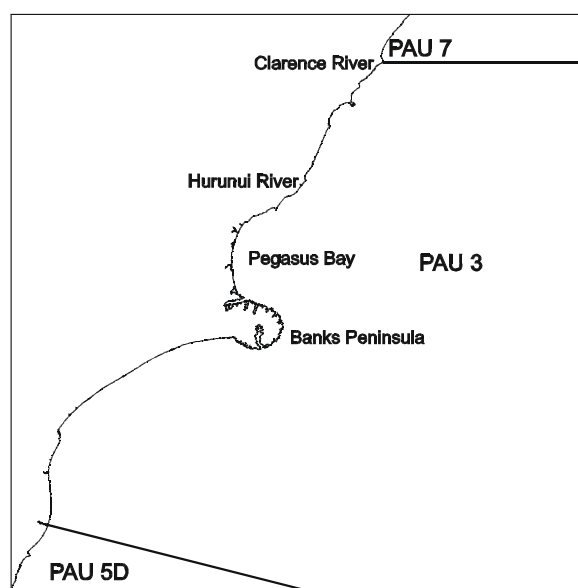


PAUA (PAU 3) – Canterbury / Kaikoura

(Haliotis iris)

Paua



1. FISHERY SUMMARY

1.1 Commercial fisheries

PAU 3 was introduced into the Quota Management System in 1986–87 with a TACC of 57 t. The TACC has since increased to 91.62 t in 1995 as a result of the appeal process. The fishing year runs from 1 October through 30 September. In what follows, the fishing year is referred to using the second part, *viz* 2002–03 is termed “2003”. Most of the commercial catch comes from the northern part of the QMA between the northern end of Pegasus Bay and the Clarence River, and from the southern side of Banks Peninsula.

Table 1: TACC and reported landings (t) of paua in PAU 3 from 1995–96 to 2008-09.

Year	Landings	TACC
1995–96	92.89	91.62
1996–97	89.65	91.62
1997–98	93.88	91.62
1998–99	92.54	91.62
1999–00	90.3	91.62
2000–01	93.19	91.62
2001–02	89.66	91.62
2002–03	90.92	91.62
2003–04	91.58	91.62
2004–05	91.43	91.62
2005–06	91.6	91.62
2006–07	91.61	91.62
2007–08	91.67	91.62
2008–09	90.84	91.62

In recent years the commercial paua fishery has implemented a number of voluntary management actions in most QMAs. Agreement to these actions has been formalised within each QMA through the development of an Annual Operational Plan (AOP) that is agreed to and signed by all quota and ACE holders within the fishery. The plan explains the voluntary management actions that will be undertaken for the fishing year. The main actions of the AOP for PAU 3 for the 2009-10 fishing year are outlined below (Table 2).

PAUA (PAU 3)

Table 2: Summary of AOP for PAU 3 for the 2009-10 fishing year

Management Zones (fig 1)	3A	3B	3D	3E
Harvest Caps	34,000kgs	14,000kgs	23,500kgs	20,000kgs plus (no limit on catch)
Min harvest size	130mm	127mm	125mm (except Motonau Island (P319 where the MHS is 127mm))	125mm
Voluntary closures		Subzone 3B was closed to commercial paua harvesting for October and November 2009.		
Data Collection – CATCH SAMPLING		Each fishing operation is asked to collect a minimum of 2 samples (“red bag” sample kits will be supplied) during the course of their fishing year.		
Data Collection – DATA LOGGERS		All Dive Teams will have one diver who carries & uses a data logger		
General Operating Procedures		Details on procedures are available in the AOP.		

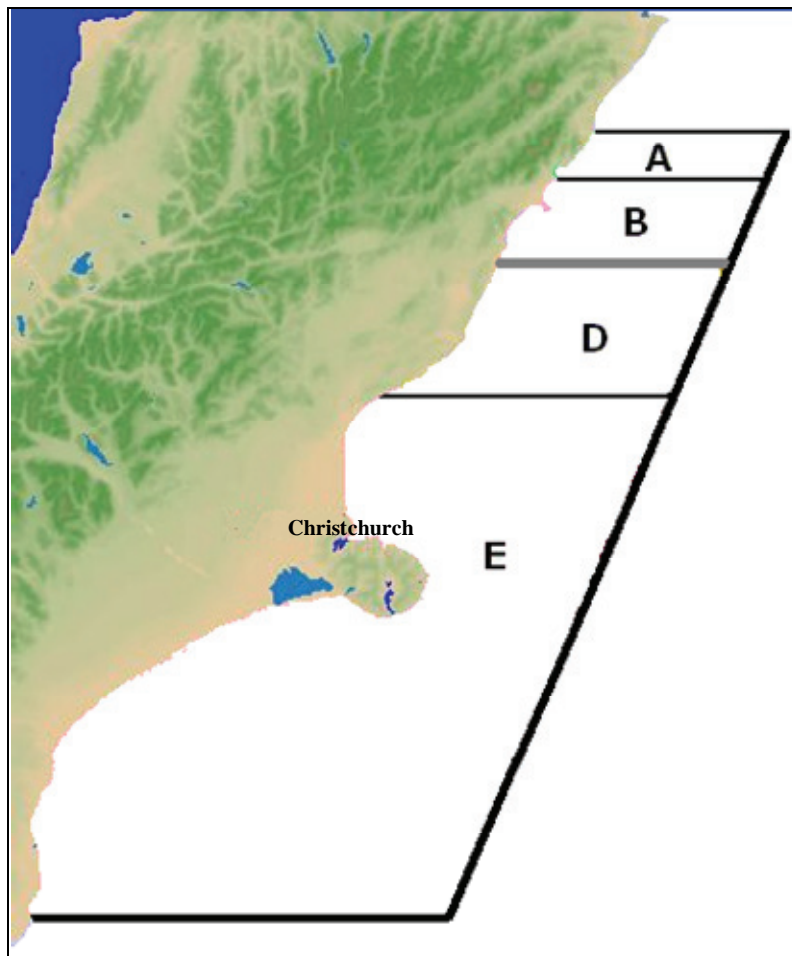


Figure 1: Voluntary management zones for the PAU 3 commercial fishery

1.2 Recreational fisheries

Refer to the Paua introduction Working Group Report

1.3 Customary non-commercial fisheries

Estimates of customary catch for PAU 3 over the period of their reliable availability are shown in Table 3. Landings do not include the area between the Hurunui River and the South Shore (just north of Banks Peninsula), as Tangata Tiaki have not yet been appointed there. Many tangata whenua also harvest paua under their recreational allowance and these are not included in records of customary catch.

Table 3: Reported customary landings (t) of paua in PAU 3 from 2000–01 to 2008–09. Landings data exclude the area between the Hurunui and Pegasus Bay.

Year	Landings (t)
2000/01	1.64
2001/02	4.88
2002/03	3.84
2005/06	1.89
2006/07	4.56
2007/08	5.79
2008/09	8.13

1.4 Illegal catch

There are no estimates of illegal catch for PAU 3.

1.5 Other sources of mortality

Refer to the Paua introduction Working Group Report

2. BIOLOGY

Refer to the Paua introduction Working Group Report

A summary of published estimates of biological parameters for PAU 3 is presented in Table 3.

Table 3: Estimates of biological parameters (*H. iris*) in PAU 3.

	Estimate	Source
1. Natural mortality (<i>M</i>)		
Peraki Bay	0.02–0.25	Sainsbury (1982)
2. von Bertalanffy Growth parameters		
Peraki Bay	$L_{\infty} = 131.9$ $K = 0.164$	Sainsbury (1982)
Kaikoura	$L_{\infty} = 146.2$ $K = 0.31$	Poore (1972)
3. Size at maturity (shell length)		
50% mature (Banks Peninsula)	75.5 mm	Naylor & Andrew (2000)
4. Fecundity = a (length) ^b (eggs, shell length in mm)		
	$a = 7.75 \times 10^{-4}$ $b = 4.64$	Banks Peninsula
Fecundity = 0.17 (weight) – 1.528 (eggs $\times 10^{-6}$, gms)		Kaikoura Naylor & Andrew (2000) Poore (1973)

3. STOCKS AND AREAS

The present Fishstock boundaries may not represent a single discrete paua stock for PAU 3.

4. STOCK ASSESSMENT

A standardised CPUE index based on commercial catch was constructed covering the 1990 to 2007 fishing years (McKenzie et al. 2009). The index was based CELR data for 1990 to 2001, and PCELR data collapsed into CELR format for 2002 to 2007, with units of kg per diver day. The index shows a decline from 1990 to 1992, but has remained fairly stable since. (Table 4, Figure 2).

PAUA (PAU 3)

Table 4: The standardised CPUE for PAU 3 1990–2007.

Fishing year	Number of records	Standardised CPUE	cv
1990	227	153	0.14
1991	252	111	0.12
1992	263	97	0.11
1993	238	120	0.11
1994	260	105	0.11
1995	293	100	0.11
1996	225	104	0.11
1997	219	113	0.11
1998	235	112	0.11
1999	187	127	0.11
2000	210	116	0.10
2001	294	107	0.10
2002	283	113	0.10
2003	276	102	0.10
2004	266	115	0.10
2005	267	105	0.10
2006	242	127	0.10
2007	244	108	0.10

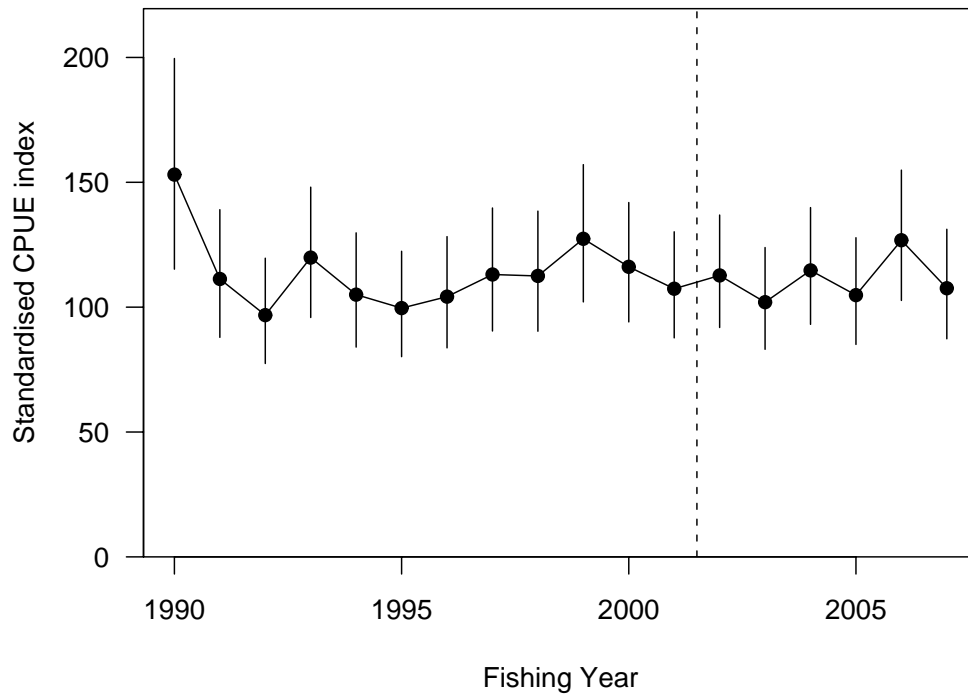


Figure 2: Standardised CPUE index for PAU 3 1990–2007 with 95% confidence intervals. The vertical line delineates between CELR and PCELR data.

5. STATUS OF THE STOCKS

Stock Structure Assumptions

Stock boundaries are unknown but for the purpose of this summary PAU 3 is considered to be a single management unit.

PAU 3

Stock Status	
Year of Most Recent Assessment	No stock assessment has been undertaken for this stock
Assessment Runs Presented	–

Reference Points	Target(s): Not established. Soft Limit: Not established Hard Limit: Not established
Status in relation to Target	Unknown
Status in relation to Limits	Unknown
Historical Stock Status Trajectory and Current Status	
Standardised CPUE index for PAU 3 1990–2007 with 95% confidence intervals. The vertical line delineates between CELR and PCELR data.	

Fishery and Stock Trends	
Recent Trend in Biomass or Proxy	–
Recent Trend in Fishing Mortality or proxy	–
Other Abundance Indices	Standardised CPUE decreased between 1990 and 1992 and has since remained fairly stable up to 2007.
Trends in Other Relevant Indicators or Variables	–

Projections and Prognosis	
Stock Projections or Prognosis	No stock assessment has been undertaken for this stock.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unknown

Assessment Methodology	
Assessment Type	N/A
Assessment Method	N/A
Main data inputs	N/A
Period of Assessment	Latest assessment: N/A Next assessment: N/A
Changes to Model Structure and Assumptions	N/A
Major Sources of Uncertainty	N/A

Qualifying Comments	
CPUE is not generally considered to be a reliable indicator of the status of abalone stocks and may not reflect abundance.	

Fishery Interactions

There are no bycatch species in this dive fishery.

6. FOR FURTHER INFORMATION

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