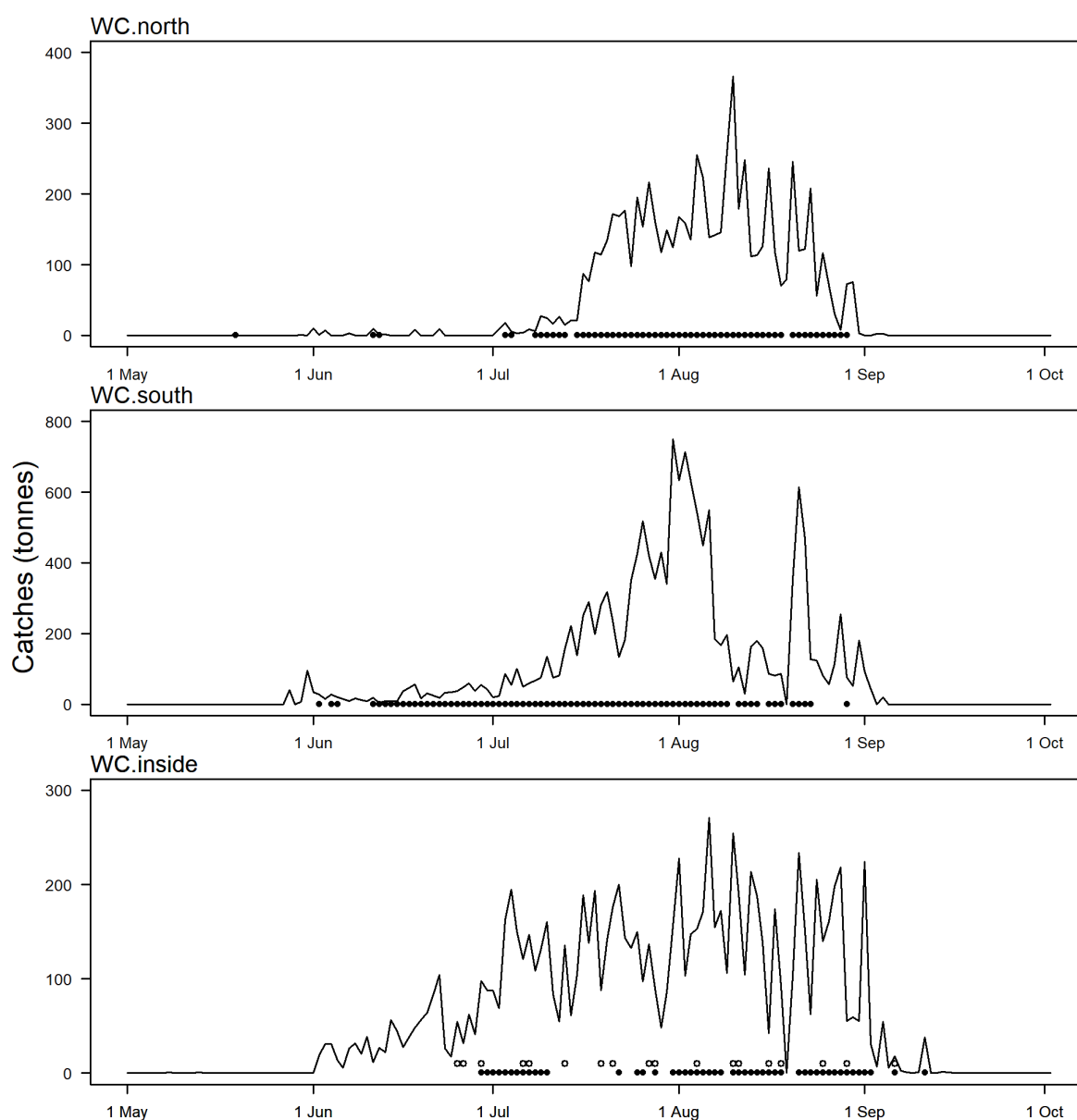
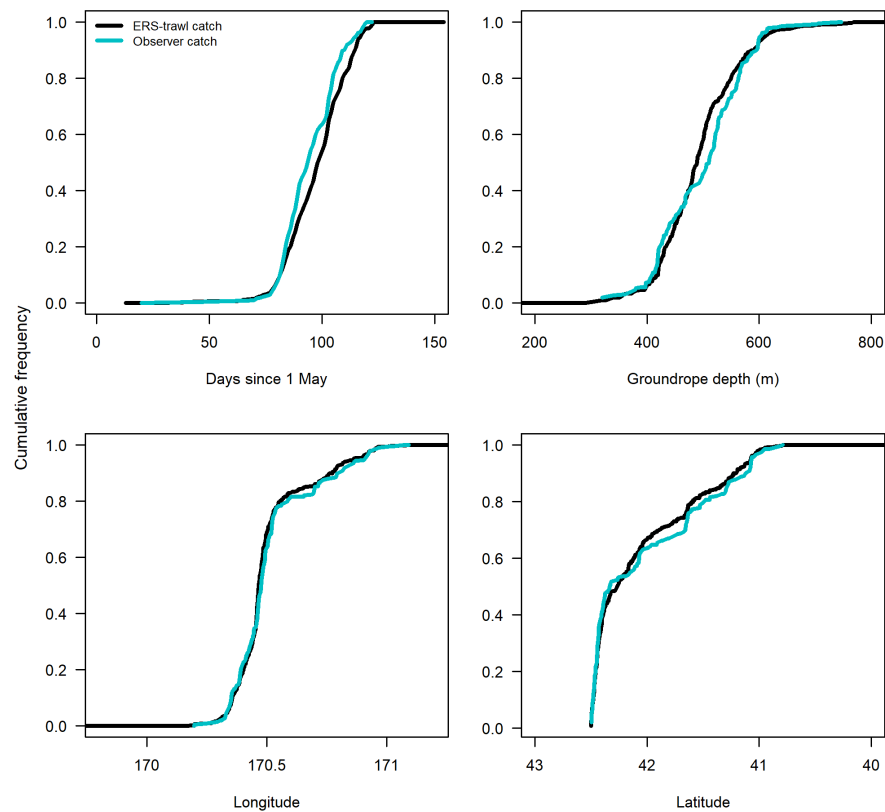


Figure 16: Daily catch for vessels from WCSI fisheries during the 2024 spawning season, showing timing of Observer Programme samples (black dots) and land-based samples (hollow dots).

WC.north



WC.south

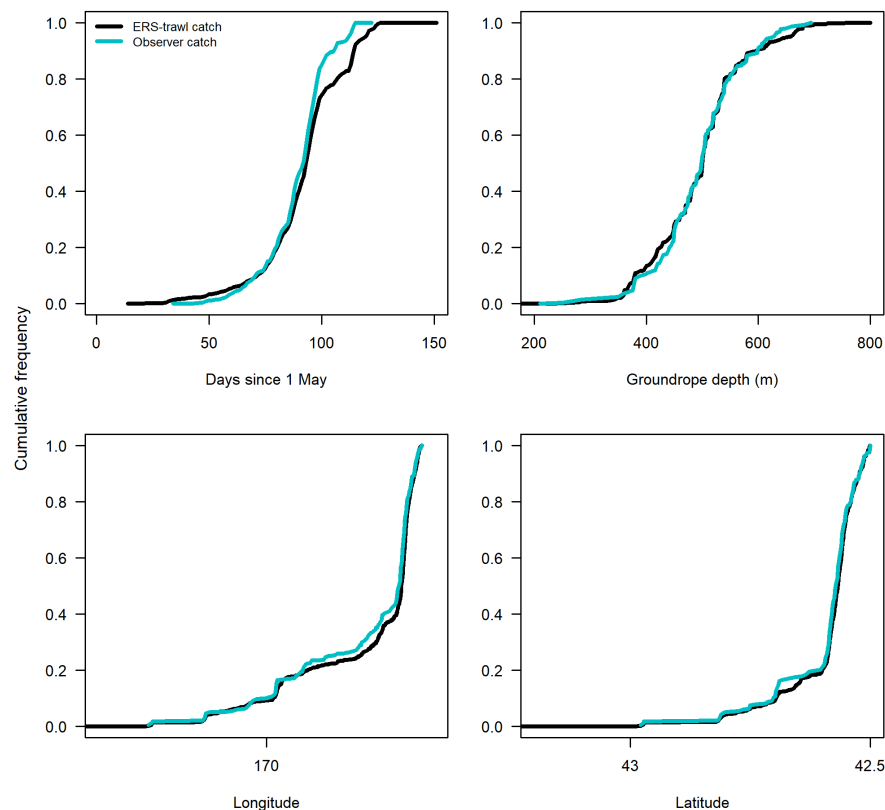


Figure 17: Comparison of WCSI 2023–24 Observer Programme catch coverage outside the 25-n. mile line (WC.north and WC.south) with ERS-trawl catches by day of year, depth, latitude, and longitude. If sampling is representative of the fishery, then the blue lines (observed catches) should overlay the black lines (ERS-trawl catch).

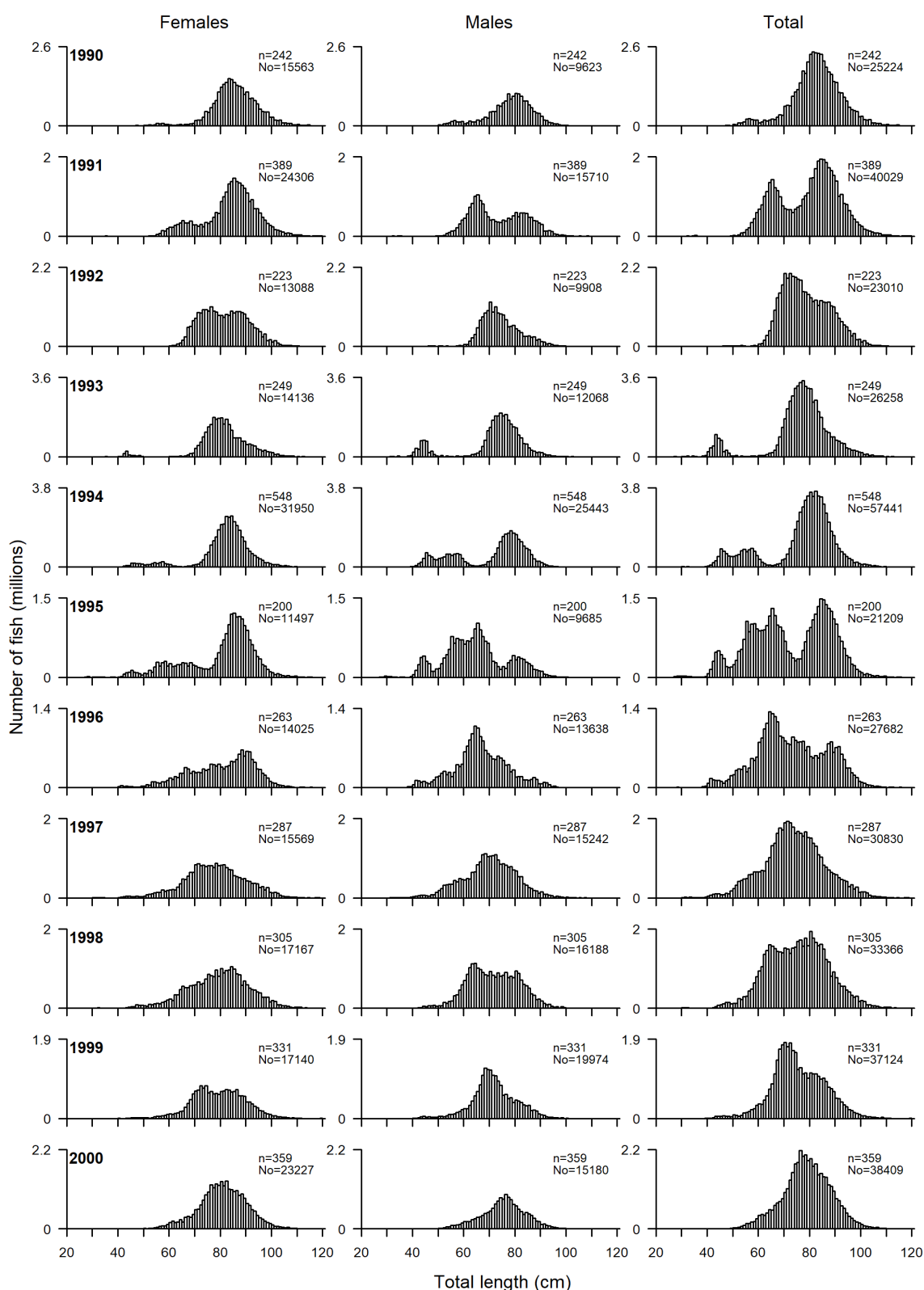


Figure 18a: Length frequency distributions of hoki in commercial catches from the WCSI WC.north spawning sub-fishery from 1990 to 2024 sampled at sea by the Observer Programme. n, number of tows sampled; No, number of fish sampled.

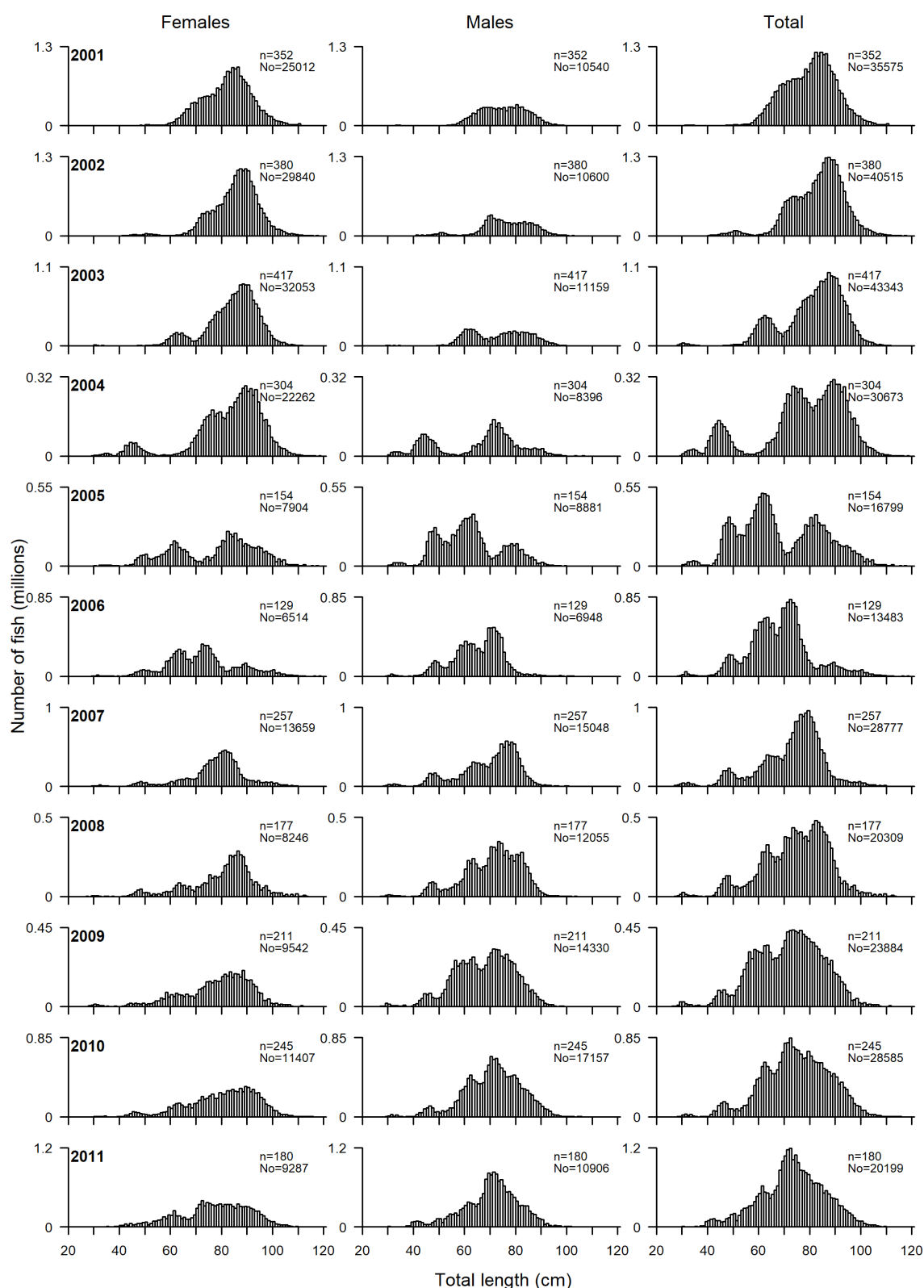


Figure 18a:(continued) Hoki length frequency distributions for the WCSI WC.north sub-fishery continued for years 2001–2011.

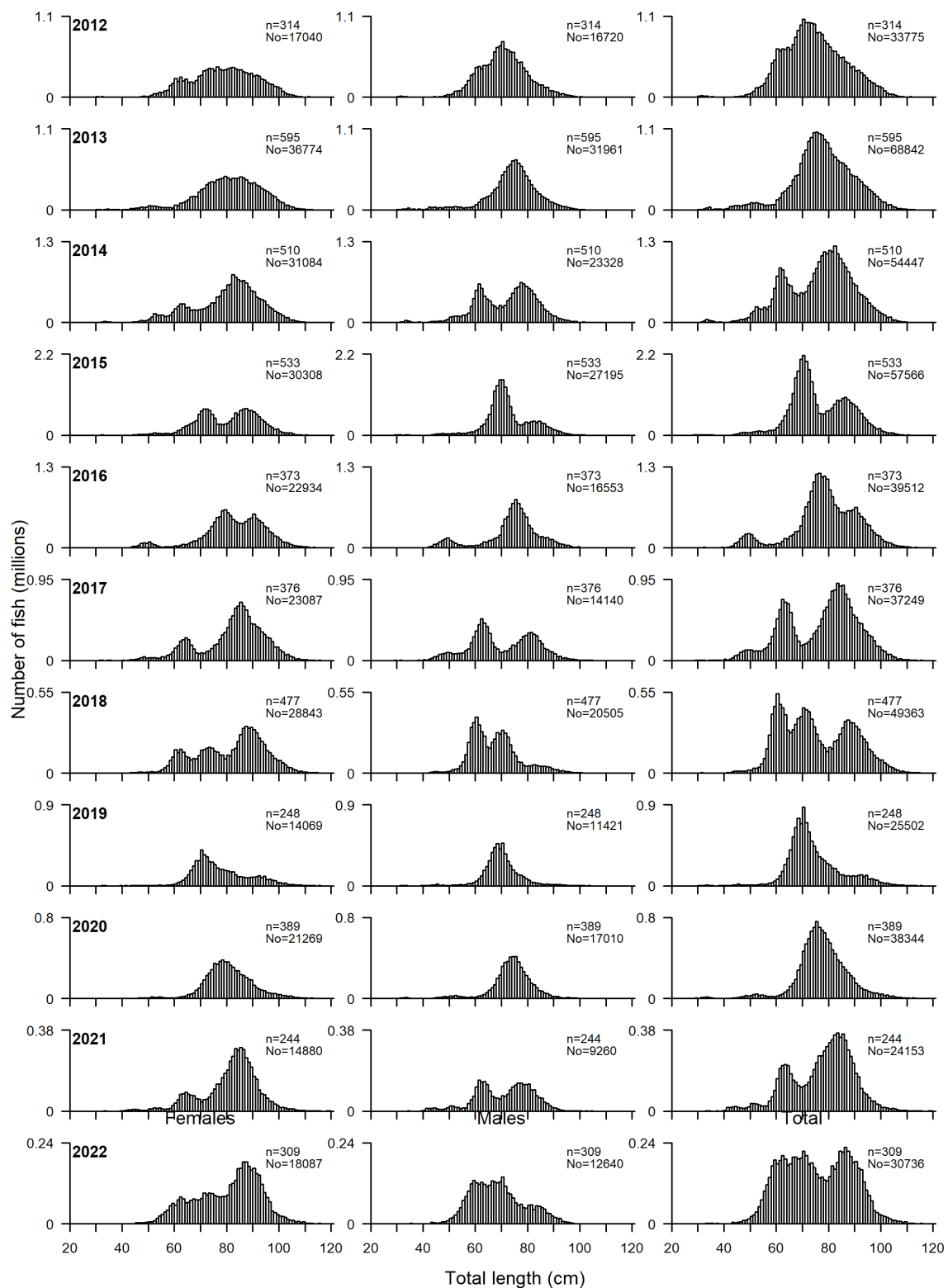


Figure 18a:(continued) Hoki length frequency distributions for the WCSI WC.north sub-fishery continued for years 2012–2022.

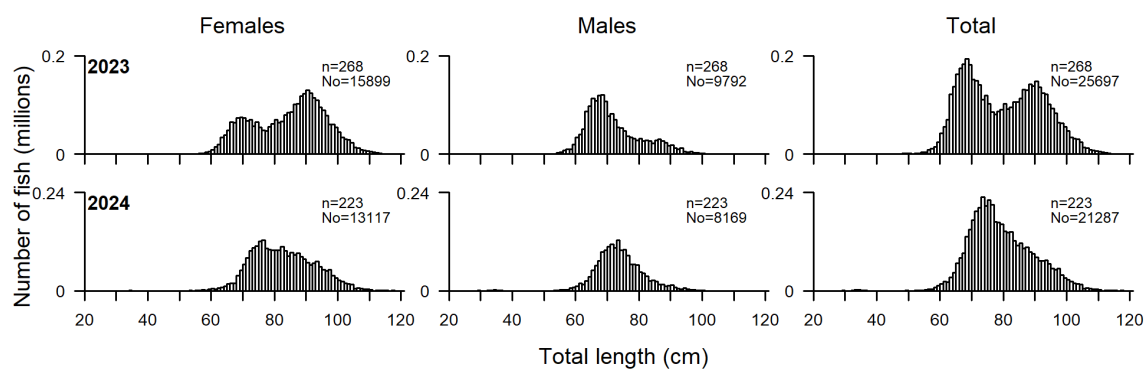


Figure 18a:(continued) Hoki length frequency distributions for the WCSI WC.north sub-fishery continued for years 2023–2024.

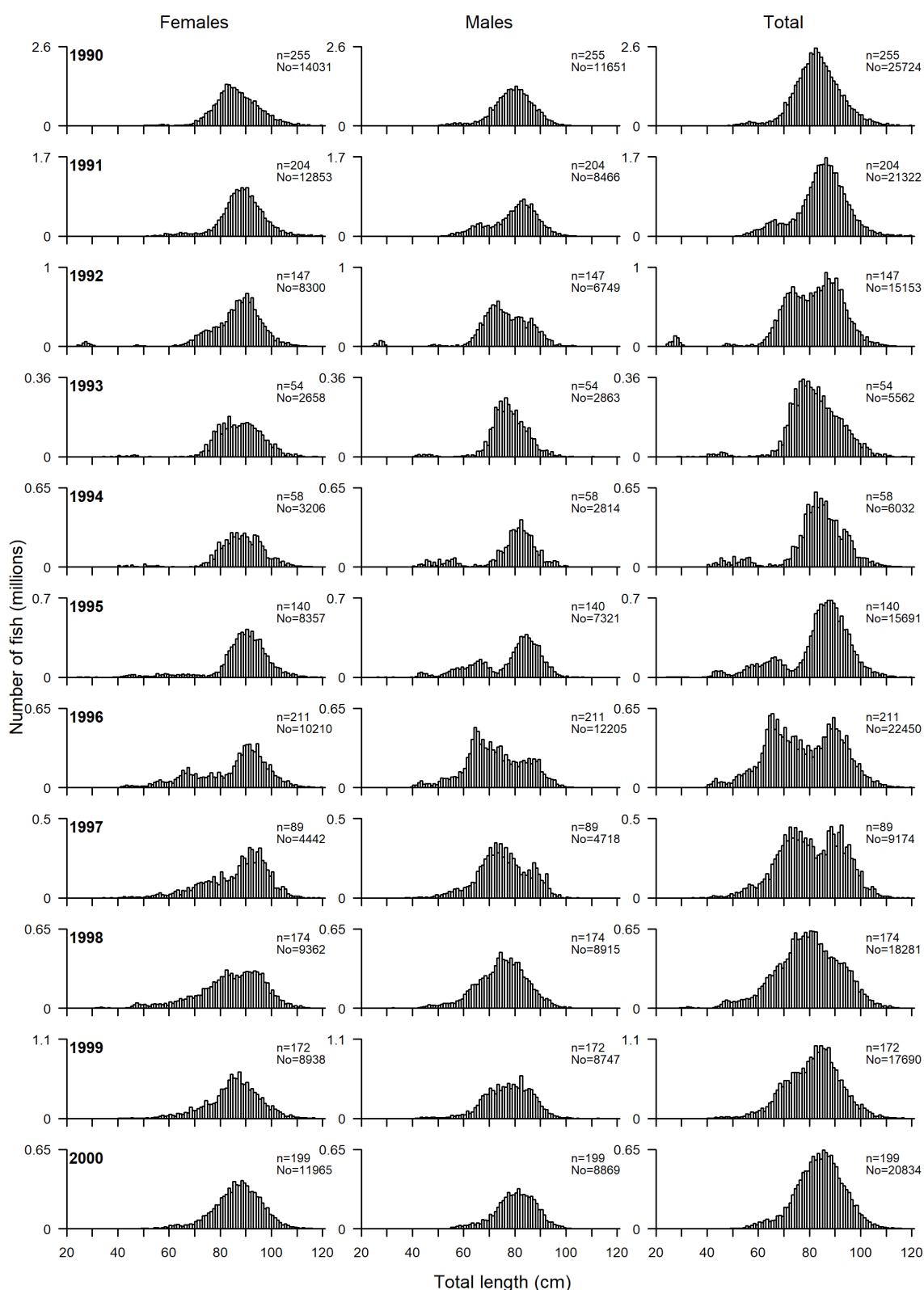


Figure 18b: Length frequency distributions of hoki in commercial catches from the WCSI WC.south spawning sub-fishery from 1990 to 2000 sampled at sea by the Observer Programme. n, number of tows sampled; No, number of fish sampled.

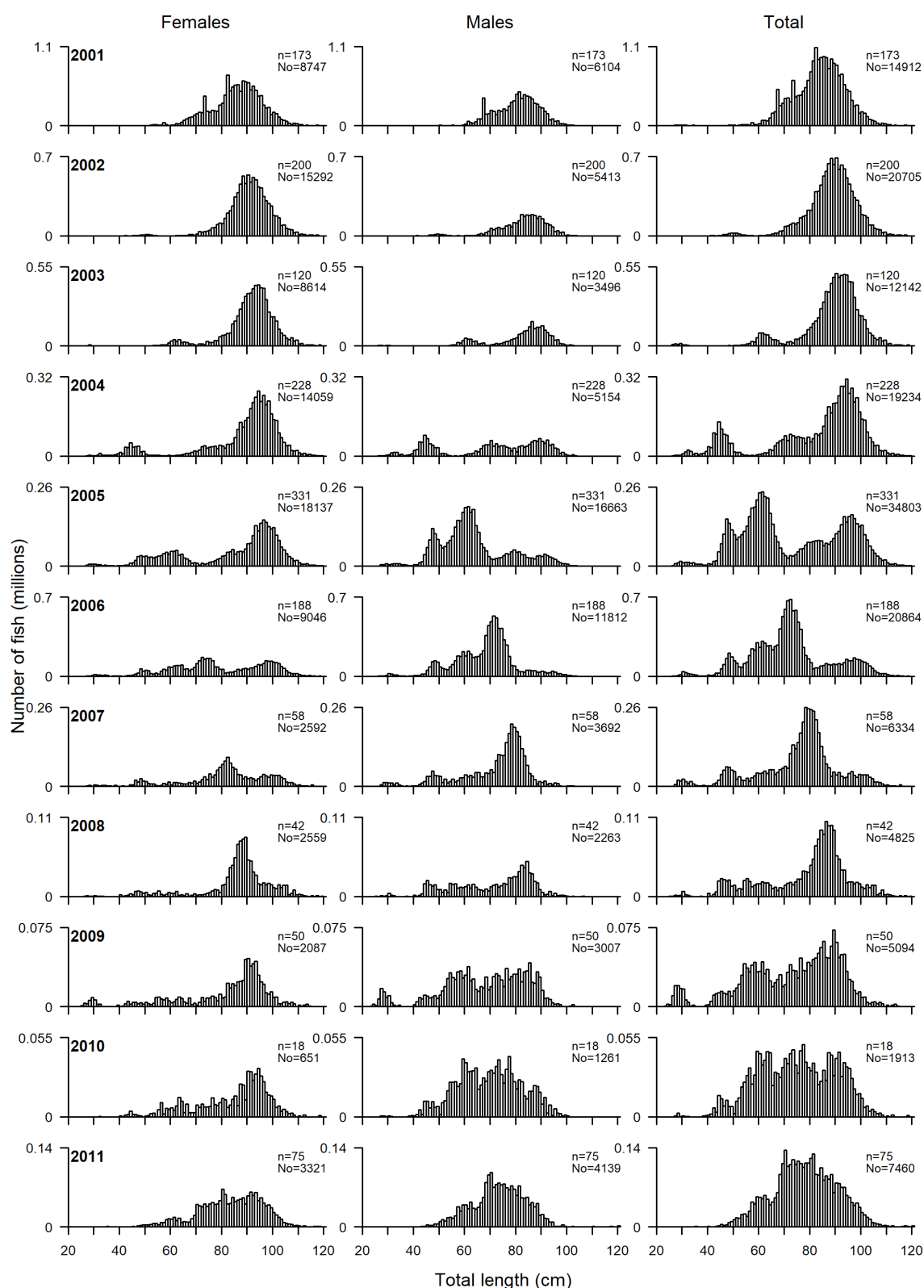


Figure 18b: (continued) Hoki length frequency distributions for the WCSI WC.south sub-fishery continued for years 2001–2011.

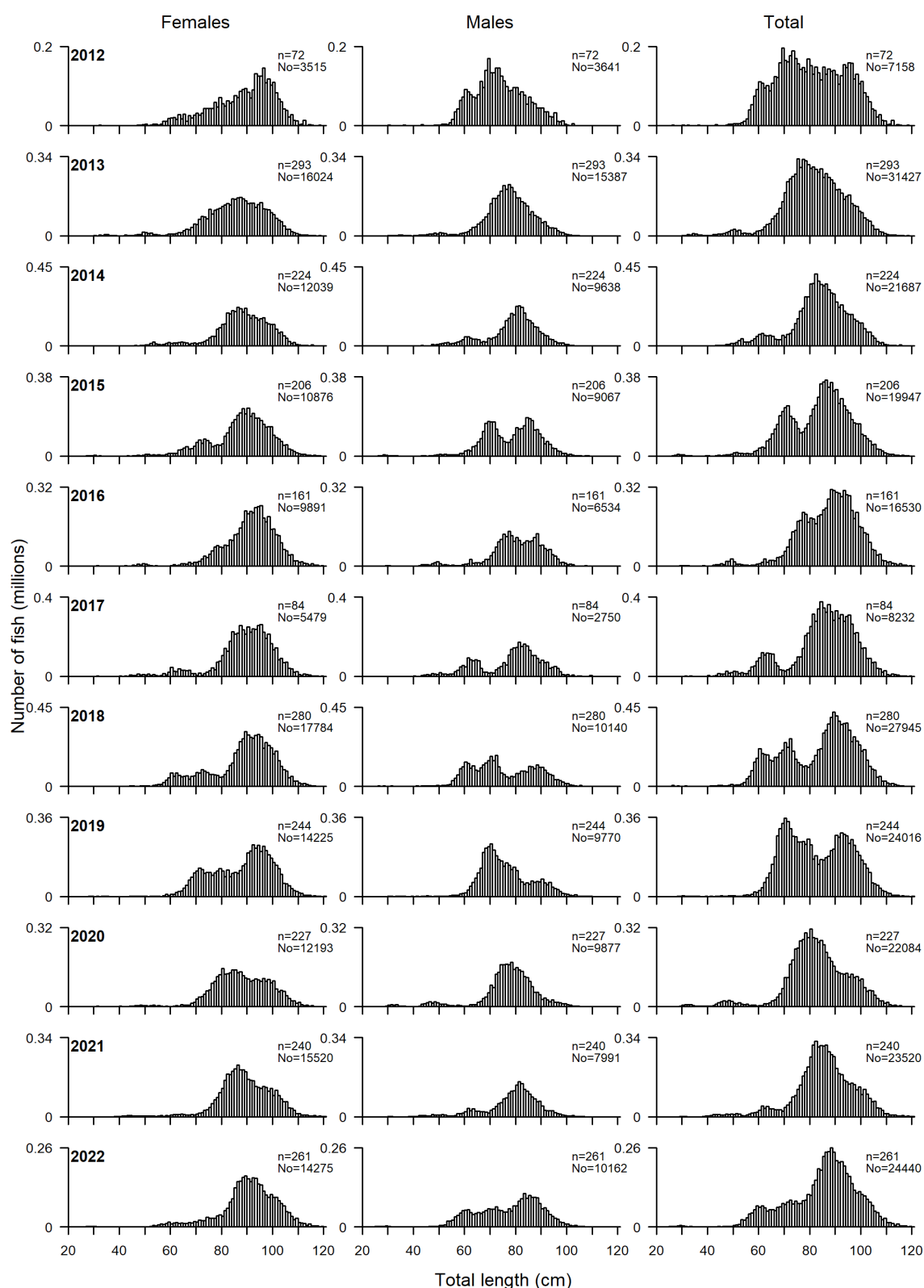


Figure 18b: (continued) Hoki length frequency distributions for the WCSI WC.south sub-fishery continued for years 2012–2022.

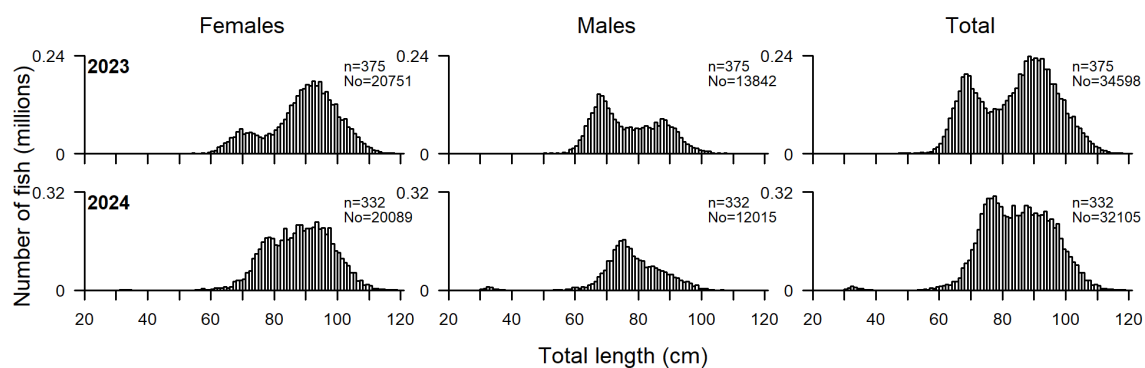


Figure 18b: (continued) Hoki length frequency distributions for the WCSI WC.south sub-fishery continued for years 2023–2024.

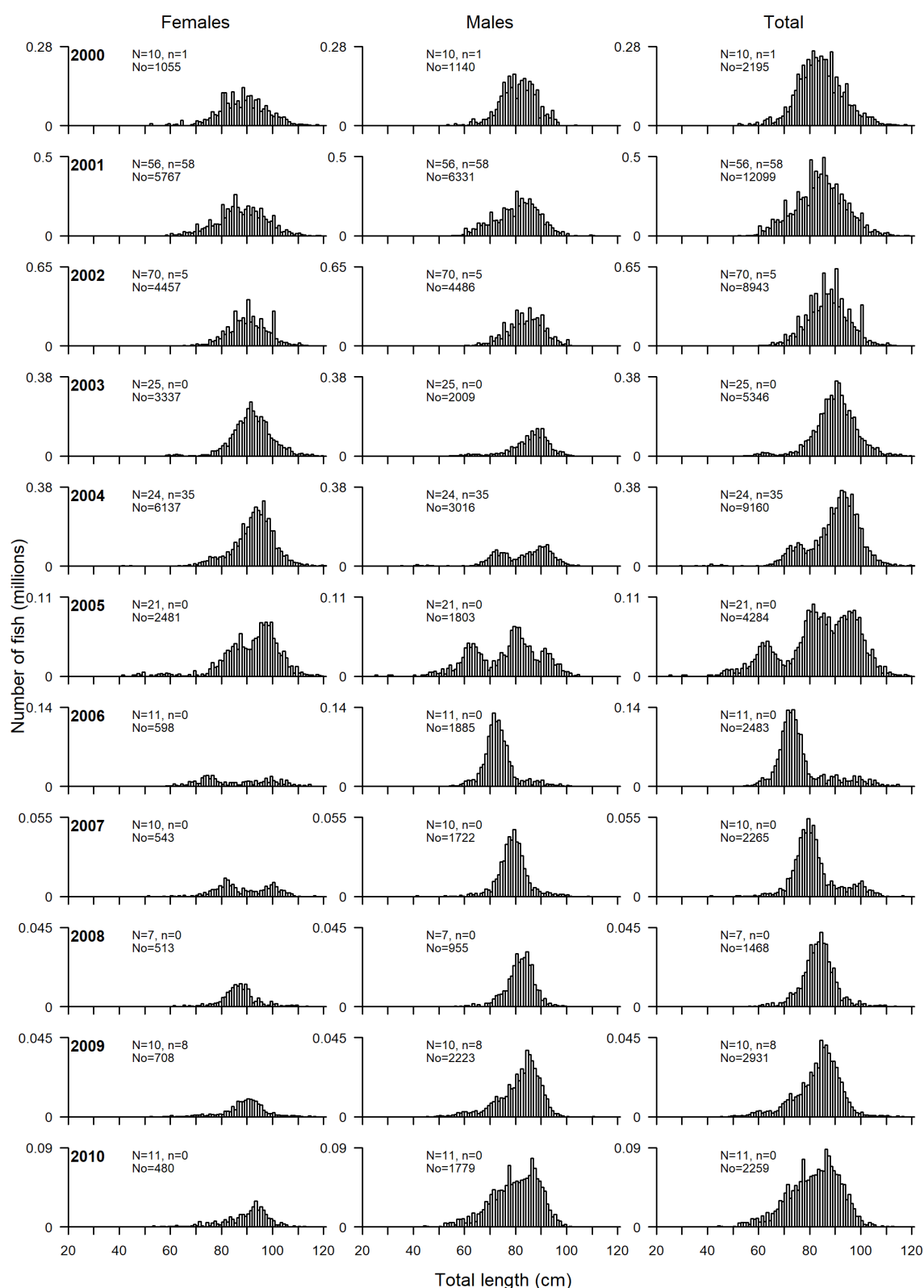


Figure 18c: Length frequency distributions of hoki in commercial catches from the WCSI WC inside spawning sub-fishery from 2000 to 2024. Observer Programme data were combined with land-based samples from inside the 25-n. mile line. n, number of tows sampled; No, number of fish sampled; N, number of landings.

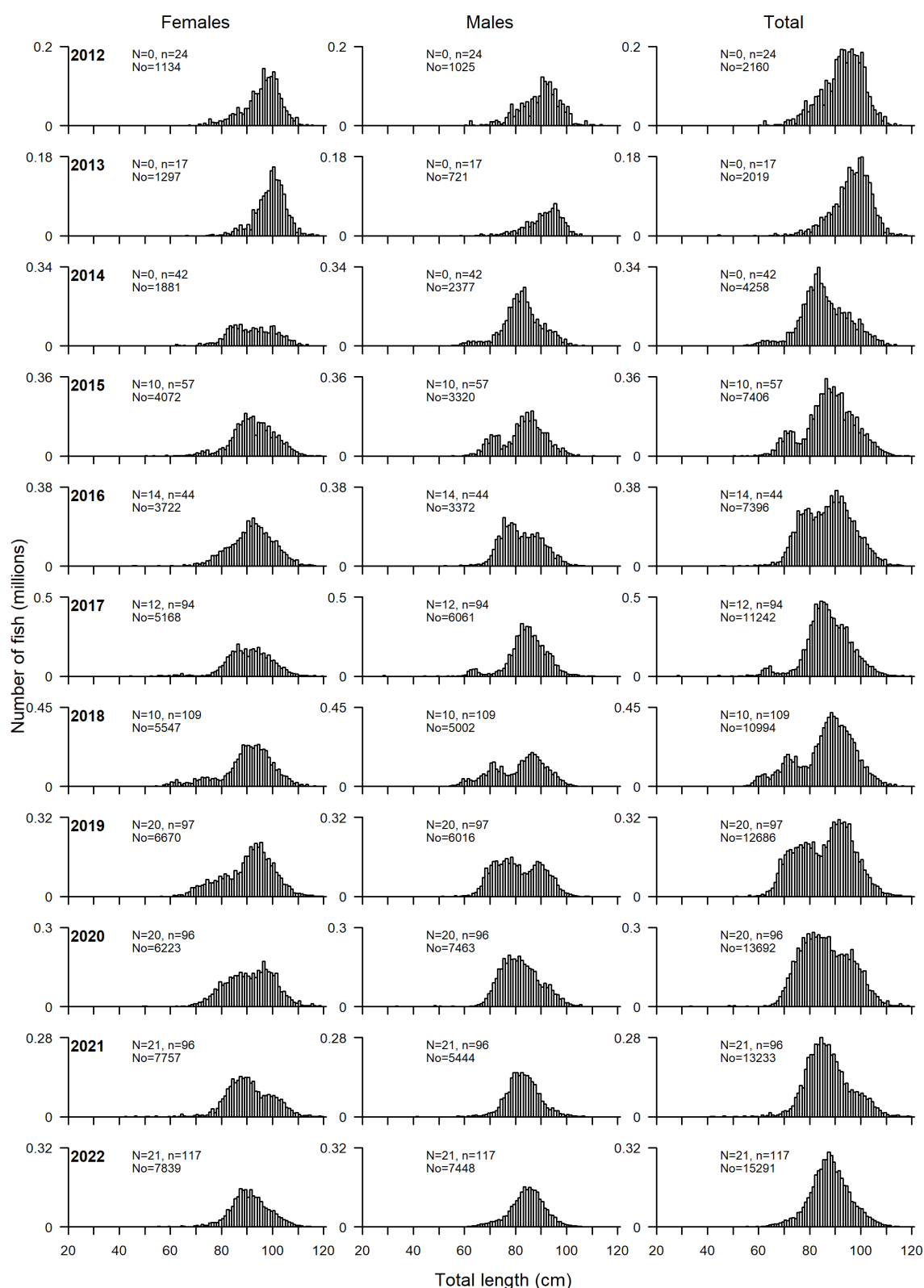


Figure 18c: (continued) Hoki length frequency distributions for the WCSI WC.inside sub-fishery continued for 2012–2022.

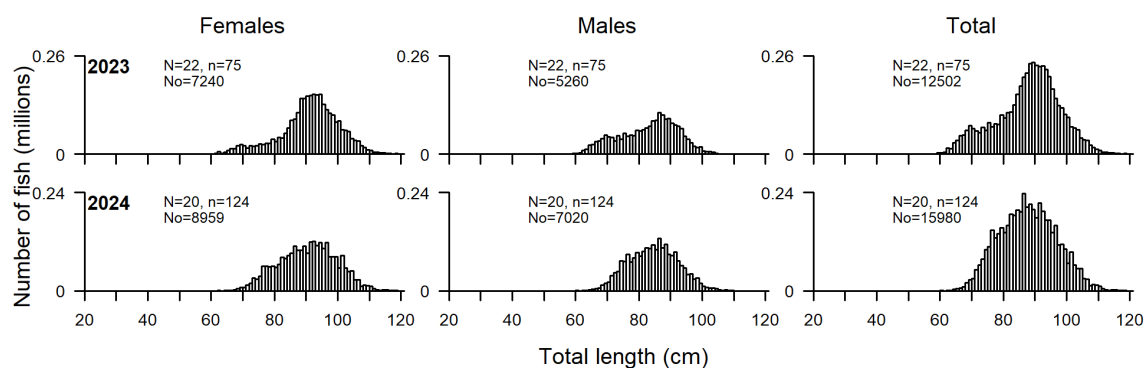


Figure 18c: (continued) Hoki length frequency distributions for the WCSI WC.inside sub-fishery continued for years 2023–2024.

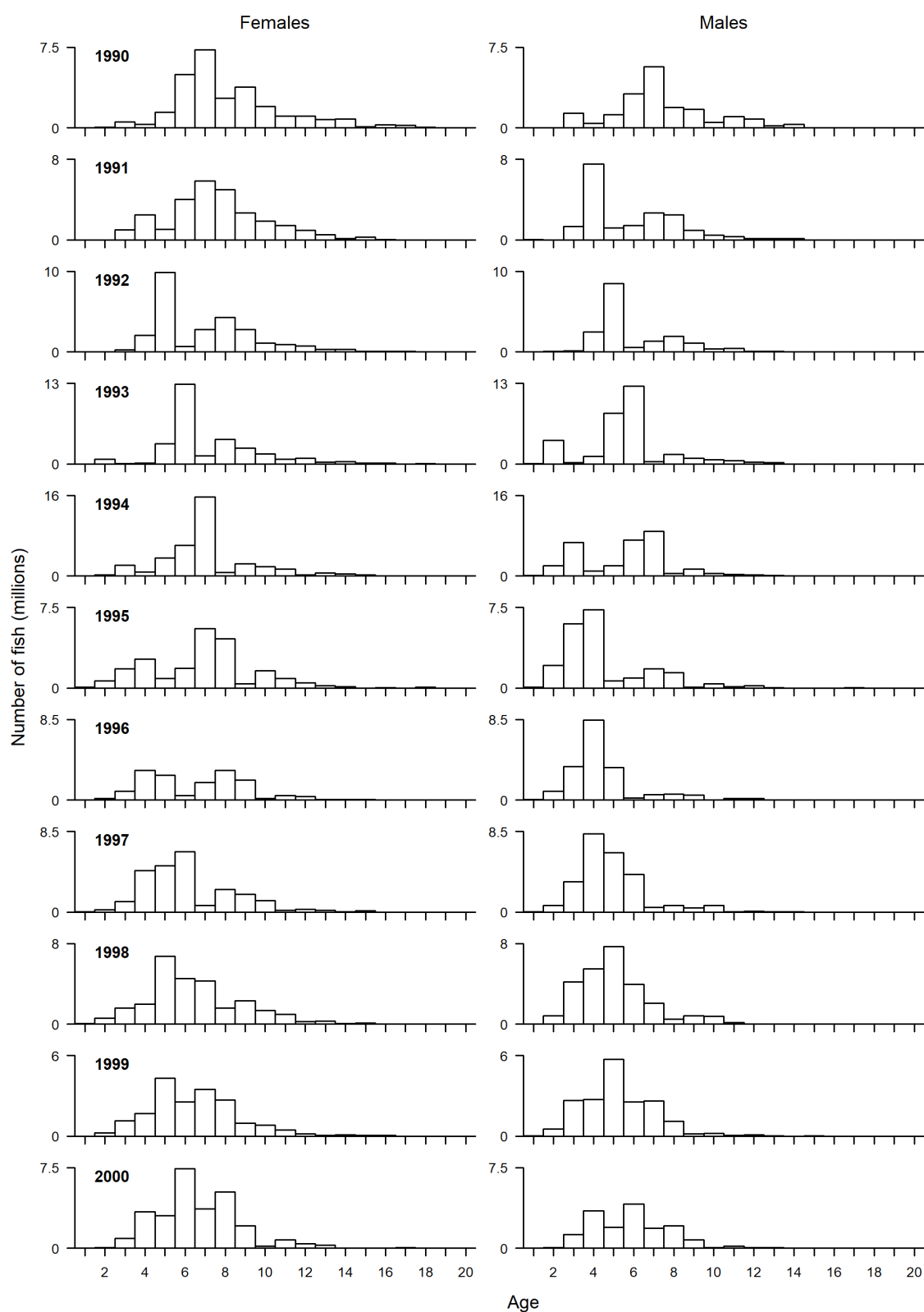


Figure 19a: Catch-at-age of hoki in commercial catches from the WCSI WC.north spawning sub-fishery from 1990 to 2024.

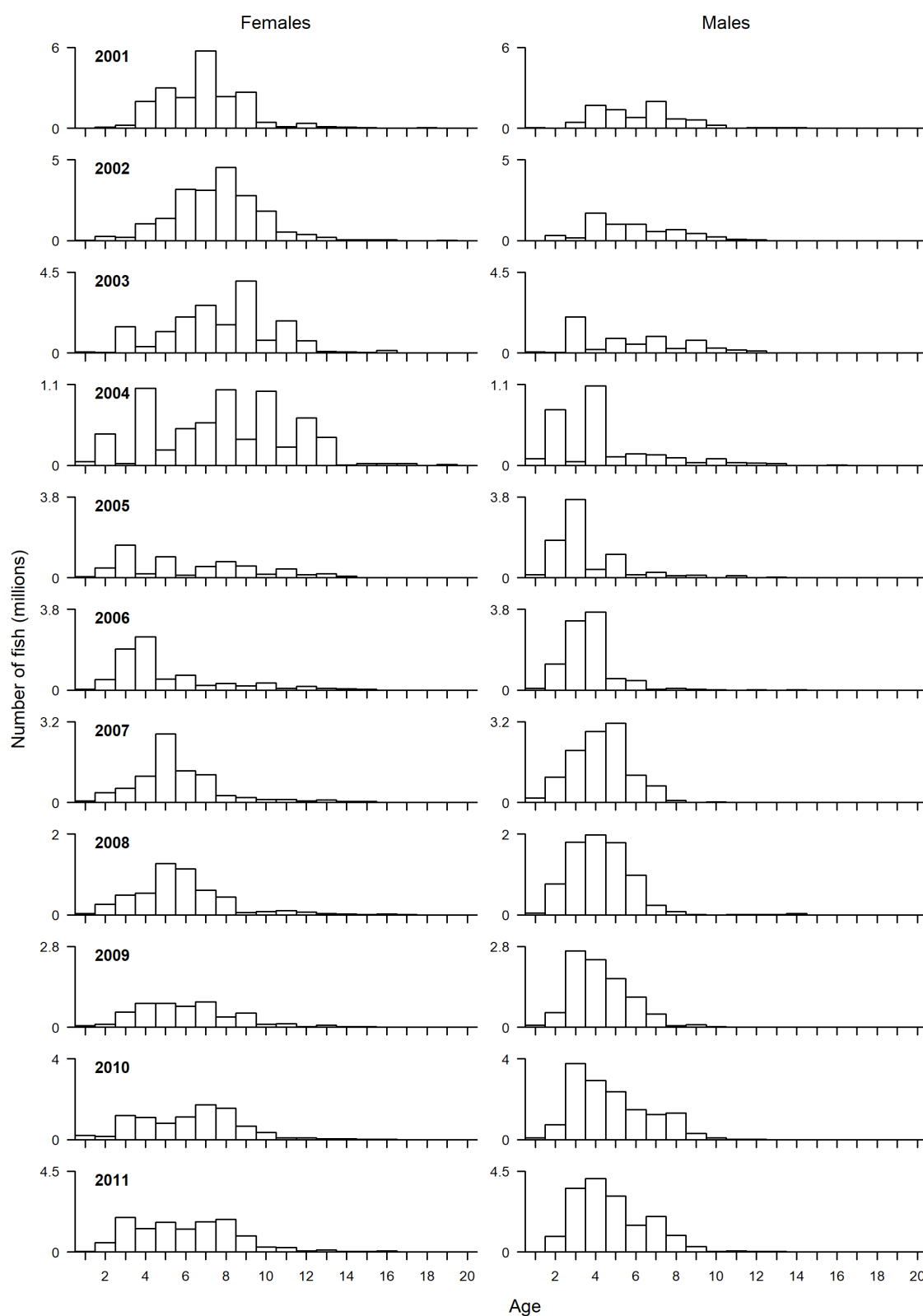


Figure 19a: (continued) Catch-at-age of hoki from the WCSI WC.north sub-fishery continued for 2001–2011.

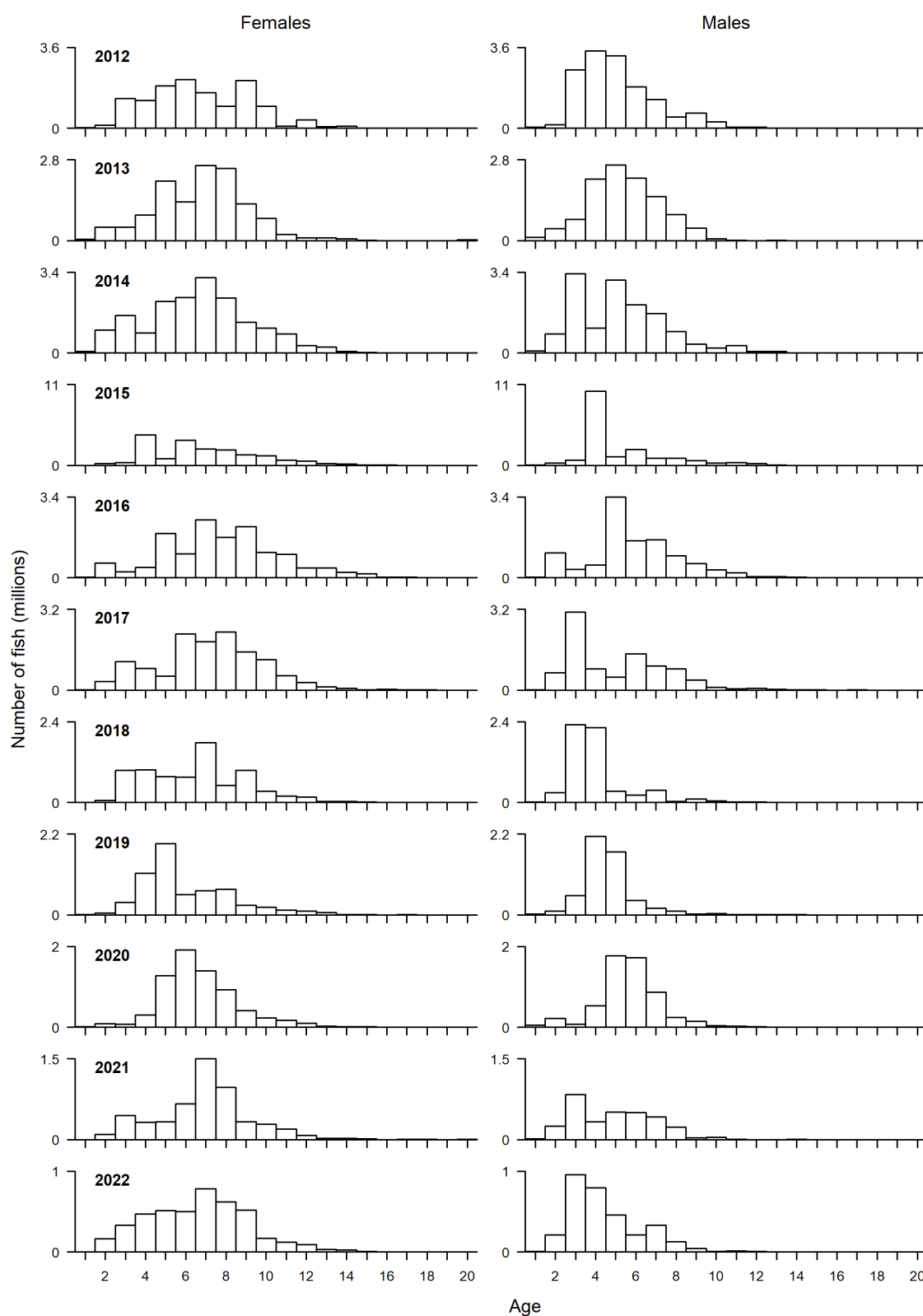


Figure 19a: (continued) Catch-at-age of hoki from the WCSI WC.north sub-fishery continued for 2012–2022.

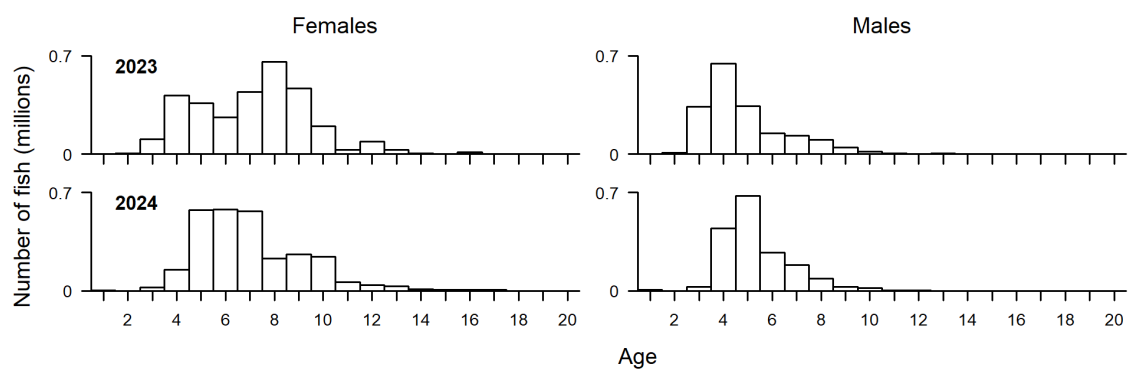


Figure 19a: (continued) Catch-at-age of hoki from the WCSI WC.north sub-fishery continued for years 2023–2024.

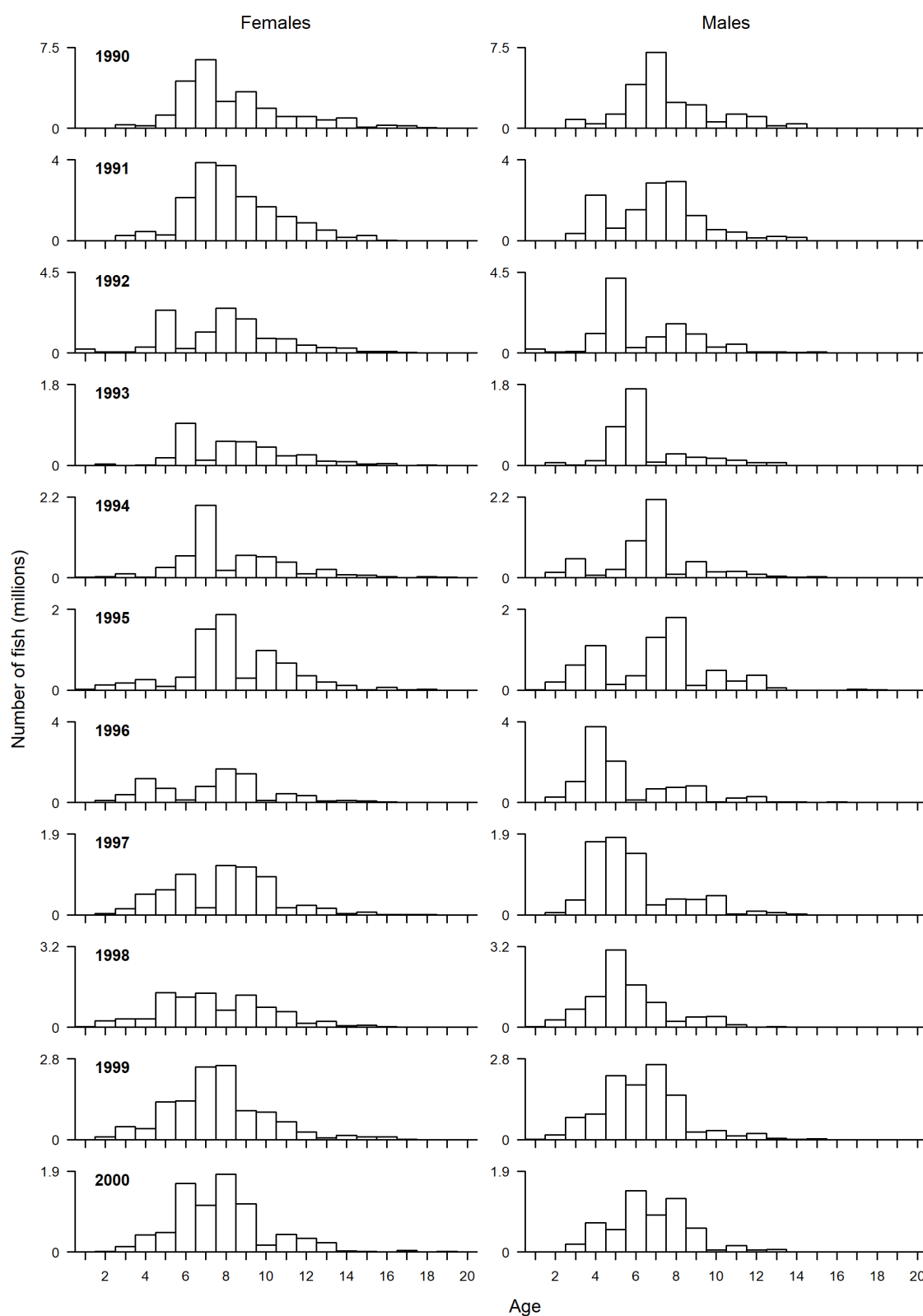


Figure 19b: Catch-at-age of hoki in commercial catches from the WCSI WC.south spawning sub-fishery from 1990 to 2024.

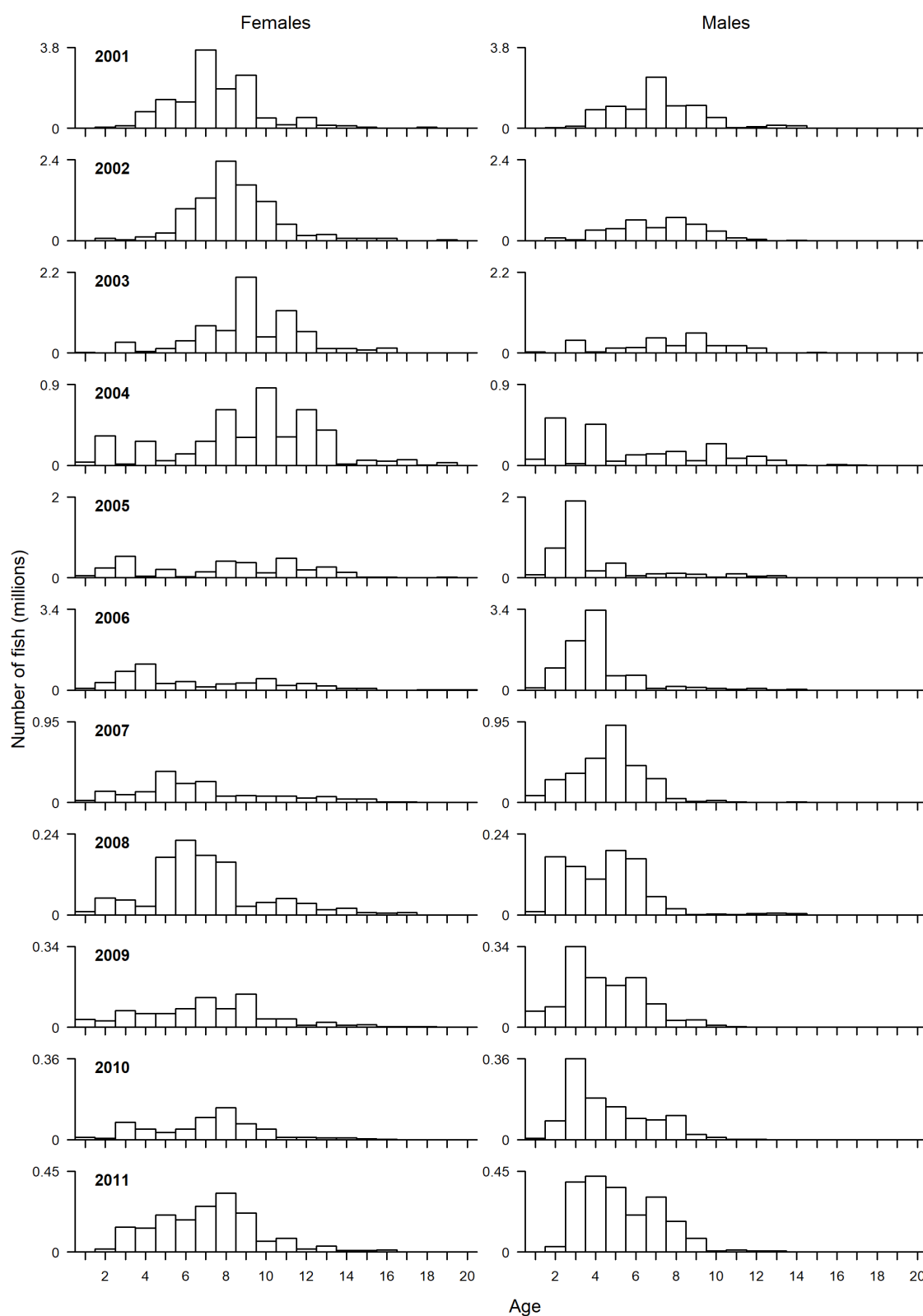


Figure 19b: (continued) Catch-at-age of hoki in commercial catches from the WCSI WC.south sub-fishery continued for 2001–2011.

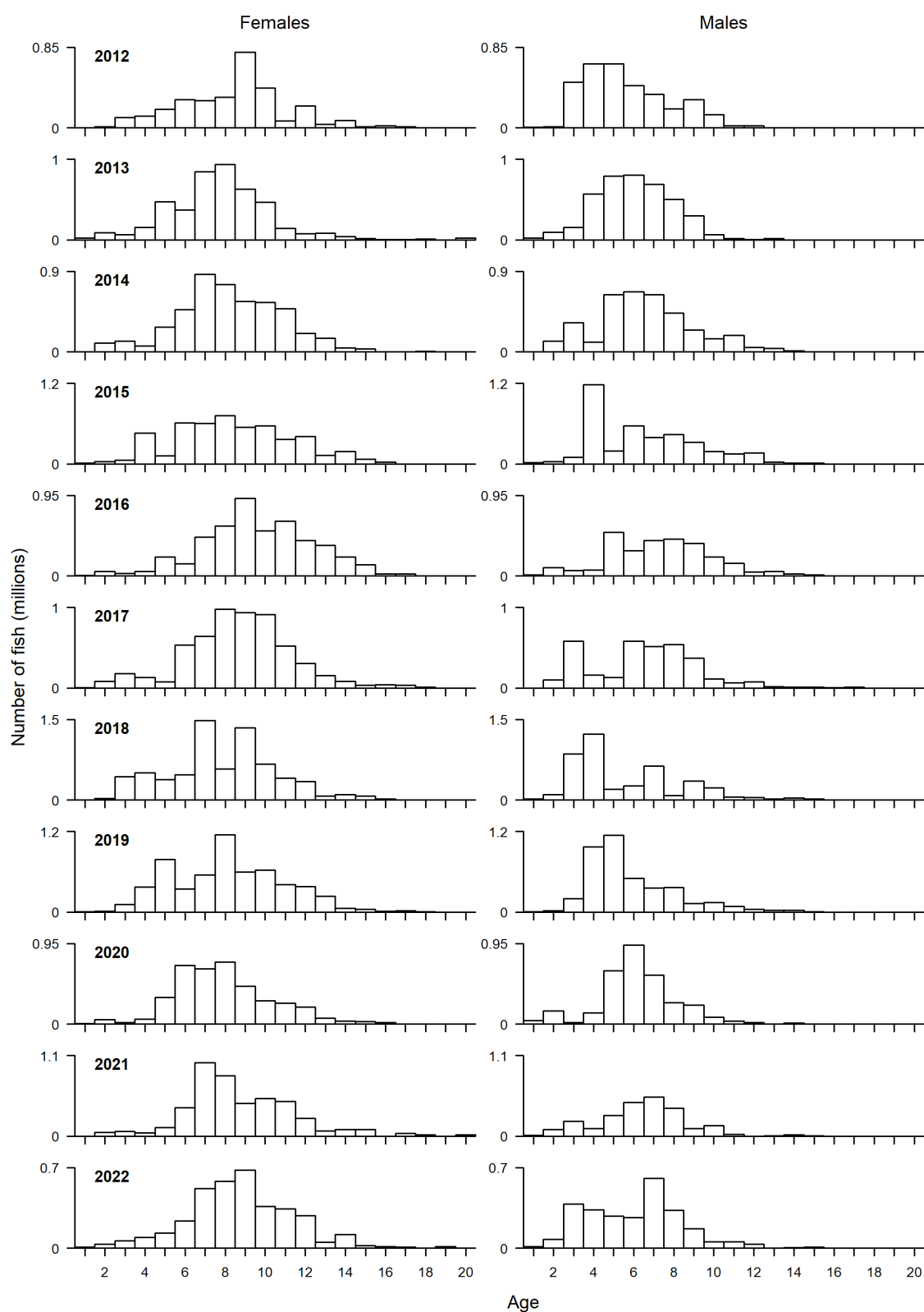


Figure 19b: (continued) Catch-at-age of hoki in commercial catches from the WCSI WC.south sub-fishery continued for 2012–2022.

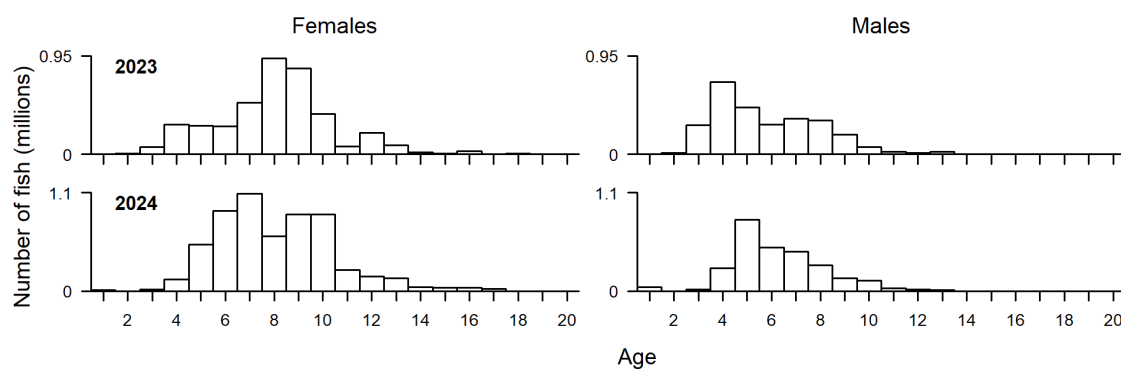


Figure 19b: (continued) Catch-at-age of hoki in commercial catches from the WCSI WC.south sub-fishery continued for years 2023–2024.

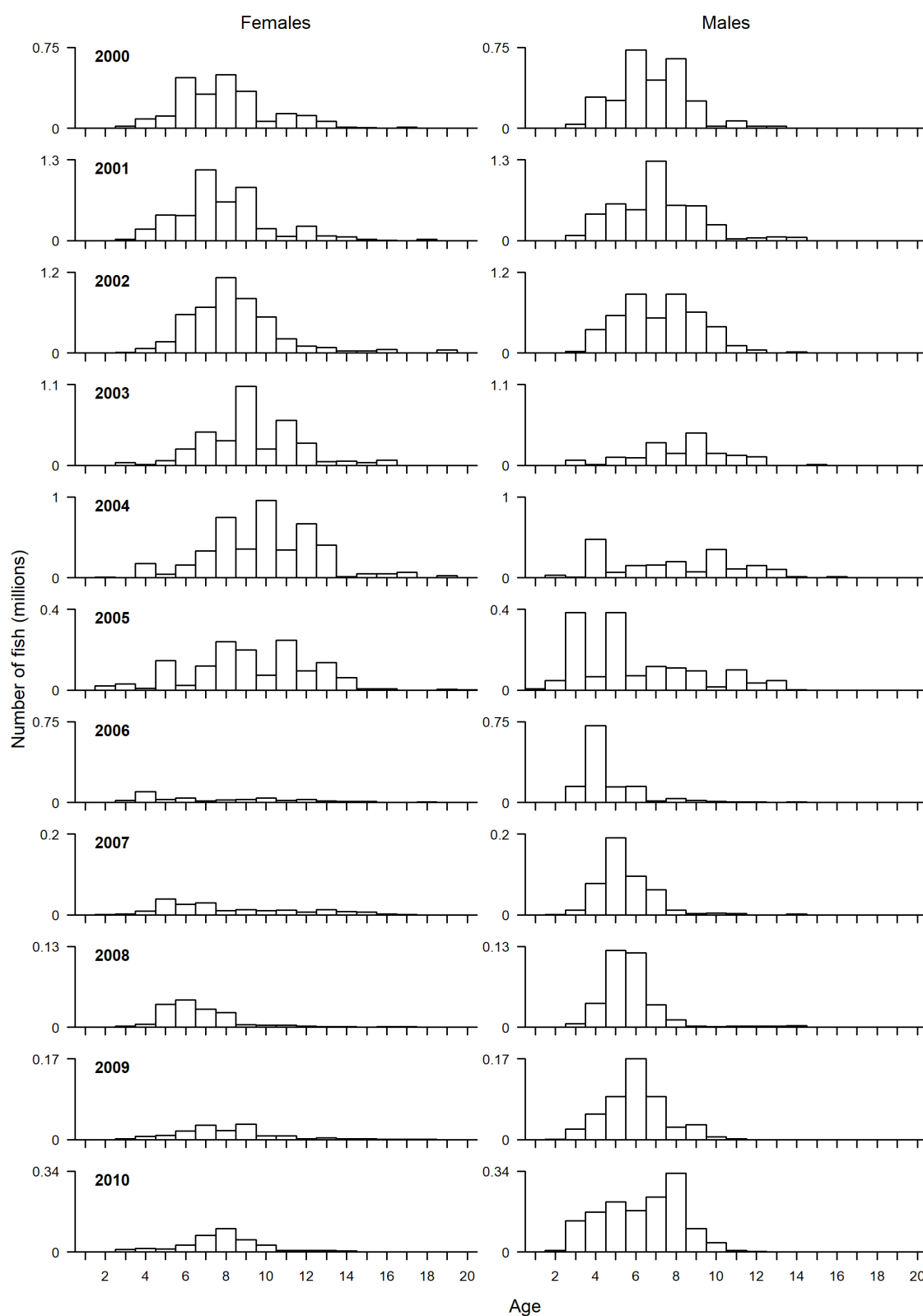


Figure 19c: Catch-at-age of hoki in commercial catches from the WCSI WC inside spawning sub-fishery from 2000 to 2024.

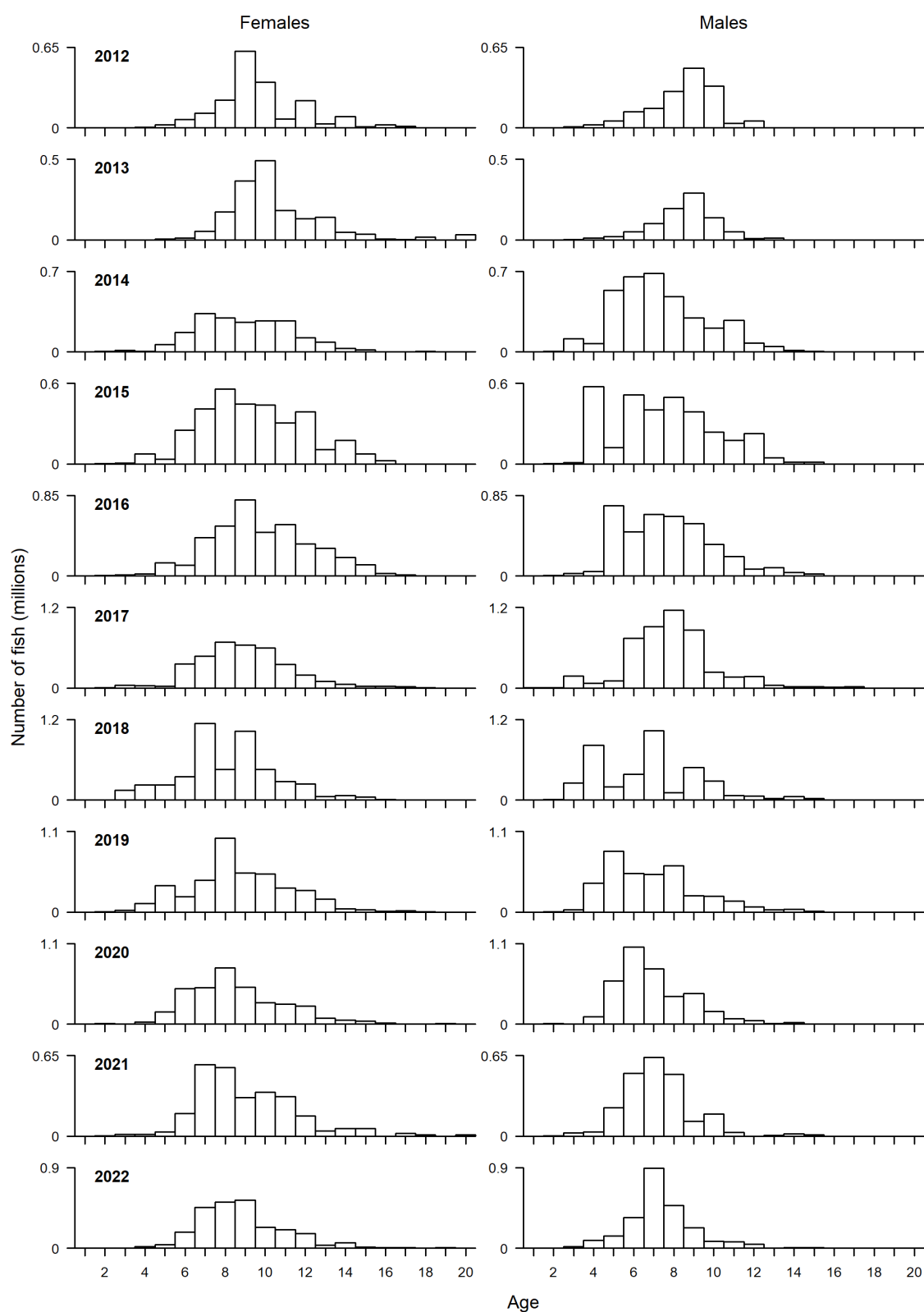


Figure 19c: (continued) Hoki catch-at-age for WCSI WC.inside sub-fishery continued for 2012–2022.

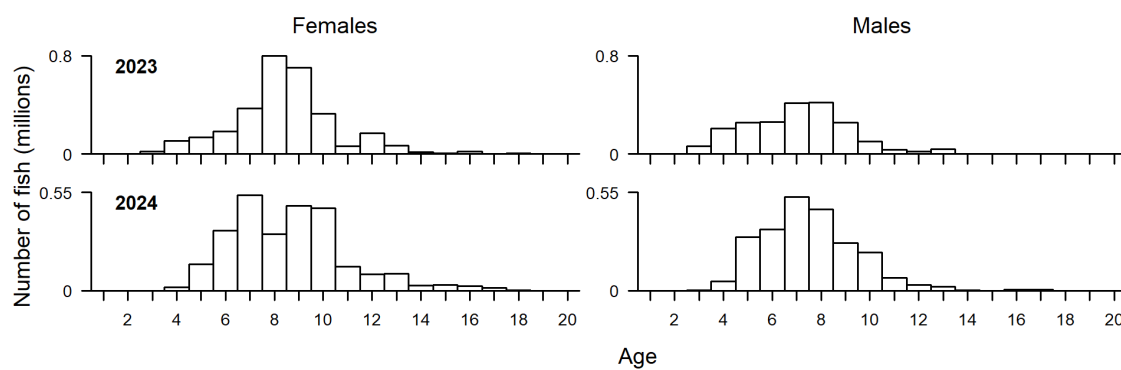


Figure 19c: (continued) Hoki catch-at-age for WCSI WC.inside sub-fishery continued for years 2023–2024.

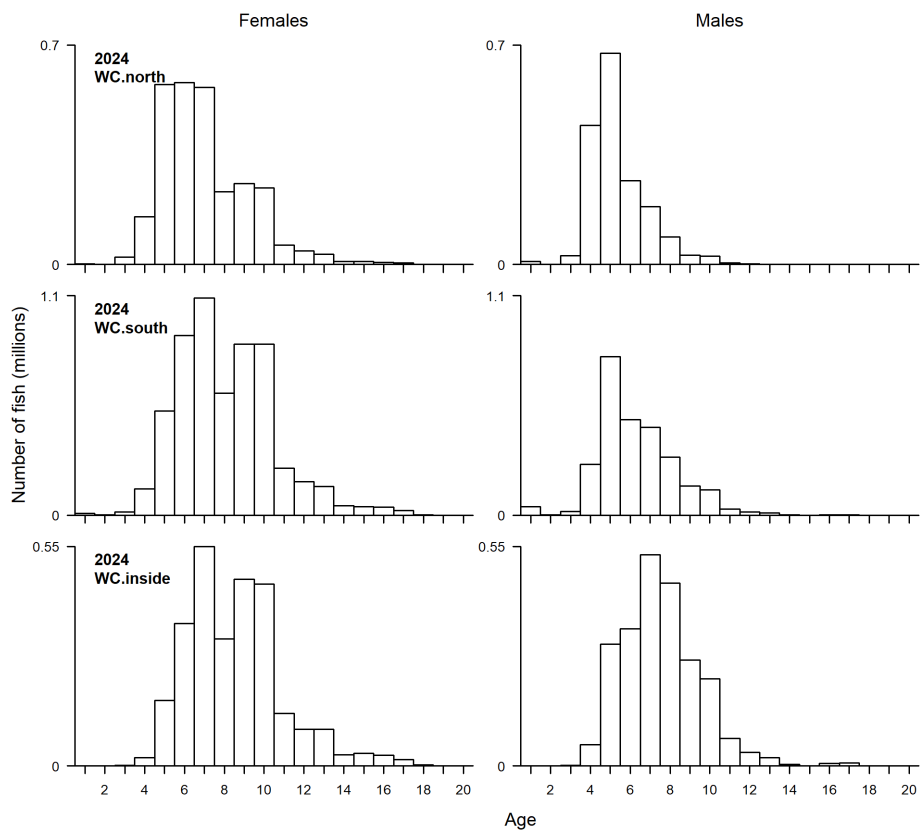
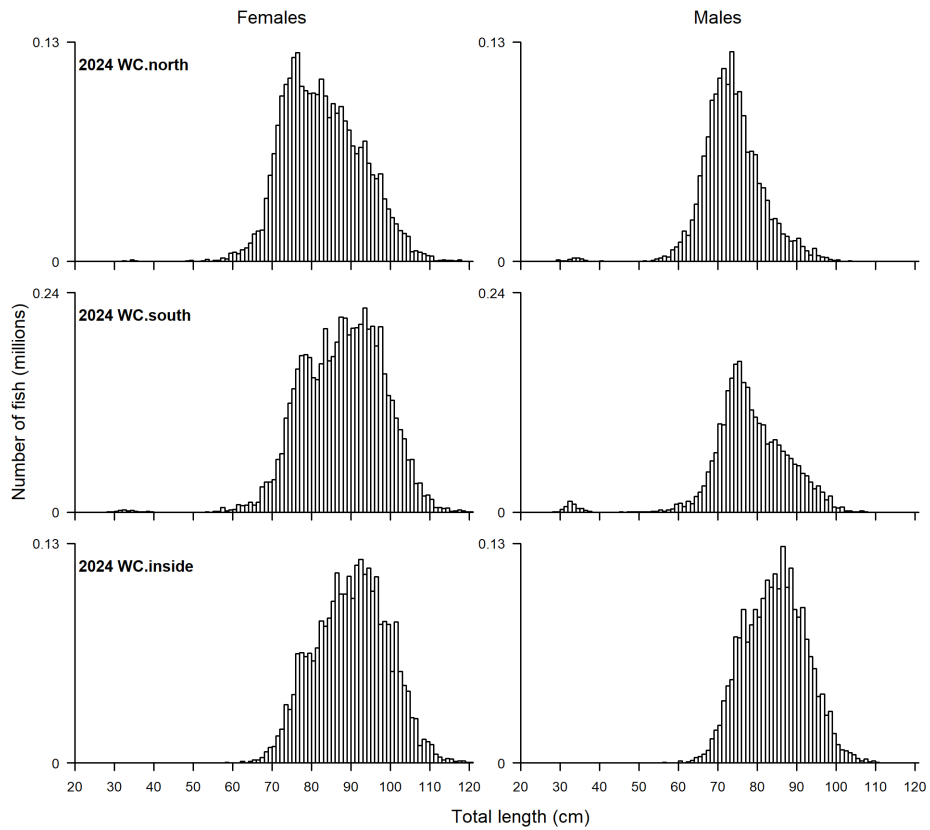


Figure 20: Comparisons of WCSI WC.north, WC.south, and WC.inside sub-fishery female and male length and age frequency distributions for the 2024 season.

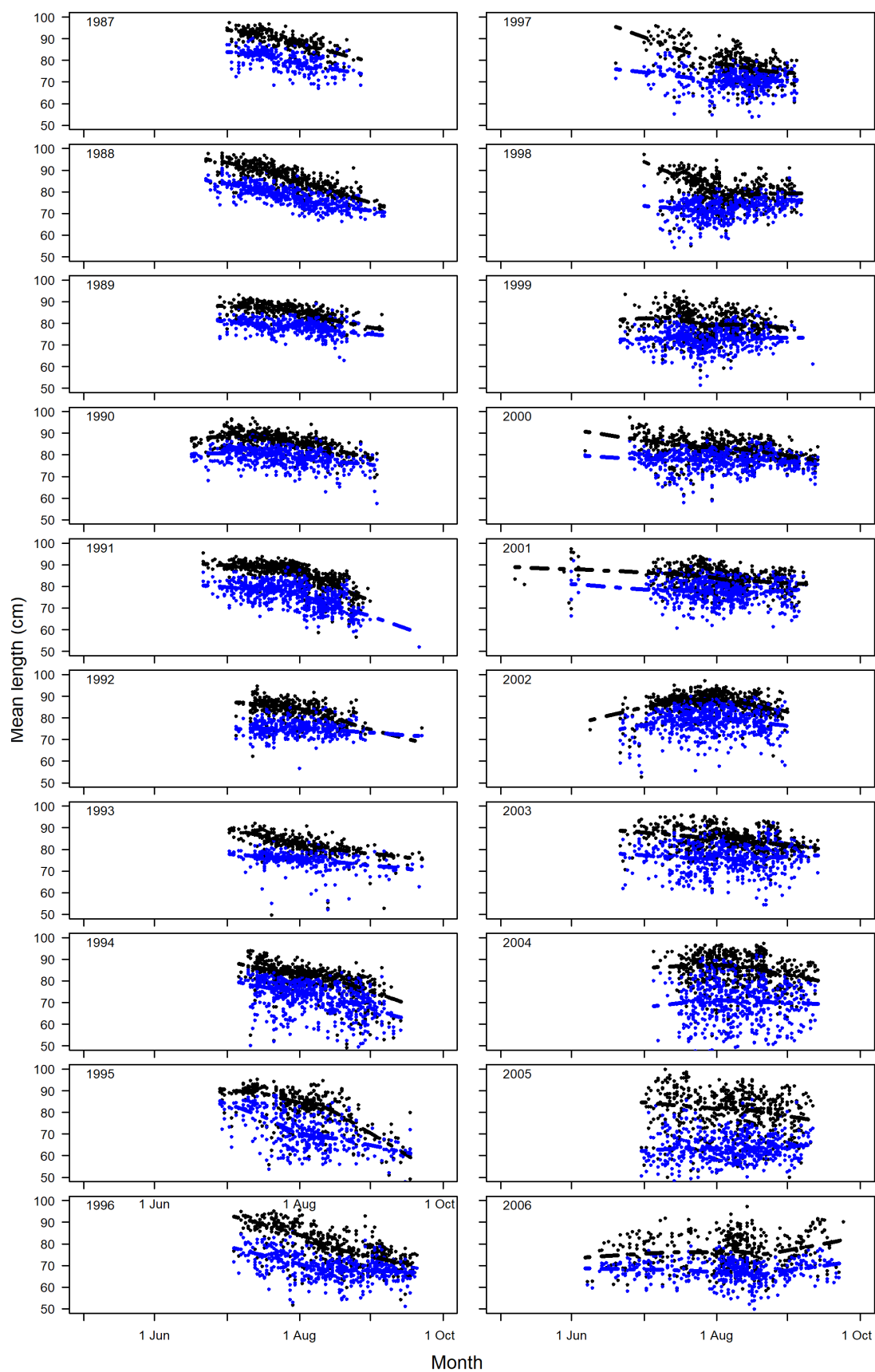


Figure 21: Mean length of female (black) and male (blue) hoki taken in commercial catches from the WCSI overall spawning fishery 1987–2024 sampled at sea by the Observer Programme. Dashed lines are a loess fit.

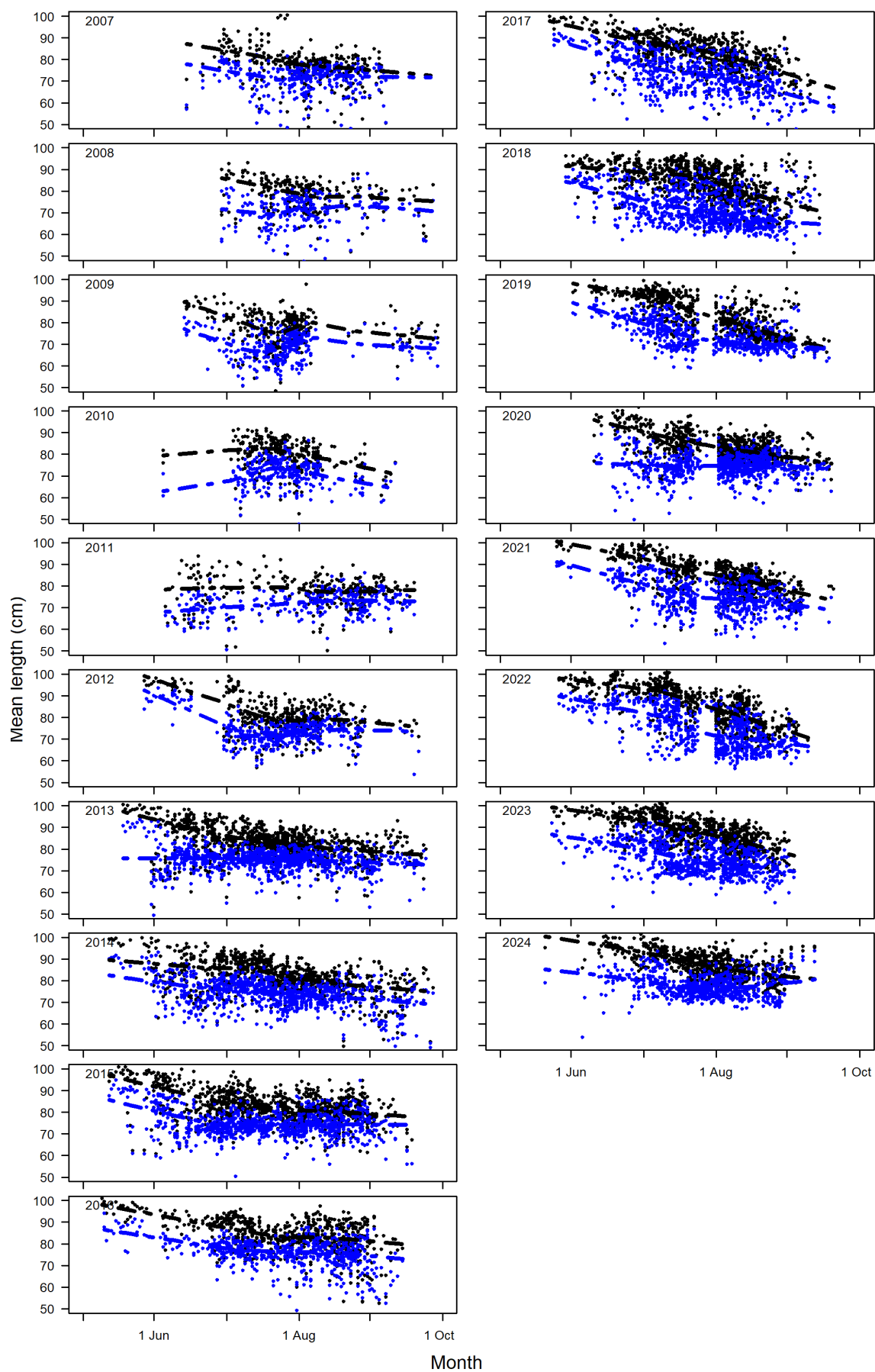


Figure 21: (continued) Mean lengths of WCSI hoki continued for 2007–2024.

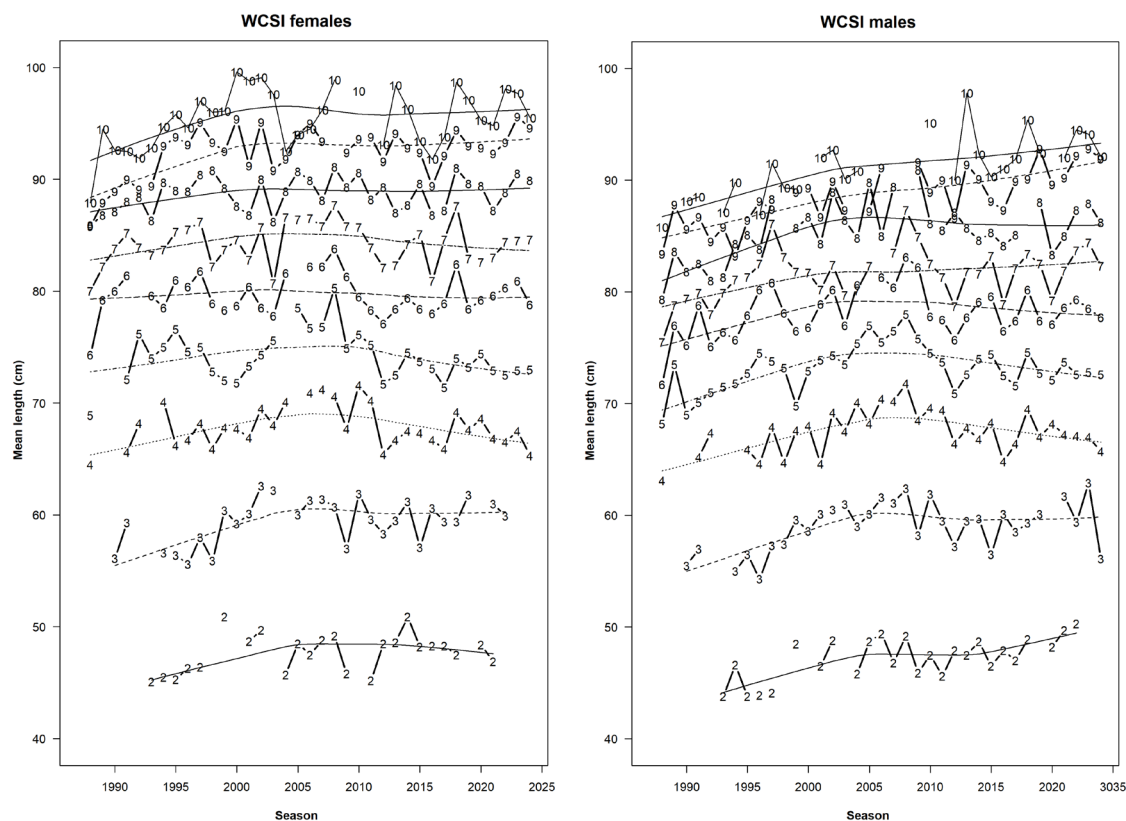


Figure 22: Mean length-at-age of female and male hoki taken in commercial catches from WCSI overall spawning fishery 1988–2024 sampled at sea by the Observer Programme, or in a land-based sampling programme in some years. Lines are a loess fit. Points with fewer than ten records were excluded.

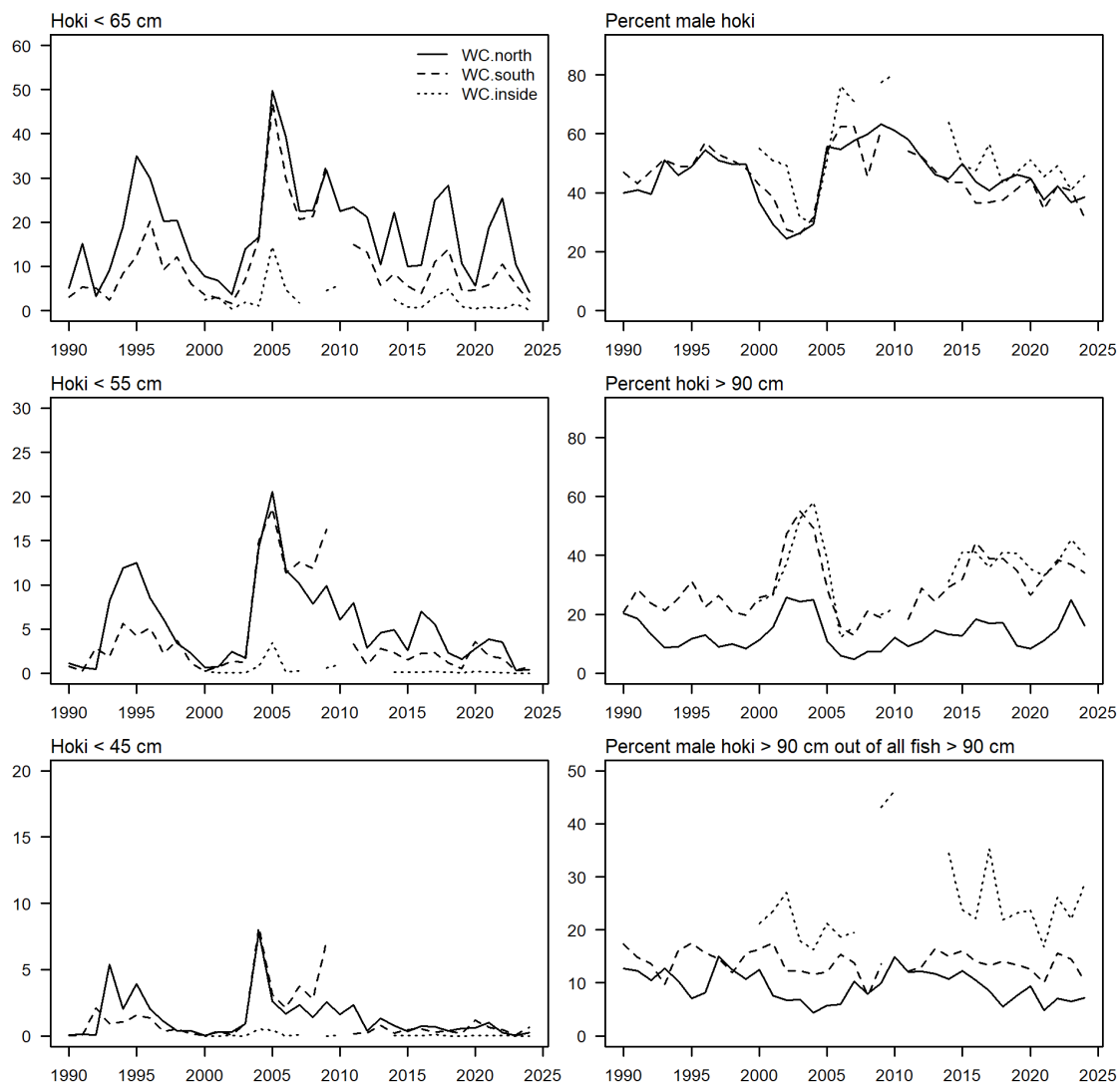


Figure 23: Percentage of small fish (total length < 45 cm, < 55 cm, and < 65 cm), males, all older fish (> 90 cm length), and male fish (total length > 90 cm only) in the catch by WCSI sub-fishery and fishing year.

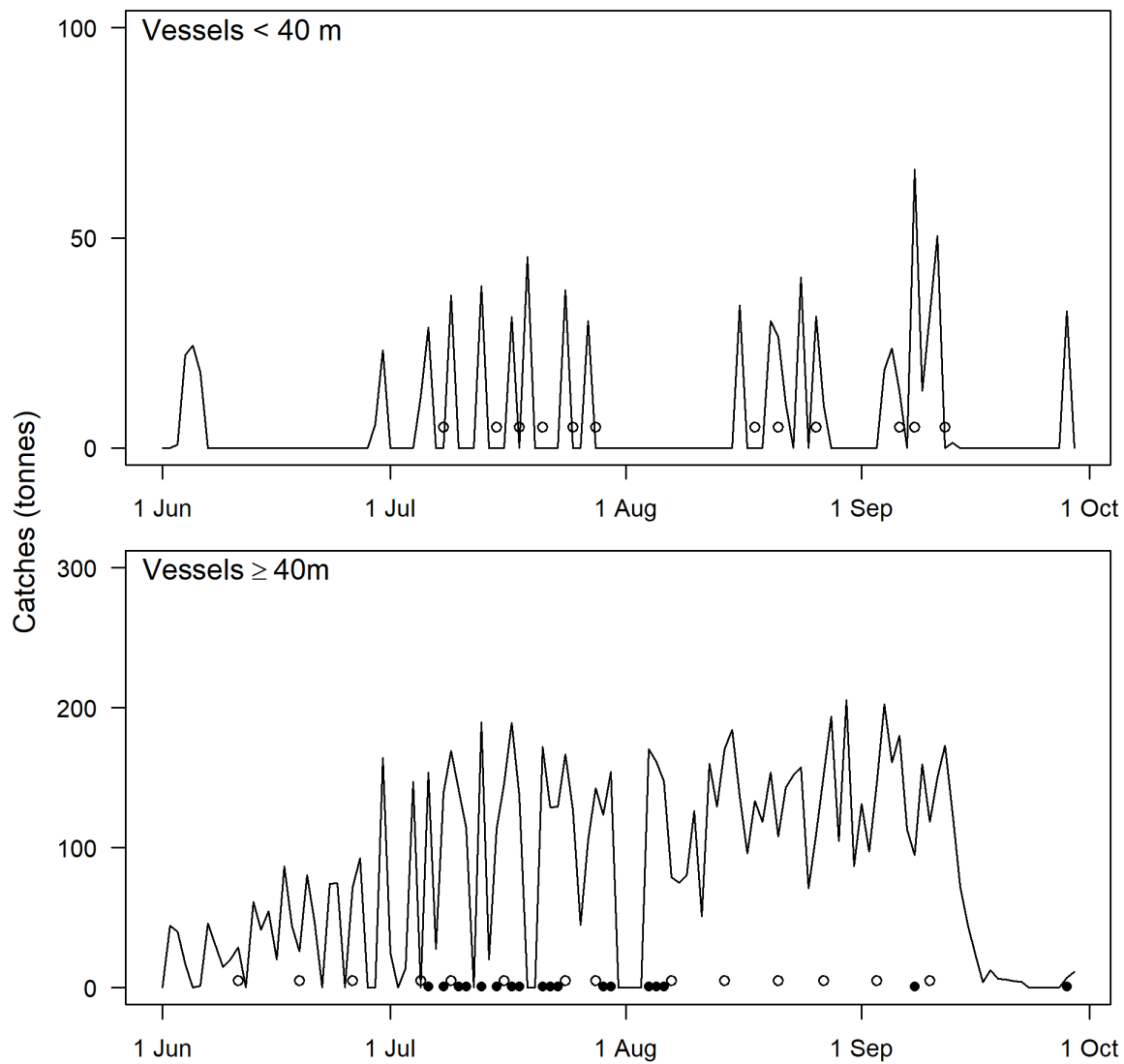


Figure 24: Cook Strait 2023–24 catch by day for vessels less than 40 m and 40 m or longer during the spawning season, showing timing of Observer Programme samples (black dots), and land-based samples (hollow dots).

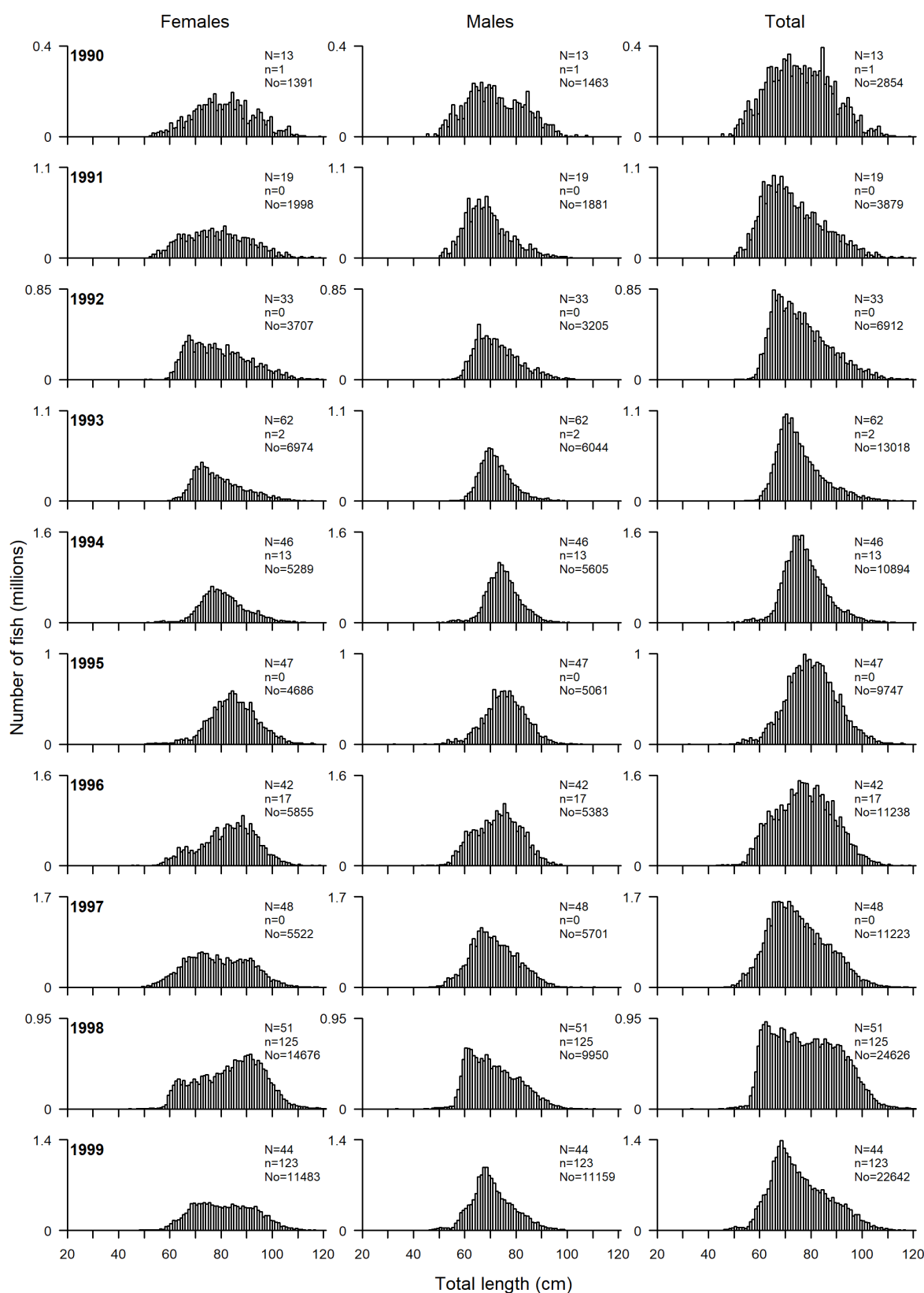


Figure 25: Comparison of Cook Strait spawning sub-fishery length frequencies by year for 1990–2024. N: number of land-based length frequencies, n: number of observed length frequencies; No: number of fish measured.

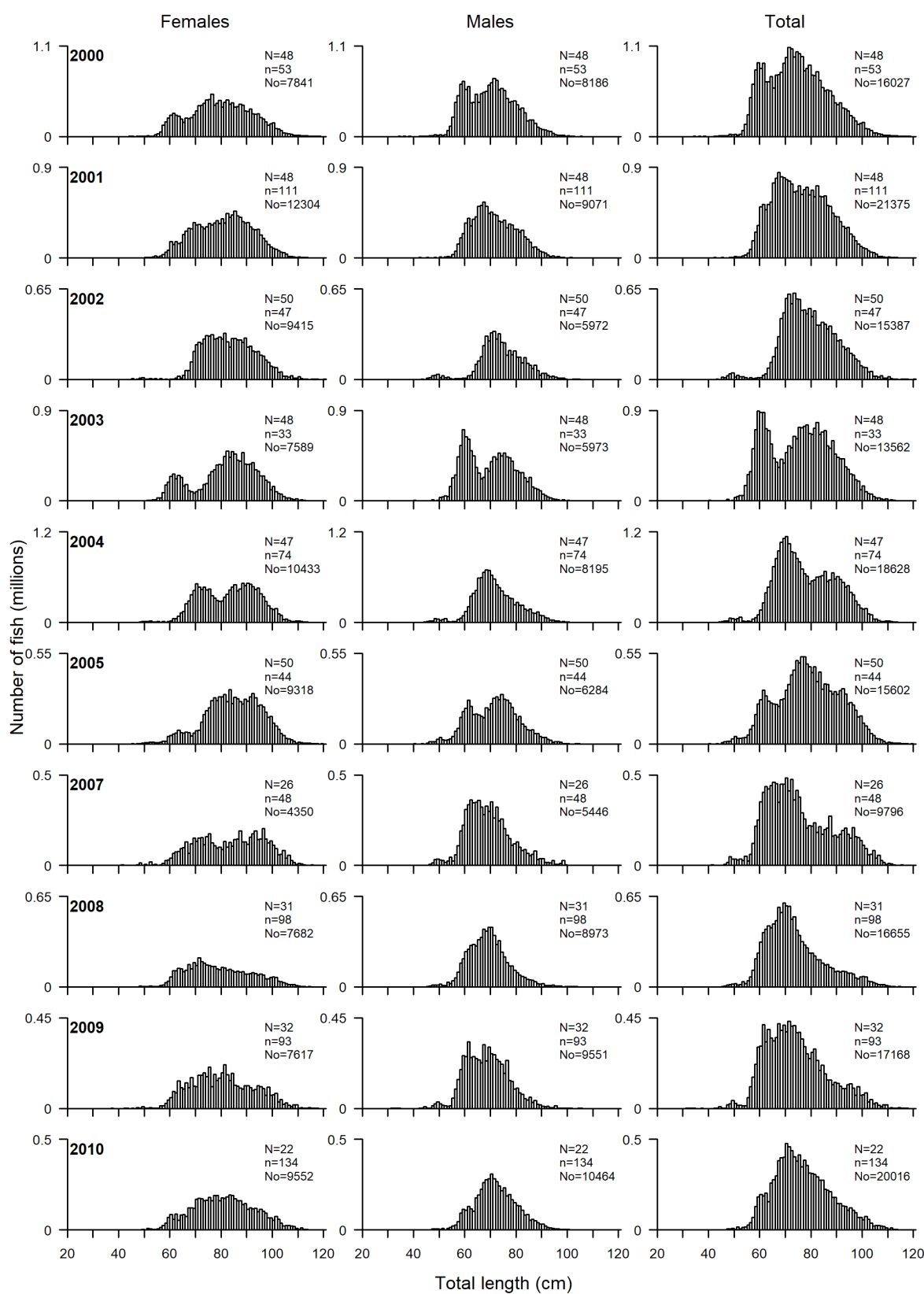


Figure 25: (continued) Cook Strait spawning sub-fishery continued for 2000–2005, 2007–2010.

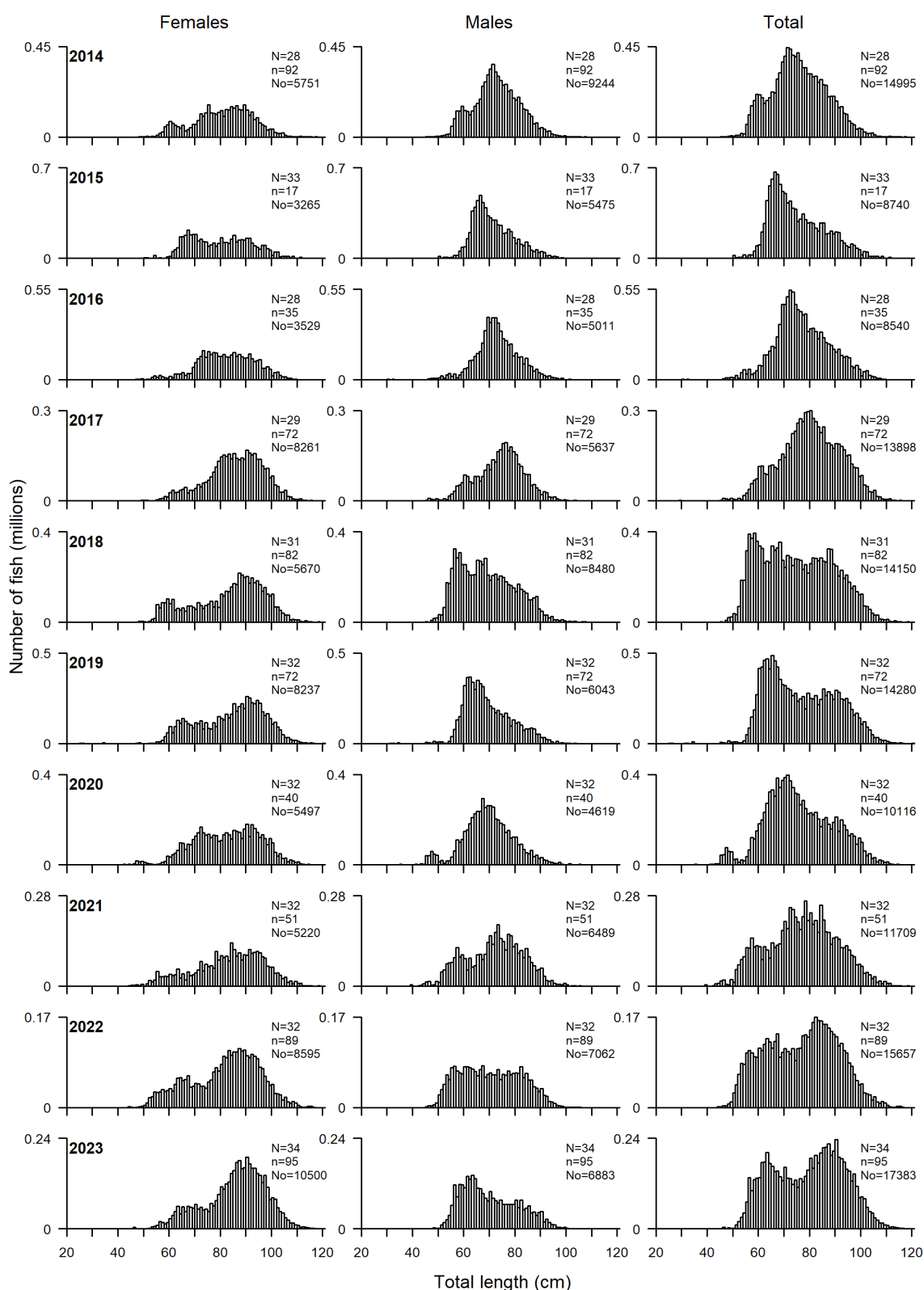


Figure 25: (continued) Cook Strait spawning sub-fishery continued for 2014–2023.

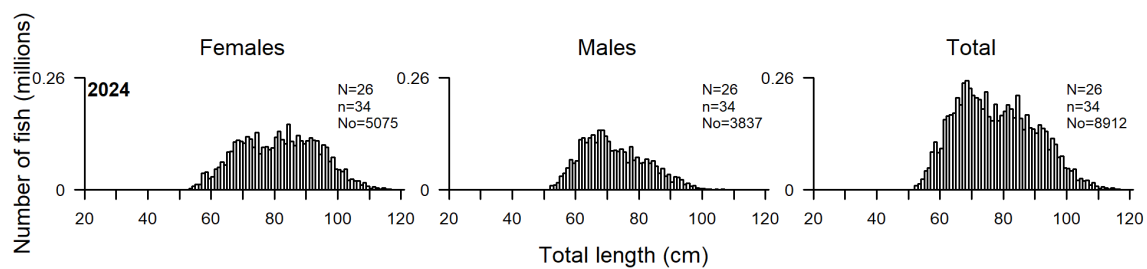


Figure 25: (continued) Cook Strait spawning sub-fishery continued for 2024.

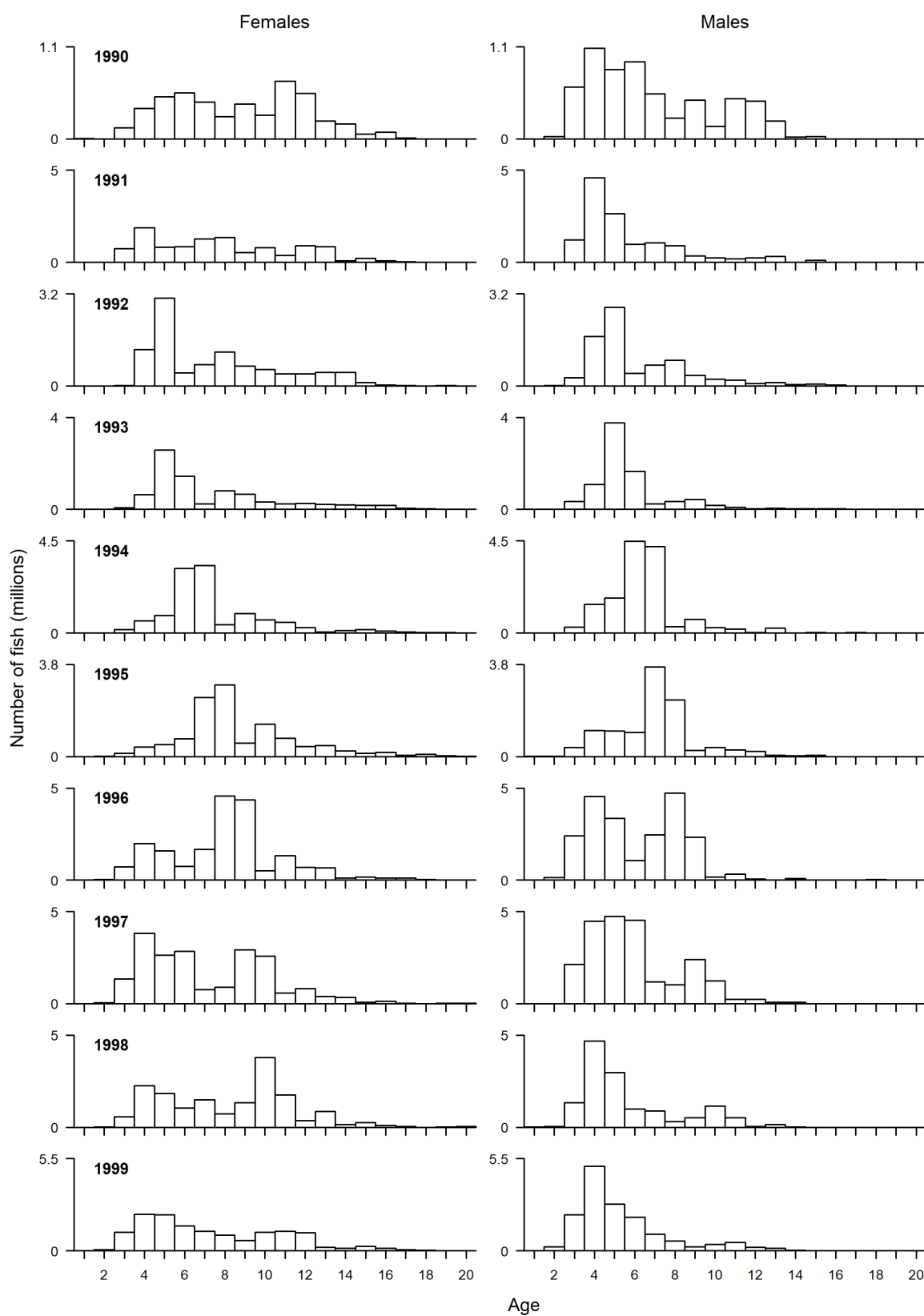


Figure 26: Catch-at-age of hoki in commercial catches from the overall Cook Strait spawning sub-fishery for 1990–2024 sampled by the land-based sampling programme, and at sea by observers.

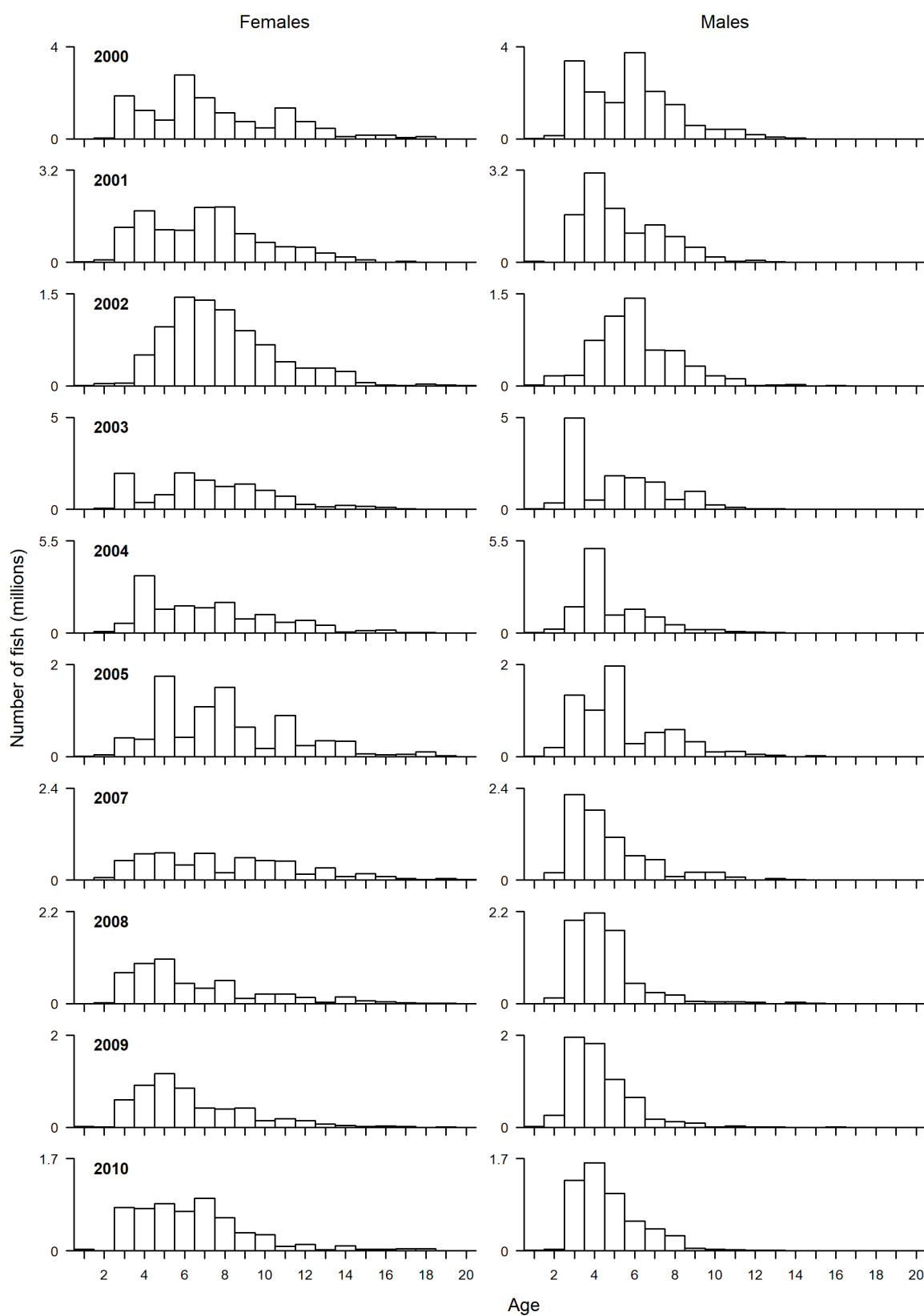


Figure 26: (continued) Cook Strait continued for 2000–2005, 2007–2010. [The 2006 data excluded Nelson land-based samples from vessels of at least 40 m length which sorted their catch at sea and are not shown here.]

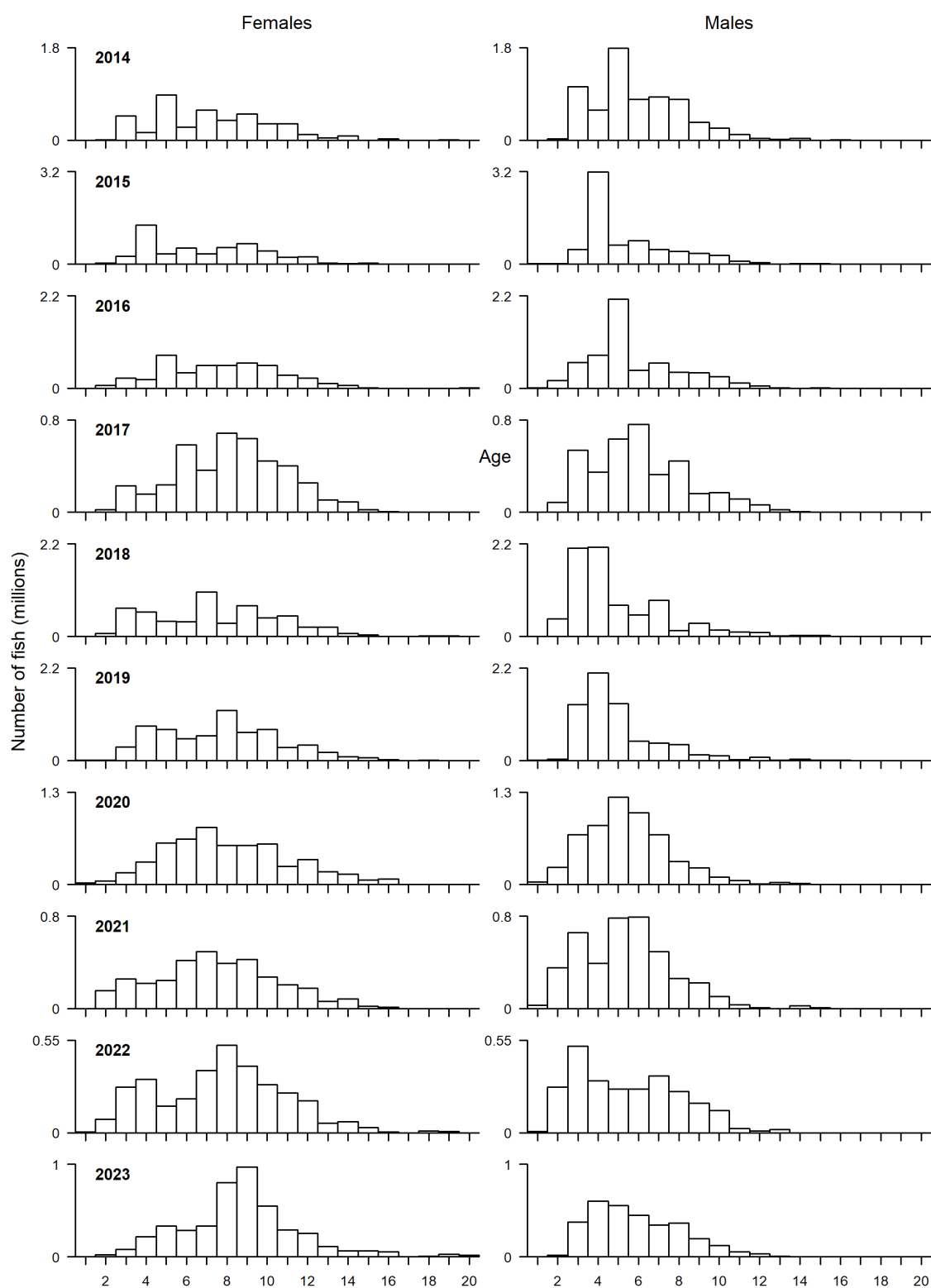


Figure 26: (continued) Cook Strait spawning sub-fishery continued for 2014–2023.

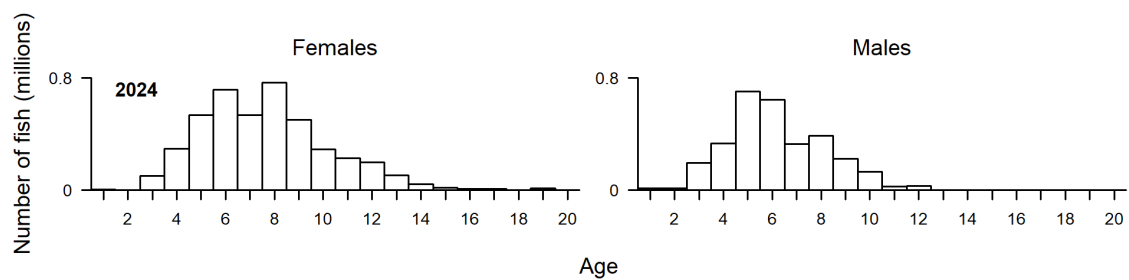


Figure 26: (continued) Cook Strait spawning sub-fishery continued for 2024.

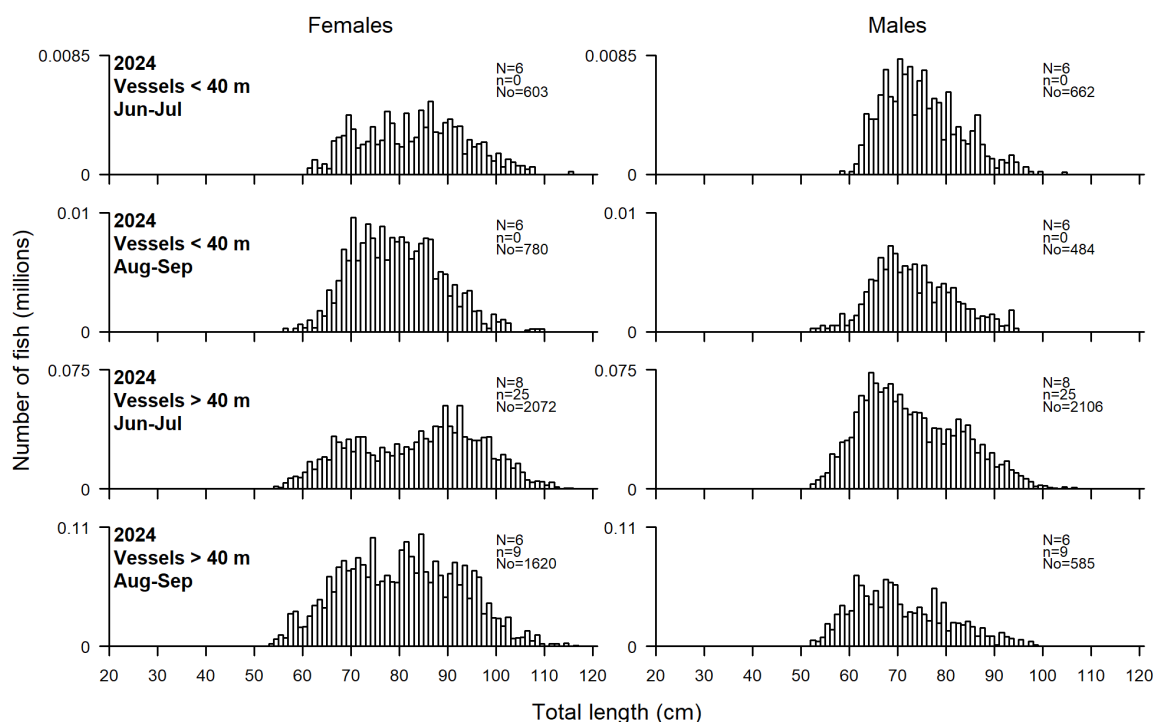


Figure 27: Comparison of Cook Strait spawning sub-fishery length frequency distributions by strata in 2024.

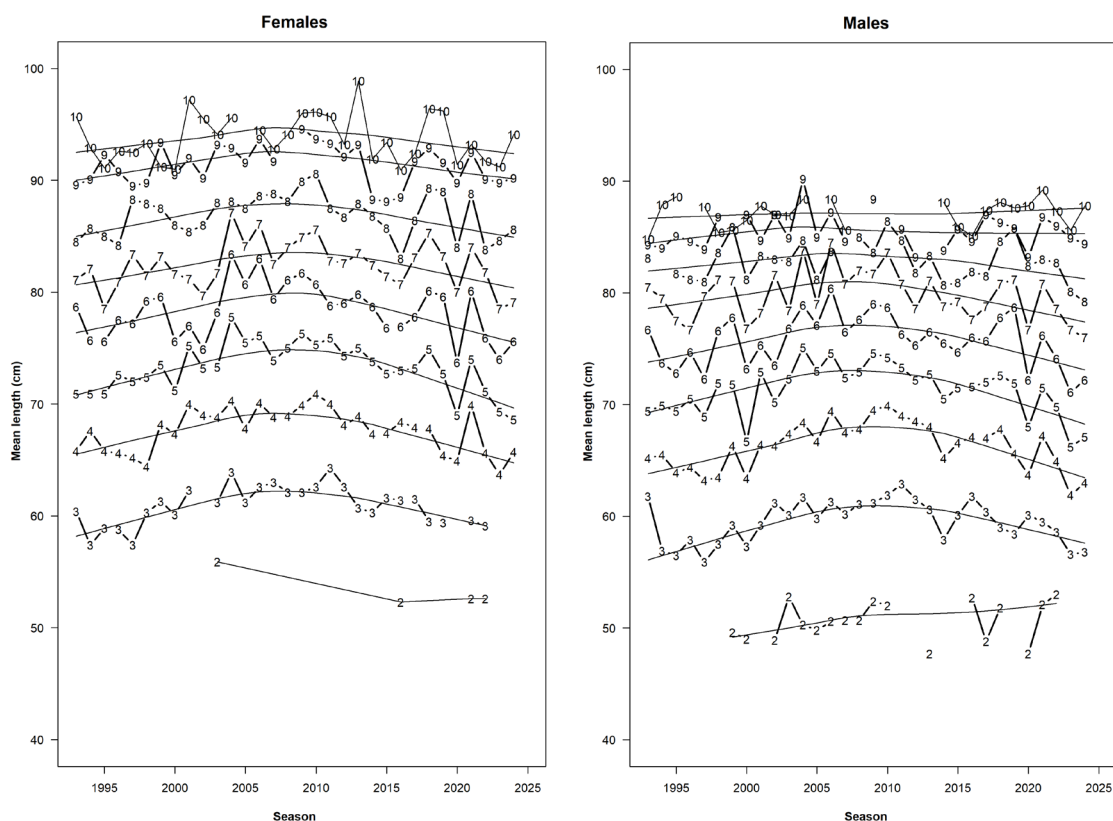


Figure 28: Mean length-at-age of female and male hoki taken in commercial catches from the Cook Strait overall spawning fishery 1993–2024 sampled by the land-based sampling programme, and at sea by observers. Lines are a loess fit. Points with fewer than ten records were excluded.

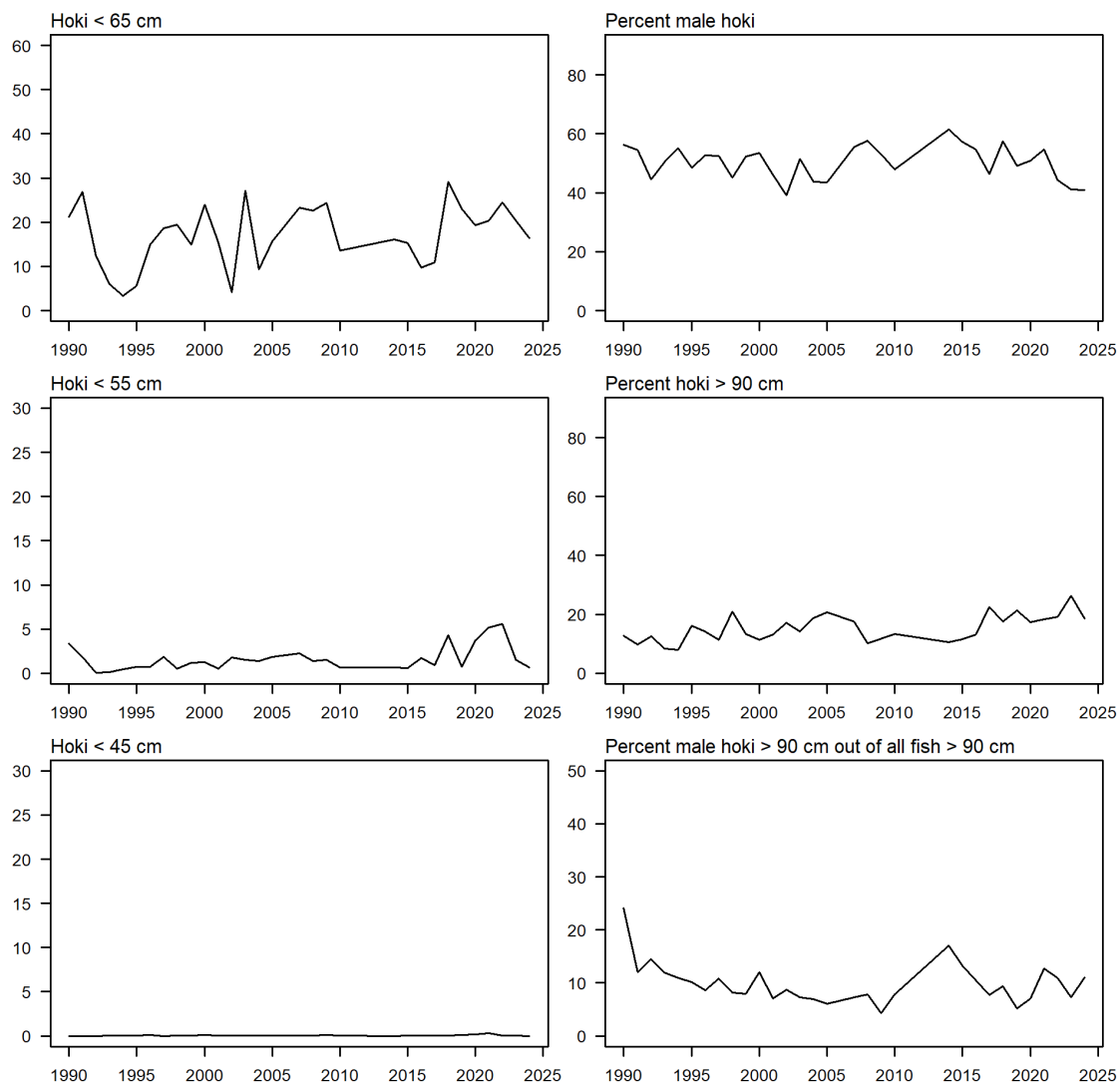


Figure 29: Percentage of small fish (total length < 45 cm, < 55 cm, and < 65 cm), males, all older fish (> 90 cm length), and male fish (total length > 90 cm only) in the catch for the Cook Strait spawning sub-fishery by fishing year.

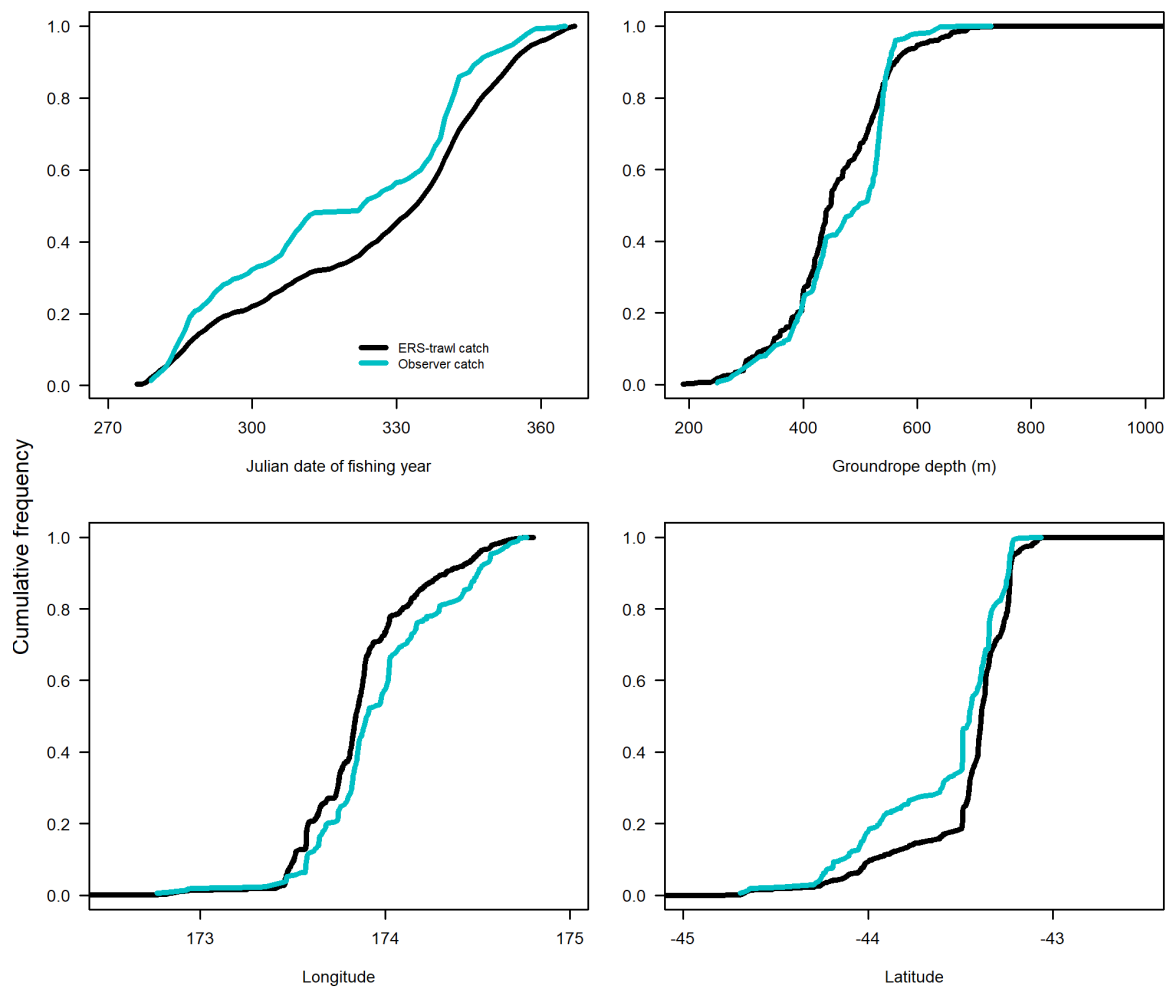


Figure 30: Comparison of ECSI July-September 2023–24 Observer Programme catch coverage with ERS-trawl catches by day of year, depth, latitude, and longitude. If sampling is representative of the fishery, then the blue lines (observed catches) should overlay the black lines (ERS-trawl catch).

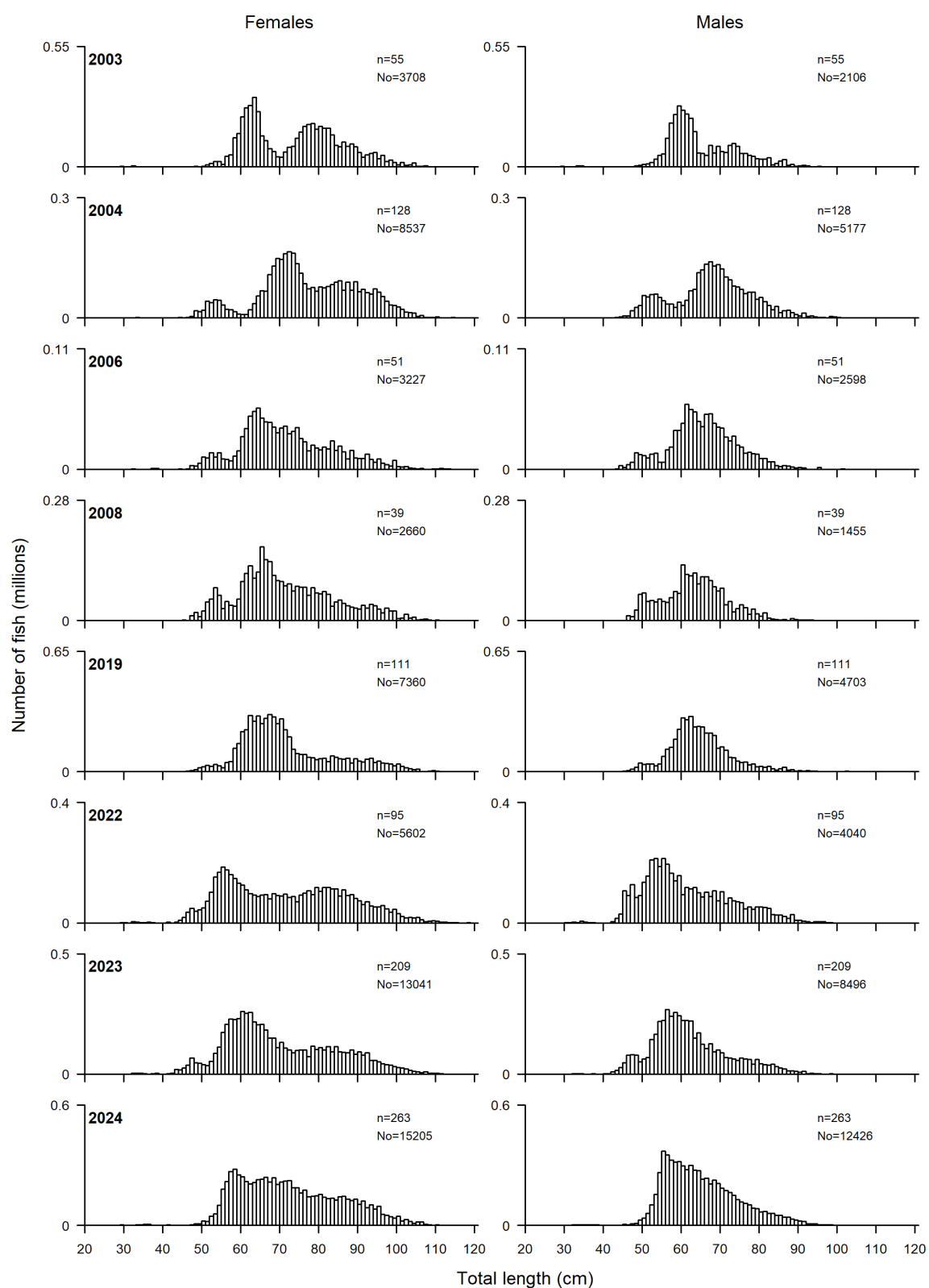


Figure 31: Length frequency distributions of hoki taken in commercial catches from the ECSI July to September spawning fishery from 2003–2004, 2006, 2008, 2019, 2022–2024 sampled by the Scientific Observer Programme. N, number of tows sampled; no., number of fish sampled.

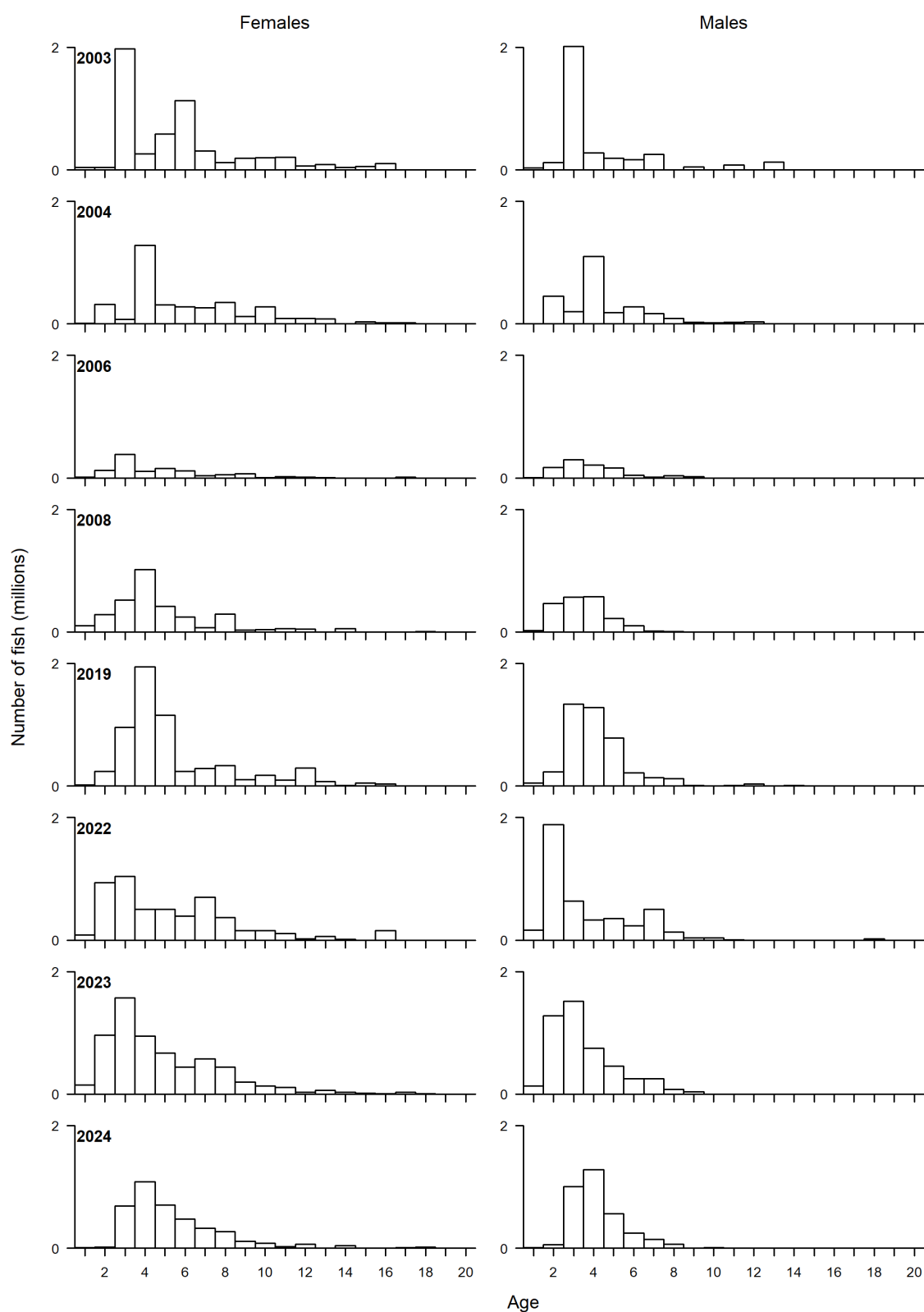


Figure 32: Age frequency distributions of hoki taken in commercial catches from the ECSI July to September spawning fishery from 2003–2004, 2006, 2008, 2019, 2022–2024 sampled by the Scientific Observer Programme.

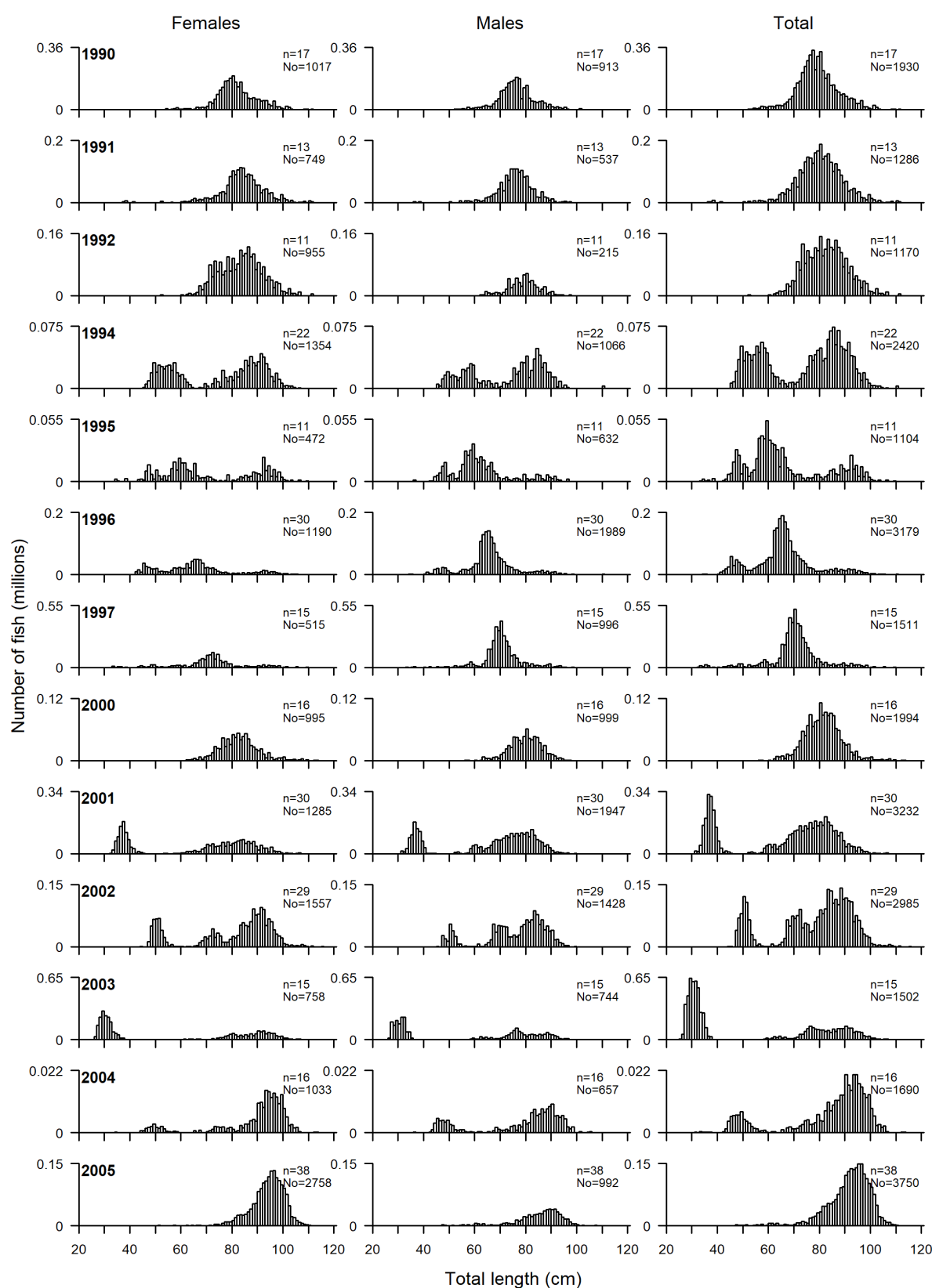


Figure 33: Length frequency distributions of hoki in commercial catches from the Puysegur spawning fishery from 1990–1997 and 2000–2005 sampled at sea by the Observer Programme. n, number of tows sampled; no., number of fish sampled.

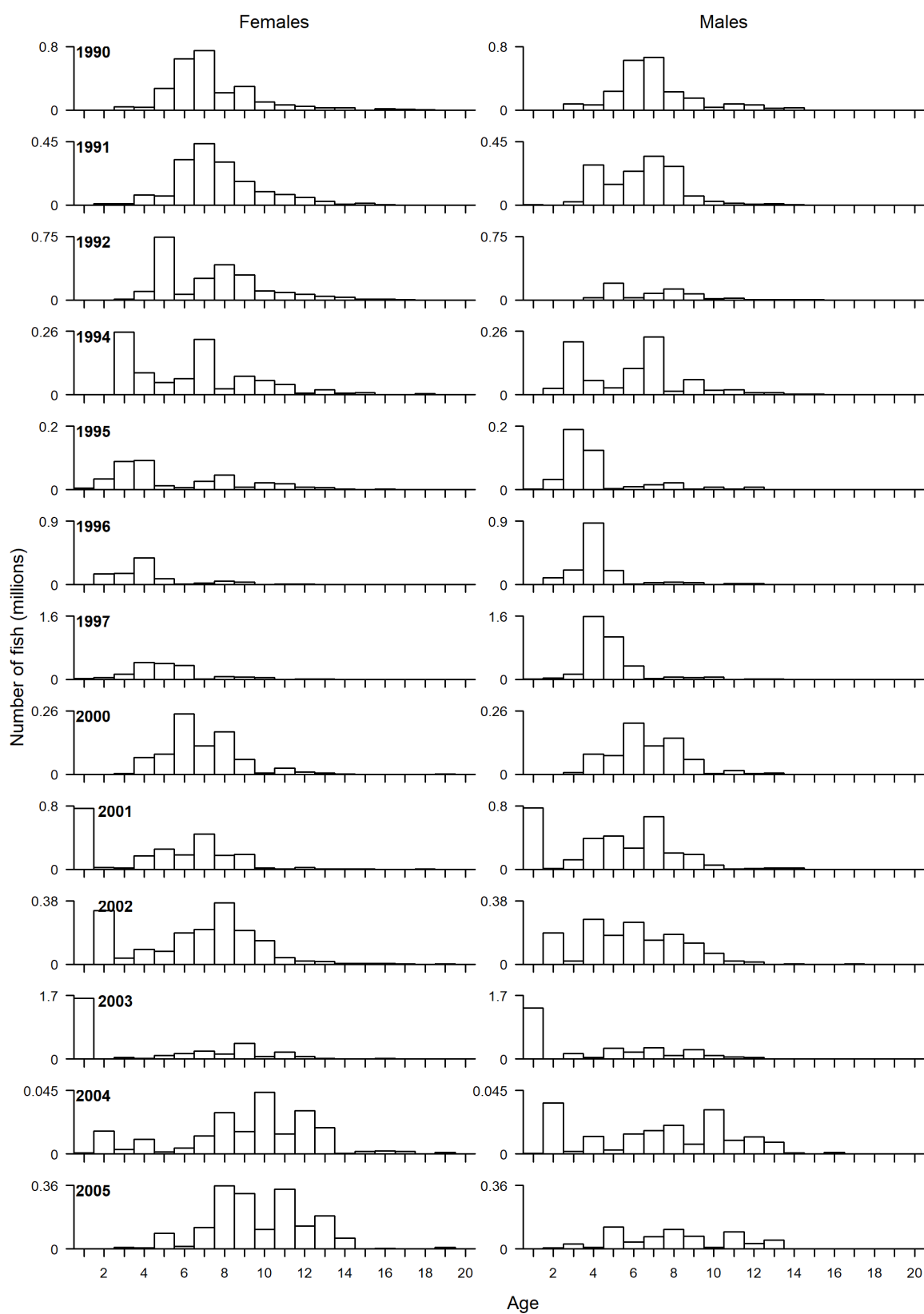
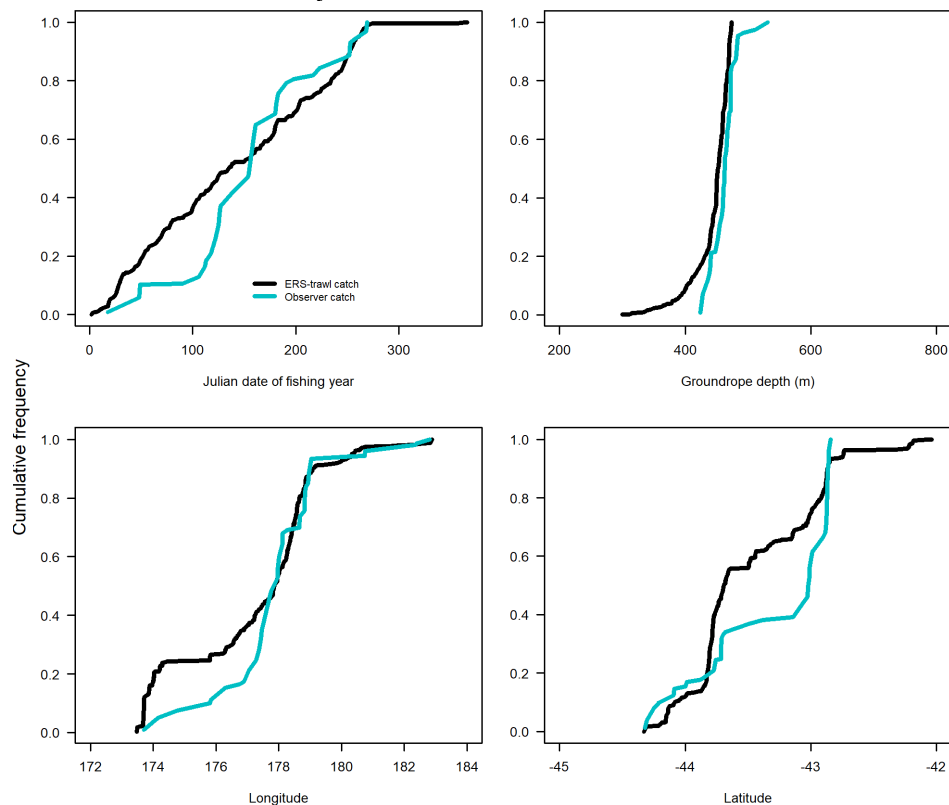


Figure 34: Age frequency distributions of hoki in commercial catches from the Puysegur spawning fishery from 1990–1997 and 2000–2005 sampled at sea by the Observer Programme.

Chatham Rise CR.shallow sub-fishery



Chatham Rise CR.deep sub-fishery

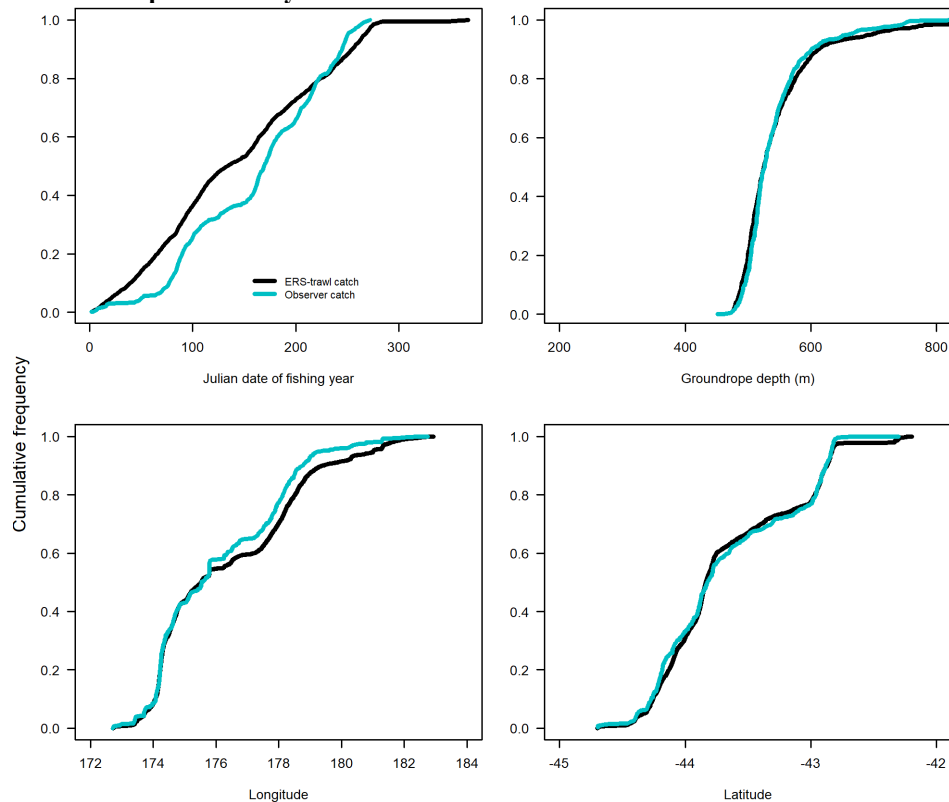


Figure 35: Comparison of Chatham Rise 2023–24 Observer Programme catch coverage with ERS-trawl catches by day of year, depth, latitude, and longitude. If sampling is representative of the fishery, then the blue lines (observed catches) should overlay the black lines (ERS-trawl catch).

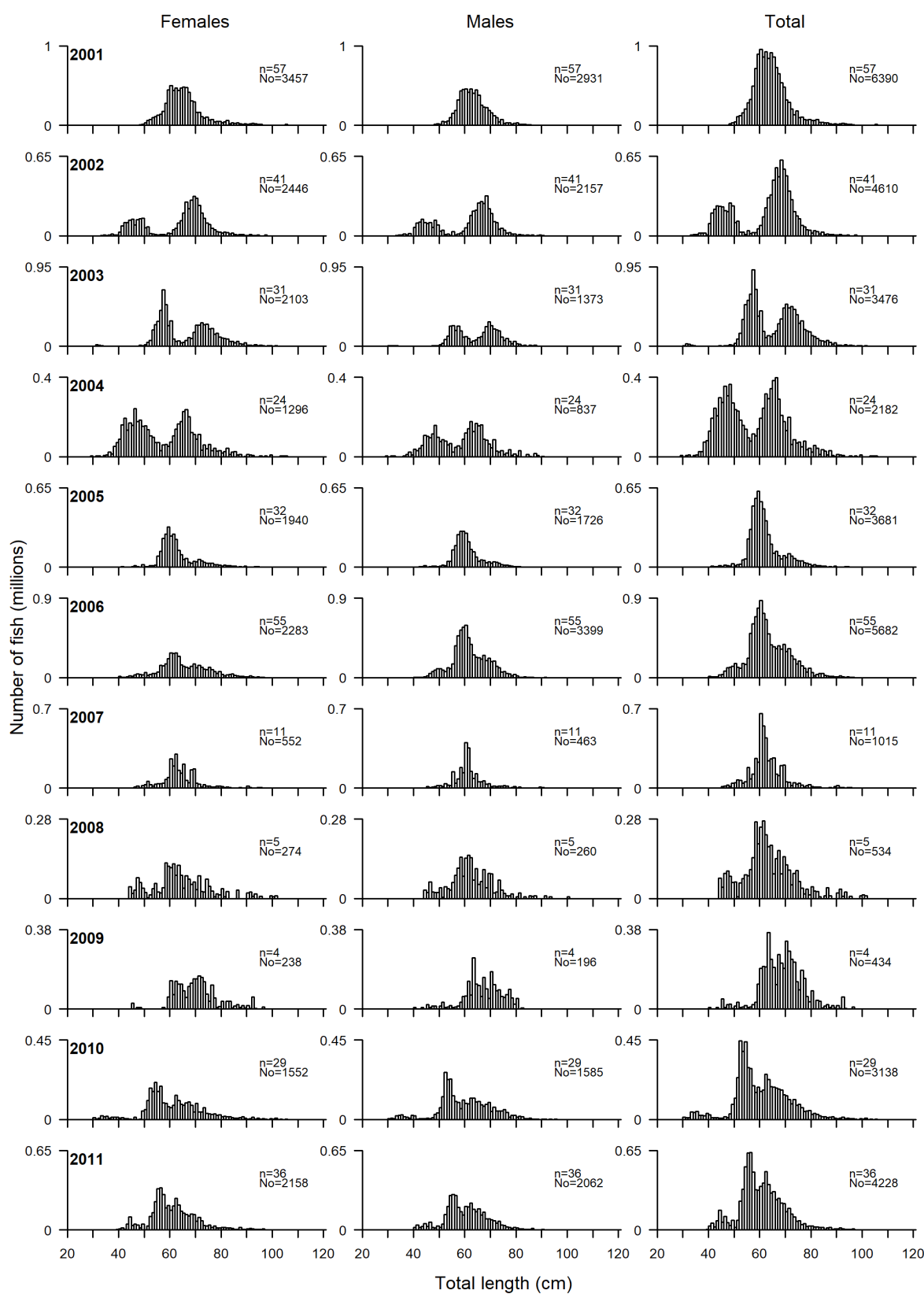


Figure 36a: Chatham Rise CR.shallow sub-fishery length frequency distributions by fishing years 2001 to 2024 sampled by the Scientific Observer Programme. n, number of tows sampled; no., number of fish sampled.

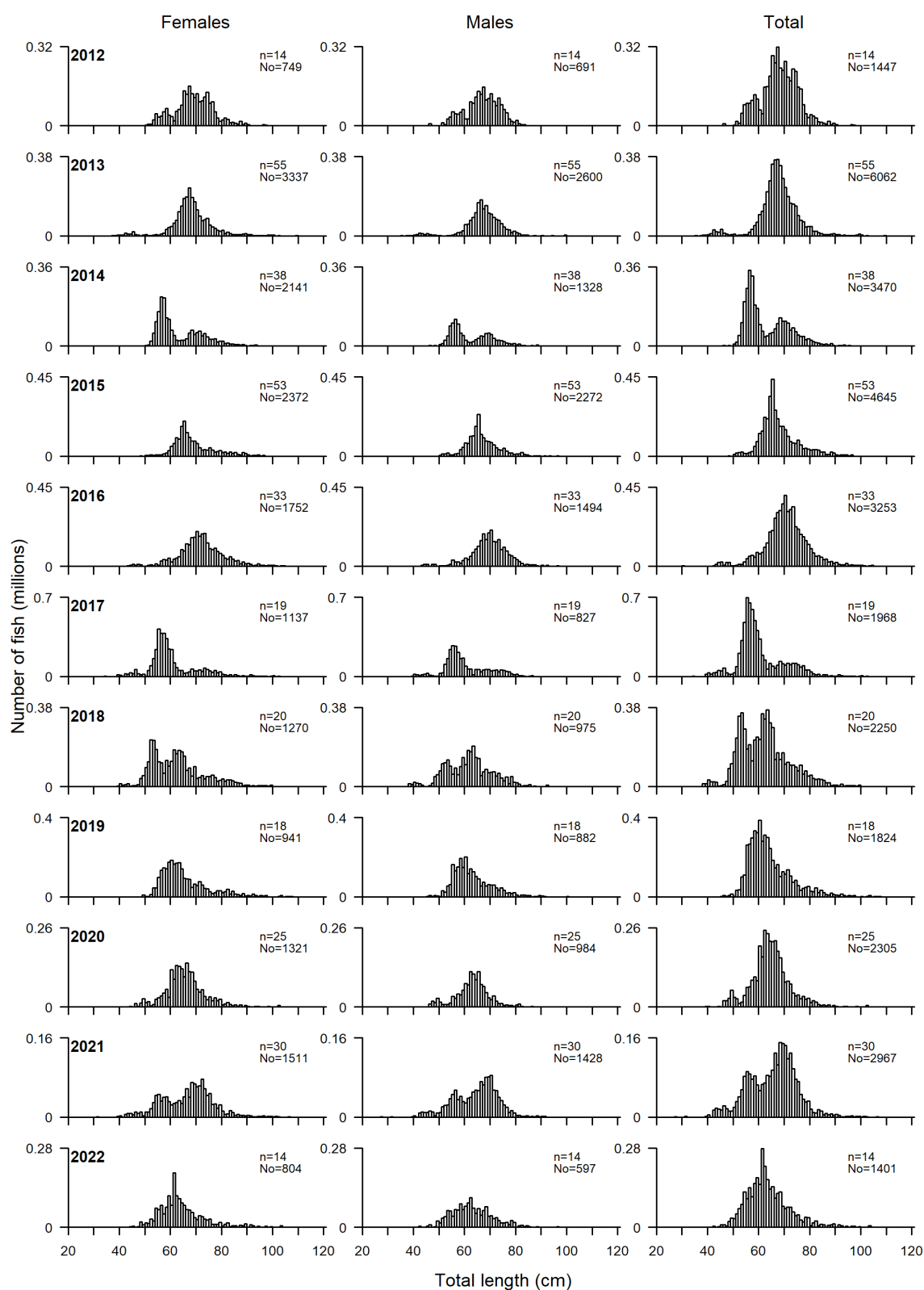


Figure 36a: (continued) Chatham Rise CR.shallow sub-fishery continued for 2012 to 2022.

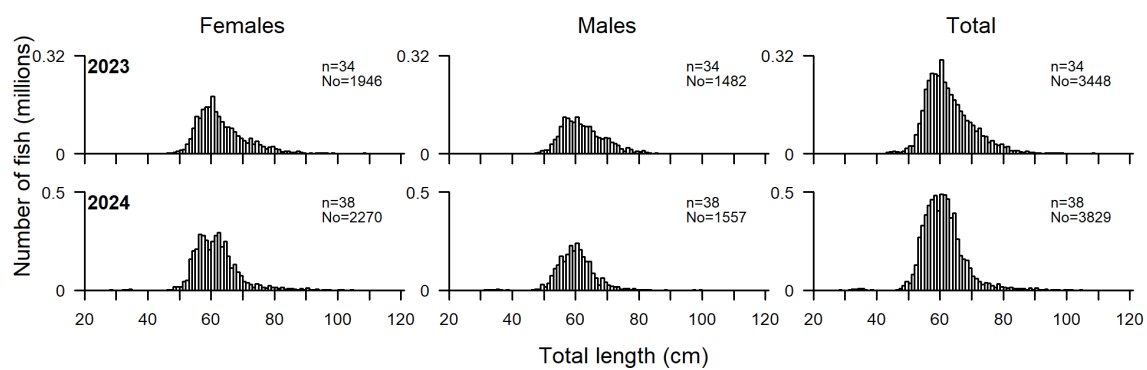


Figure 36a: (continued) Chatham Rise CR.shallow sub-fishery continued for 2023 to 2024.

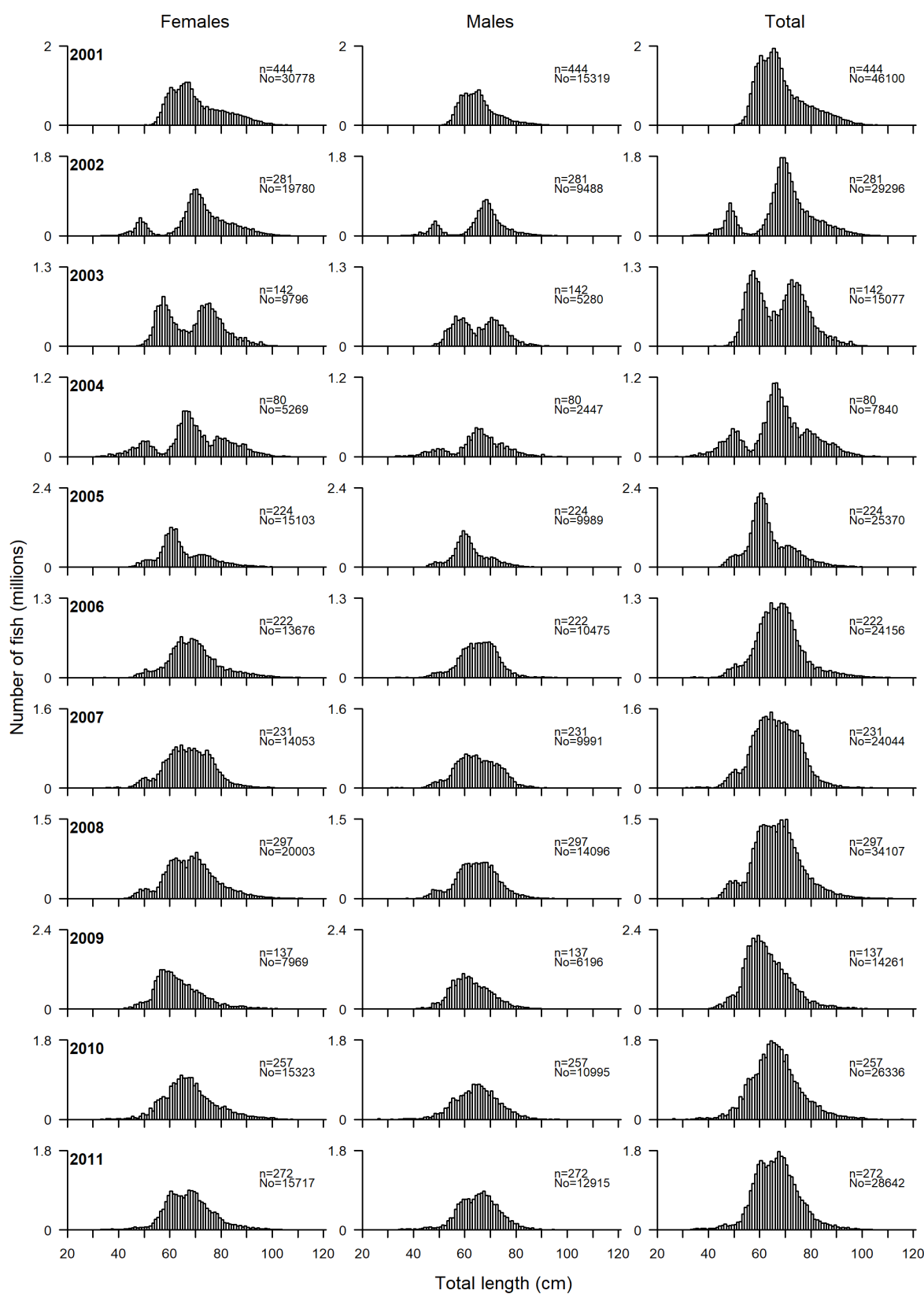


Figure 36b: Chatham Rise CR.deep sub-fishery length frequencies by fishing year for 2001 to 2024 by the Scientific Observer Programme. n, number of tows sampled; no., number of fish sampled.

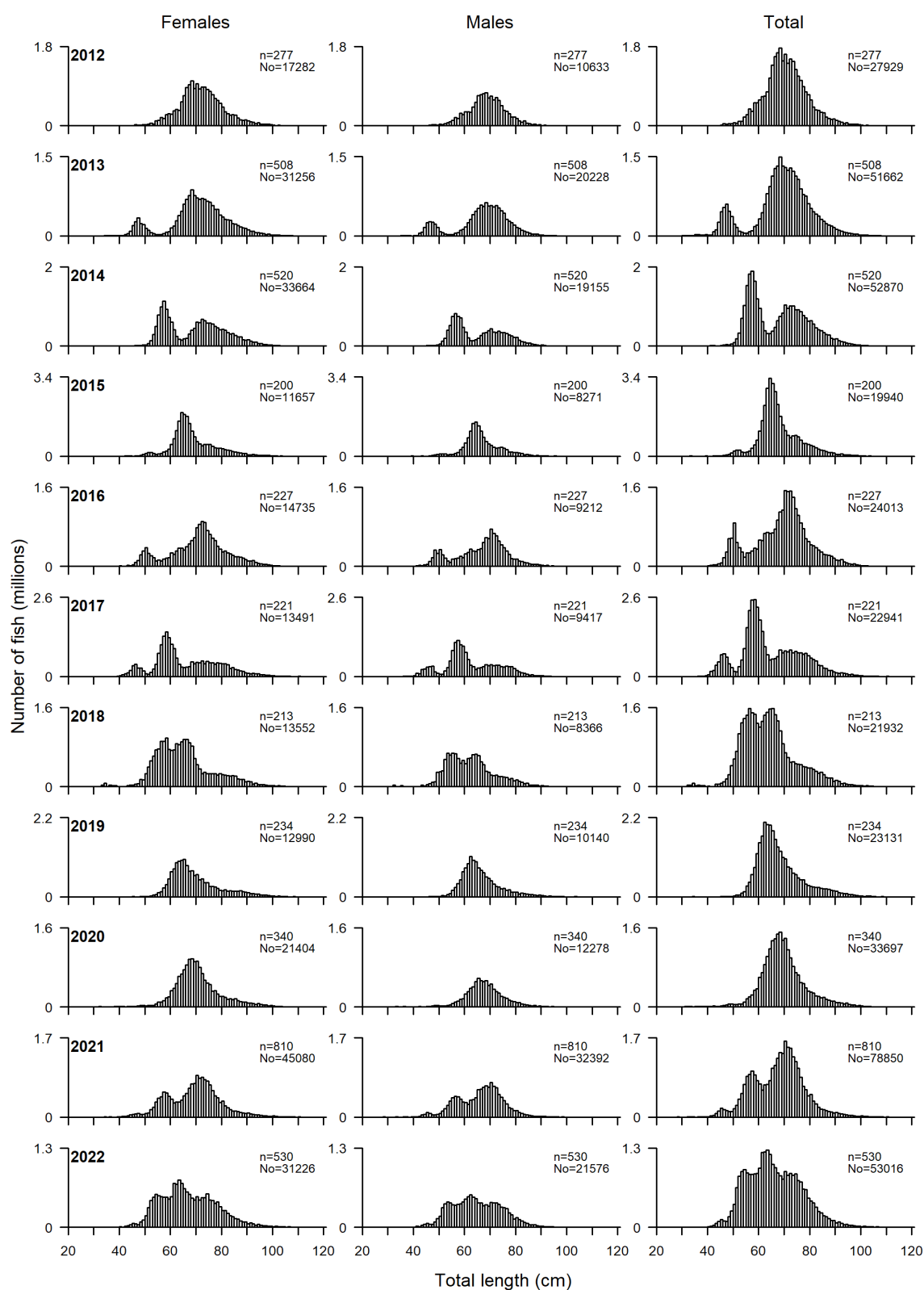


Figure 36b: (continued) Chatham Rise CR.deep sub-fishery continued for 2012 to 2022.

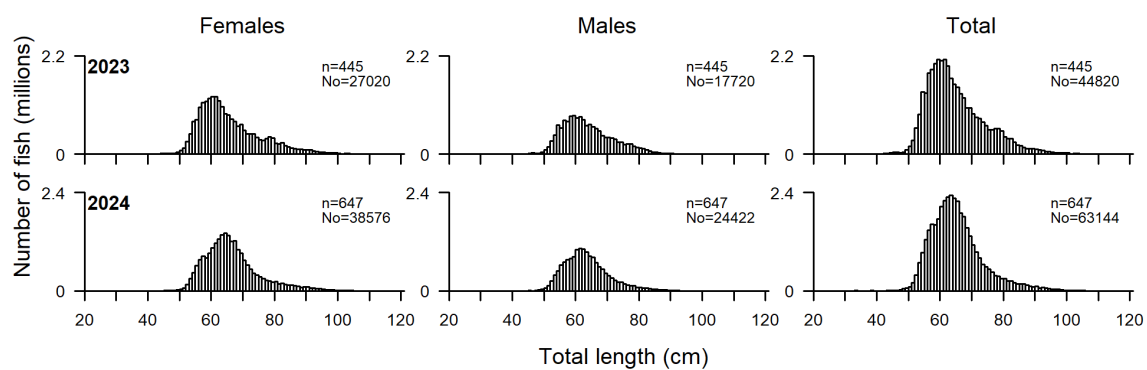


Figure 36b: (continued) Chatham Rise CR.deep sub-fishery continued for 2023 to 2024.

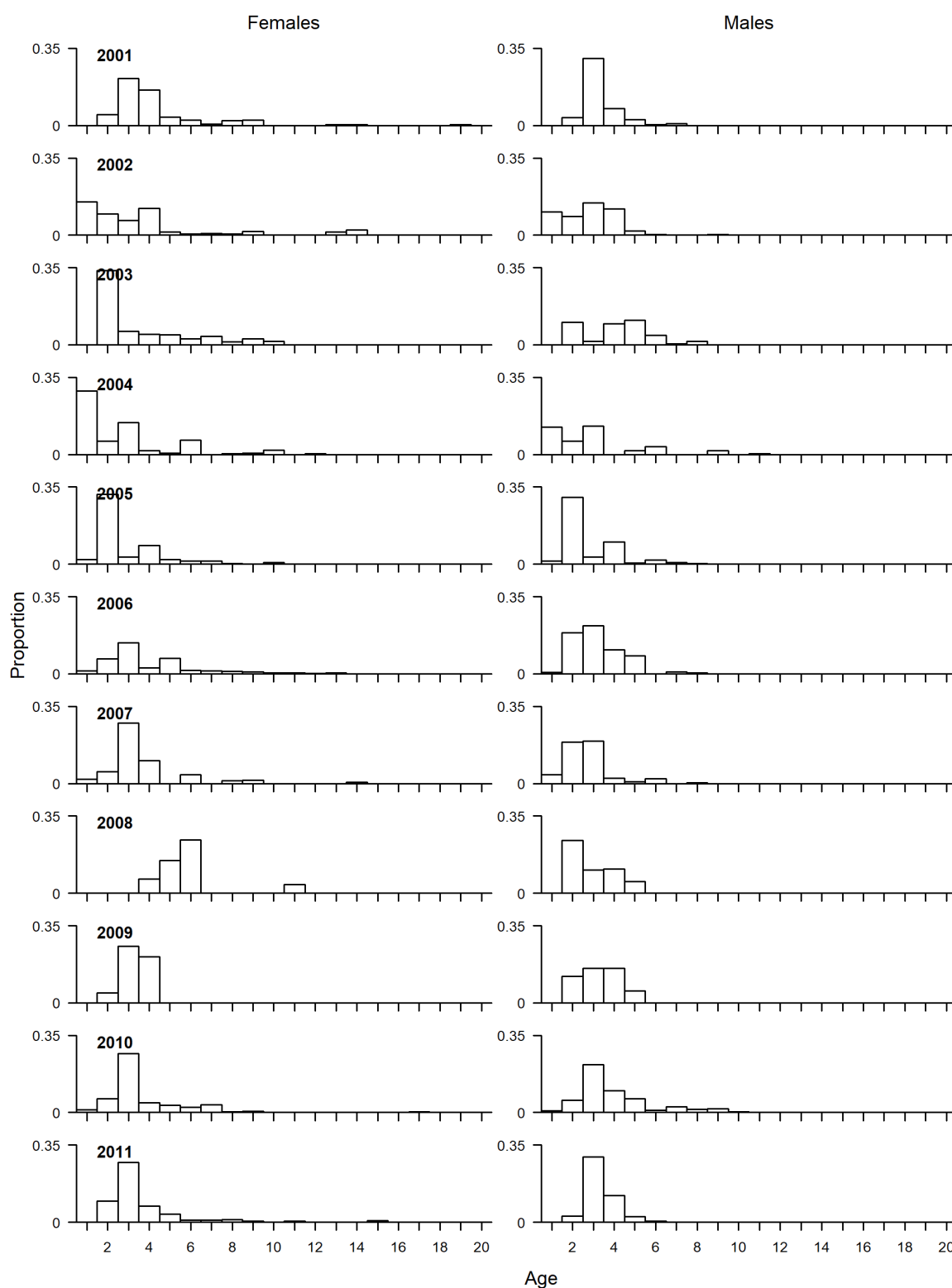


Figure 37a: Comparison of direct age results by year for Chatham Rise CR.shallow sub-fishery for fishing years 2001 to 2024.

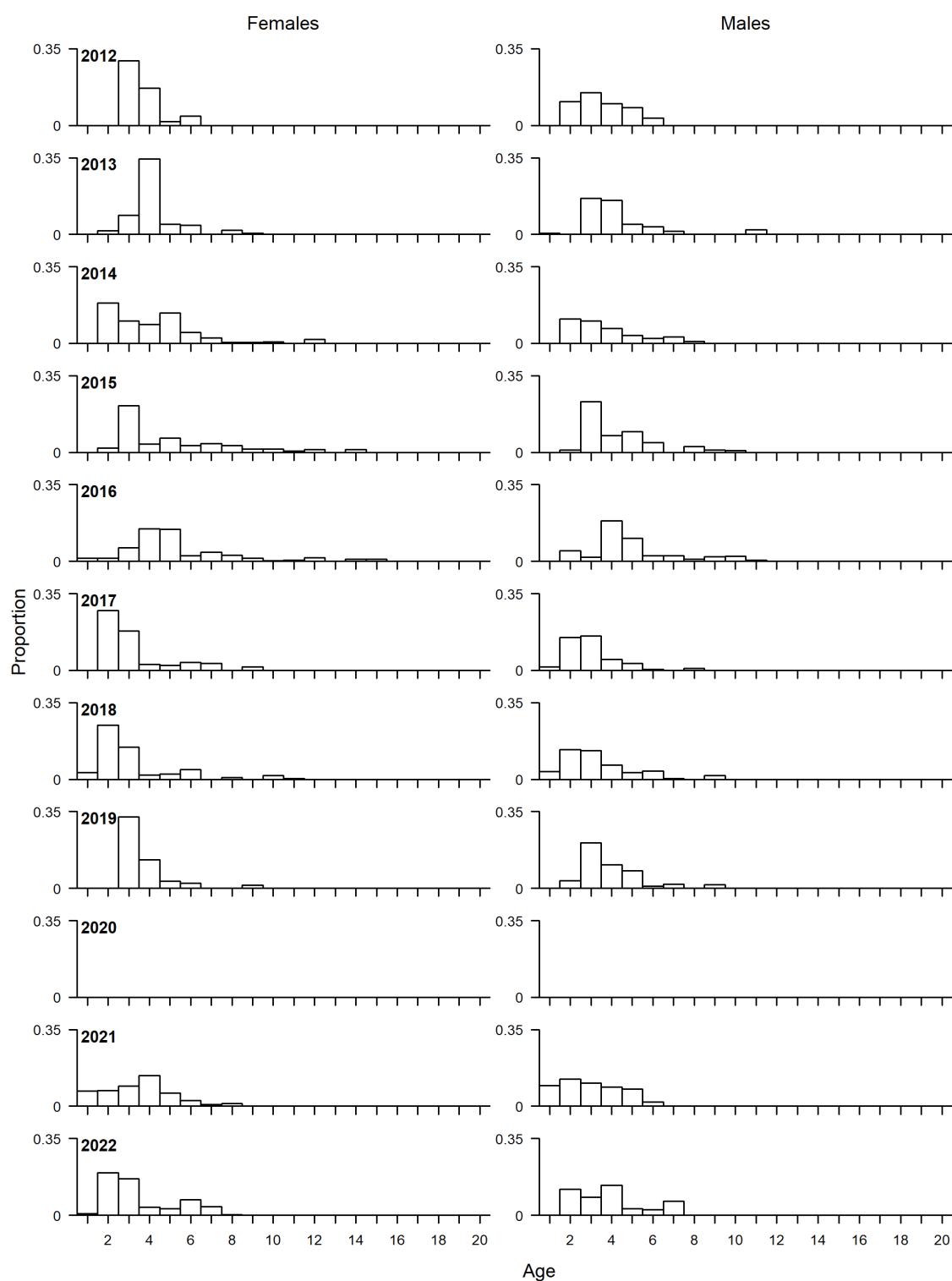


Figure 37a: (continued) Chatham Rise CR.shallow sub-fishery continued for 2012 to 2022. No age frequency was calculated for 2020.

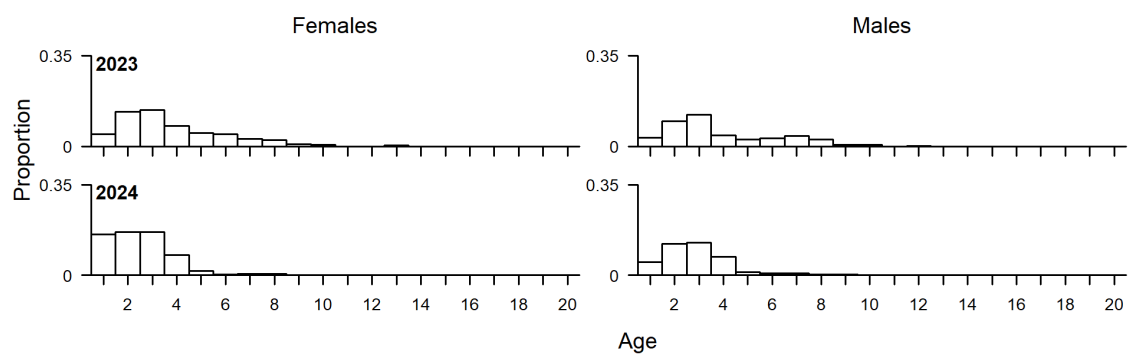


Figure 37a: (continued) Chatham Rise CR.shallow sub-fishery continued for 2023 to 2024.

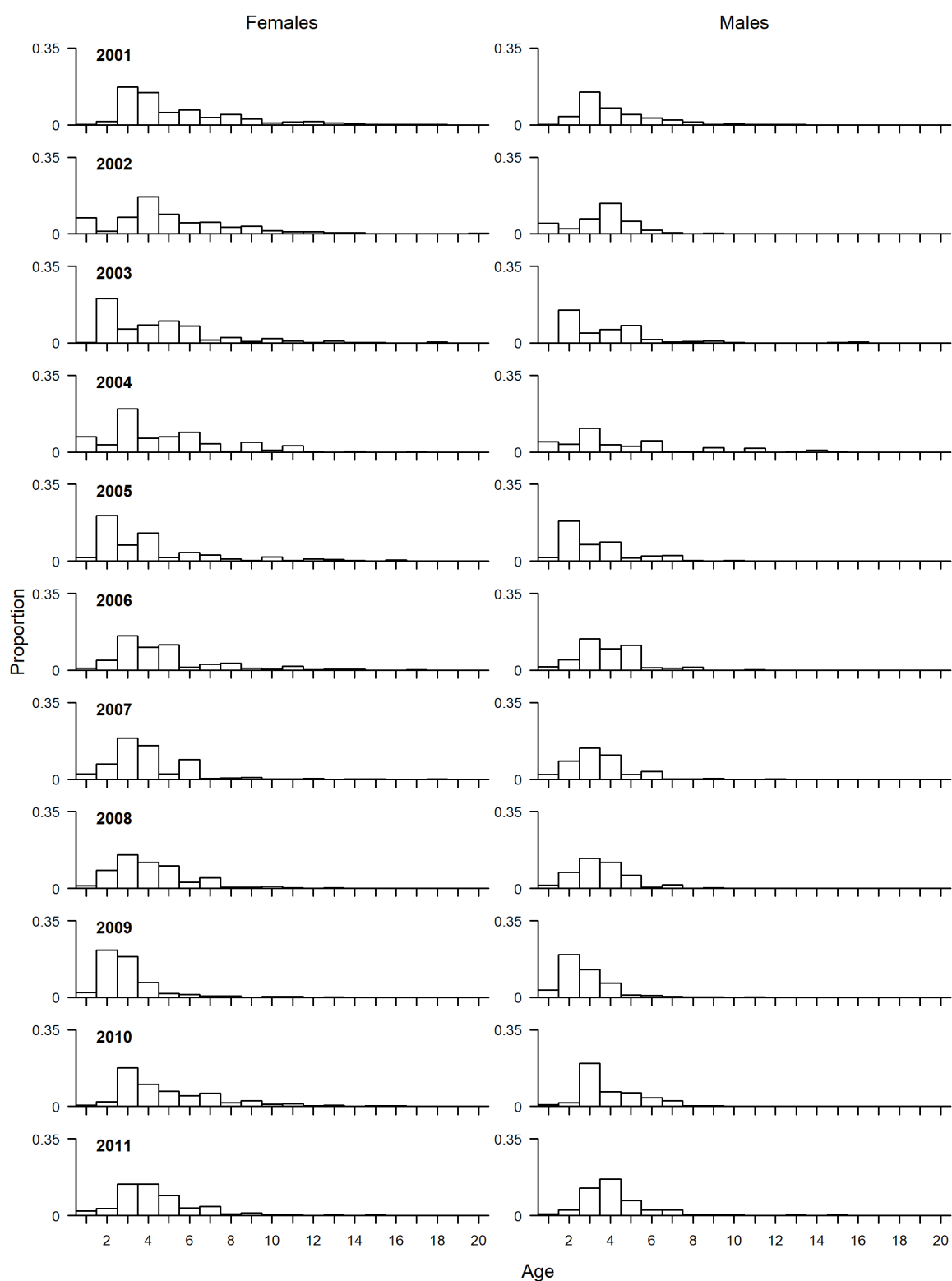


Figure 37b: Comparison of direct age results by year for Chatham Rise CR.deep sub-fishery for fishing years 2001 to 2024.

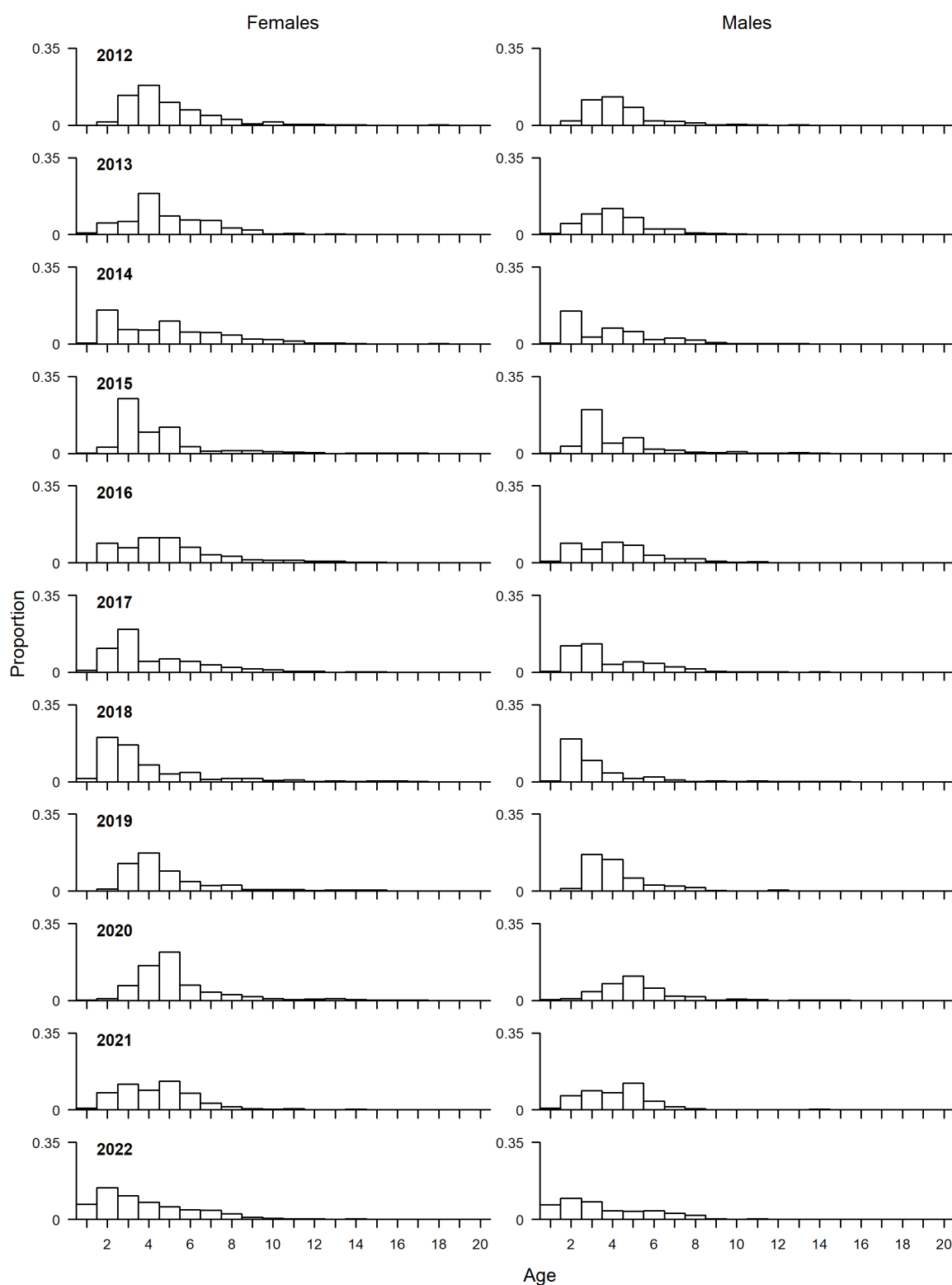


Figure 37b: (continued) Chatham Rise CR.deep sub-fishery continued for 2012 to 2022.

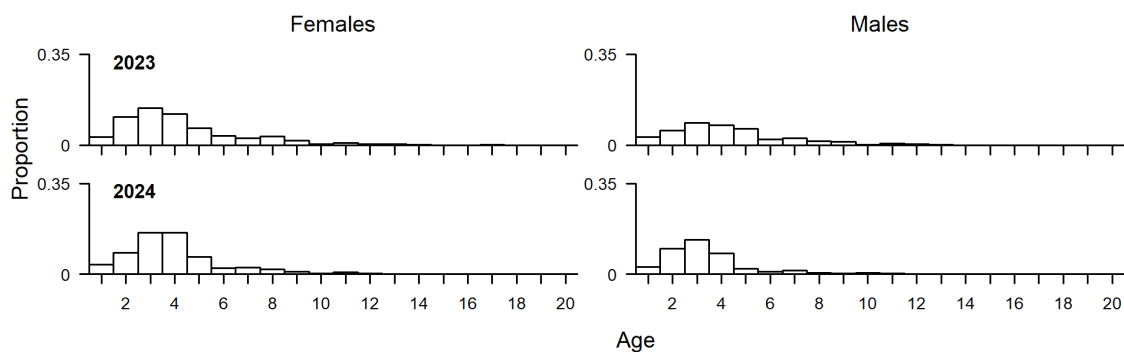


Figure 37b: (continued) Chatham Rise CR.deep sub-fishery continued 2023 to 2024.

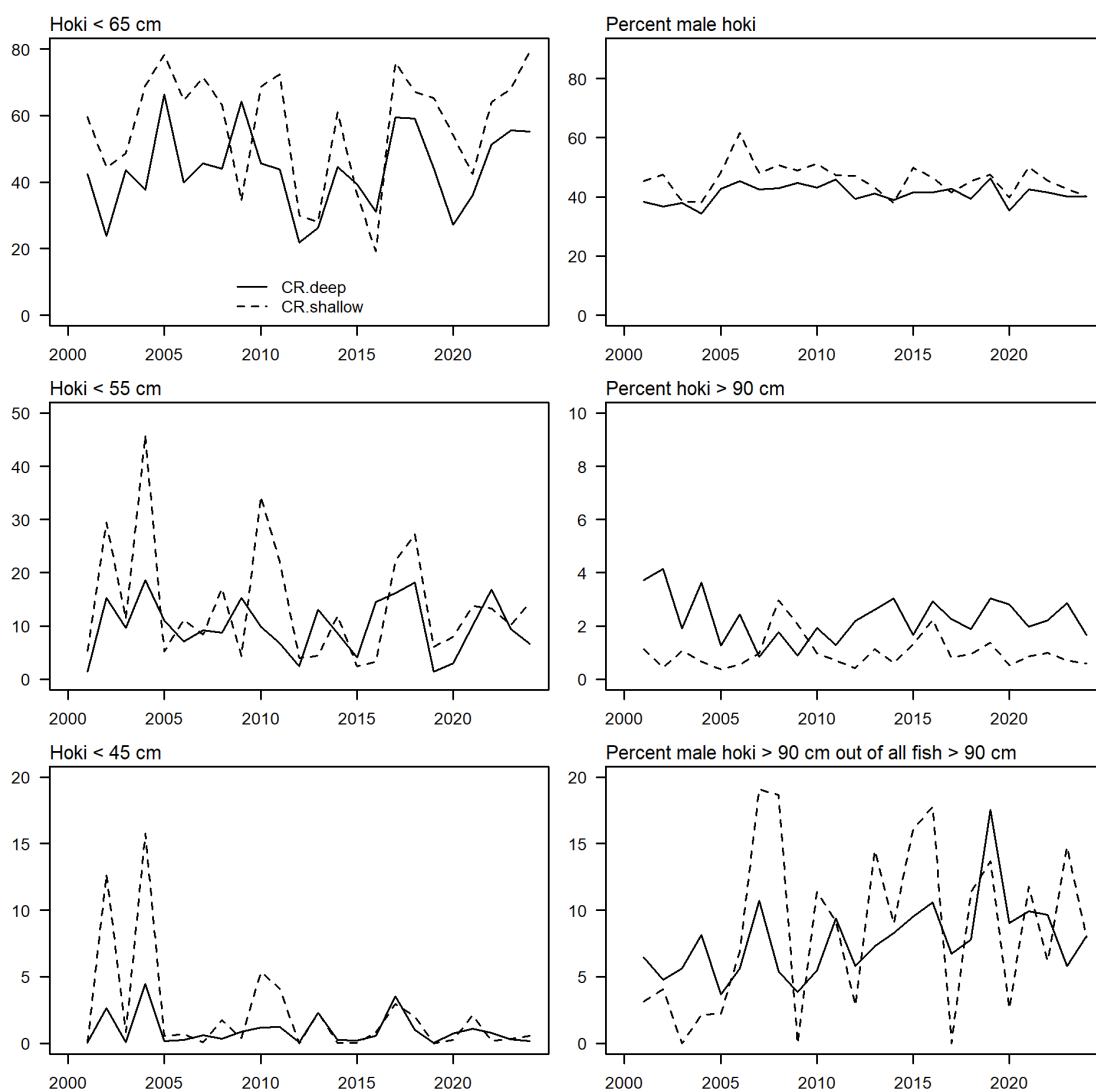
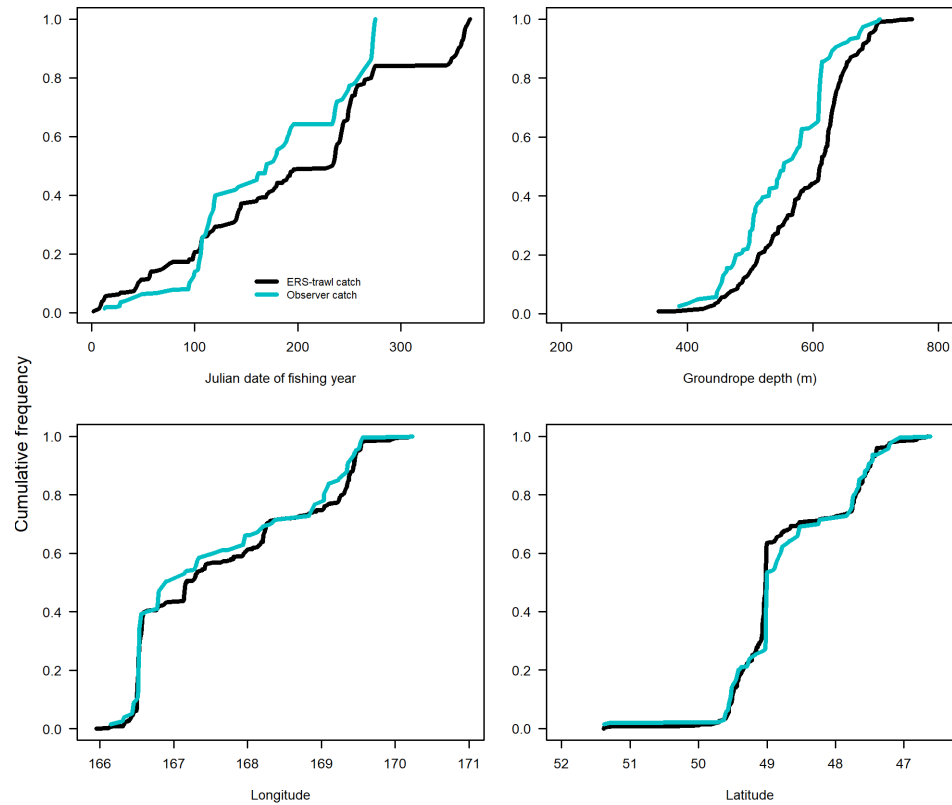


Figure 38: Percentage of small fish (total length < 45 cm, < 55 cm, and < 65 cm), males, all older fish (> 90 cm length), and male fish (total length > 90 cm only) in the catch by Chatham Rise sub-fishery and fishing year.

Sub-Antarctic SA.auck fishery



Sub-Antarctic SA.snares fishery

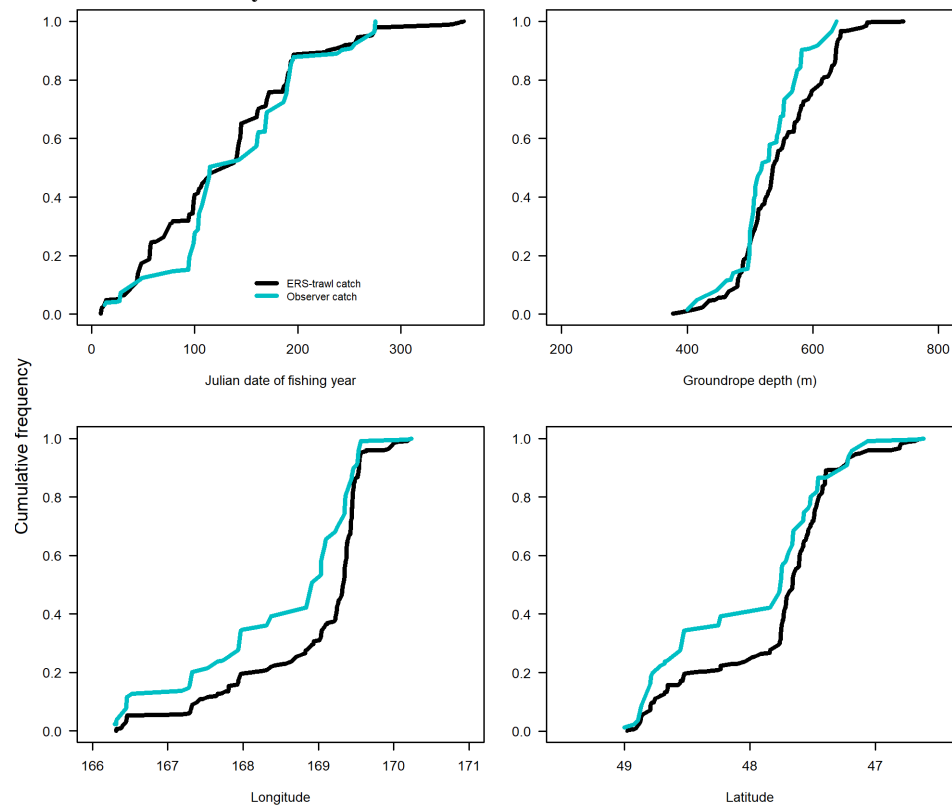


Figure 39: Comparison of Sub-Antarctic 2023–24 Observer Programme catch coverage with ‘ERS-trawl’ catches by day of year, depth, latitude, and longitude. If sampling is representative of the fishery, then the blue lines (observed catches) should overlay the black lines (ERS-trawl catch).

Sub-Antarctic Suba fishery

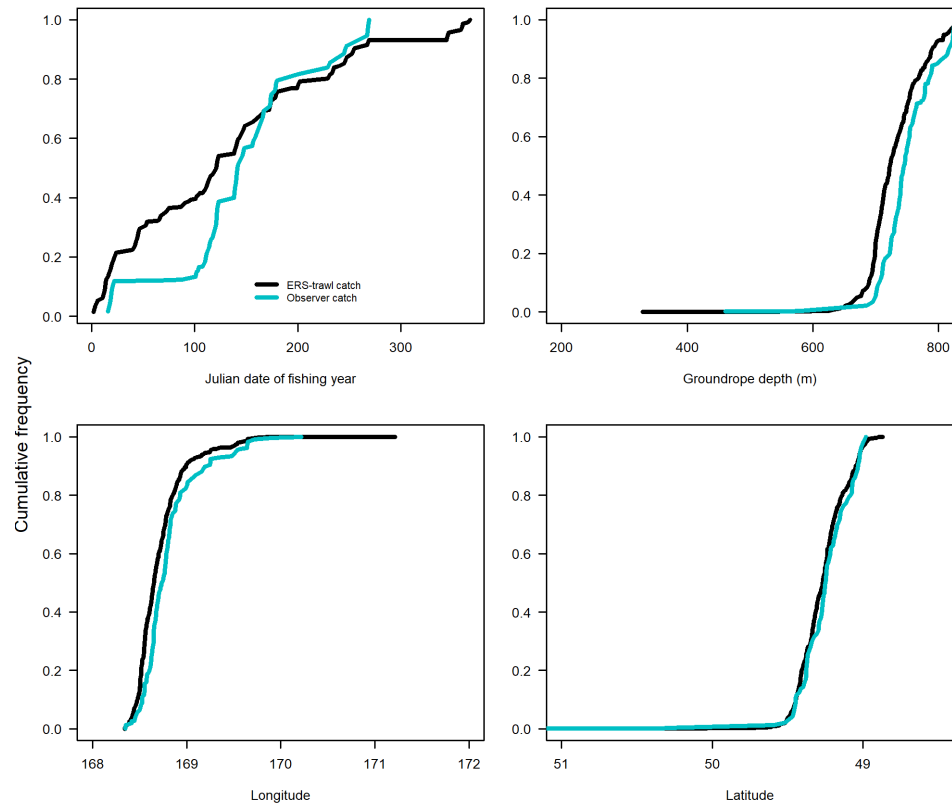


Figure 39: (continued)

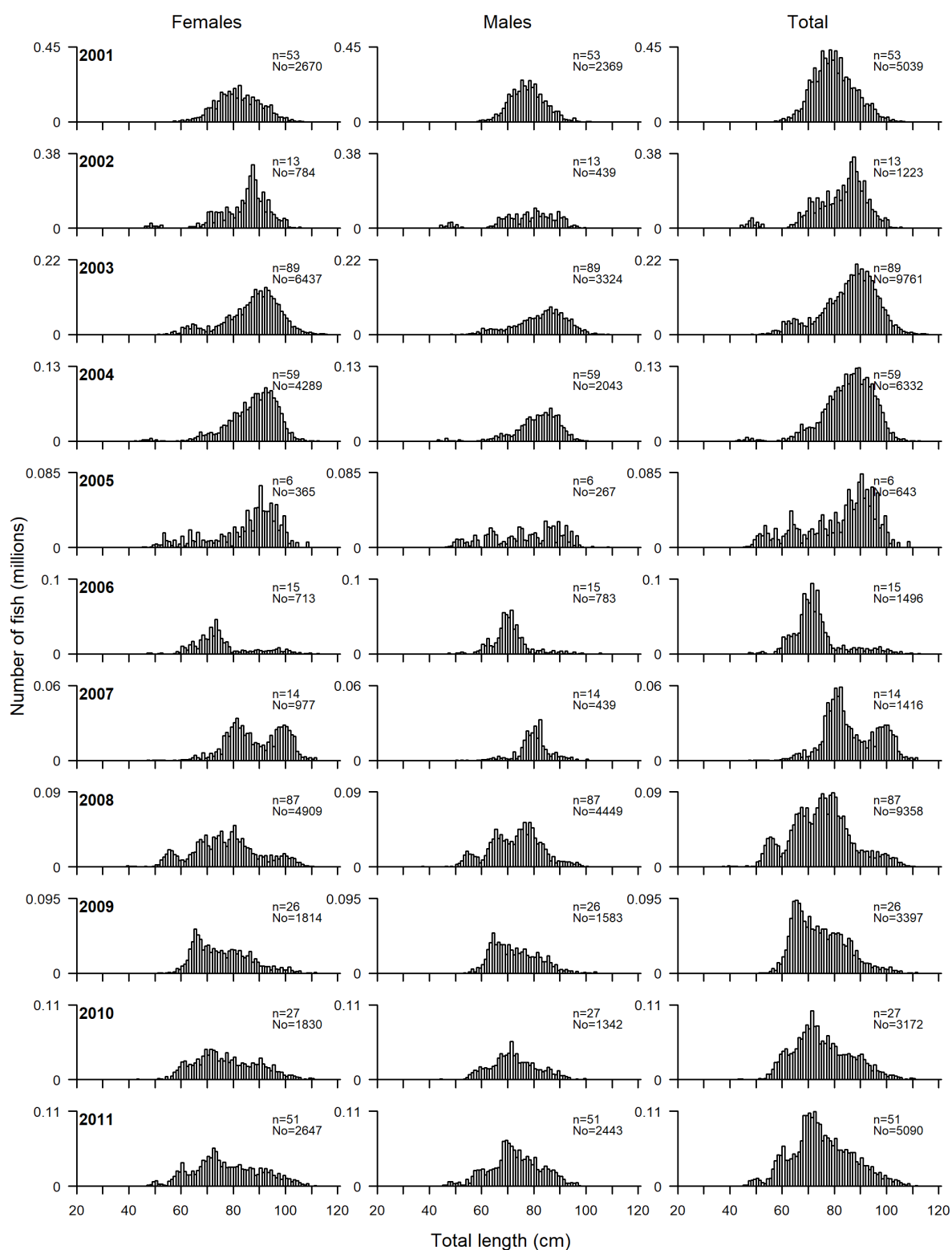


Figure 40a: Sub-Antarctic SA.auck sub-fishery length frequency distributions by fishing year 2001 to 2024.

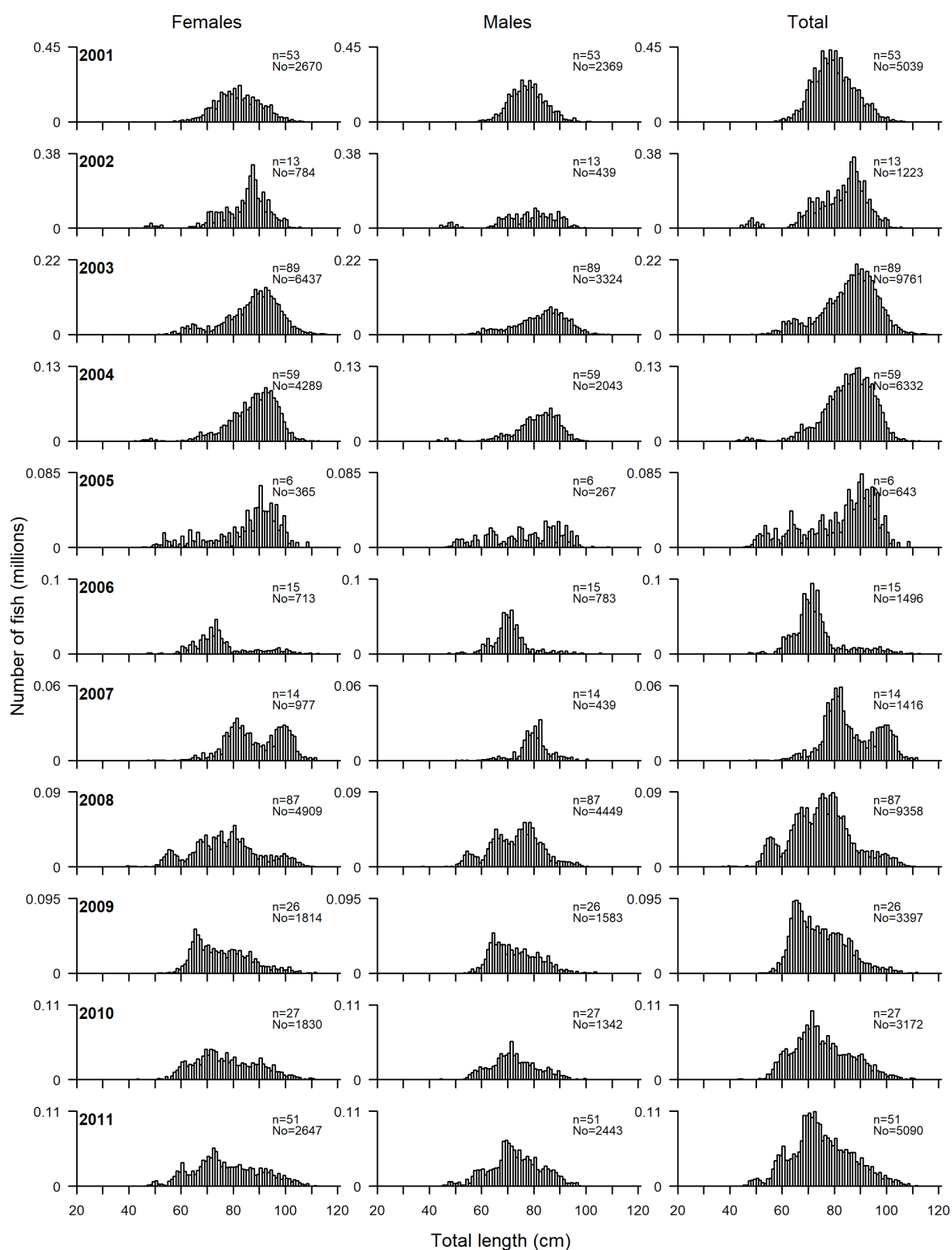


Figure 40a: (continued) Sub-Antarctic SA.auck sub-fishery continued for 2012 to 2022.

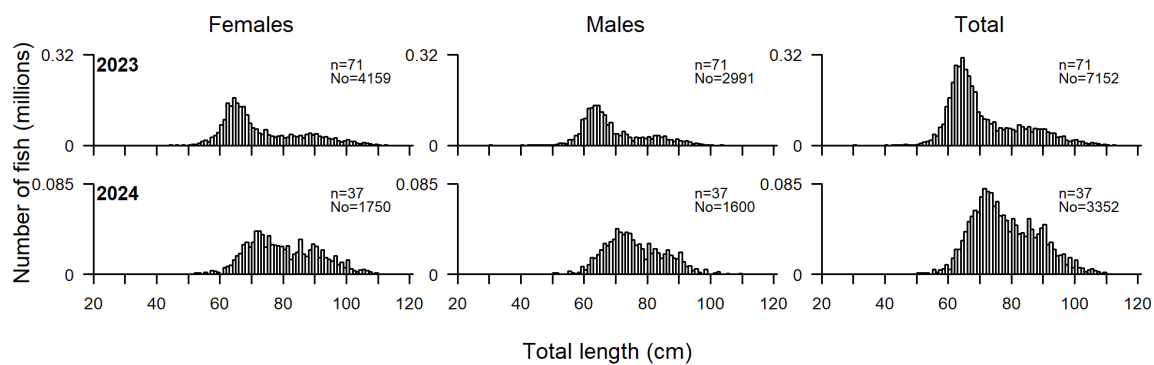


Figure 40a: (continued) Sub-Antarctic SA.auck sub-fishery continued for 2023 to 2024.

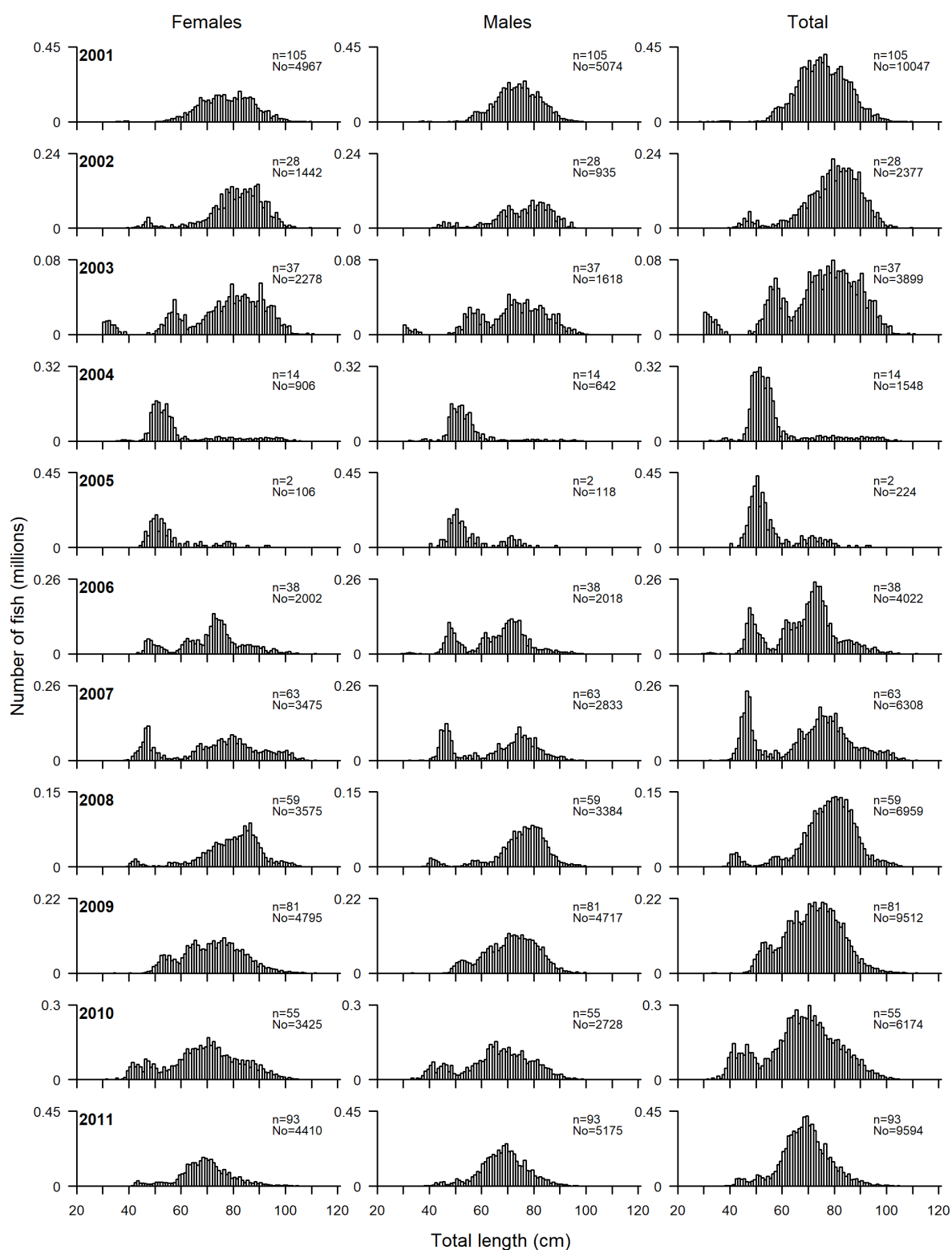


Figure 40b: Sub-Antarctic SA.snares sub-fishery length frequency distributions by fishing year for 2001 to 2024.

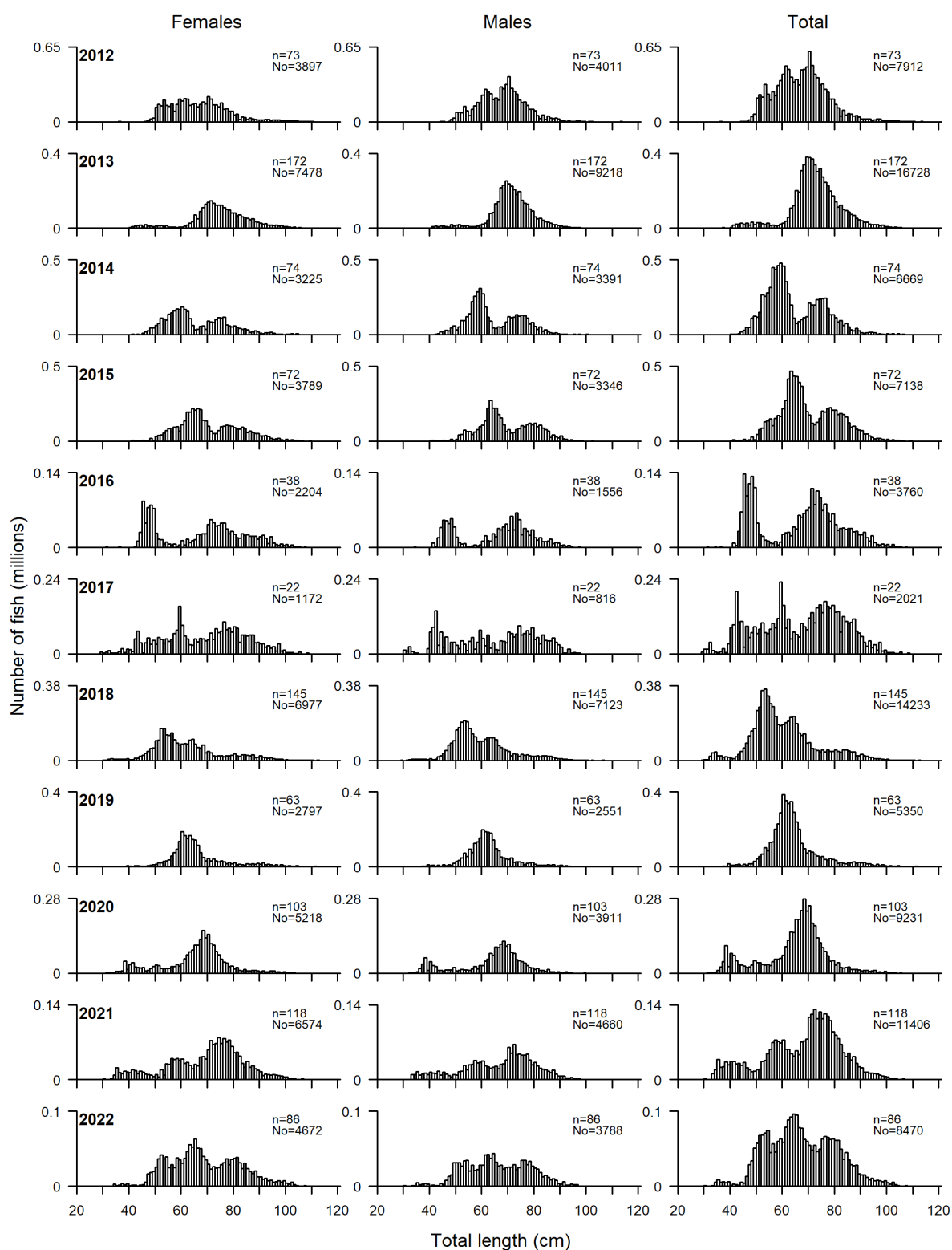


Figure 40b: (continued) Sub-Antarctic SA.snares sub-fishery continued for 2012 to 2022.

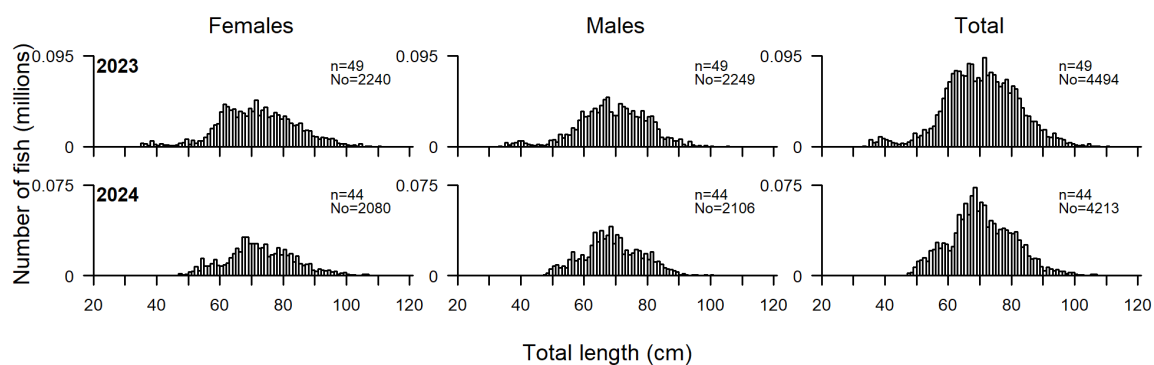


Figure 40b: (continued) Sub-Antarctic SA.snares sub-fishery continued for 2023 to 2024.

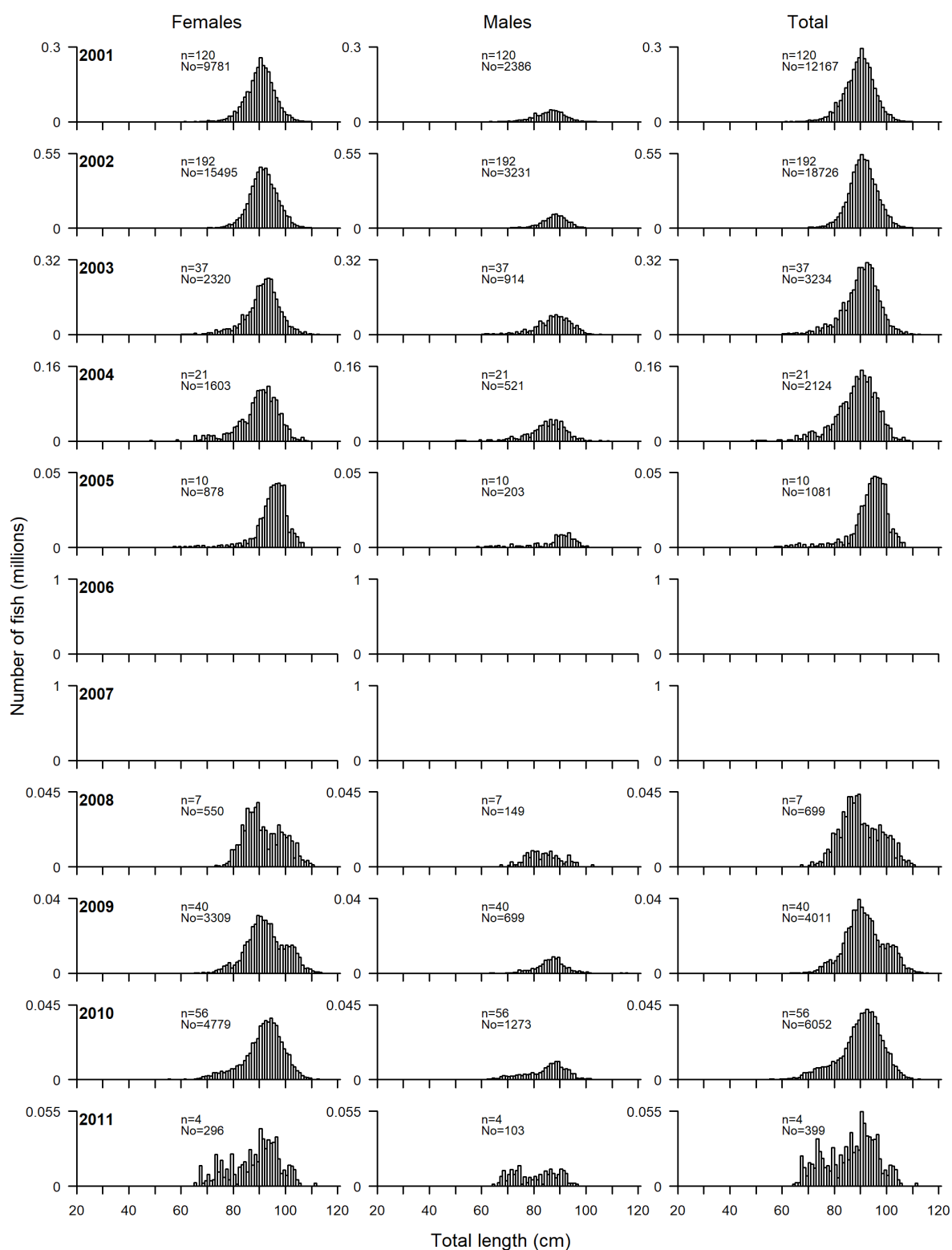


Figure 40c: Sub-Antarctic SA.suba sub-fishery length frequency distributions by fishing year for 2001 to 2024. No observer data in 2006 and 2007 fishing years.

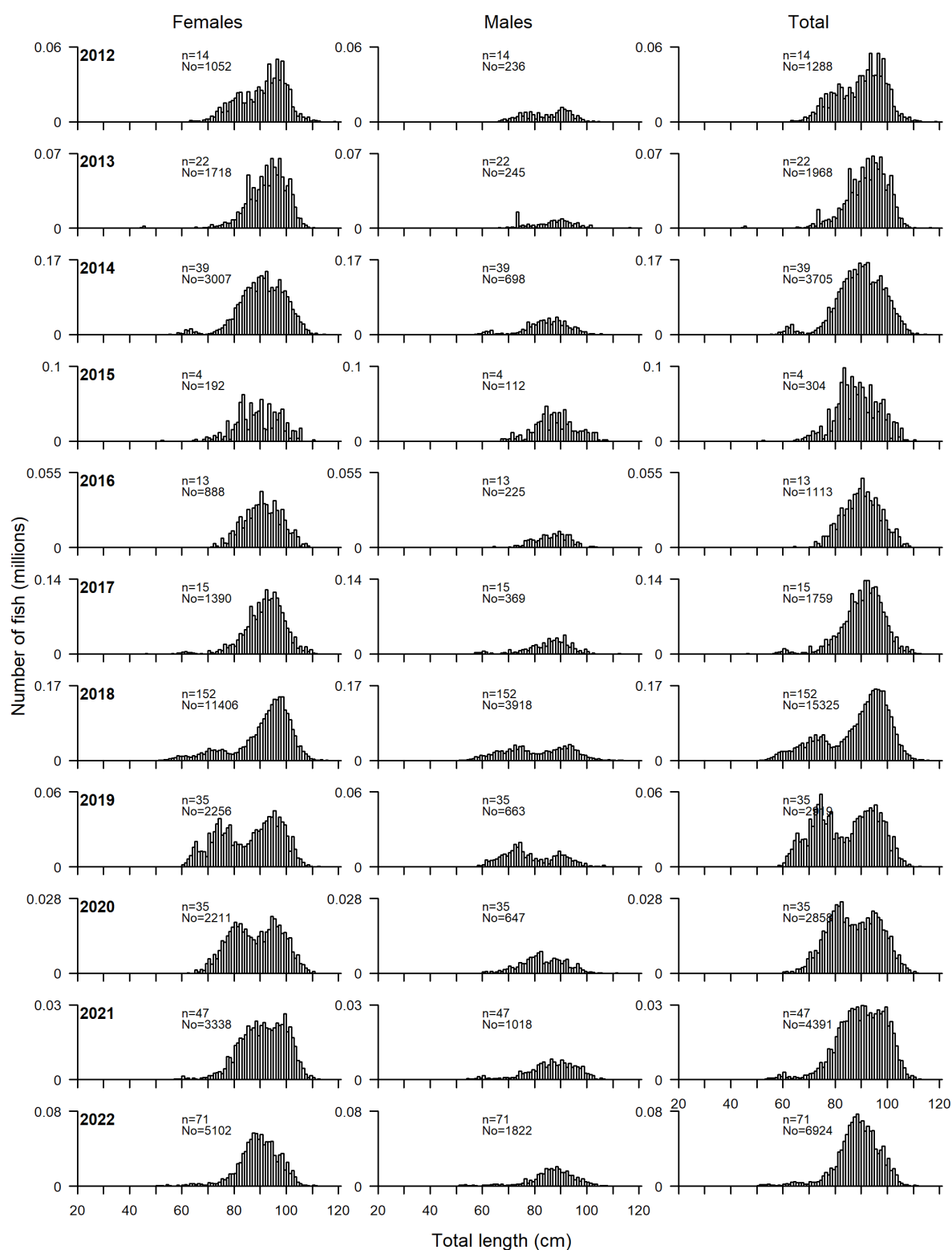


Figure 40c: (continued) Sub-Antarctic SA.suba sub-fishery continued for 2012 to 2022.

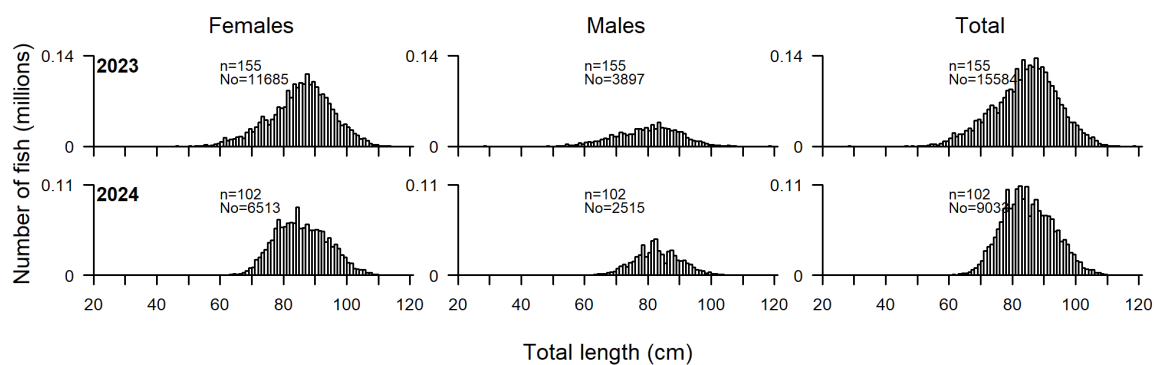


Figure 40c: (continued) Sub-Antarctic SA.suba sub-fishery continued for 2023 to 2024.

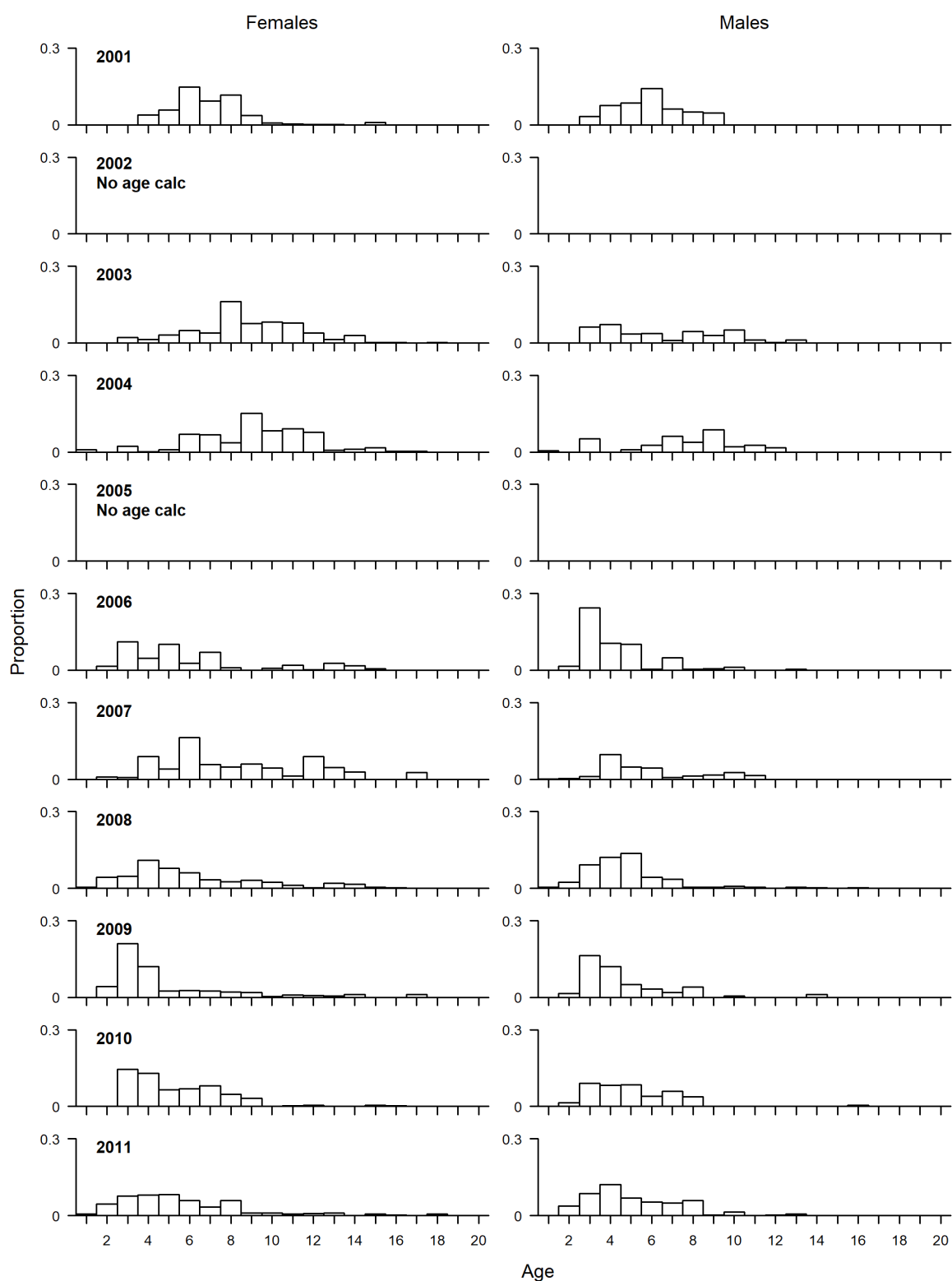


Figure 41a: Comparison of direct age results by year for Sub-Antarctic SA.auck sub-fishery continued by fishing years for 2001 to 2024. No age calculations for 2002 or 2005 fishing years.

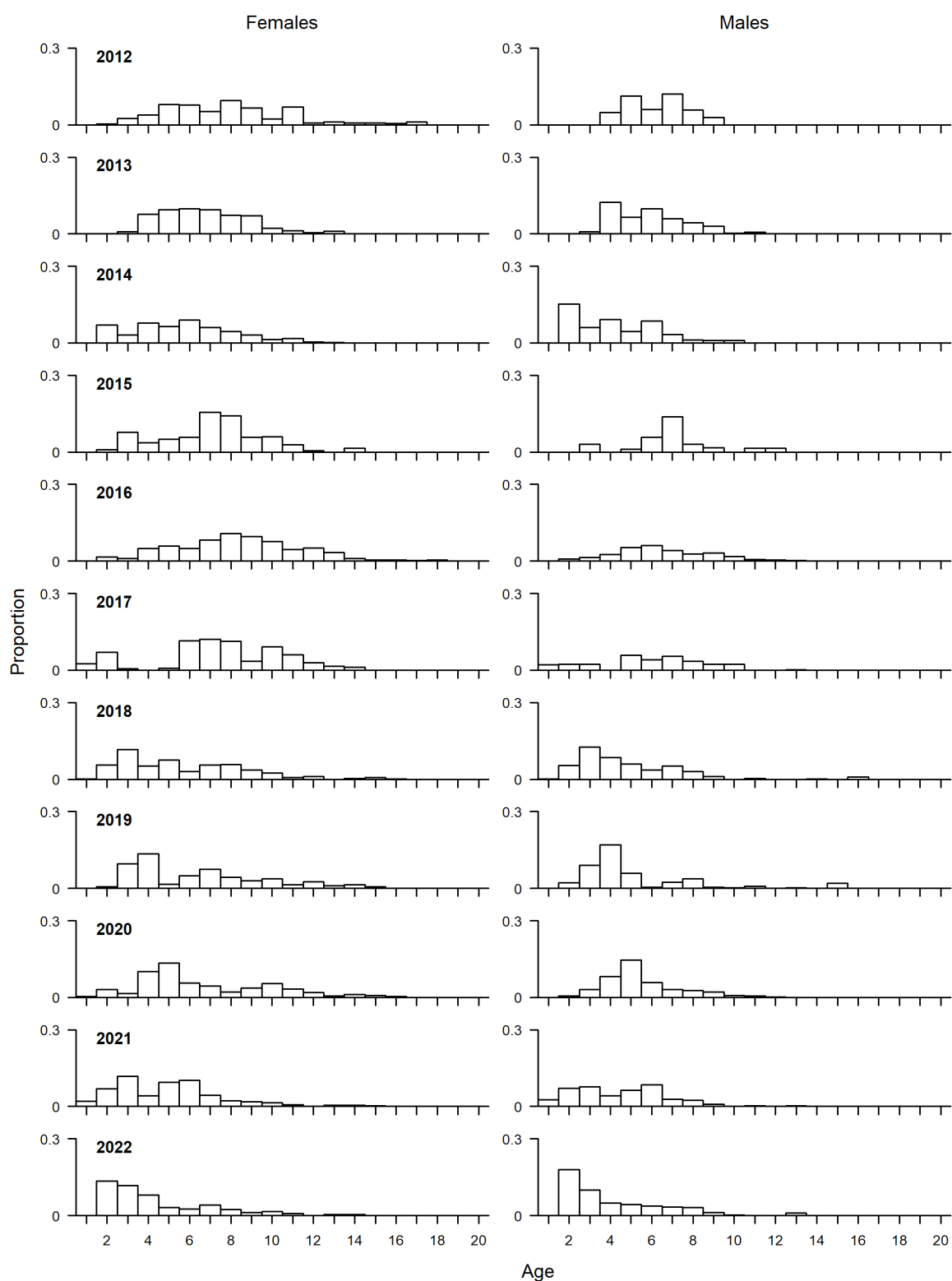


Figure 41a: (continued) Sub-Antarctic SA.auck sub-fishery continued for 2012 to 2022.

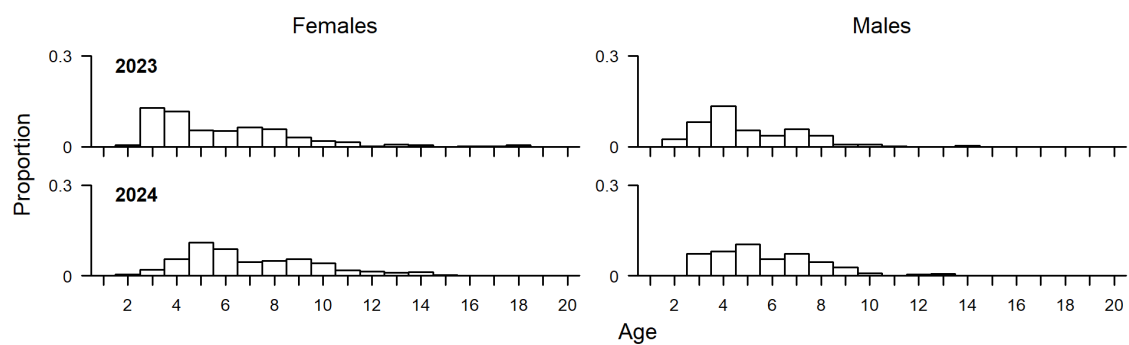


Figure 41a: (continued) Sub-Antarctic SA.auck sub-fishery continued for 2023 to 2024.

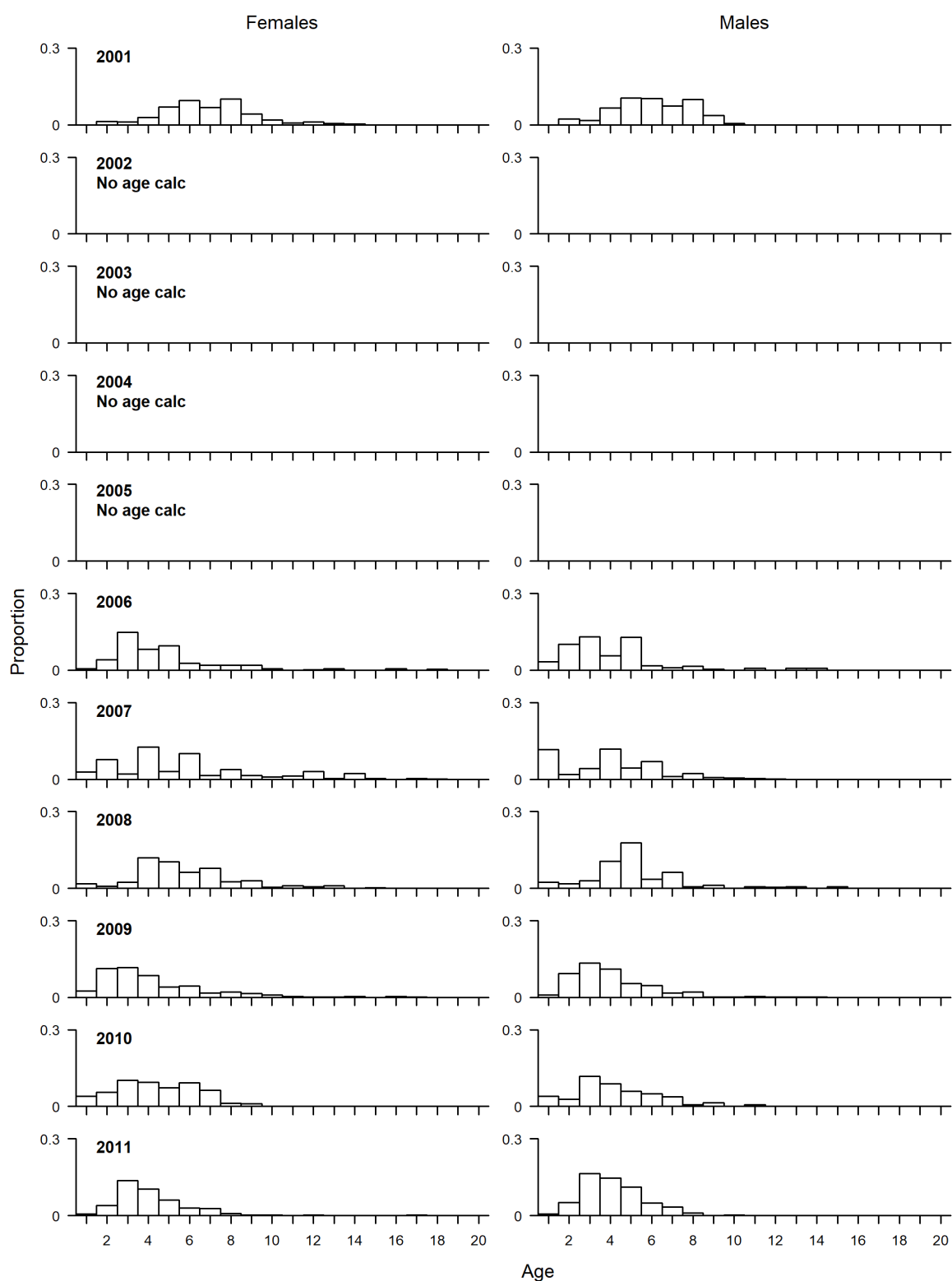


Figure 41b: Comparison of direct age results by year for Sub-Antarctic SA.snares sub-fishery by fishing year for 2001 to 2024. No age data for 2002–2005 fishing years.

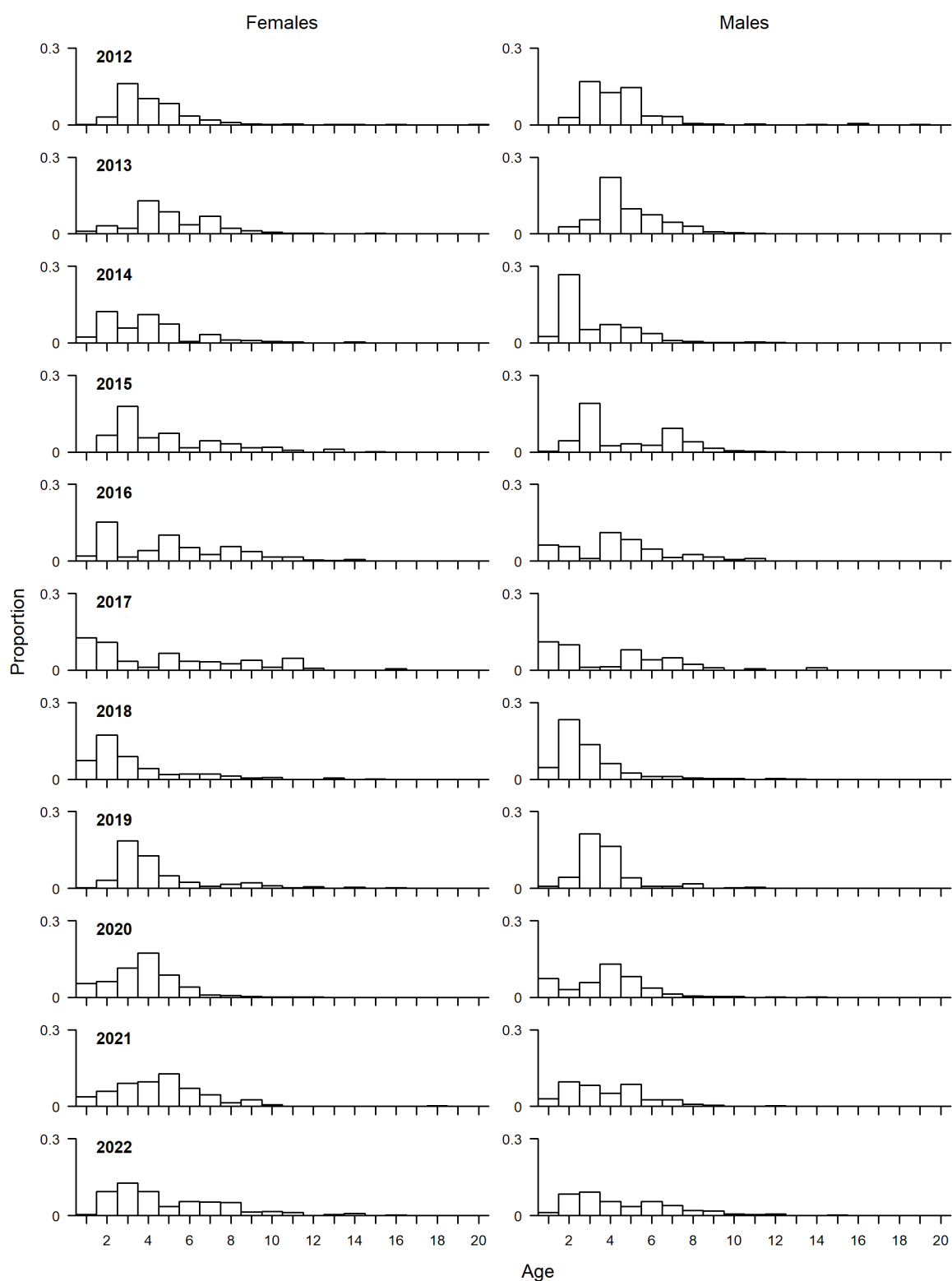


Figure 41b: (continued) Sub-Antarctic SA.snares sub-fishery continued for 2012 to 2022.

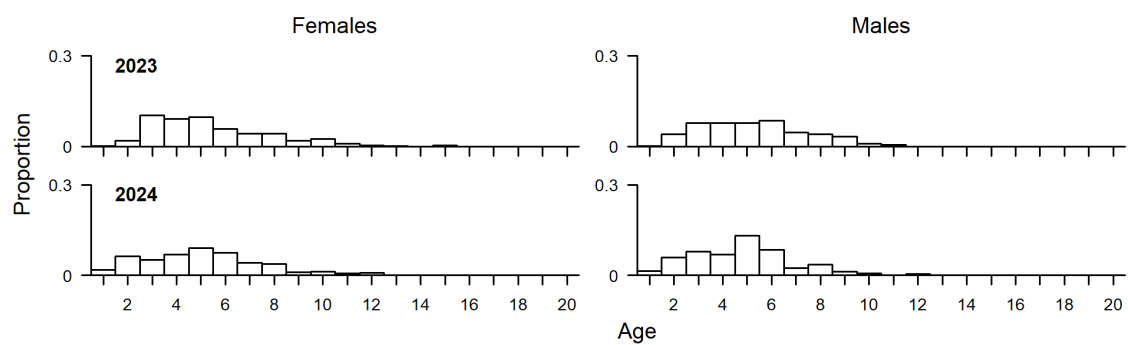


Figure 41b: (continued) Sub-Antarctic SA.snare sub-fishery continued for 2023 to 2024.

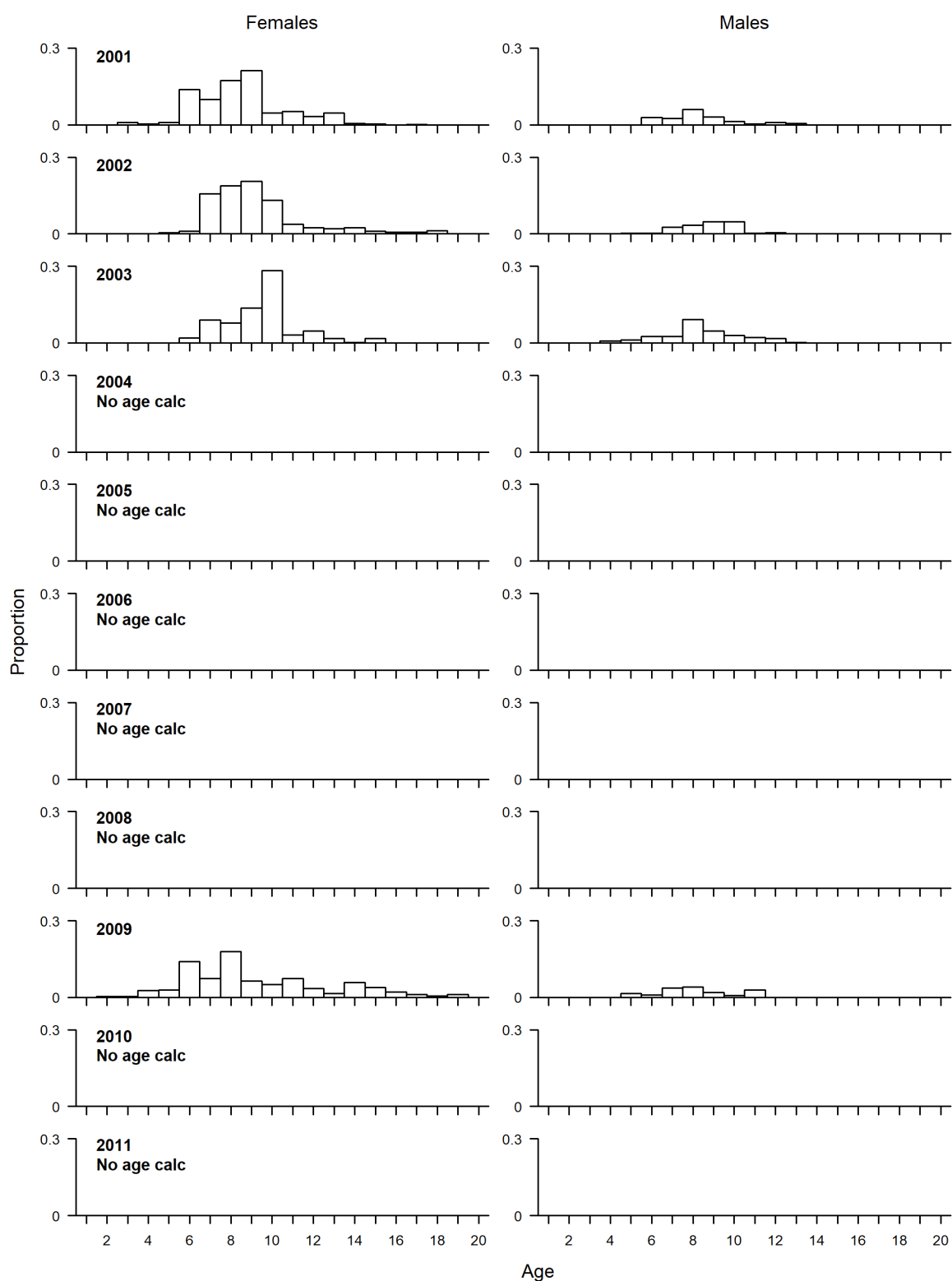


Figure 41c: Comparison of direct age results by year for Sub-Antarctic SA.suba sub-fishery by fishing year for 2001 to 2024. No age data (No age calc) for 2004–2008, 2010, 2011 fishing years.

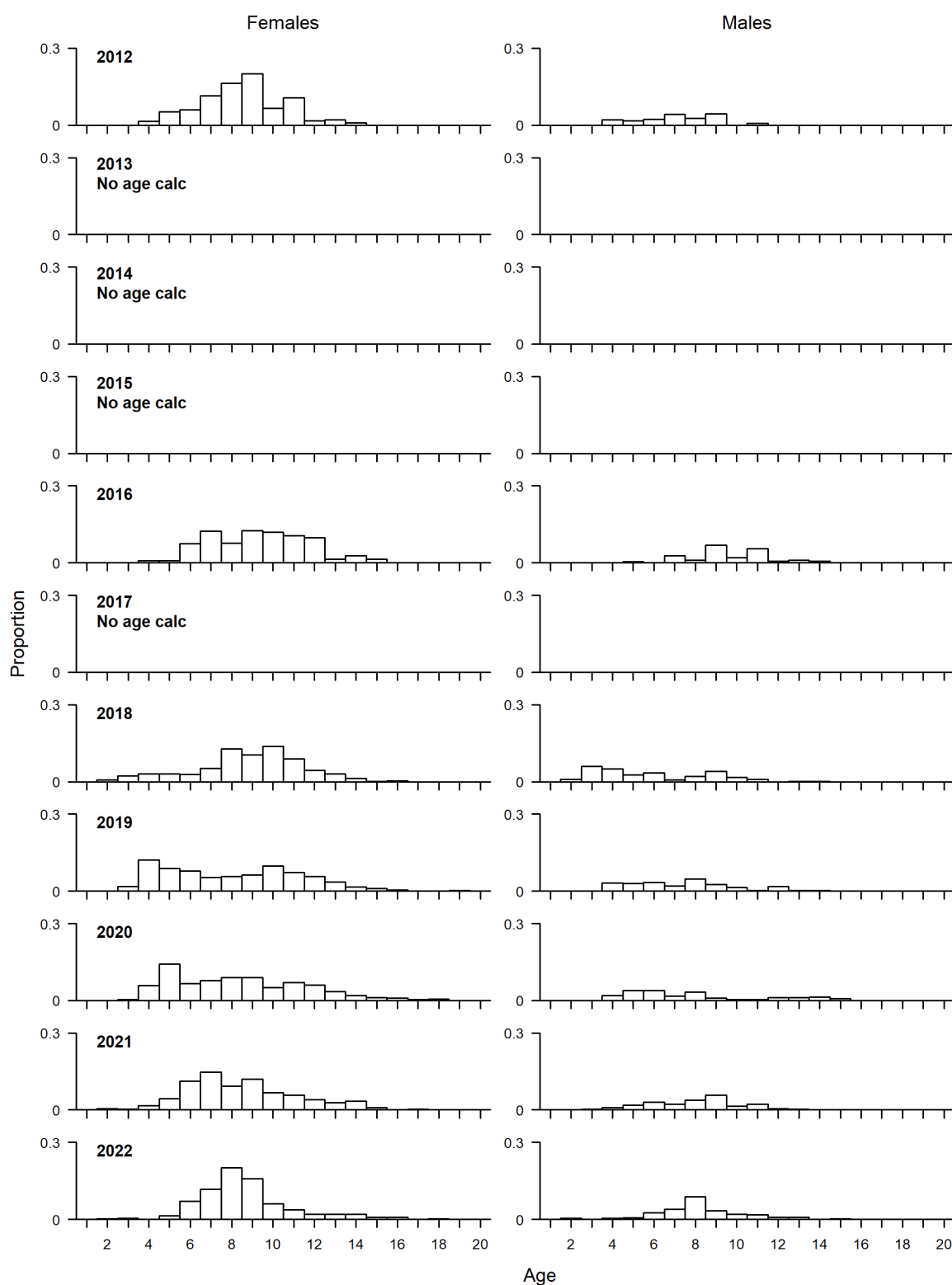


Figure 41c: (continued) Sub-Antarctic SA.suba sub-fishery continued for 2012 to 2022. No age calculations for 2011, 2013–2014 or 2017 fishing years.

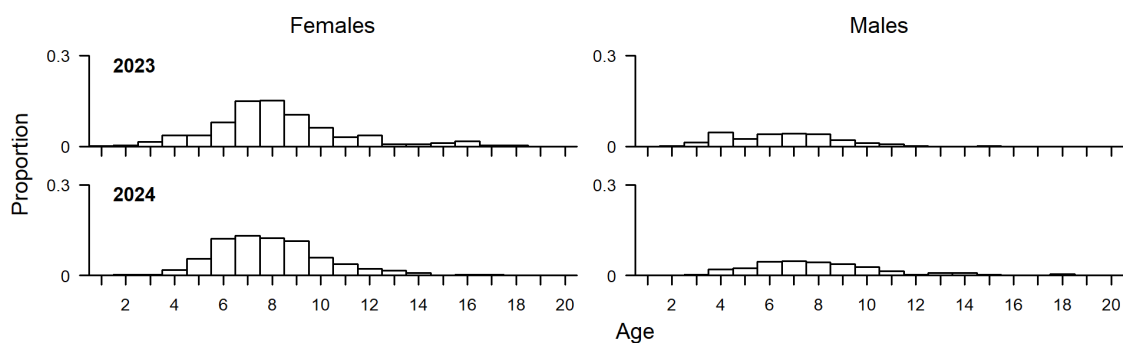


Figure 41c: (continued) Sub-Antarctic SA.suba sub-fishery continued for 2023 to 2024.

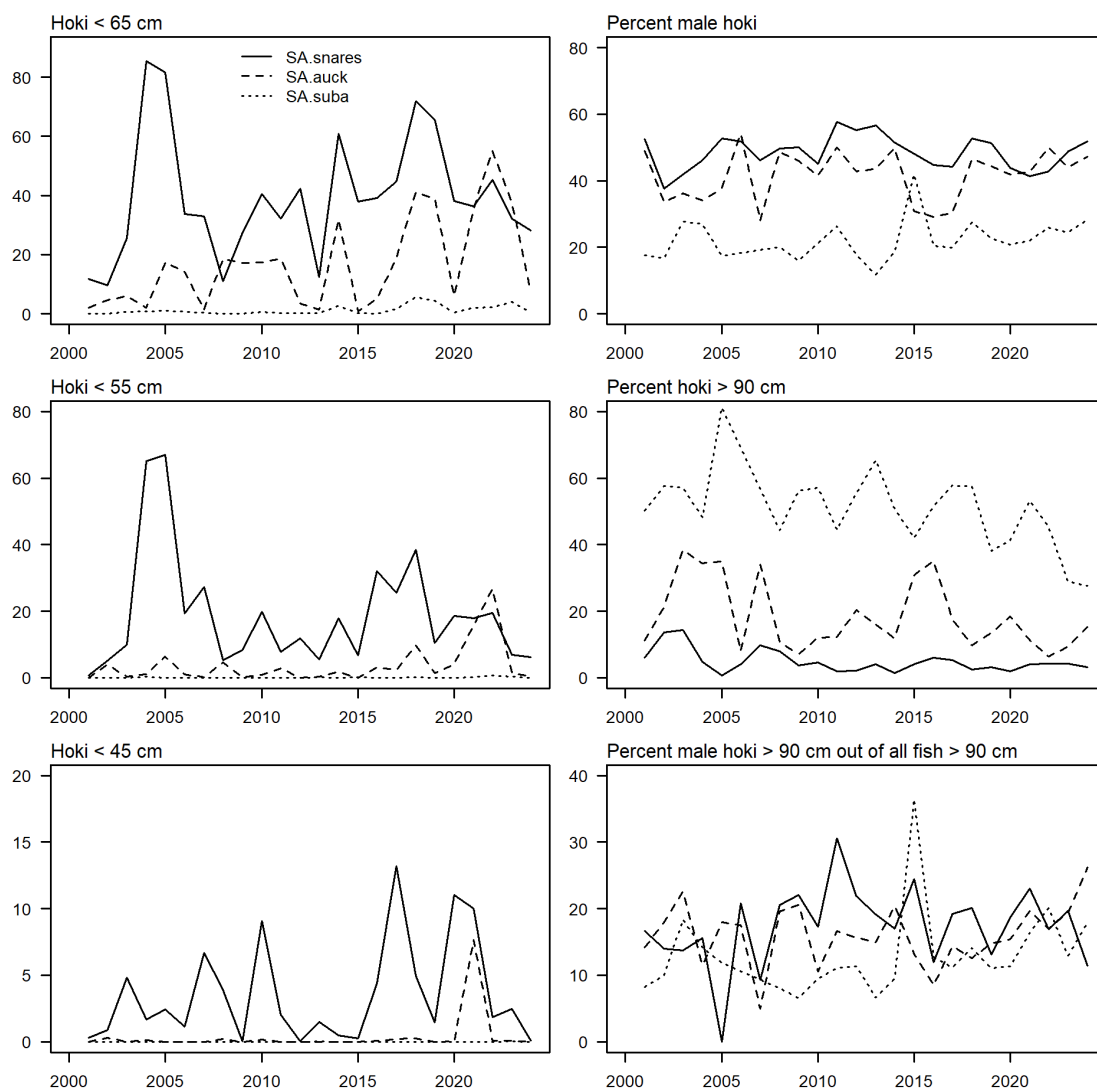


Figure 42: Percentage of small fish (total length < 45 cm, < 55 cm, and < 65 cm), males, all older fish (> 90 cm length), and male fish (total length > 90 cm only) in the catch by Sub-Antarctic sub-fishery and fishing year.

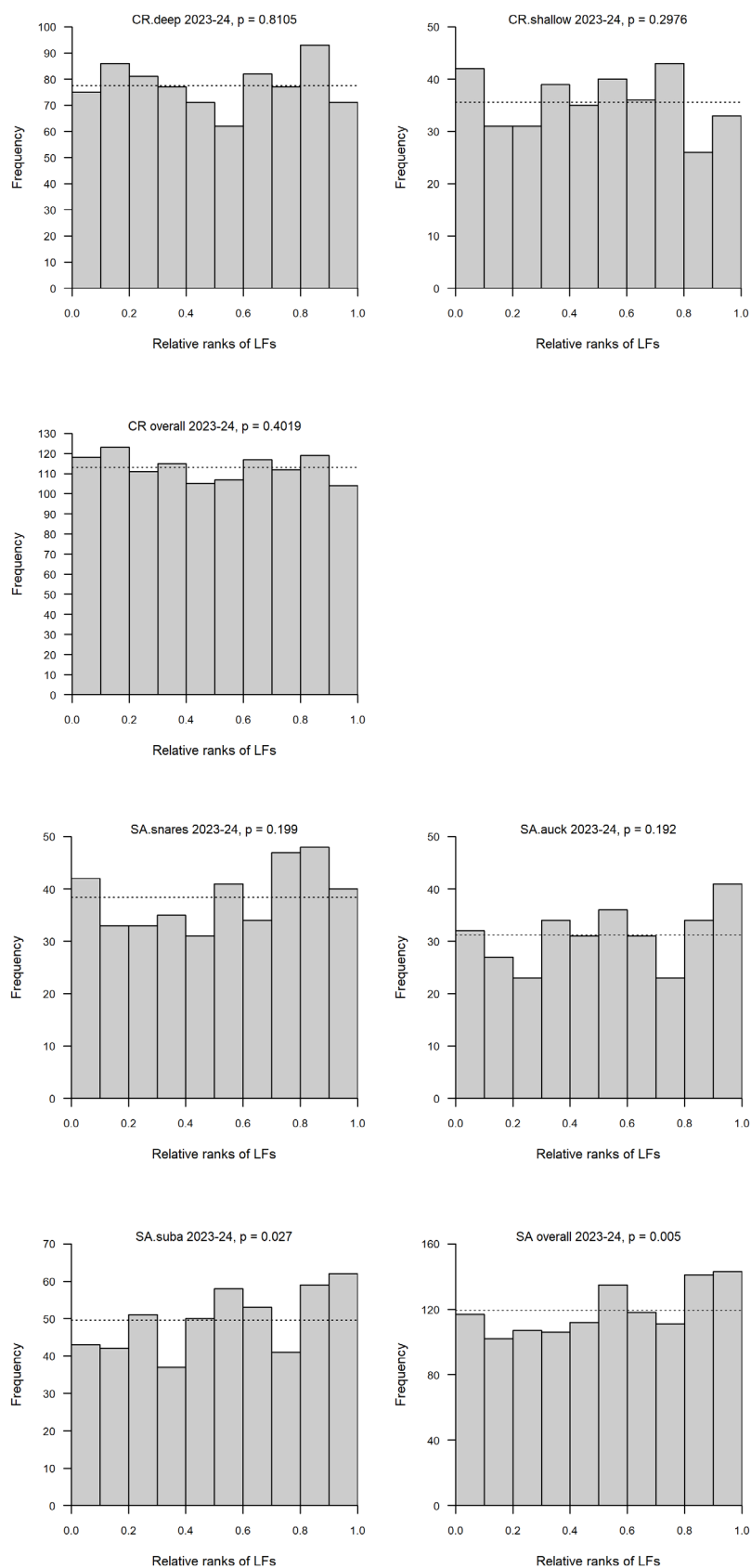


Figure 43: Histograms of ranks of the lengths that yielded 2023–24 Chatham Rise and Sub-Antarctic otoliths relative to the lengths of hoki measured for each tow. If sampling was random then the expected counts are given by the dotted line. The p-value was calculated using the rank sum test.

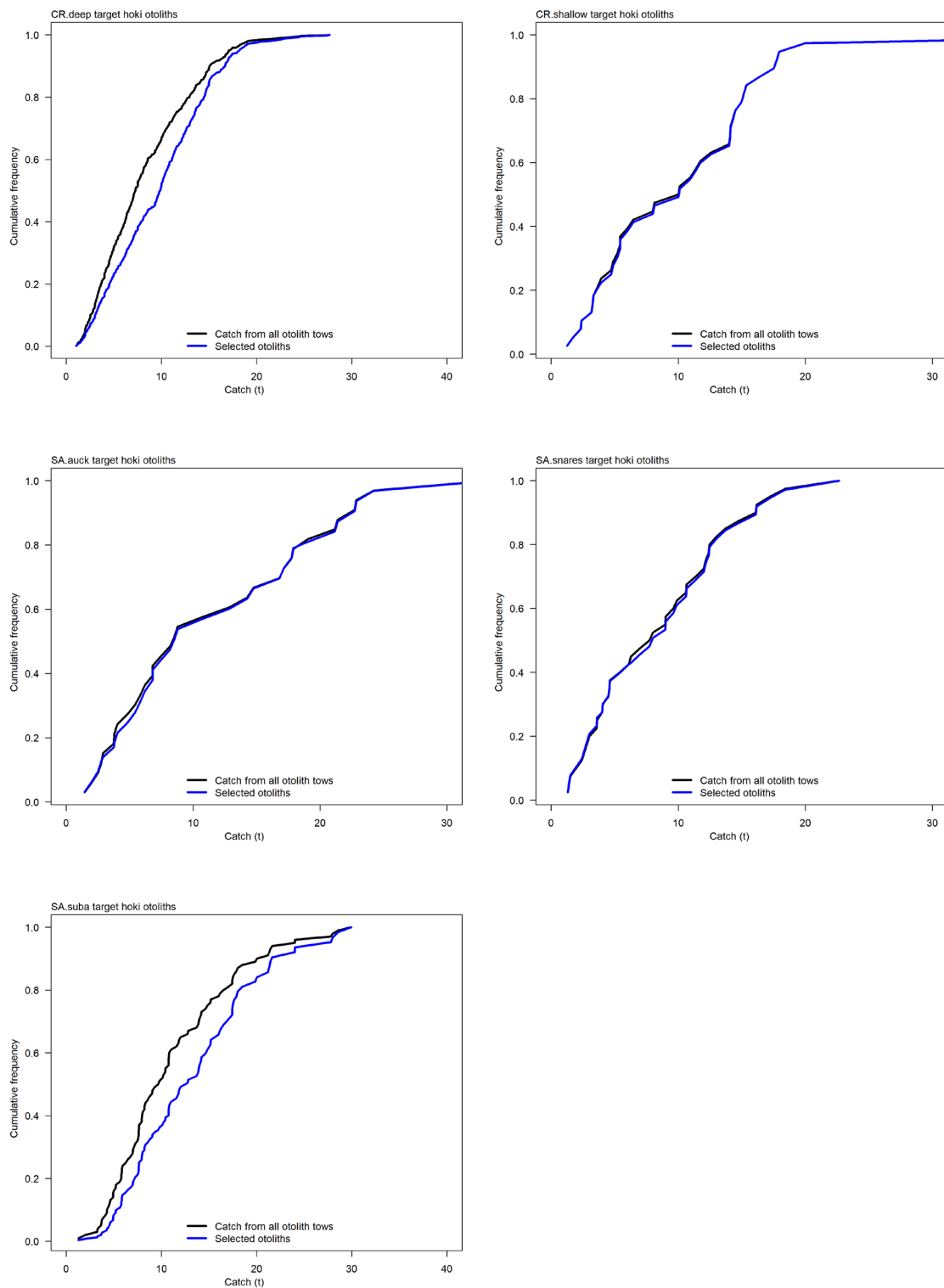


Figure 44a: Cumulative plot of selected 2023–24 Chatham Rise and Sub-Antarctic otoliths and catches.

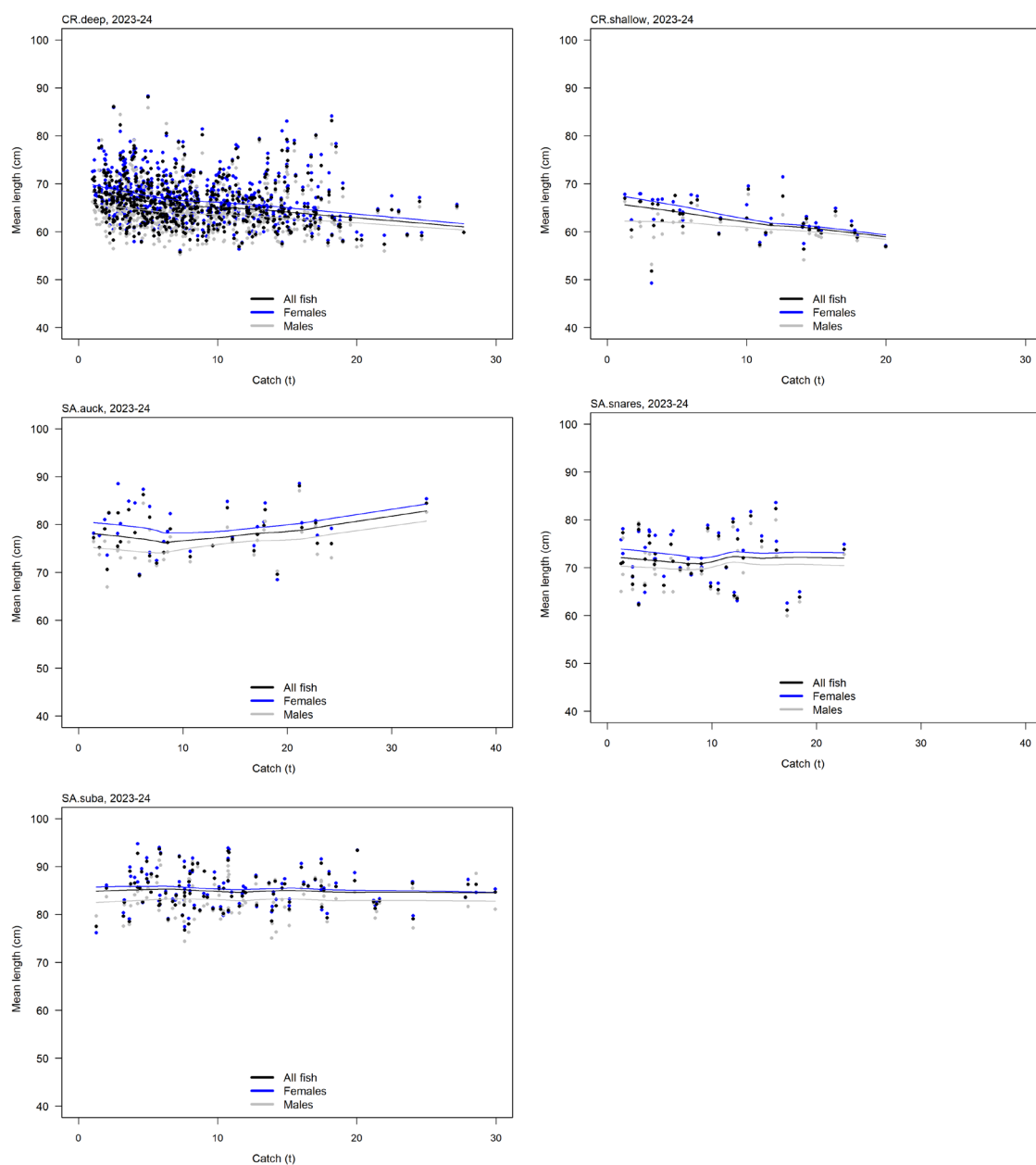


Figure 44b: Mean length of selected Chatham Rise and Sub-Antarctic 2023–24 otolith-sampled fish by catch. Females: black; Males: blue.

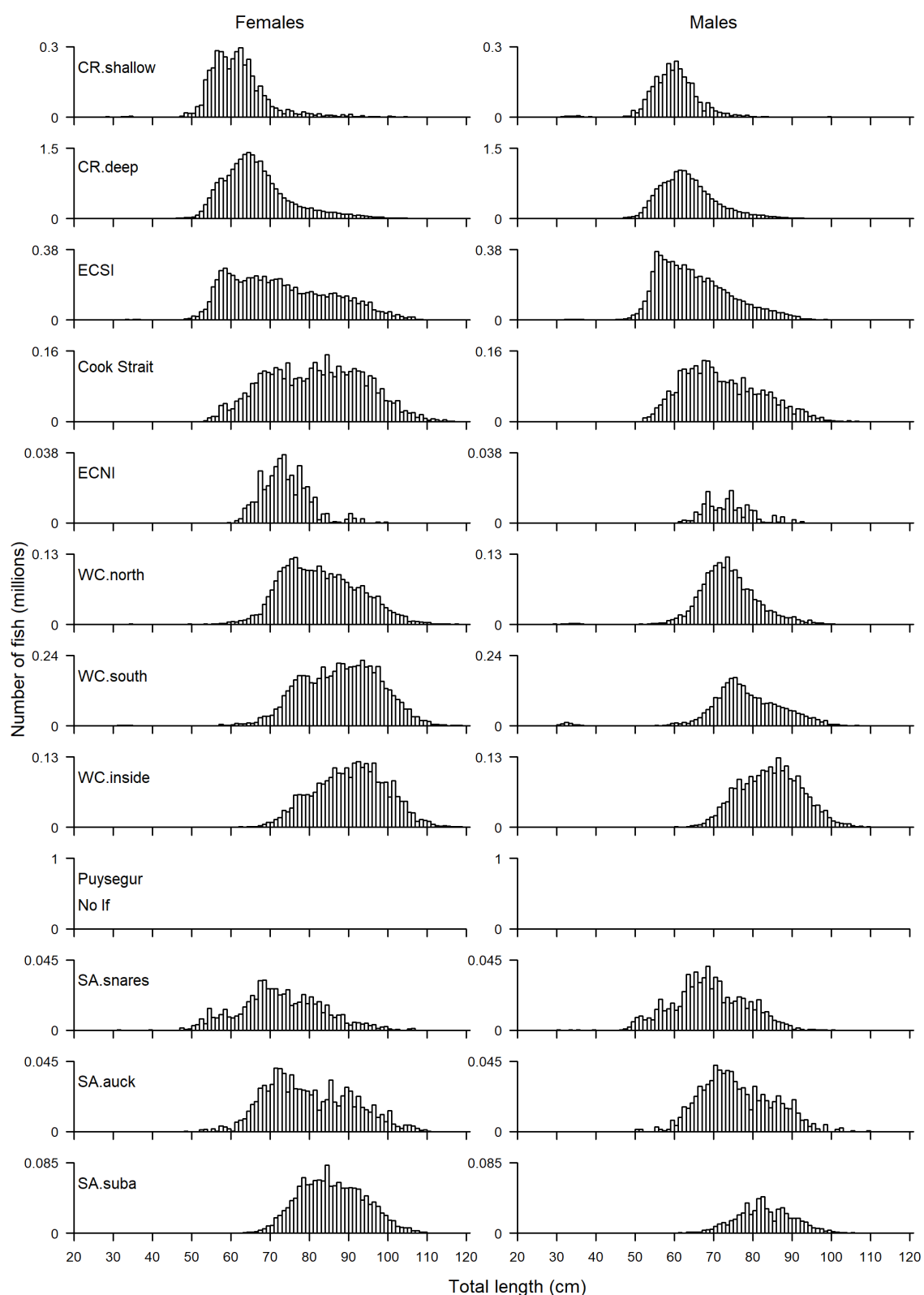


Figure 45: Length frequency distributions of female and male hoki taken in commercial catches from different sub-fisheries during the 2023–24 fishing year.

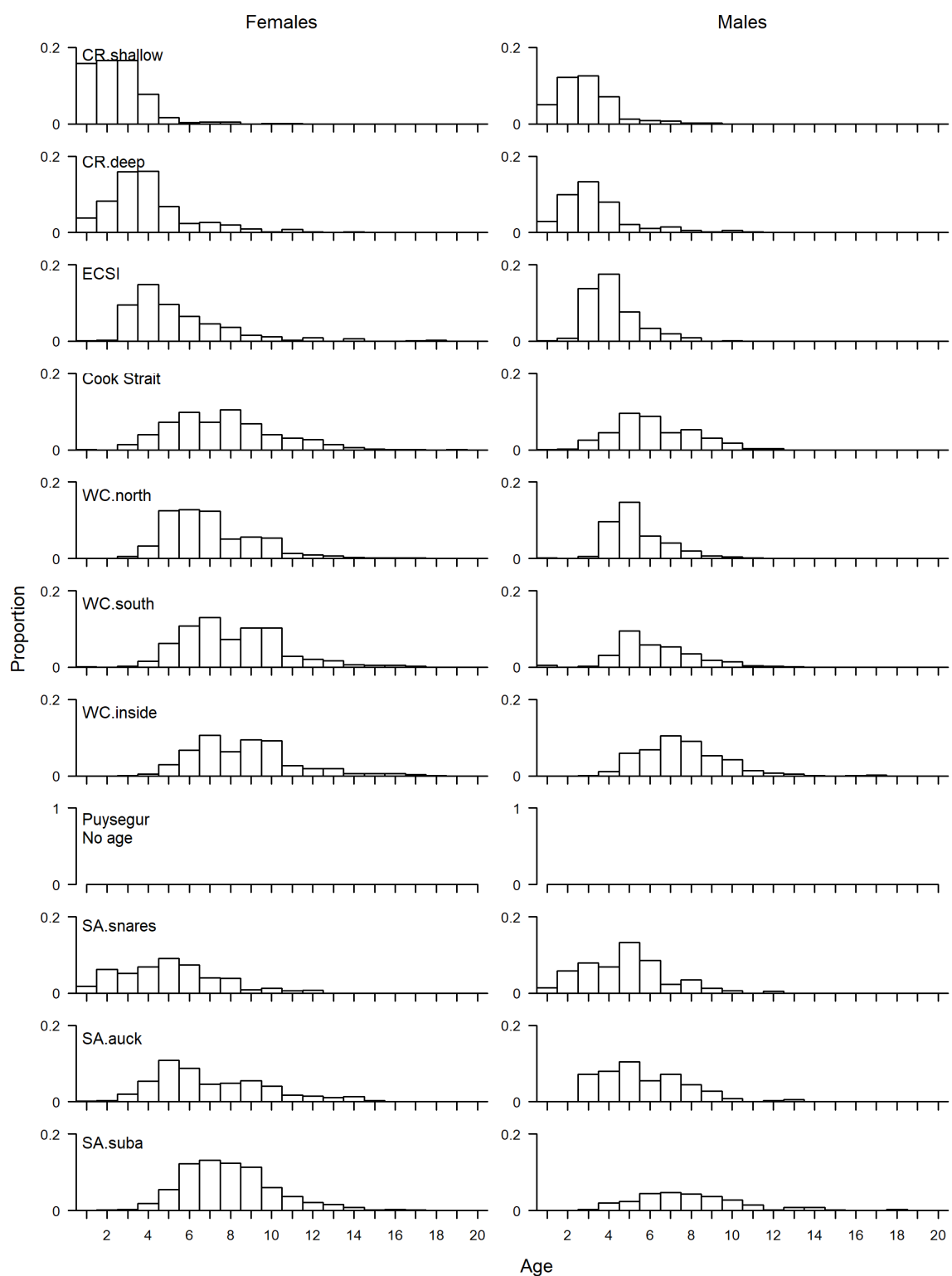


Figure 46: Age frequency distributions of female and male hoki taken in commercial catches from different sub-fisheries during the 2023–24 fishing year.

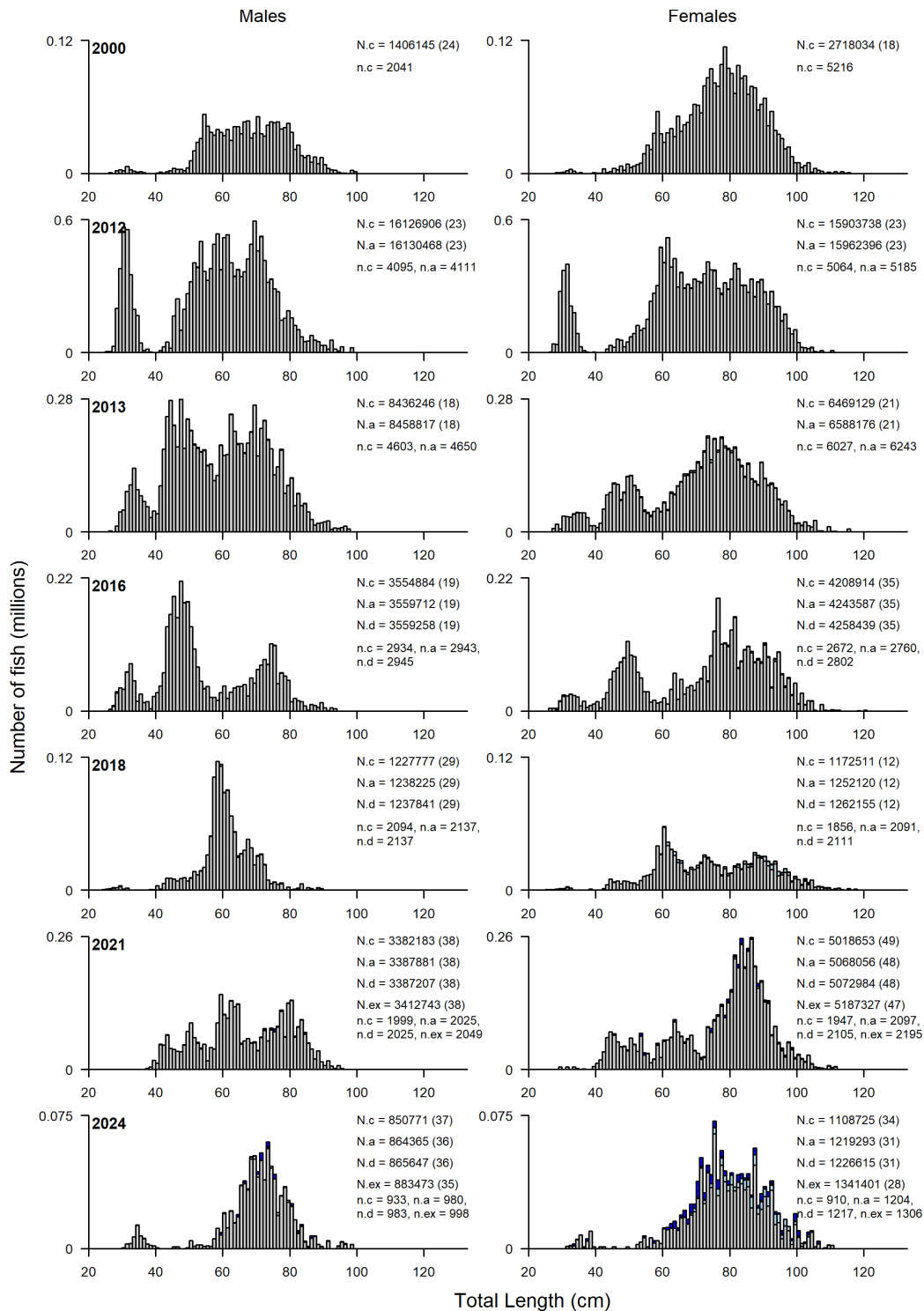


Figure 47: Scaled length frequency distributions by sex for hoki for core (grey), all (light blue), deep (black), and deep exploratory (dark blue) strata for the WCSI trawl survey time series. N.c, estimated scaled total number of fish for core strata; N.a, estimated scaled total number of fish for all strata; N.d, estimated scaled total number of fish for deep strata; N.ex, estimated scaled total number of fish for deep exploratory strata; n.c, number of fish measured in core strata; n.a, number of fish measured for all strata; n.d, number of fish measured for deep strata; n.ex, number of fish measured for exploratory strata; and CV, the coefficient of variation (in parentheses).

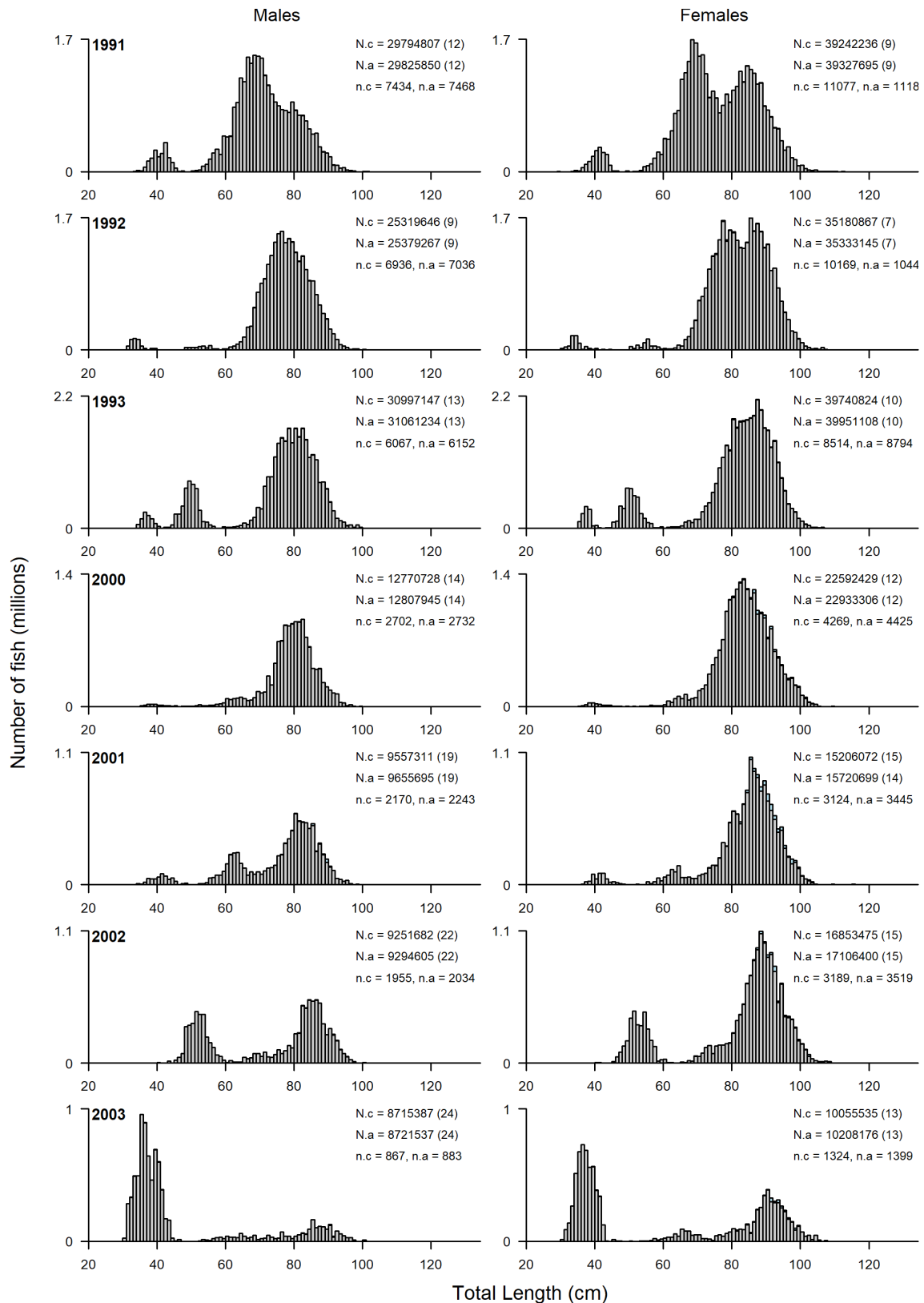


Figure 48: Scaled length frequency distributions for hoki from the core Sub-Antarctic *Tangaroa* trawl surveys from 1991 to 2024. N.c and N.a, population numbers of core and all fish respectively; CV, in brackets, coefficients of variation; n.c and n.a, number of core and all fish measured respectively.

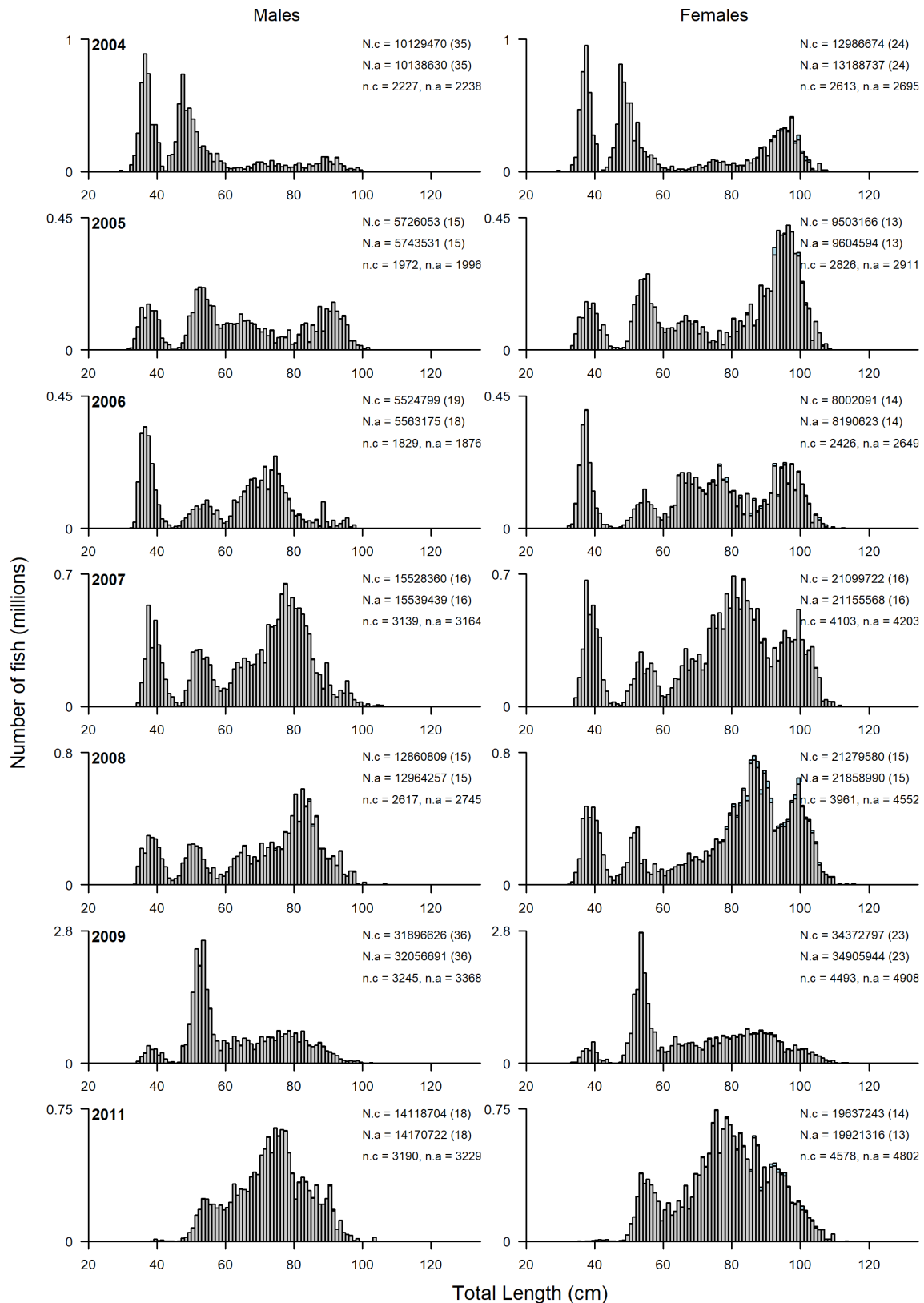


Figure 48: (continued) Sub-Antarctic *Tangaroa* trawl surveys continued for 2004–2009 and 2011.

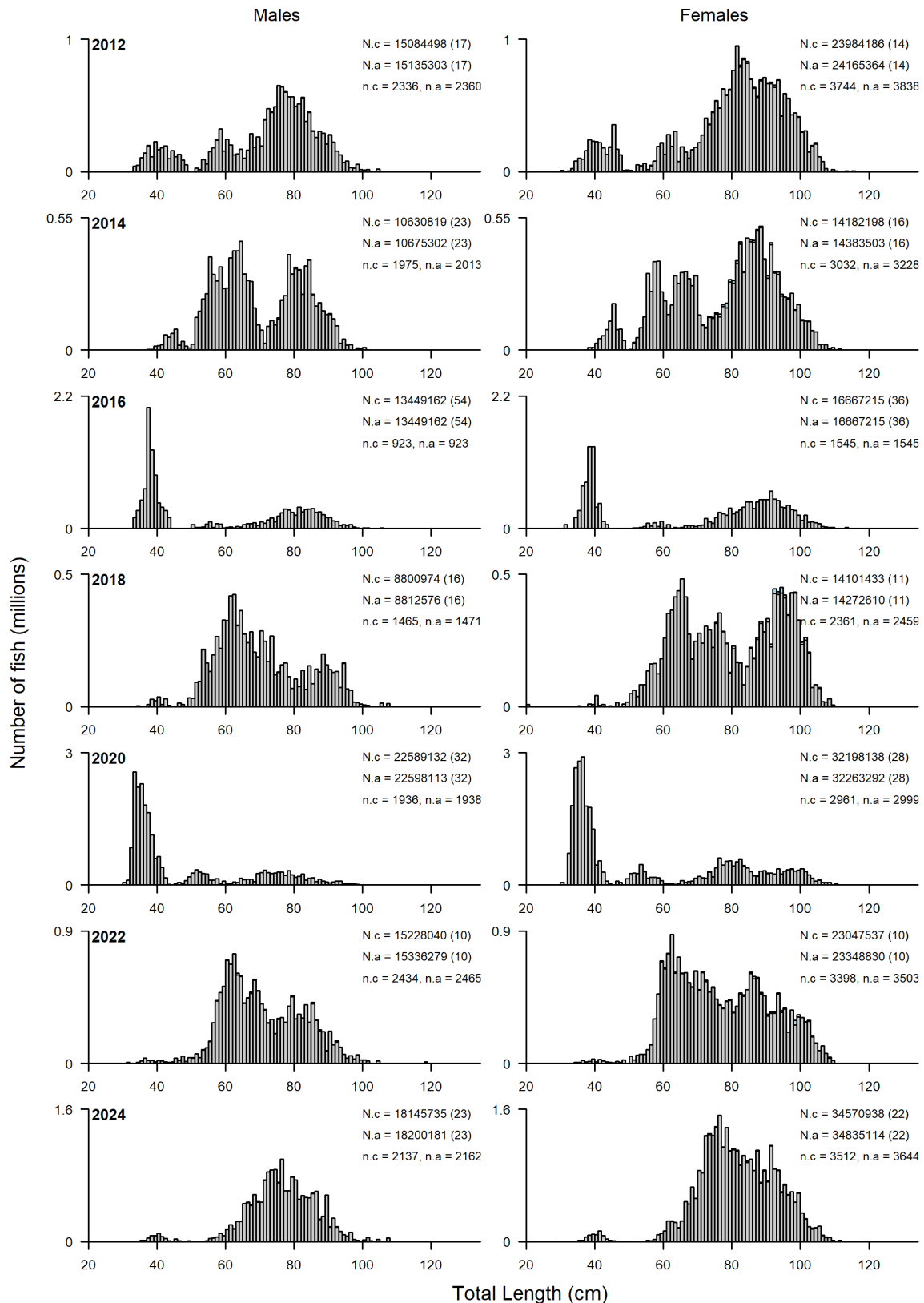


Figure 48: (continued) Sub-Antarctic *Tangaroa* trawl surveys continued for 2012, 2014, 2016, 2018, 2020, 2022, and 2024.

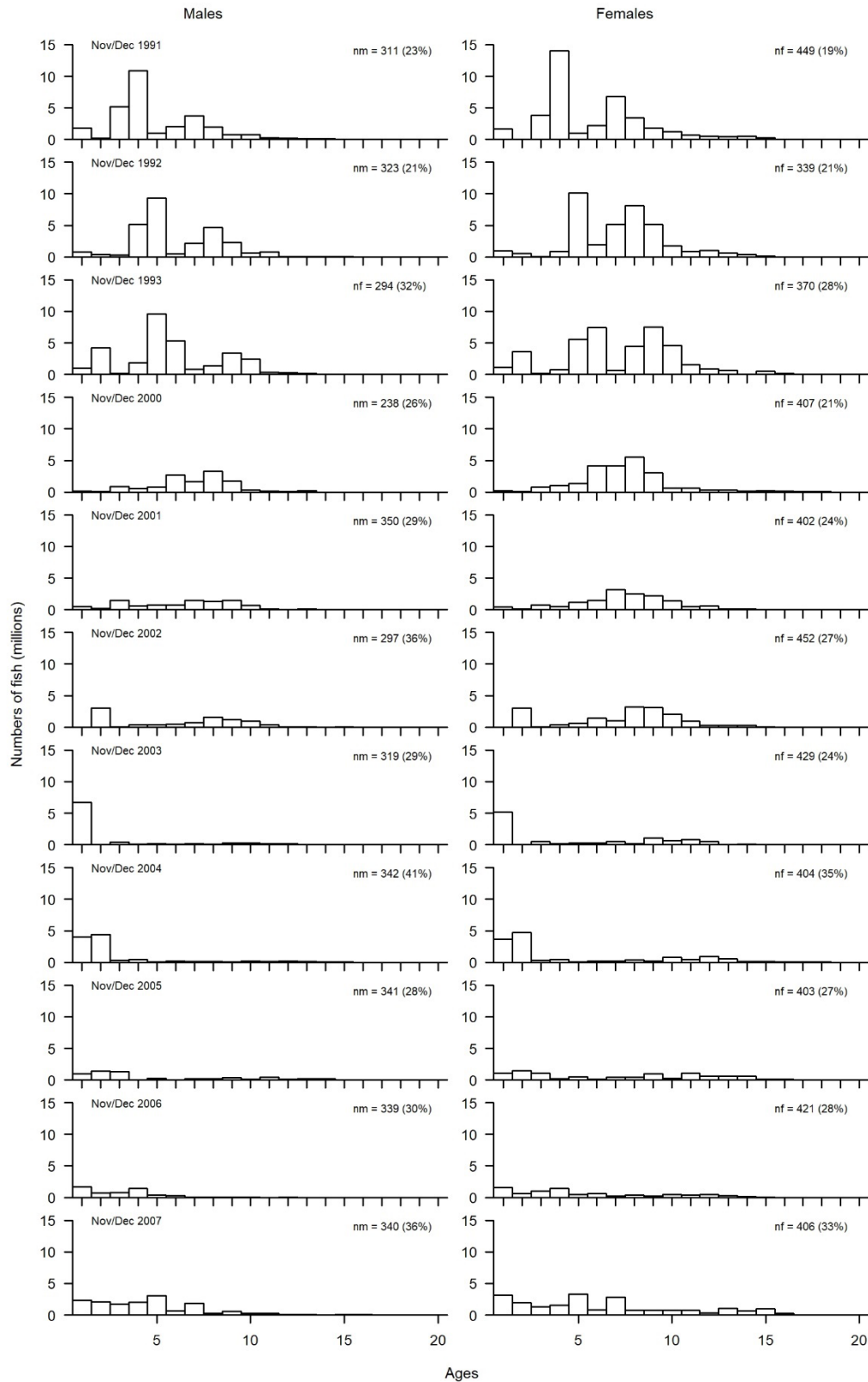


Figure 49: Scaled age frequency distributions for hoki from Sub-Antarctic *Tangaroa* trawl surveys from 1991 to 2024.

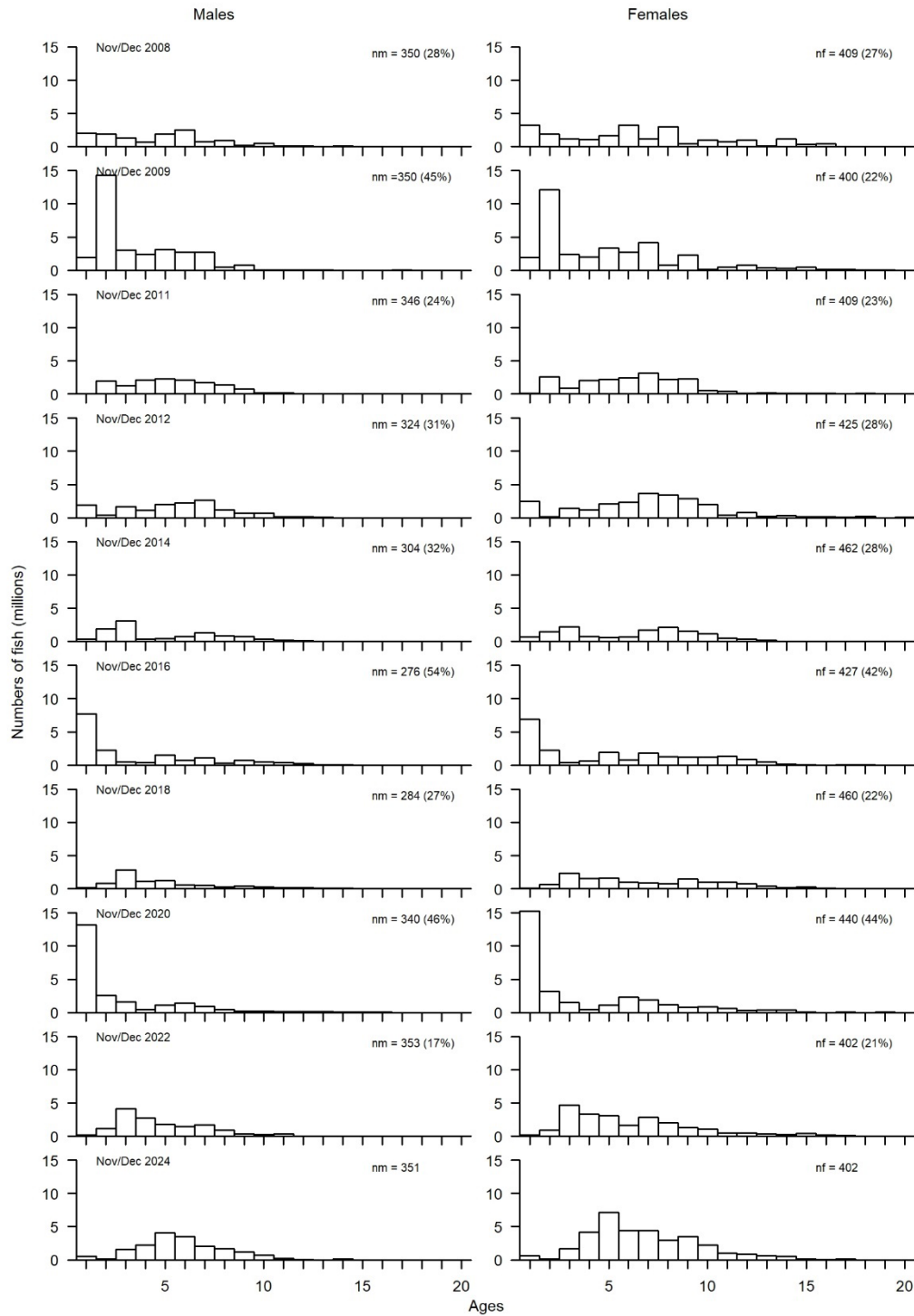


Figure 49: (continued) Sub-Antarctic *Tangaroa* trawl surveys continued for 2008–2009, 2011–2012, 2014, 2016, 2018, 2020, 2022, and 2024.

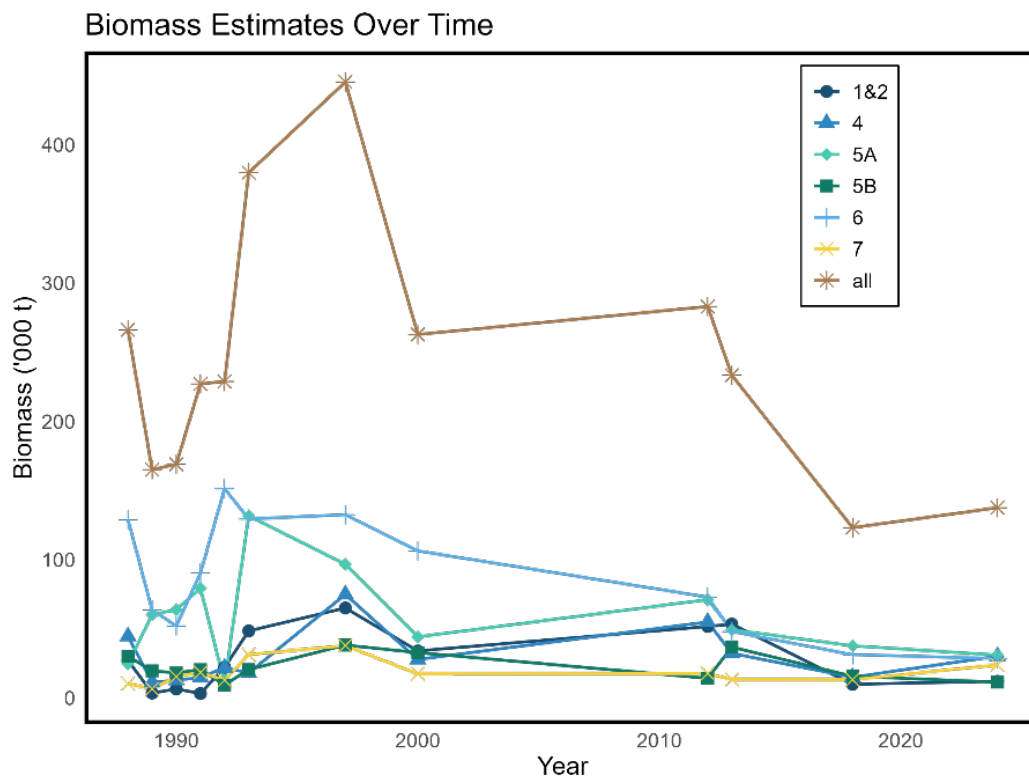


Figure 50: Time-series of research survey acoustic abundance indices for hoki on the WCSI.

APPENDIX A: Unstandardised CPUE data

Table A1: Number of vessels, total hoki catch, number of tows, median tow duration, median catch per tow, and median catch per hour for target hoki tows by year. Data are non-zero catches for TCEPR and ‘ERS-trawl’ tows and exclude MHS tows. *, data not shown where there are less than 3 vessels.

WCSI overall target hoki midwater tows. Data for June to September

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	70	4.2	10.3	2.6
1991	66	4.0	10.2	2.6
1992	60	3.6	12.4	3.6
1993	56	3.1	10.5	4.1
1994	64	3.0	9.5	3.4
1995	59	3.5	5.1	1.6
1996	59	3.5	6.9	2.0
1997	77	3.8	7.9	2.1
1998	66	3.5	10.4	2.8
1999	56	3.1	10.3	3.4
2000	51	2.7	12.0	4.5
2001	62	2.6	9.3	3.6
2002	56	2.3	9.8	4.3
2003	51	3.0	8.1	2.5
2004	51	2.3	4.9	1.6
2005	37	2.4	5.8	2.0
2006	34	2.6	8.7	3.2
2007	31	2.8	15.0	5.5
2008	13	1.7	7.3	4.7
2009	15	2.7	14.5	5.0
2010	23	2.5	17.1	5.5
2011	24	2.0	17.4	8.5
2012	27	2.1	16.3	7.9
2013	24	2.6	15.4	6.2
2014	26	2.8	15.2	5.9
2015	27	2.7	15.5	6.1
2016	24	2.2	11.7	5.0
2017	24	2.2	11.8	5.5
2018	20	2.0	9.8	4.9
2019	27	2.2	7.8	3.0
2020	24	1.9	9.2	4.3
2021	22	2.1	9.9	4.4
2022	22	1.8	9.1	4.7
2023	18	2.2	10.3	4.9
2024	20	2.3	10.1	4.4
All years	254	3.0	10.0	3.3

Table A1: (continued)

WCSI overall target hoki bottom tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	34	4.2	4.1	1.1
1991	31	4.0	4.1	1.1
1992	28	4.0	7.0	1.7
1993	29	3.8	5.9	1.6
1994	29	4.3	4.2	0.9
1995	24	4.5	2.7	0.6
1996	36	4.7	2.1	0.4
1997	42	5.0	2.5	0.5
1998	34	5.2	3.1	0.6
1999	34	4.7	5.1	1.0
2000	32	4.3	6.6	1.4
2001	37	4.6	5.0	1.0
2002	34	5.0	5.9	1.1
2003	39	5.1	3.0	0.6
2004	34	5.7	2.0	0.4
2005	27	5.6	4.6	0.8
2006	24	7.0	5.1	0.8
2007	20	4.8	9.3	1.7
2008	13	5.0	8.6	1.7
2009	13	4.5	11.3	2.6
2010	19	3.2	13.5	4.7
2011	17	4.1	11.4	2.9
2012	20	3.8	15.0	4.1
2013	16	3.5	15.6	4.8
2014	15	3.9	15.3	3.8
2015	17	3.6	14.3	4.0
2016	17	3.2	15.1	5.1
2017	16	4.4	8.7	1.8
2018	18	5.3	6.2	1.1
2019	16	5.0	13.1	2.4
2020	13	3.9	16.8	4.2
2021	13	4.0	15.0	3.8
2022	12	5.7	7.1	1.2
2023	10	5.0	7.7	1.5
2024	12	5.2	9.5	1.6
All years	134	4.6	5.9	1.2

Table A1: (continued)

WCSI WC.north target hoki MW tows: Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	70	4.2	10.3	2.6
1991	66	4.0	10.2	2.6
1992	60	3.6	12.4	3.6
1993	56	3.1	10.5	4.1
1994	64	3.0	9.5	3.4
1995	59	3.5	5.1	1.6
1996	59	3.5	6.9	2.0
1997	77	3.8	7.9	2.1
1998	66	3.5	10.4	2.8
1999	56	3.1	10.3	3.4
2000	51	2.7	12.0	4.5
2001	62	2.6	9.3	3.6
2002	56	2.3	9.8	4.3
2003	51	3.0	8.1	2.5
2004	51	2.3	4.9	1.6
2005	37	2.4	5.8	2.0
2006	34	2.6	8.7	3.2
2007	31	2.8	15.0	5.5
2008	13	1.7	7.3	4.7
2009	15	2.7	14.5	5.0
2010	23	2.5	17.1	5.5
2011	24	2.0	17.4	8.5
2012	27	2.1	16.3	7.9
2013	24	2.6	15.4	6.2
2014	26	2.8	15.2	5.9
2015	27	2.7	15.5	6.1
2016	24	2.2	11.7	5.0
2017	24	2.2	11.8	5.5
2018	20	2.0	9.8	4.9
2019	27	2.2	7.8	3.0
2020	24	1.9	9.2	4.3
2021	22	2.1	9.9	4.4
2022	22	1.8	9.1	4.7
2023	18	2.2	10.3	4.9
2024	20	2.3	10.1	4.4
All years	254	3.0	10.0	3.3

Table A1: (continued)

WCSI WC.north target hoki BT tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	31	4.2	4.6	1.1
1991	31	4.2	4.6	1.1
1992	25	4.2	6.9	1.6
1993	29	3.8	5.9	1.5
1994	25	4.5	4.2	0.9
1995	22	4.7	2.7	0.5
1996	32	4.9	2.1	0.4
1997	40	5.0	2.4	0.5
1998	31	5.7	3.1	0.5
1999	32	4.8	5.1	0.9
2000	30	4.5	6.9	1.3
2001	35	4.8	5.8	1.0
2002	31	5.1	5.6	1.0
2003	36	5.3	2.8	0.5
2004	31	6.2	1.7	0.3
2005	26	6.5	4.9	0.7
2006	24	8.2	4.6	0.7
2007	20	5.2	8.1	1.4
2008	13	5.0	8.6	1.7
2009	13	4.5	12.4	3.0
2010	19	3.2	13.7	4.7
2011	17	4.1	11.4	2.9
2012	20	3.8	15.5	4.4
2013	15	3.5	15.4	4.8
2014	15	3.8	15.8	4.0
2015	15	3.5	15.3	4.8
2016	17	3.1	15.4	5.4
2017	15	4.4	9.7	2.0
2018	18	5.5	5.5	0.9
2019	14	5.2	13.3	2.4
2020	12	4.0	19.4	5.6
2021	12	4.0	17.0	4.3
2022	12	6.5	7.1	1.0
2023	9	5.3	9.3	1.4
2024	11	5.6	8.2	1.1
All years	123	4.8	5.9	1.1

WCSI WC.south target hoki MW tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	66	4.3	15.4	3.7
1991	59	4.2	11.6	3.0
1992	53	3.7	10.3	3.1
1993	37	4.4	5.2	1.4
1994	41	3.0	7.4	2.7
1995	49	3.2	5.1	1.5
1996	44	3.3	6.9	2.0
1997	60	3.7	5.3	1.5
1998	54	3.1	8.3	2.6
1999	46	2.5	11.1	4.6
2000	32	2.2	10.0	4.0
2001	45	2.8	9.0	3.1
2002	32	2.7	7.0	2.9
2003	28	2.4	5.7	2.4
2004	25	2.2	3.0	1.4
2005	22	2.3	4.1	1.7
2006	21	2.4	8.0	3.1
2007	16	2.3	6.2	2.7
2008	7	1.5	3.4	2.1
2009	10	1.7	5.6	3.3
2010	11	1.7	2.5	1.5
2011	14	1.7	9.0	4.7
2012	14	2.1	16.4	6.9
2013	15	2.2	10.5	4.9
2014	19	2.6	11.4	4.3
2015	18	2.7	9.5	3.5
2016	17	2.4	11.2	4.2
2017	16	3.5	13.6	4.0
2018	16	2.8	9.1	3.2
2019	13	4.2	11.3	2.7
2020	9	2.2	6.3	2.7
2021	13	3.7	10.0	2.9
2022	17	3.3	9.8	3.1
2023	9	5.7	6.1	1.1
2024	10	5.2	9.7	2.1
All years	214	3.0	8.2	2.7

Table A1: (continued)

WCSI WC.south target hoki BT tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	22	3.8	3.1	0.9
1991	19	3.5	3.5	1.0
1992	15	3.6	7.0	2.1
1993	14	3.2	6.2	1.9
1994	12	3.6	4.2	1.2
1995	7	3.4	3.1	1.0
1996	8	3.0	2.1	0.7
1997	14	3.6	3.7	1.0
1998	15	2.6	4.5	1.7
1999	15	3.5	5.8	1.7
2000	12	4.1	6.0	1.8
2001	17	3.8	4.0	1.0
2002	13	3.5	6.8	1.6
2003	19	4.5	3.5	0.8
2004	16	4.6	4.1	0.8
2005	11	4.0	3.8	1.1
2006	11	4.4	6.4	1.5
2007	9	4.2	10.3	2.3
2008	5	3.5	8.9	3.1
2009	6	5.3	5.2	1.1
2010	6	2.0	8.9	5.4
2011	8	4.4	10.8	2.4
2012	10	4.1	11.3	2.8
2013	13	3.5	16.5	5.1
2014	13	4.2	15.3	2.9
2015	10	4.1	9.8	1.9
2016	7	3.8	12.8	3.1
2017	11	4.2	6.2	1.5
2018	13	4.9	7.2	1.4
2019	7	3.9	13.0	2.7
2020	6	3.8	12.6	2.6
2021	5	4.0	9.5	2.1
2022	6	4.3	8.5	1.6
2023	6	4.1	6.9	1.7
2024	8	3.9	14.4	3.3
All years	88	4.0	6.0	1.5

WCSI WC.inside target hoki MW tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	23	5.0	10.3	2.9
1991	28	3.4	9.4	2.7
1992	18	4.1	9.9	2.9
1993	8	1.5	4.8	3.3
1994	16	1.0	6.8	5.1
1995	28	1.5	7.2	3.7
1996	25	1.0	16.6	19.1
1997	37	0.8	12.1	15.9
1998	29	0.8	15.1	18.7
1999	28	1.0	15.0	17.0
2000	22	0.8	12.0	15.2
2001	38	1.0	10.0	11.1
2002	27	1.0	13.7	15.6
2003	22	1.0	12.3	12.1
2004	26	1.1	9.1	7.4
2005	11	1.0	9.5	8.4
2006	13	1.0	11.1	12.1
2007	6	0.6	7.2	12.1
2008	6	0.9	8.3	10.9
2009	*	*	*	*
2010	4	0.8	18.8	21.4
2011	5	0.8	12.3	16.0
2012	8	1.0	11.1	12.2
2013	8	0.8	14.1	18.5
2014	6	0.7	12.1	15.1
2015	12	0.9	14.0	15.4
2016	8	1.3	11.1	8.6
2017	11	1.0	10.2	11.2
2018	4	0.8	11.8	14.6
2019	14	1.8	6.3	3.4
2020	12	1.4	9.6	6.5
2021	10	1.3	9.8	7.0
2022	9	1.2	9.1	7.0
2023	9	1.1	11.3	10.4
2024	10	1.0	10.8	10.1
All years	154	1.0	10.3	9.6

Table A1: (continued)

WCSI WC.inside target hoki BT tows. Data for June to September only. No data 2008–2011, 2020, 2022–2024.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	7	3.9	3.6	0.8
1991	3	4.0	3.1	0.8
1992	*	*	*	*
1993	7	3.5	1.9	0.6
1994	8	2.9	3.2	0.8
1995	4	1.5	3.9	2.6
1996	4	2.8	1.4	0.5
1997	4	3.7	8.5	1.9
1998	3	1.3	6.5	4.2
1999	3	0.8	4.8	9.1
2000	6	1.0	4.7	4.2
2001	7	1.6	2.5	1.7
2002	10	2.1	5.8	5.4
2003	8	2.1	3.4	1.2
2004	6	1.8	1.5	0.8
2005	3	2.2	5.7	1.0
2006	*	*	*	*
2007	*	*	*	*
2008	-	-	-	-
2009	-	-	-	-
2010	-	-	-	-
2011	-	-	-	-
2012	4	1.5	4.6	3.9
2013	*	*	*	*
2014	*	*	*	*
2015	3	2.9	7.4	2.6
2016	*	*	*	*
2017	3	2.5	3.8	0.9
2018	*	*	*	*
2019	3	4.6	1.2	0.2
2020	-	-	-	-
2021	*	*	*	*
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
All years	51	2.0	4.0	1.8

Cook Strait target hoki midwater tows. Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	17	1.2	9.1	7.4
1991	21	1.5	8.2	5.0
1992	22	1.2	8.3	6.5
1993	18	1.0	8.5	7.1
1994	28	1.0	12.1	12.1
1995	24	1.0	10.1	12.4
1996	36	0.8	11.7	17.7
1997	34	0.9	10.6	12.7
1998	29	1.0	12.5	12.7
1999	21	1.0	14.1	15.8
2000	21	0.7	12.9	20.9
2001	25	0.8	11.6	14.4
2002	15	1.0	15.9	19.5
2003	20	0.9	13.7	17.8
2004	19	1.0	13.2	15.1
2005	13	1.0	13.7	18.0
2006	11	0.8	15.6	21.7
2007	7	0.9	11.8	15.5
2008	5	0.8	19.8	26.8
2009	7	0.6	10.1	18.2
2010	8	0.8	11.2	15.3
2011	6	0.7	12.3	19.9
2012	9	0.9	11.5	15.1
2013	9	0.7	12.3	17.9
2014	9	0.9	11.2	12.2
2015	9	0.7	15.1	22.0
2016	9	0.7	16.9	26.1
2017	9	0.9	15.1	17.5
2018	7	0.8	17.6	21.7
2019	18	1.0	11.5	9.6
2020	12	0.9	15.8	18.8
2021	11	0.7	16.6	20.6
2022	11	1.1	14.6	11.4
2023	7	1.0	15.0	12.3
2024	7	1.0	23.7	25.9
All years	80	1.0	12.1	13.9

Table A1: (continued)

ECSI target hoki midwater tows. Year defined as July to September. No data 2010

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	3	0.7	5.3	7.7
1991	12	1.5	5.2	2.9
1992	11	1.1	3.9	3.2
1993	8	5.1	4.1	0.8
1994	14	2.3	3.2	1.0
1995	14	1.9	1.2	1.2
1996	15	2.9	5.3	2.0
1997	19	3.2	5.3	1.8
1998	17	2.7	3.6	1.5
1999	13	3.8	2.4	0.7
2000	10	4.0	2.9	0.7
2001	14	2.8	7.0	2.3
2002	9	2.5	13.0	5.7
2003	19	2.2	12.1	4.6
2004	8	3.6	10.2	1.7
2005	6	1.8	17.2	11.2
2006	5	1.4	14.3	7.8
2007	3	1.0	14.3	13.5
2008	*	*	*	*
2009	*	*	*	*
2010	-	-	-	-
2011	4	1.0	14.7	10.8
2012	9	1.5	12.4	6.3
2013	10	2.0	14.2	6.4
2014	10	2.2	17.1	8.5
2015	8	2.5	17.4	7.1
2016	8	2.2	11.8	4.6
2017	8	2.6	18.4	6.5
2018	11	2.8	22.6	6.2
2019	5	1.7	17.5	7.4
2020	9	1.8	16.6	9.3
2021	10	1.0	17.4	15.4
2022	13	1.2	16.1	11.2
2023	12	1.3	11.0	6.3
2024	9	1.5	14.4	7.8
All years	95	2.0	12.0	5.5

ECSI target hoki bottom tows. Year defined as July to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	13	4.5	2.1	0.4
1991	15	4.0	4.1	1.2
1992	20	4.5	3.4	0.8
1993	9	4.0	9.4	2.2
1994	18	4.2	3.2	1.0
1995	26	3.4	4.1	1.2
1996	38	4.0	3.2	0.8
1997	30	3.9	3.2	1.0
1998	24	4.2	4.2	1.0
1999	24	4.0	2.3	0.6
2000	14	4.5	3.5	0.7
2001	20	4.7	3.9	0.8
2002	14	4.2	4.4	1.1
2003	17	4.5	4.1	1.0
2004	15	5.0	5.1	1.0
2005	10	4.7	5.6	1.2
2006	10	4.8	6.1	1.4
2007	11	4.7	6.5	1.3
2008	12	4.7	7.2	1.6
2009	6	4.1	10.3	2.5
2010	12	4.2	7.5	1.7
2011	15	4.0	8.8	2.2
2012	11	3.5	10.1	2.6
2013	10	4.2	10.3	2.4
2014	10	4.8	3.5	0.7
2015	8	4.5	6.2	1.3
2016	8	3.5	3.6	1.1
2017	7	3.2	7.2	2.0
2018	9	4.2	4.8	1.3
2019	13	4.0	13.1	3.0
2020	17	4.5	10.5	2.1
2021	11	4.5	10.3	2.5
2022	15	4.6	7.7	1.8
2023	14	4.0	8.7	2.2
2024	12	3.9	10.9	2.8
All years	112	4.3	5.7	1.3

Table A1: (continued)

Chatham Rise overall target hoki bottom tows. Year defined as Chatham Rise Oct–Sep, and ECSI Oct–Jun.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	30	4.0	4.0	1.0
1991	41	4.0	3.4	0.9
1992	45	3.8	5.7	1.6
1993	37	3.5	5.7	1.6
1994	32	3.1	4.2	1.4
1995	39	3.5	4.1	1.2
1996	54	3.5	3.5	1.1
1997	71	3.5	3.7	1.1
1998	62	4.0	4.2	1.0
1999	46	4.0	4.5	1.1
2000	34	4.1	3.7	0.9
2001	39	4.5	3.5	0.8
2002	31	4.4	3.4	0.8
2003	31	4.8	2.9	0.6
2004	28	4.8	2.9	0.6
2005	21	5.0	4.1	0.8
2006	18	4.8	5.1	1.0
2007	21	4.4	5.8	1.2
2008	22	4.7	6.5	1.4
2009	21	4.2	7.1	1.7
2010	21	4.6	6.9	1.5
2011	22	4.8	7.2	1.5
2012	24	4.8	7.2	1.5
2013	21	4.8	6.7	1.4
2014	18	4.9	6.6	1.4
2015	21	5.0	7.2	1.4
2016	14	4.8	6.8	1.5
2017	16	4.8	7.7	1.6
2018	19	4.7	7.6	1.6
2019	17	4.4	7.9	1.8
2020	18	4.8	7.9	1.6
2021	16	4.6	8.8	1.9
2022	16	4.6	7.6	1.7
2023	17	4.7	7.9	1.7
2024	16	4.7	6.8	1.4
All years	172	4.2	4.9	1.2

Chatham Rise CR.shallow target hoki bottom tows. Year defined as Chatham Rise Oct–Sep, and ECSI Oct–Jun.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	22	3.6	2.6	0.7
1991	34	4.6	1.2	0.3
1992	34	4.2	5.8	1.4
1993	31	4.0	6.7	1.6
1994	26	3.0	2.9	1.1
1995	34	3.5	1.8	0.6
1996	48	3.0	1.8	0.7
1997	58	3.2	2.6	0.9
1998	58	4.0	3.6	1.0
1999	41	4.0	4.8	1.3
2000	31	4.0	4.0	1.0
2001	37	4.3	4.0	0.9
2002	27	4.2	3.8	0.9
2003	29	4.5	3.3	0.8
2004	27	4.4	3.0	0.7
2005	18	4.3	4.6	1.0
2006	16	4.5	6.3	1.5
2007	15	4.0	5.2	1.2
2008	16	3.6	4.4	1.3
2009	18	3.7	4.8	1.3
2010	17	3.5	5.1	1.4
2011	18	5.0	6.8	1.2
2012	20	5.3	5.5	1.0
2013	19	4.4	6.7	1.6
2014	15	3.1	4.6	1.3
2015	19	4.4	6.2	1.4
2016	12	4.2	8.4	2.0
2017	15	4.2	7.7	1.8
2018	16	4.2	7.2	1.6
2019	13	3.7	8.1	2.0
2020	15	3.4	5.6	1.6
2021	12	3.0	6.2	2.1
2022	10	2.9	5.7	1.8
2023	11	3.5	6.1	1.7
2024	13	4.0	7.1	1.7
All years	148	4.0	4.1	1.1

Table A1: (continued)

Chatham Rise CR.deep target hoki bottom tows. Year defined as Chatham Rise Oct–Sep, and ECSI Oct–Jun.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	21	4.0	4.1	1.1
1991	29	4.0	4.1	1.0
1992	36	3.7	5.7	1.6
1993	34	3.5	5.6	1.6
1994	26	3.2	4.2	1.4
1995	33	3.5	4.1	1.2
1996	43	3.5	4.2	1.2
1997	58	3.6	4.2	1.1
1998	54	4.0	4.2	1.0
1999	45	4.0	4.3	1.1
2000	32	4.1	3.6	0.9
2001	35	4.5	3.5	0.8
2002	28	4.5	3.4	0.8
2003	27	4.8	2.7	0.6
2004	27	4.9	2.8	0.6
2005	20	5.0	4.1	0.8
2006	16	5.0	4.9	1.0
2007	19	4.5	5.9	1.2
2008	22	4.8	6.6	1.4
2009	20	4.2	7.5	1.7
2010	21	4.7	7.1	1.5
2011	22	4.8	7.2	1.6
2012	23	4.8	7.2	1.6
2013	21	4.8	6.7	1.4
2014	17	4.9	6.9	1.4
2015	20	5.0	7.3	1.5
2016	14	4.9	6.5	1.4
2017	15	4.8	7.7	1.6
2018	19	4.7	7.7	1.6
2019	16	4.5	7.9	1.7
2020	16	4.8	8.3	1.7
2021	15	4.7	9.1	1.9
2022	15	4.8	7.6	1.7
2023	16	4.8	8.2	1.7
2024	16	4.8	6.7	1.4
All years	158	4.2	5.1	1.2

Sub-Antarctic overall target hoki bottom tows. Year defined as October to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	20	4.0	3.6	0.9
1991	30	4.4	2.8	0.6
1992	33	4.1	4.1	1.0
1993	24	3.8	3.6	0.9
1994	22	4.0	3.2	0.9
1995	25	4.0	4.1	1.0
1996	25	4.0	3.2	0.9
1997	42	4.2	4.6	1.1
1998	35	4.2	4.2	1.0
1999	33	4.2	4.1	1.0
2000	30	4.0	3.9	1.0
2001	31	4.2	3.5	0.8
2002	33	4.2	2.9	0.8
2003	33	4.8	3.0	0.7
2004	26	4.9	3.0	0.6
2005	25	5.1	2.5	0.5
2006	16	4.9	4.1	0.8
2007	20	4.5	2.2	0.5
2008	13	4.8	4.5	0.9
2009	12	4.4	5.1	1.2
2010	12	4.5	6.1	1.3
2011	15	4.5	5.5	1.2
2012	17	4.6	7.6	1.6
2013	16	4.3	6.2	1.5
2014	13	4.5	7.1	1.6
2015	15	4.9	6.2	1.3
2016	9	4.9	5.2	1.1
2017	15	4.8	6.1	1.3
2018	19	5.1	5.1	1.0
2019	14	5.1	6.0	1.2
2020	14	5.0	5.8	1.2
2021	16	5.0	6.2	1.2
2022	14	5.1	6.1	1.2
2023	15	5.0	6.9	1.4
2024	13	5.0	6.8	1.3
All years	114	4.3	4.0	0.9

Table A1: (continued)

Sub-Antarctic SA.snares target hoki bottom tows. Year defined as October to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	19	3.8	5.1	1.3
1991	23	3.8	3.8	1.0
1992	28	3.7	5.0	1.3
1993	22	3.8	4.1	1.1
1994	20	3.8	3.2	1.0
1995	23	4.0	3.6	0.9
1996	21	3.8	3.2	0.9
1997	35	4.1	4.2	1.1
1998	30	4.2	3.9	0.9
1999	32	4.5	4.1	0.9
2000	28	4.5	3.5	0.7
2001	31	4.6	3.0	0.7
2002	33	4.7	2.4	0.6
2003	33	4.7	1.8	0.4
2004	24	4.5	1.5	0.3
2005	17	4.6	1.8	0.4
2006	14	4.8	5.1	0.9
2007	18	4.5	2.6	0.6
2008	11	4.4	5.5	1.2
2009	12	4.3	5.4	1.3
2010	12	4.2	6.1	1.4
2011	14	4.3	4.9	1.1
2012	17	4.4	7.9	1.8
2013	16	4.8	5.7	1.1
2014	13	4.5	5.6	1.2
2015	15	4.9	6.9	1.4
2016	9	4.6	4.6	1.1
2017	14	4.6	6.1	1.3
2018	17	4.8	4.6	0.9
2019	12	4.6	5.5	1.2
2020	13	4.8	5.6	1.1
2021	16	4.5	5.6	1.2
2022	13	5.2	4.6	0.9
2023	14	4.9	5.1	1.0
2024	11	4.9	3.6	0.7
All years	102	4.2	4.1	0.9

Sub-Antarctic SA.auck target hoki bottom tows. Year defined as October to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	8	3.0	3.3	0.7
1991	19	4.2	2.6	0.6
1992	15	4.2	4.2	1.0
1993	16	3.0	2.1	0.7
1994	9	3.9	2.1	0.6
1995	9	4.0	3.2	0.9
1996	14	3.8	3.2	0.9
1997	29	4.0	5.3	1.4
1998	23	4.0	4.7	1.2
1999	21	4.2	4.4	1.0
2000	22	4.0	4.7	1.2
2001	19	4.2	4.0	1.0
2002	21	4.1	2.9	0.8
2003	21	4.6	3.2	0.7
2004	12	4.8	2.6	0.6
2005	10	5.0	2.4	0.5
2006	8	4.5	2.6	0.5
2007	10	4.3	1.8	0.4
2008	6	4.9	3.4	0.7
2009	5	4.5	4.1	0.9
2010	8	4.5	5.2	1.2
2011	7	4.6	6.1	1.2
2012	7	4.6	7.2	1.5
2013	5	4.3	7.4	1.5
2014	7	4.4	6.8	1.4
2015	10	4.8	5.2	1.1
2016	7	4.9	5.0	1.0
2017	10	4.8	4.0	0.8
2018	15	5.2	3.7	0.7
2019	9	5.2	4.7	0.9
2020	10	5.0	5.8	1.2
2021	12	5.0	6.6	1.2
2022	11	5.1	5.1	0.9
2023	11	4.8	7.2	1.5
2024	8	5.0	5.7	1.1
All years	79	4.3	4.0	0.9

Table A1: (continued)

Sub-Antarctic SA.suba target hoki bottom tows. Year defined as October to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	8	4.5	2.1	0.5
1991	14	5.0	2.6	0.5
1992	16	4.5	3.6	0.8
1993	13	4.0	3.9	0.9
1994	8	4.0	4.2	1.0
1995	9	4.2	4.8	1.1
1996	16	4.1	3.2	0.8
1997	22	4.7	4.2	0.9
1998	19	4.3	4.2	1.1
1999	15	2.0	3.4	1.5
2000	23	3.0	3.0	1.2
2001	21	4.0	3.0	0.9
2002	25	4.1	3.4	1.0
2003	21	4.8	3.6	0.8
2004	17	5.0	3.6	0.7
2005	18	5.9	3.0	0.6
2006	6	5.8	5.6	0.9
2007	7	4.1	2.6	0.6
2008	6	5.1	6.0	1.2
2009	4	4.6	6.1	1.3
2010	6	5.2	6.3	1.2
2011	6	4.8	5.7	1.2
2012	7	4.9	7.2	1.5
2013	7	2.2	6.2	3.2
2014	7	4.8	9.2	2.0
2015	10	5.0	6.8	1.4
2016	6	5.0	6.4	1.2
2017	7	5.0	7.6	1.5
2018	11	5.2	6.2	1.2
2019	8	5.6	7.8	1.4
2020	9	5.1	7.4	1.3
2021	13	5.2	6.7	1.2
2022	7	5.0	8.6	1.7
2023	10	5.0	7.2	1.4
2024	11	5.1	8.2	1.6
All years	82	4.5	4.0	0.9

Puysegur target hoki mid-water tows (no data 2009, 2021, 2024). Data for June to September only.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	25	2.5	7.9	3.2
1991	16	2.4	10.2	4.1
1992	10	3.2	7.0	2.0
1993	7	2.0	6.2	2.6
1994	16	2.9	4.2	1.4
1995	14	2.0	3.1	1.8
1996	12	2.5	6.9	3.2
1997	20	3.5	8.7	2.4
1998	4	2.7	8.3	2.4
1999	14	2.9	5.6	1.6
2000	9	4.3	11.8	2.6
2001	21	4.3	11.8	2.4
2002	19	3.5	7.8	2.0
2003	19	2.4	17.3	5.9
2004	*	*	*	*
2005	8	2.1	22.3	10.1
2006	4	2.8	15.1	5.0
2007	*	*	*	*
2008	*	*	*	*
2009	-	-	-	-
2010	*	*	*	*
2011	*	*	*	*
2012	*	*	*	*
2013	*	*	*	*
2014	*	*	*	*
2015	3	2.5	16.4	3.7
2016	3	3.5	6.6	1.6
2017	5	3.2	12.3	3.1
2018	5	3.7	10.2	1.8
2019	7	2.7	6.2	2.1
2020	*	*	*	*
2021	-	-	-	-
2022	3	4.2	7.9	3.0
2023	*	*	*	*
2024	-	-	-	-
All years	101	2.9	8.6	2.9

Table A1: (continued)

Puysegur target hoki bottom tows. Data for June to September only. No data 2011.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	8	3.5	0.7	0.2
1991	20	4.1	4.1	0.9
1992	26	4.2	3.1	0.8
1993	10	4.0	4.1	1.0
1994	14	4.0	2.1	0.4
1995	9	5.0	0.9	0.2
1996	13	3.5	2.4	0.7
1997	17	4.0	2.9	0.8
1998	11	4.2	6.7	1.5
1999	16	4.3	4.0	0.9
2000	14	4.1	4.6	1.1
2001	20	4.2	3.0	0.7
2002	12	3.7	7.8	2.1
2003	13	4.5	3.0	0.7
2004	4	3.3	5.1	1.3
2005	8	3.2	2.2	0.9
2006	6	3.5	6.7	2.2
2007	*	*	*	*
2008	*	*	*	*
2009	*	*	*	*
2010	*	*	*	*
2011	-	-	-	-
2012	*	*	*	*
2013	4	3.8	11.8	3.0
2014	3	3.5	4.1	1.1
2015	4	3.2	16.0	4.5
2016	4	3.3	10.3	2.9
2017	4	3.9	11.7	3.3
2018	6	3.5	7.2	1.9
2019	6	3.3	7.3	1.4
2020	*	*	*	*
2021	3	2.9	12.5	3.5
2022	4	4.2	1.6	0.4
2023	*	*	*	*
2024	*	*	*	*
All years	76	4.0	3.9	1.0

ECNI target hoki mid-water tows. No data for 2008–2014 or 2020–2021. Year defined as October to September.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	*	*	*	*
1991	7	2.0	0.8	0.3
1992	4	1.2	1.3	0.9
1993	*	*	*	*
1994	*	*	*	*
1995	3	1.3	1.9	1.2
1996	5	1.5	1.0	0.4
1997	5	1.3	2.1	1.4
1998	5	2.2	2.1	0.8
1999	*	*	*	*
2000	*	*	*	*
2001	3	2.2	0.8	0.4
2002	*	*	*	*
2003	*	*	*	*
2004	*	*	*	*
2005	*	*	*	*
2006	*	*	*	*
2007	*	*	*	*
2008	-	-	-	-
2009	-	-	-	-
2010	-	-	-	-
2011	-	-	-	-
2012	-	-	-	-
2013	-	-	-	-
2014	-	-	-	-
2015	*	*	*	*
2016	*	*	*	*
2017	*	*	*	*
2018	3	2.4	0.2	0.1
2019	*	*	*	*
2020	-	-	-	-
2021	-	-	-	-
2022	*	*	*	*
2023	*	*	*	*
2024	*	*	*	*
All years	29	1.5	2.1	1.2

Table A1: (continued)

ECNI target hoki bottom tows. No data for 1990, 1992 or 2017. Year defined as October to September. *, data for less than 3 vessels not shown.

Fishing year	Number of vessels	Median tow duration (h)	Median hoki catch per tow (t)	Median hoki catch per hour (t/h)
1990	-	-	-	-
1991	*	*	*	*
1992	-	-	-	-
1993	3	4.9	0.3	0.1
1994	4	1.7	4.9	3.3
1995	5	4.3	0.3	0.1
1996	11	2.8	0.2	0.1
1997	18	3.0	0.2	0.1
1998	16	4.5	0.2	0.0
1999	9	4.3	0.3	0.0
2000	7	2.6	0.3	0.1
2001	6	3.0	0.6	0.2
2002	5	2.4	0.1	0.0
2003	5	8.5	0.3	0.0
2004	9	5.0	0.2	0.0
2005	*	*	*	*
2006	4	3.8	0.1	0.0
2007	4	3.8	0.3	0.1
2008	*	*	*	*
2009	*	*	*	*
2010	*	*	*	*
2011	5	3.7	0.4	0.1
2012	3	4.0	0.5	0.1
2013	*	*	*	*
2014	*	*	*	*
2015	3	5.0	0.4	0.1
2016	3	5.3	0.4	0.1
2017	-	-	-	-
2018	*	*	*	*
2019	7	5.0	0.3	0.1
2020	8	4.3	0.3	0.1
2021	4	5.0	0.2	0.0
2022	5	5.4	0.3	0.1
2023	4	4.0	0.4	0.1
2024	4	5.2	0.4	0.1
All years	61	4.2	0.3	0.1

Table A2: Lognormal CPUE standardised indices (with 95% confidence intervals). All models are target hoki tow-by-tow data. The dependent variable was the log-transformed estimated catch-per-tow.

Year	Chatham Rise		Cook Strait		Sub-Antarctic		WCSI	
	Index	CI	Index	CI	Index	CI	Index	CI
1990	0.69	(0.64–0.75)	1.20	(1.11–1.29)	1.04	(0.96–1.13)	–	–
1991	0.89	(0.85–0.93)	0.96	(0.91–1.01)	0.60	(0.56–0.64)	1.02	(0.97–1.07)
1992	1.06	(1.02–1.10)	1.10	(1.04–1.17)	0.84	(0.80–0.88)	1.18	(1.12–1.24)
1993	0.98	(0.95–1.01)	1.05	(0.98–1.11)	0.78	(0.74–0.81)	1.05	(1.01–1.09)
1994	0.79	(0.76–0.82)	1.27	(1.20–1.34)	0.87	(0.82–0.92)	0.96	(0.93–0.99)
1995	0.85	(0.82–0.87)	1.25	(1.18–1.32)	0.89	(0.84–0.94)	0.67	(0.65–0.70)
1996	0.95	(0.92–0.98)	1.11	(1.06–1.16)	0.80	(0.75–0.84)	0.76	(0.74–0.79)
1997	0.90	(0.88–0.92)	0.90	(0.86–0.93)	1.04	(0.99–1.09)	0.76	(0.74–0.78)
1998	0.83	(0.82–0.85)	0.96	(0.92–1.00)	0.90	(0.87–0.93)	0.94	(0.91–0.96)
1999	0.85	(0.84–0.87)	0.92	(0.88–0.96)	0.90	(0.87–0.94)	0.97	(0.95–1.00)
2000	0.73	(0.72–0.75)	0.92	(0.87–0.96)	0.84	(0.81–0.87)	1.12	(1.09–1.15)
2001	0.68	(0.67–0.70)	0.80	(0.76–0.84)	0.76	(0.73–0.78)	0.79	(0.77–0.81)
2002	0.67	(0.66–0.69)	1.19	(1.11–1.27)	0.73	(0.70–0.75)	0.80	(0.78–0.82)
2003	0.53	(0.52–0.54)	1.02	(0.96–1.07)	0.70	(0.68–0.73)	0.59	(0.57–0.60)
2004	0.52	(0.51–0.54)	0.94	(0.89–0.99)	0.52	(0.50–0.55)	0.38	(0.37–0.39)
2005	0.70	(0.68–0.73)	0.81	(0.76–0.86)	0.54	(0.51–0.57)	0.45	(0.44–0.47)
2006	0.92	(0.90–0.95)	0.95	(0.89–1.01)	0.75	(0.69–0.82)	0.77	(0.73–0.80)
2007	0.97	(0.93–1.00)	0.70	(0.66–0.75)	0.64	(0.60–0.69)	1.18	(1.12–1.24)
2008	1.22	(1.18–1.26)	0.83	(0.78–0.88)	1.12	(1.04–1.21)	0.98	(0.93–1.04)
2009	1.36	(1.32–1.41)	0.79	(0.74–0.84)	1.29	(1.20–1.39)	1.37	(1.29–1.46)
2010	1.22	(1.18–1.26)	0.94	(0.88–1.00)	1.44	(1.35–1.53)	1.33	(1.27–1.39)
2011	1.33	(1.28–1.37)	1.08	(1.00–1.16)	1.36	(1.28–1.44)	1.38	(1.33–1.44)
2012	1.34	(1.30–1.38)	0.91	(0.85–0.97)	1.77	(1.66–1.88)	1.63	(1.57–1.69)
2013	1.26	(1.22–1.30)	0.87	(0.81–0.93)	1.42	(1.34–1.50)	1.67	(1.61–1.74)
2014	1.30	(1.26–1.35)	0.92	(0.87–0.99)	1.53	(1.46–1.61)	1.62	(1.56–1.67)
2015	1.31	(1.27–1.35)	1.01	(0.94–1.07)	1.44	(1.36–1.52)	1.64	(1.59–1.70)
2016	1.16	(1.13–1.20)	1.09	(1.01–1.16)	1.02	(0.94–1.10)	1.31	(1.27–1.35)
2017	1.36	(1.31–1.40)	1.13	(1.05–1.21)	1.17	(1.10–1.24)	1.24	(1.21–1.29)
2018	1.28	(1.23–1.32)	1.02	(0.96–1.09)	1.12	(1.06–1.18)	1.04	(1.01–1.08)
2019	1.30	(1.25–1.34)	1.06	(0.99–1.13)	1.35	(1.25–1.45)	0.97	(0.94–1.01)
2020	1.30	(1.25–1.35)	1.21	(1.12–1.31)	1.41	(1.30–1.52)	1.12	(1.08–1.16)
2021	1.42	(1.37–1.47)	1.17	(1.07–1.29)	1.18	(1.10–1.27)	1.22	(1.17–1.27)
2022	1.21	(1.17–1.25)	0.95	(0.87–1.05)	1.23	(1.13–1.35)	0.86	(0.83–0.90)
2023	1.32	(1.27–1.36)	0.84	(0.77–0.92)	1.42	(1.33–1.52)	0.95	(0.91–1.00)
2024	1.12	(1.09–1.16)	1.67	(1.51–1.85)	1.33	(1.22–1.46)	1.09	(1.04–1.14)

Year	ECSI	
	Index	CI
2000	0.64	(0.57–0.72)
2001	0.68	(0.62–0.75)
2002	0.85	(0.77–0.95)
2003	0.68	(0.62–0.73)
2004	0.63	(0.58–0.69)
2005	0.95	(0.85–1.06)
2006	0.73	(0.62–0.86)
2007	1.00	(0.89–1.12)
2008	0.98	(0.89–1.07)
2009	1.01	(0.89–1.14)
2010	0.79	(0.66–0.95)
2011	1.01	(0.85–1.19)
2012	1.18	(1.05–1.33)
2013	1.39	(1.24–1.55)
2014	0.98	(0.86–1.12)
2015	1.48	(1.29–1.69)
2016	0.87	(0.77–0.99)
2017	1.21	(1.08–1.36)
2018	1.12	(0.97–1.28)
2019	1.26	(1.14–1.39)
2020	1.47	(1.35–1.61)
2021	1.36	(1.26–1.48)
2022	1.14	(1.05–1.23)
2023	1.13	(1.06–1.22)
2024	1.26	(1.18–1.35)

APPENDIX B: Species codes referred to in this document

Code	Common name	Scientific name
BAR	Barracouta	<i>Thyrsites atun</i>
CDL	Cardinalfish	Apogonidae
CSQ	Leafscale gulper shark	<i>Centrophorus squamosus</i>
FRO	Frostfish	<i>Lepidopus caudatus</i>
GSP	Pale ghost shark	<i>Hydrolagus bemisi</i>
HAK	Hake	<i>Merluccius australis</i>
HOK	Hoki	<i>Macruronus novaezelandiae</i>
JAV	Javelinfinch	<i>Lepidorhynchus denticulatus</i>
JMA	Jack mackerels	<i>Trachurus declivis</i> , <i>T. novaezelandiae</i> , <i>T. murphyi</i>
LIN	Ling	<i>Genypterus blacodes</i>
LDO	Lookdown dory	<i>Cyttus traversi</i>
MOK	Moki	<i>Latridopsis ciliaris</i>
ORH	Orange roughy	<i>Hoplostethus atlanticus</i>
RAT	Rattails	Macrouridae
RCO	Red cod	<i>Pseudophycis bachus</i>
SBW	Southern blue whiting	<i>Micromesistius australis</i>
SCH	School shark	<i>Galeorhinus galeus</i>
SCI	Scampi	<i>Metanephrops challengeri</i>
SKI/RSO	Gemfish	<i>Rexea solandri</i> , <i>R. antefurcata</i>
SND	Shovelnose dogfish	<i>Deania calcea</i>
SPD	Spiny dogfish	<i>Squalus acanthias</i>
SQU	Arrow squid	<i>Nototodarus gouldi</i> , <i>N. sloanii</i>
SWA	Silver warehou	<i>Seriotelella punctata</i>
TAR/NMP	Tarakihi	<i>Nemadactylus macropterus</i> , <i>Nemadactylus</i> sp.
WWA	White warehou	<i>Seriotelella caerulea</i>