INTERNAL REPORT

TASMANIAN ABALONE FISHERY CATCH AND EFFORT DATA SUMMARY: 2006

Abalone Research Group,
Tasmanian Aquaculture and Fisheries Institute

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Contents

1. Interpreting trends in catch and catch rate.

There are two fundamental problems associated with the use and interpretation of long-term catch and effort data from the Tasmanian abalone fishery. The first stems from errors and omissions of reported catch and effort in earlier versions of the catch reporting system, and the second from improved efficiency by divers in the way they catch and handle abalone. These two problems can present a misleading picture of the status of abalone stocks when changes in catch and catch rates are used to infer changes in abundance, both by skewing the magnitude of trends and preventing accurate summaries.

Catch reporting

Since the early 1960's, several different catch reporting systems have been used by the Tasmanian government and none of these have been specifically designed to produce accurate catch and effort information. Until 1985, abalone catches and effort were reported at the end of each month by the vessel skipper (who may not have been a diver). The monthly catch totals were often rough estimates and not prepared from daily records. Consequently, up to 1985, catch and effort data cannot be considered as an accurate record of fishing activity, and are indicative only, of fishing activity.

A new reporting system was introduced in 1985, with catch dockets completed by the diver for each landing. This greatly improved the reliability of catch reporting, but effort remained imprecisely reported, and there was often confusion out the reported location of catches. In 1992, a quota-compliance database was introduced. However, there were no provisions for summarising catch and effort by block, and only estimated (not actual) catches and effort could be reported. The nature of the database meant that many of the fishing details were duplicated, and administrative policies meant that approximately 10% of the catches from 1992-93 were not properly recorded.

The current database was introduced in 1998. Like its predecessor, it is a compliance database with minimal provision for obtaining catch and effort information by block. However, the integrity of data collected is high, with DPIW staff following up errors and omissions on catch dockets. Many divers have started reporting effort according to time logged on their dive computers, and the finer detail of block boundary maps introduced in 2000 has meant that catch and effort are now reported more accurately than at any previous stage of the fishery.

Changes in fishing efficiency

A feature common to many commercial fisheries is that fishers usually try to make their operations more efficient (*i.e.* catch more fish per unit of effort), and the abalone fishery is no exception. Early in the history of the Tasmanian abalone fishery, divers anchored their boats, and often worked without a deckhand. Later, during the 1970's, the boats carried a deckhand who drove the boat and followed the diver, thus eliminating time spent swimming the catch from the reef to the anchored boat. A large increase in efficiency occurred during the late 1980's when divers adopted the practise of attaching their nets to ropes periodically lowered to them by their deckhands, and they no longer had to surface to the boat every time the net was full. Diving efficiency again increased substantially during the 1990's, when increased capitalisation of the

fishery and the transition of divers from quota-owners to contractors working on small margins drove the need for greater levels of efficiency to make fishing profitable. More recent improvements in efficiency stem from the increased use of GPS navigation systems, improved weather forecasting and the use of Nitrox gas mixing plants. This increase in efficiency is often termed effort creep and it implies that one unit of effort now is more effective than one unit of effort in the past.

In 1983, it was estimated that the catching efficiency of divers doubled between the start of the fishery in the 1960's and 1982. This means that for the same catch rate, there would have been more abalone available in the 1960's than there would have been in the 1980's. A more recent study into the effects of improvements in efficiency on abalone catch rates was made using catch-effort data collected between 1975 and 2000. Extrapolation of the 1983 estimate of effort creep (approximately 5% p.a.) caused an overall reduction in relative catch rates over the study period *i.e.* by removing the confounding effect caused by improvements in diver efficiency, effective catch rates were higher in 1975 than they were in 2000.

The increase in fishing efficiency means that if stock levels are unchanged, more abalone can now be collected per unit of time than in the past because of improved efficiency *i.e.* catchability increases. An increase in reported catch rates through time can not therefore be used to infer an associated increase in abalone abundance. Alternatively, effort creep can lead to catch rates appearing to remain stable while in fact stock abundance is declining.

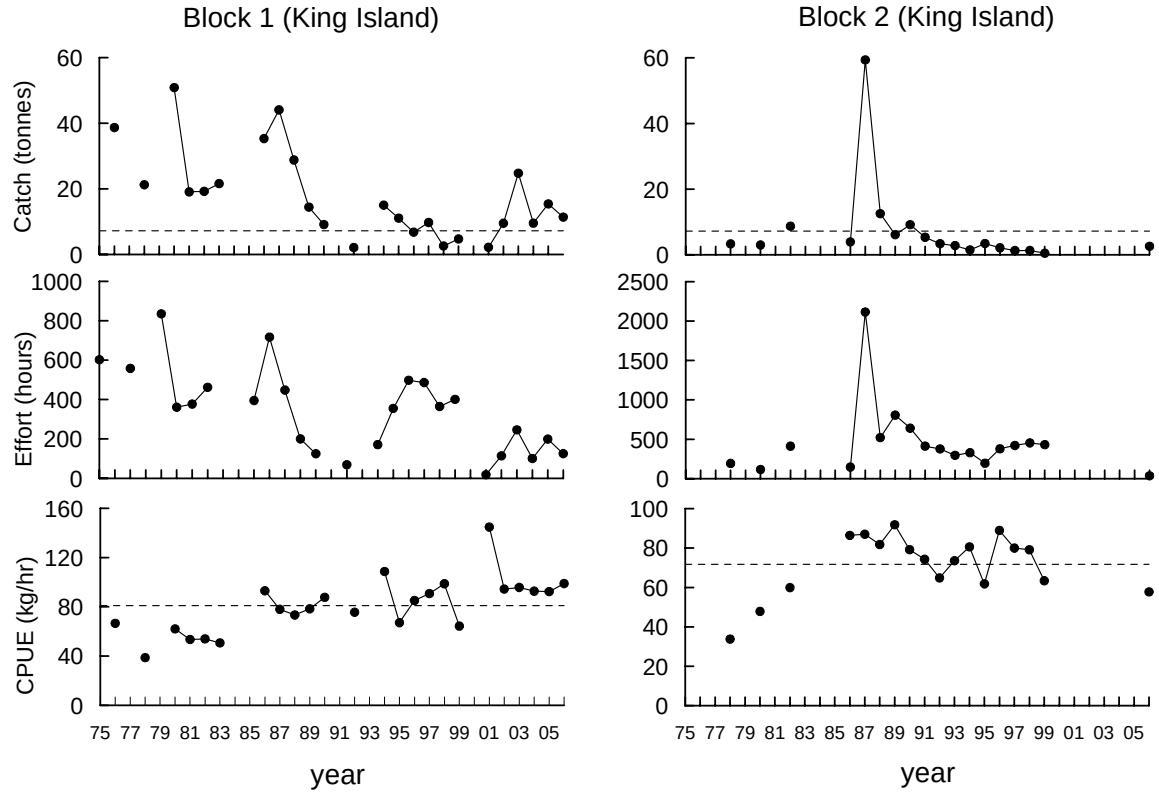
Reporting of catch and effort in this document

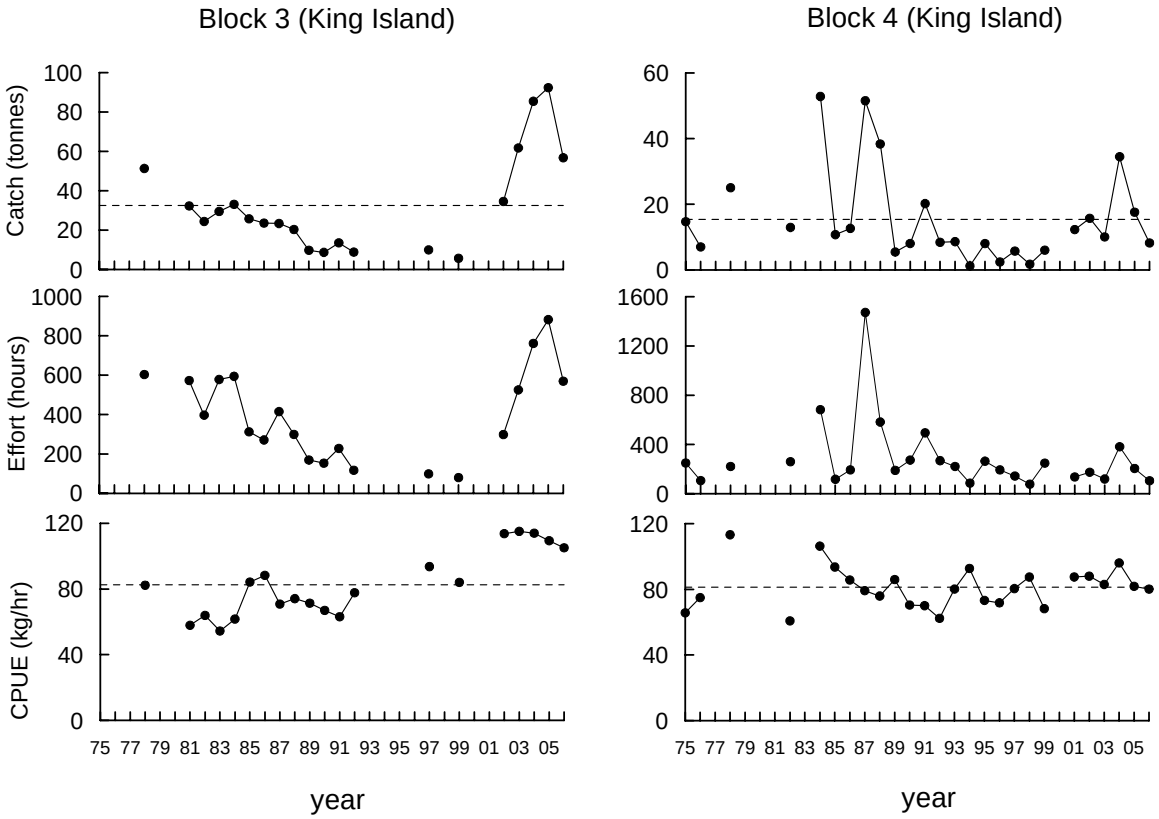
In accordance with DPIW's requirements that divers' catch and catch rates remain confidential, catch and catch rates are not shown where five or less divers have landed catch from a block or sub-block.

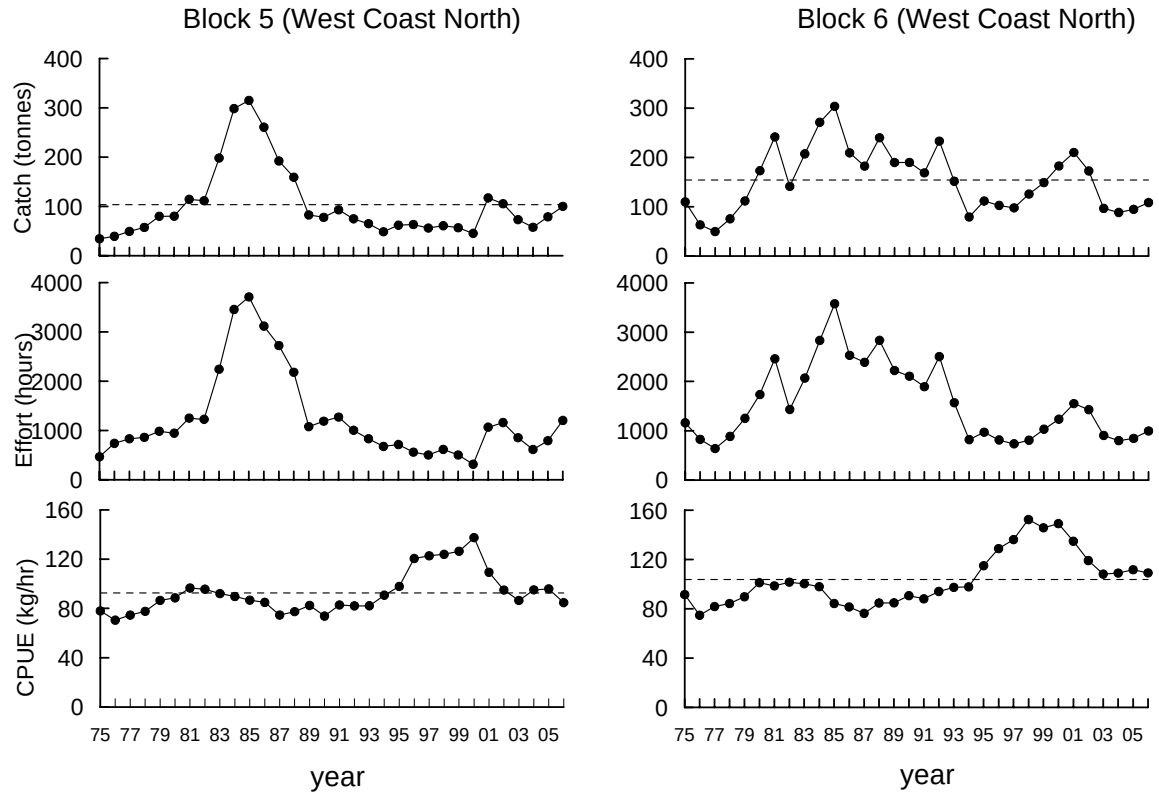
Mean catch and catch rates are indicated by a horizontal dashed line in the figures of blacklip and greenlip catch, effort and catch rate (Sections 2 and 3).

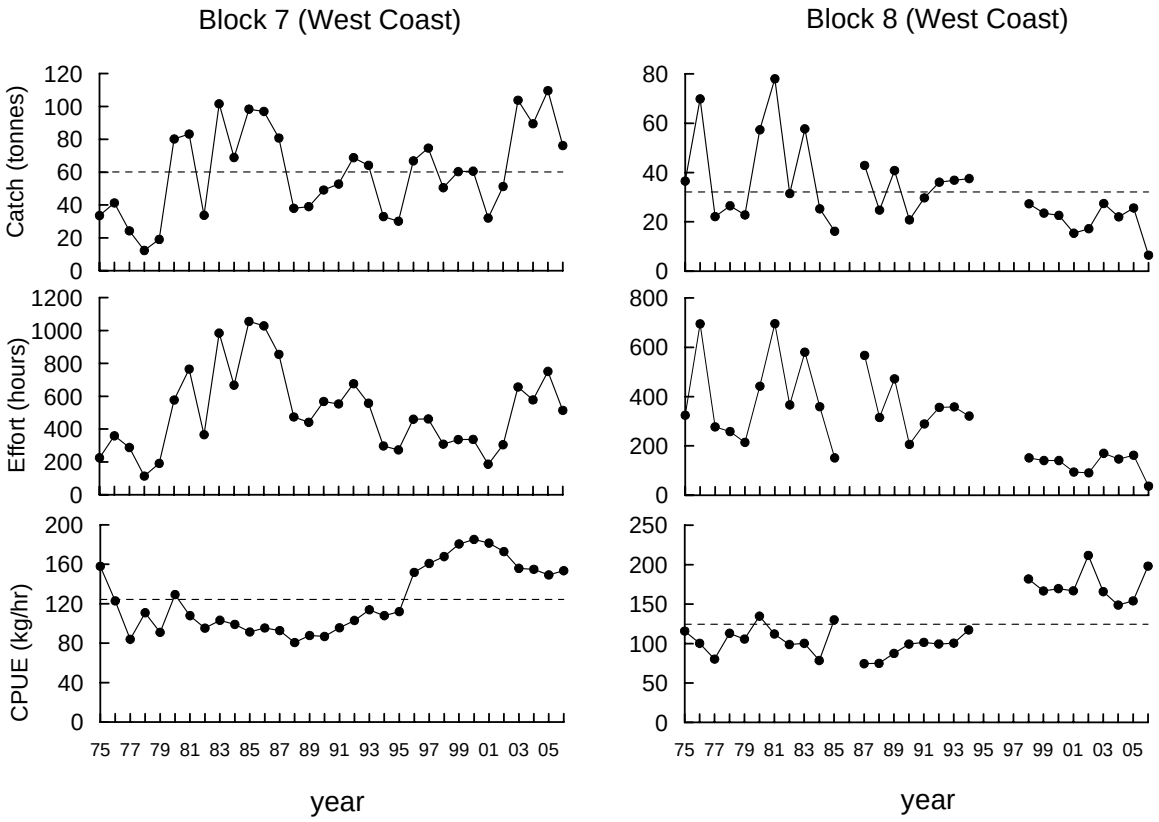
Annual catch totals and average catch rates for the fisheries for stunted blacklip abalone in Bass Strait are shown in the blacklip catch and catch rate tables. These figures are shown in italics, and have been omitted from the calculations of mean catch and catch rates for each block because of the special rules under which these fisheries operated (e.g. pulse fishery, different size limits, access to the fishery).

2. Blacklip: Blocks 1 – 57






Block 5 (West Coast North)
Block 6 (West Coast North)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
0
100
200
300
400
1000
2000
3000
4000
40
80
120
160
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year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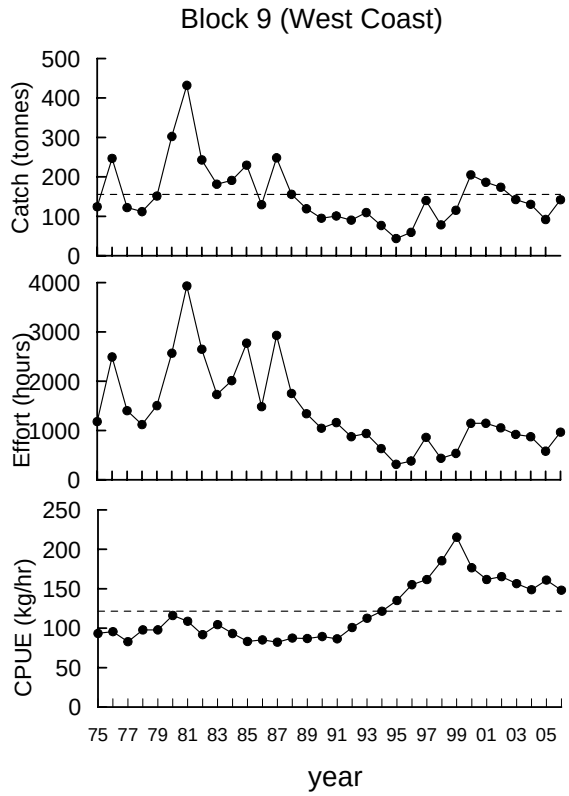
Block 8 (West Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
0
20
40
60
80
100
120
200
400
600
800
1000
1200
50
100
150
200
250
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 9 (West Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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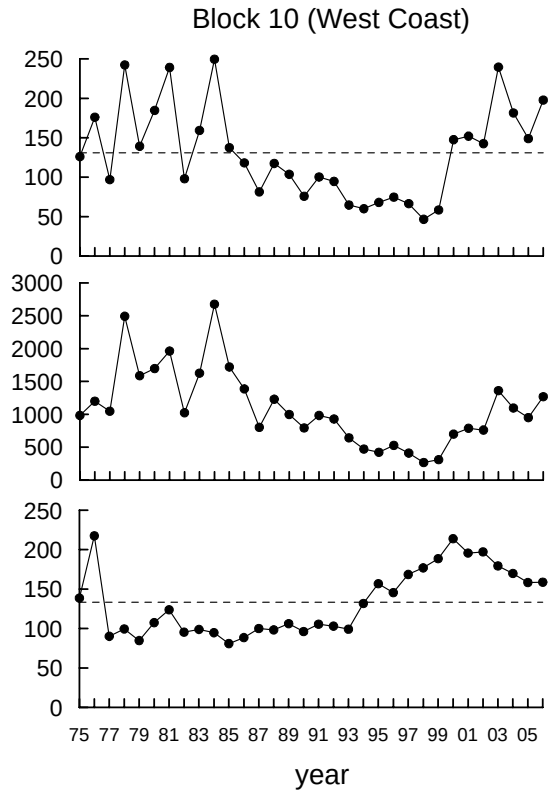
Block 10 (West Coast)
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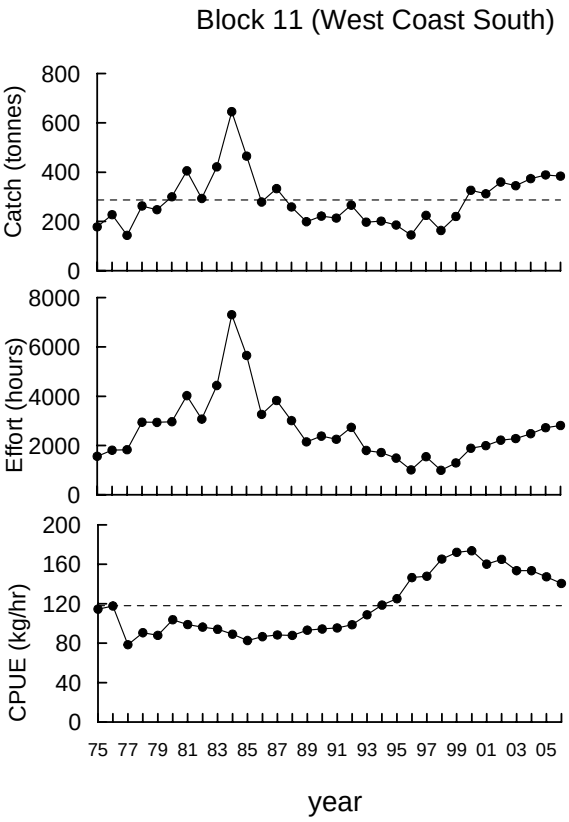
Block 11 (West Coast South)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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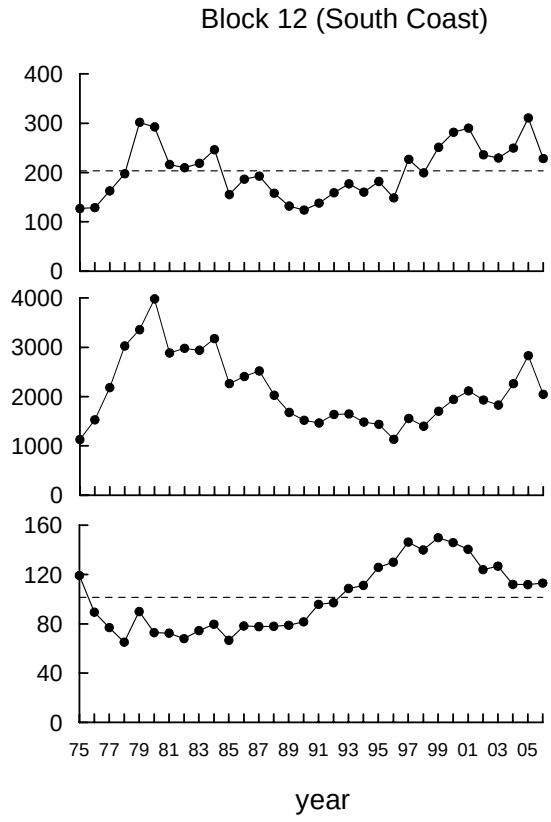
year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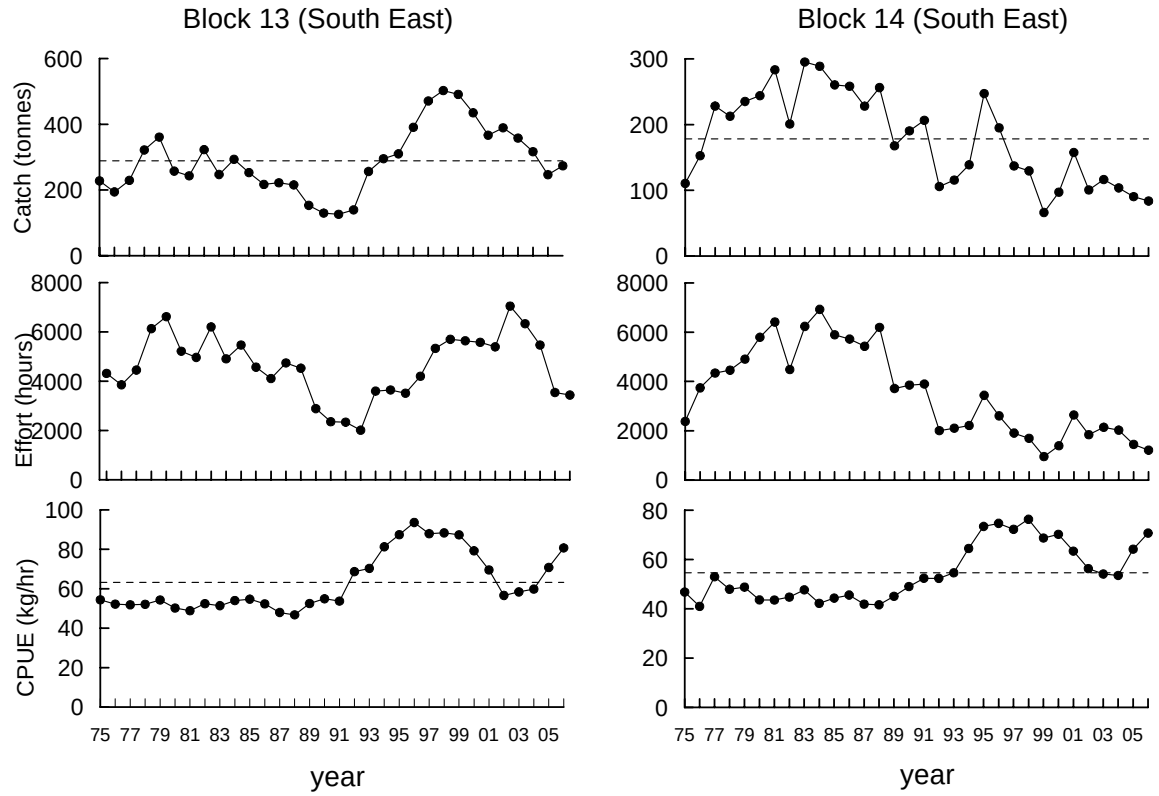
Block 13 (South East)
Block 14 (South East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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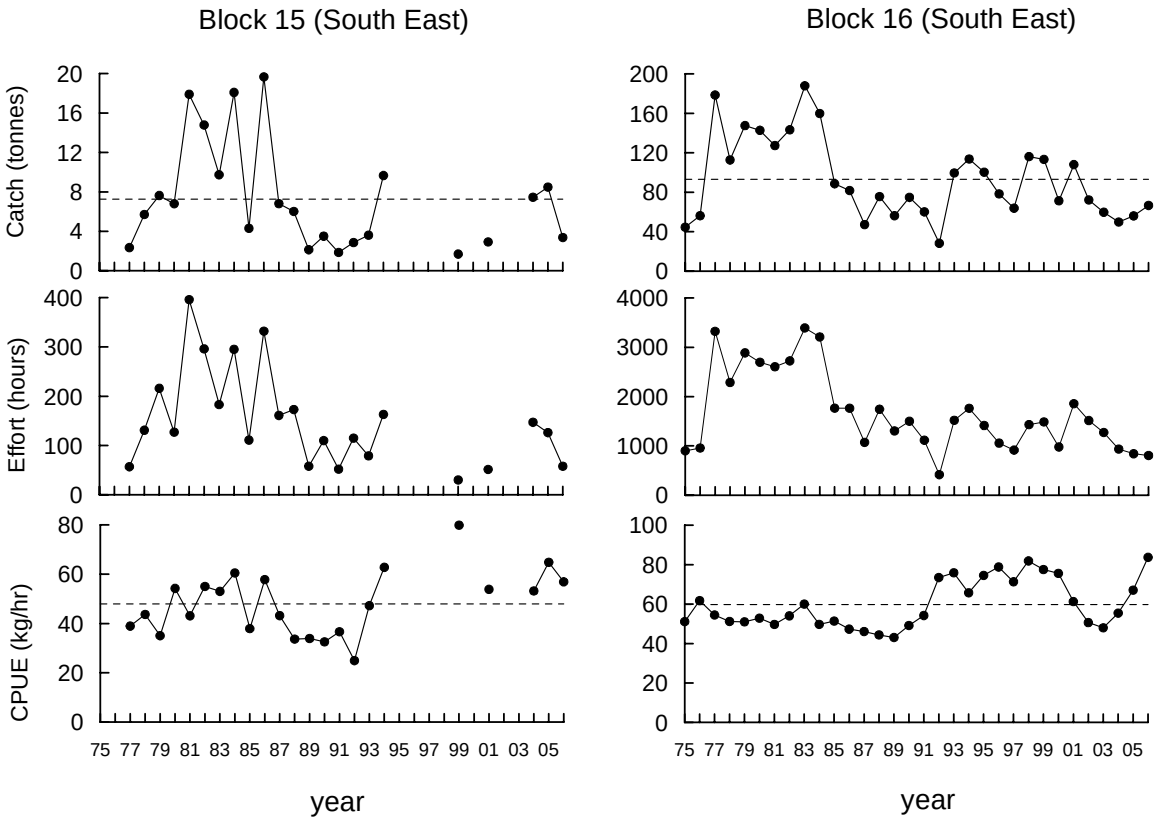
year


Block 15 (South East)
Block 16 (South East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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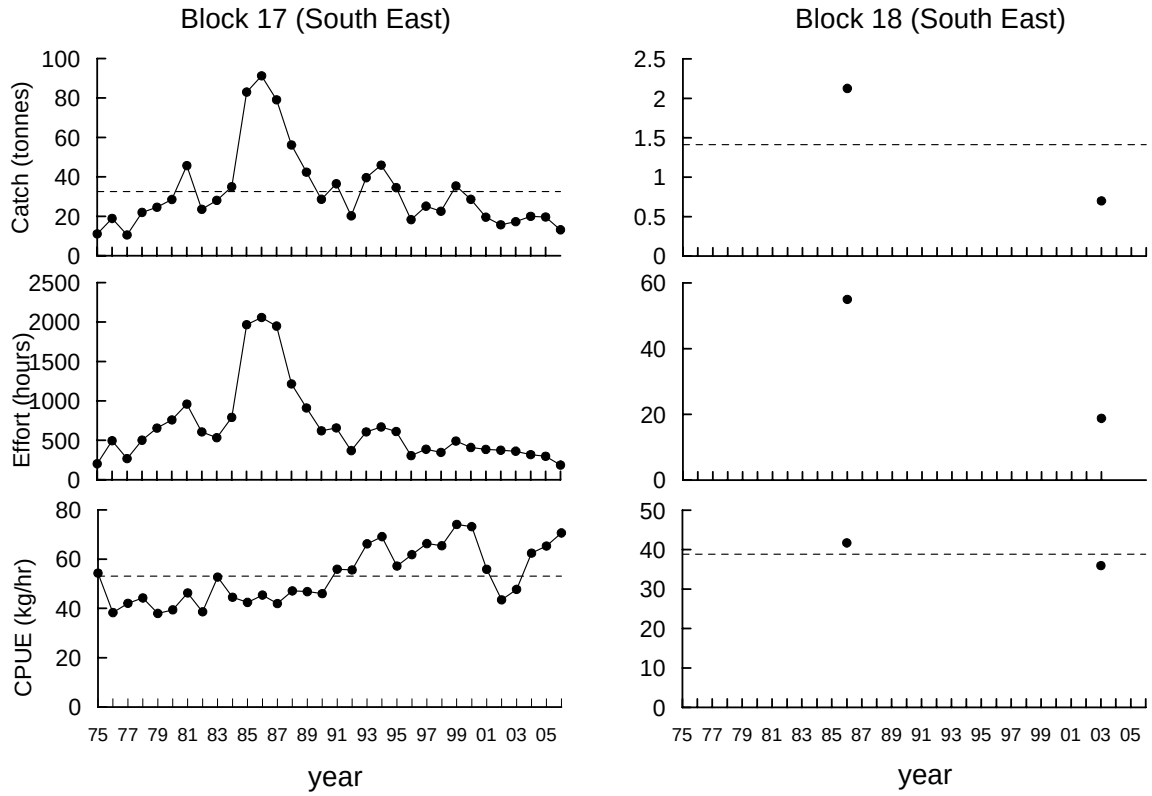
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Block 18 (South East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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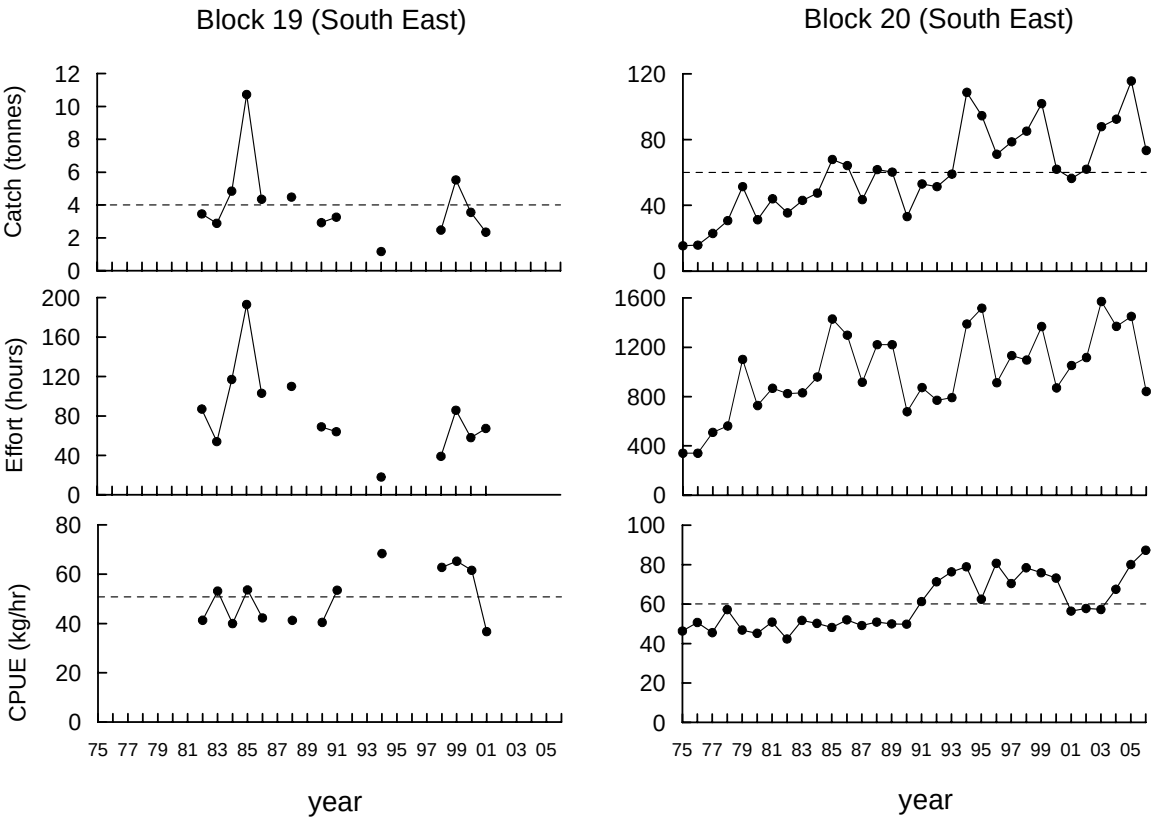
year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Block 20 (South East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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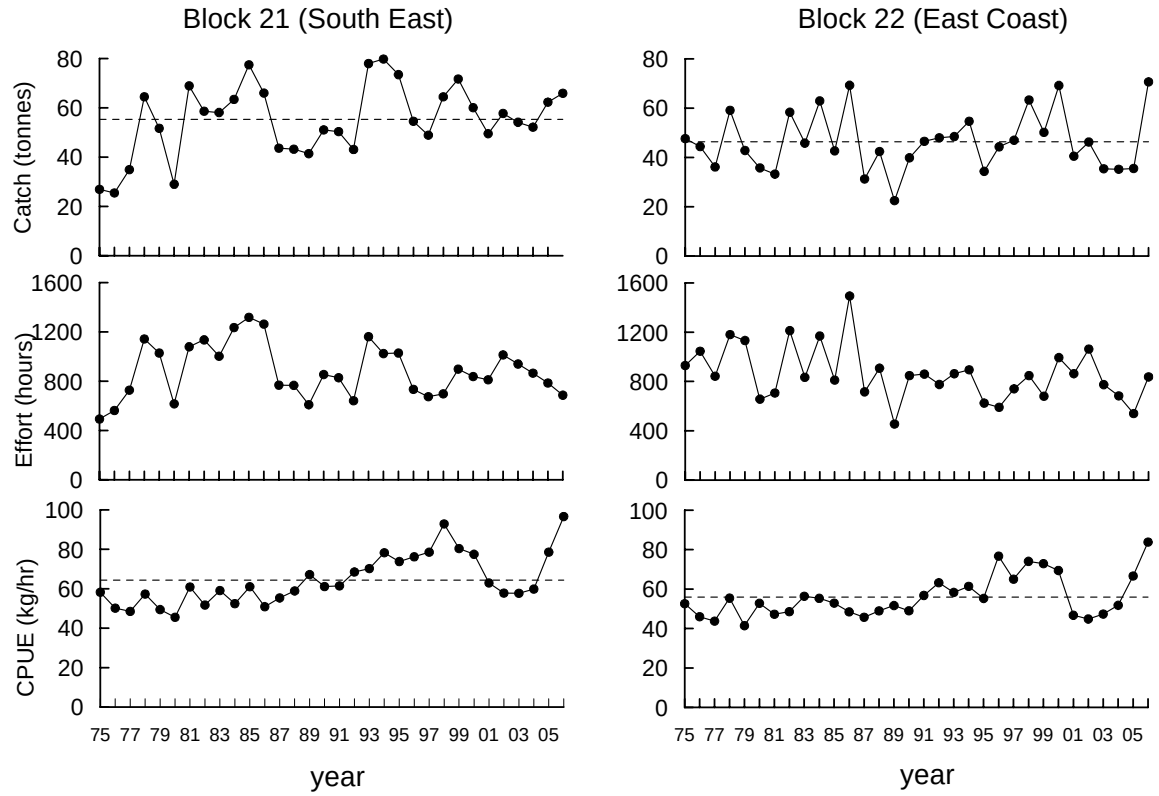
year


Block 21 (South East)
Block 22 (East Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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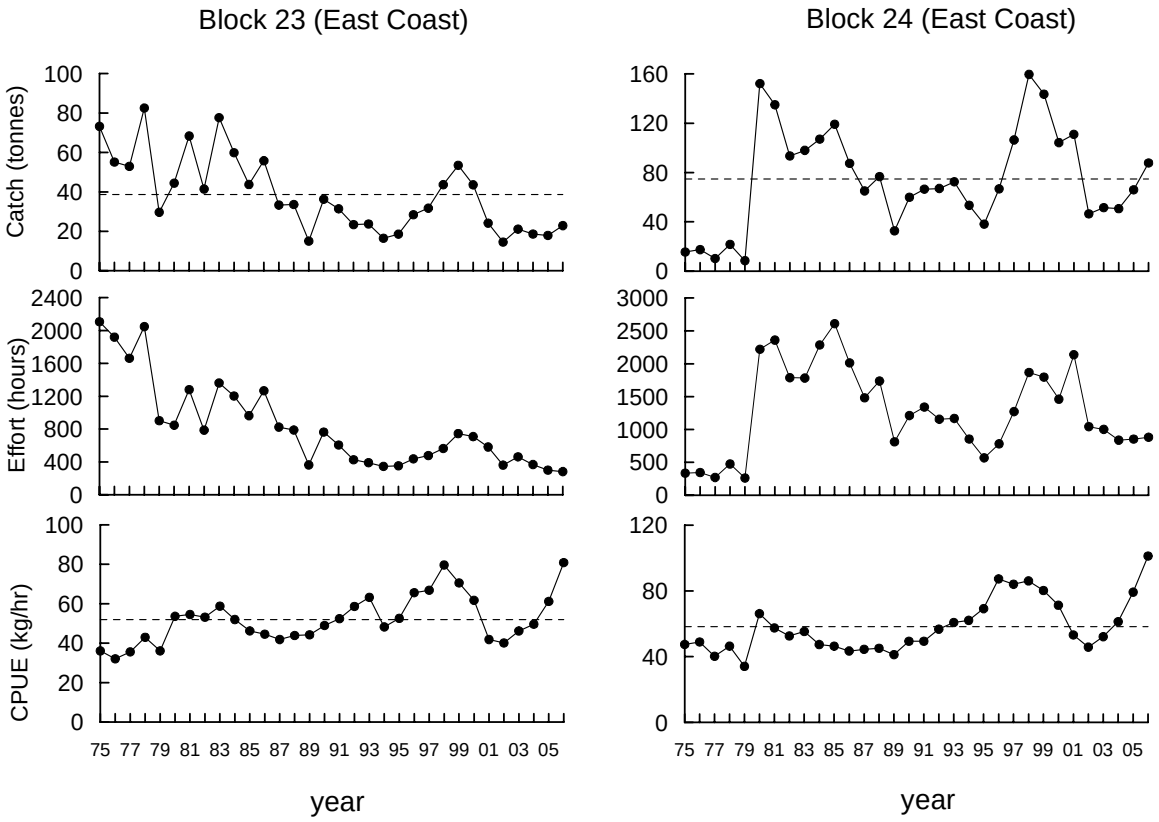
year


Block 23 (East Coast)
Block 24 (East Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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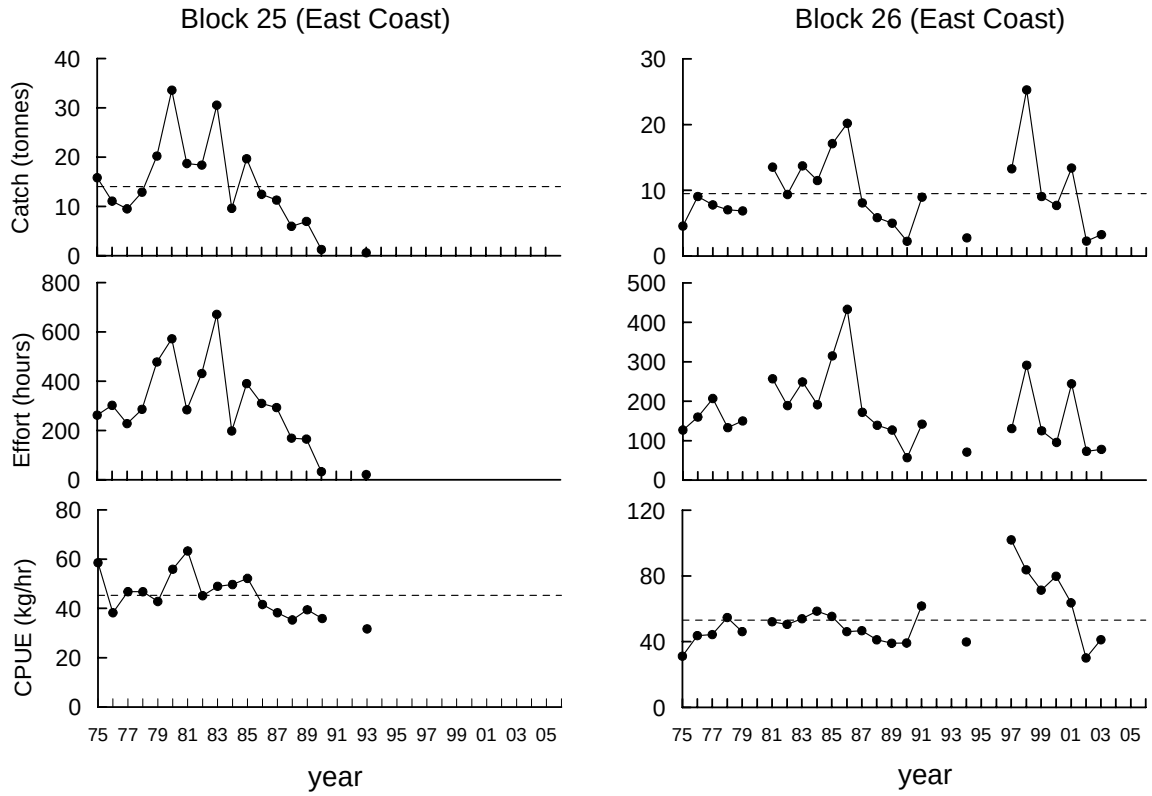
year


Block 25 (East Coast)
Block 26 (East Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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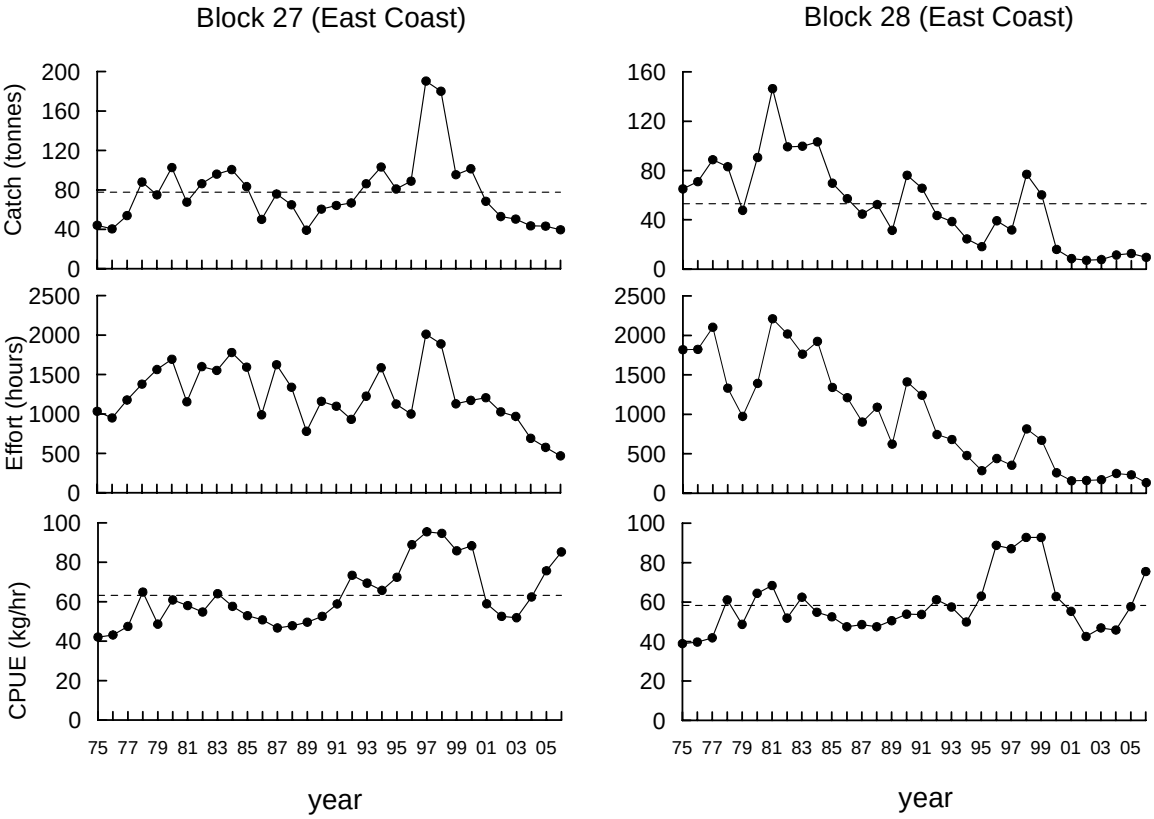
year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Block 28 (East Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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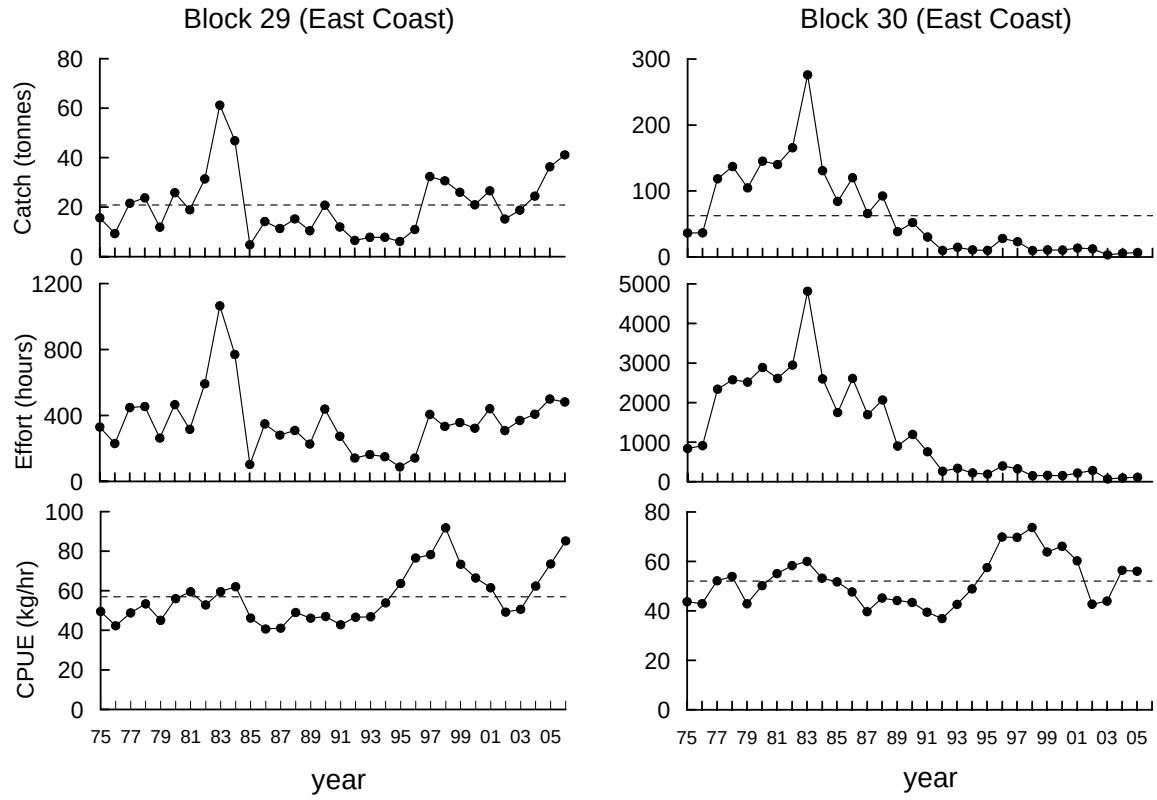
year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Block 30 (East Coast)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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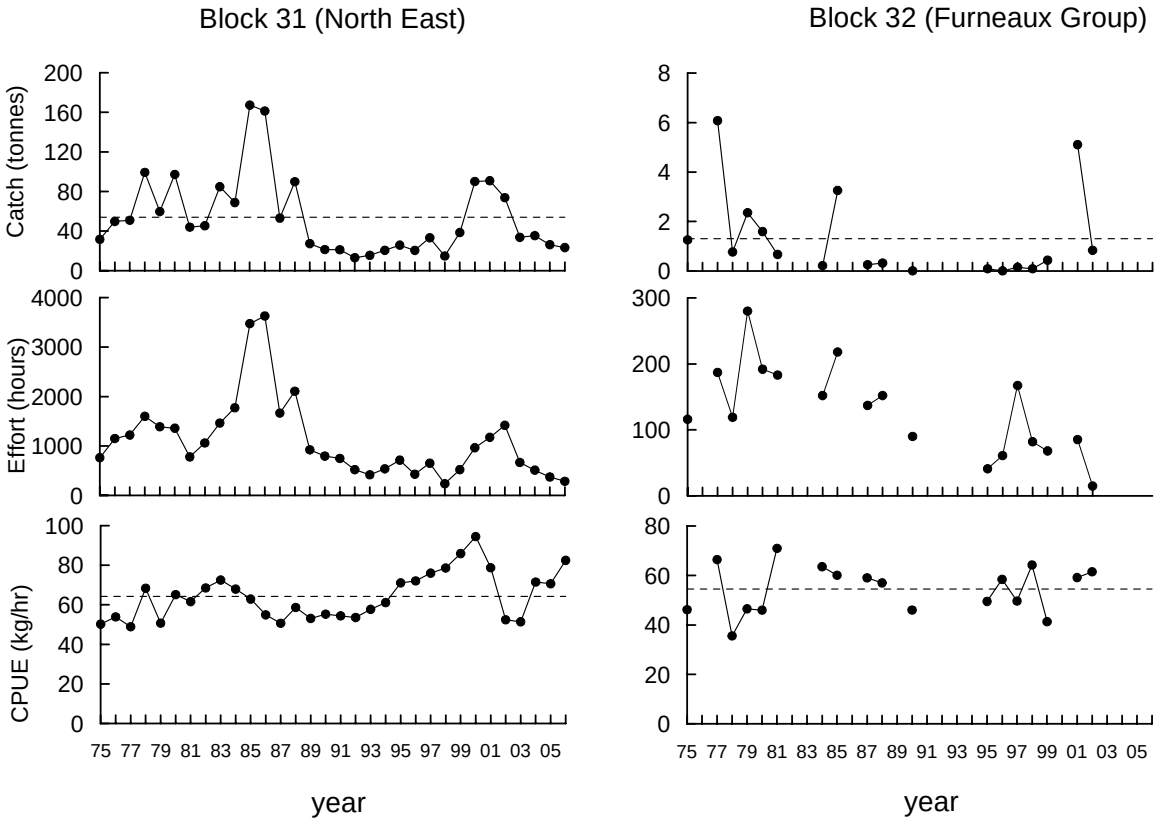
year


Block 31 (North East)
Block 32 (Furneaux Group)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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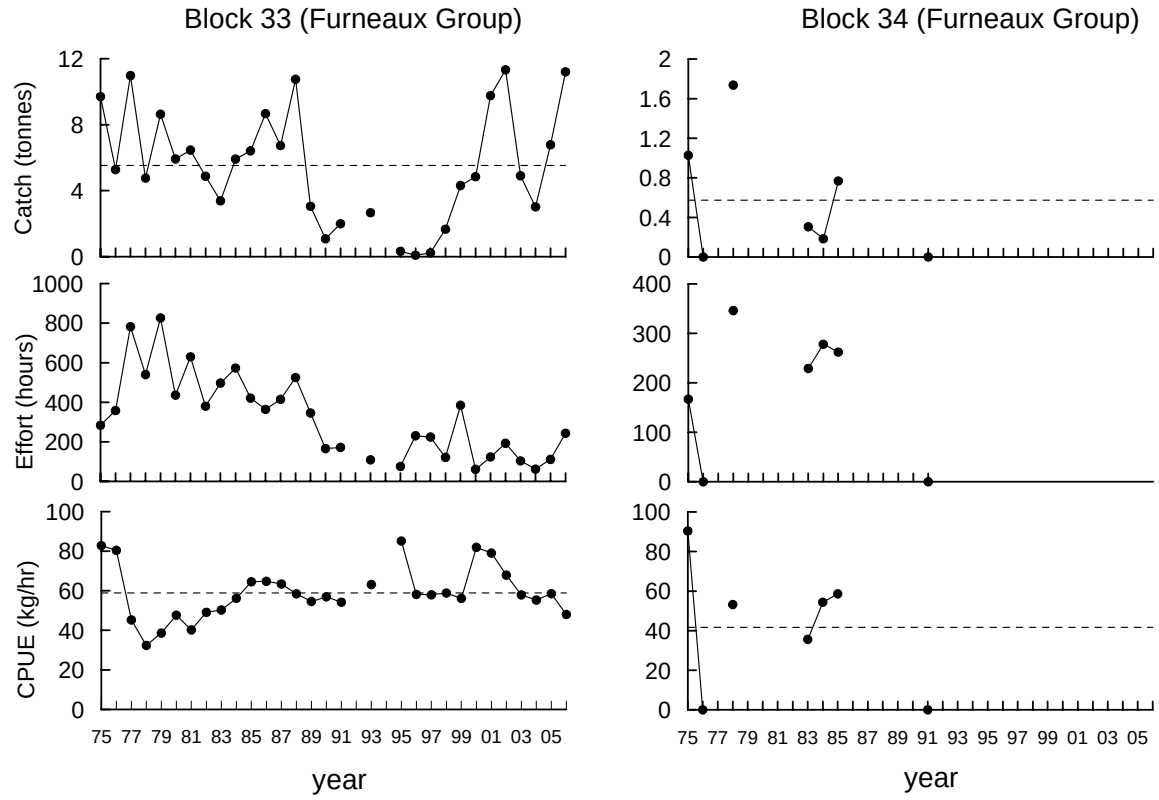
Block 33 (Furneaux Group)
Block 34 (Furneaux Group)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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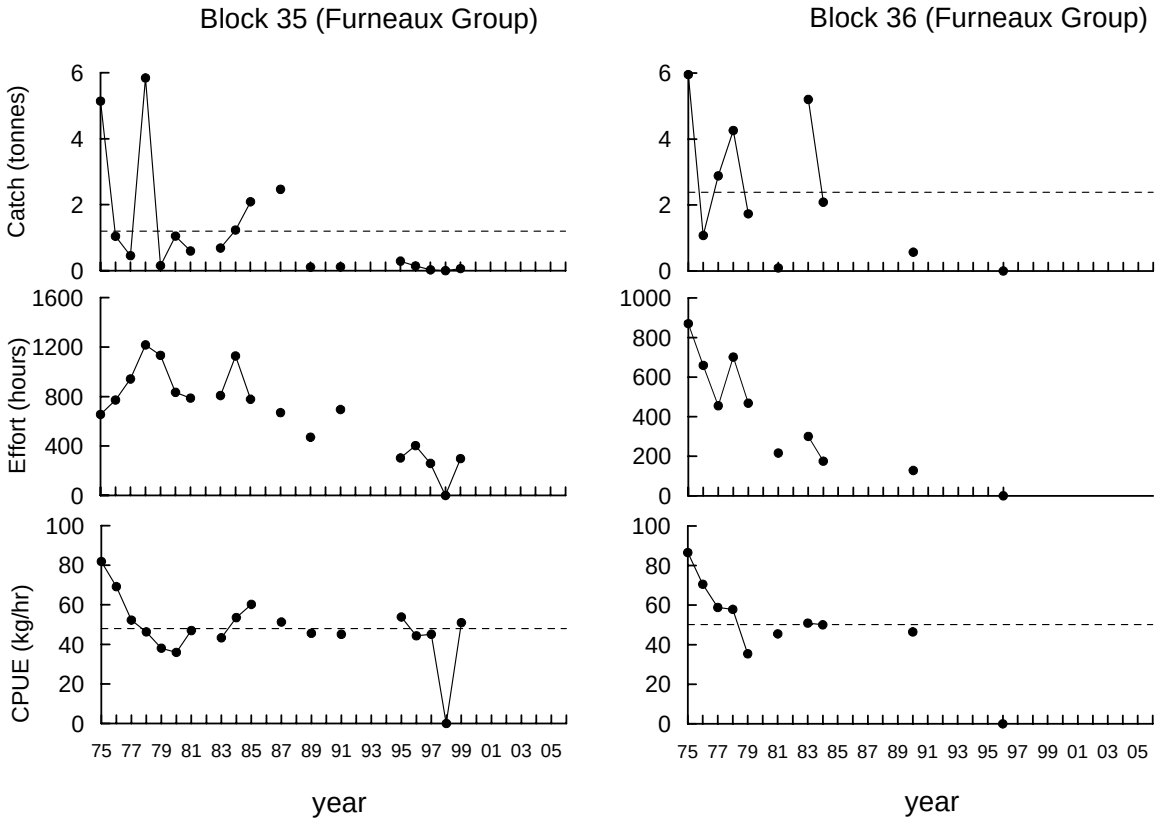
Block 35 (Furneaux Group)
Block 36 (Furneaux Group)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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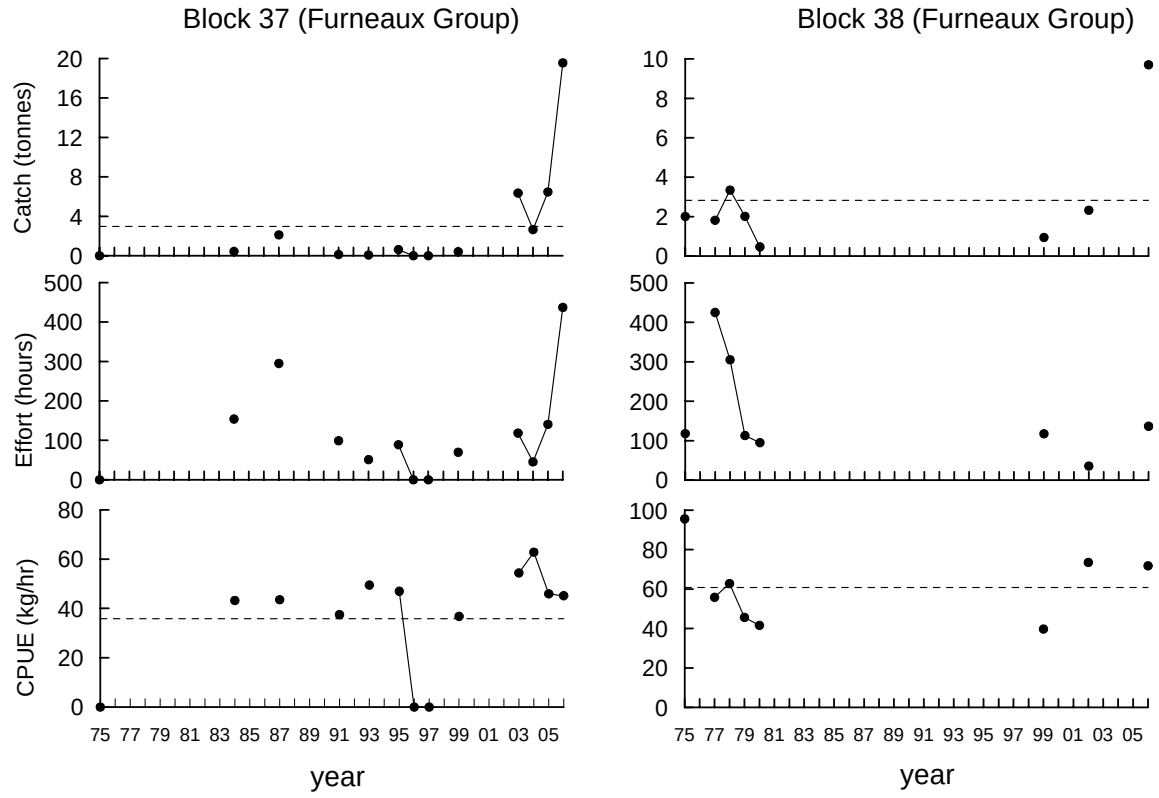
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Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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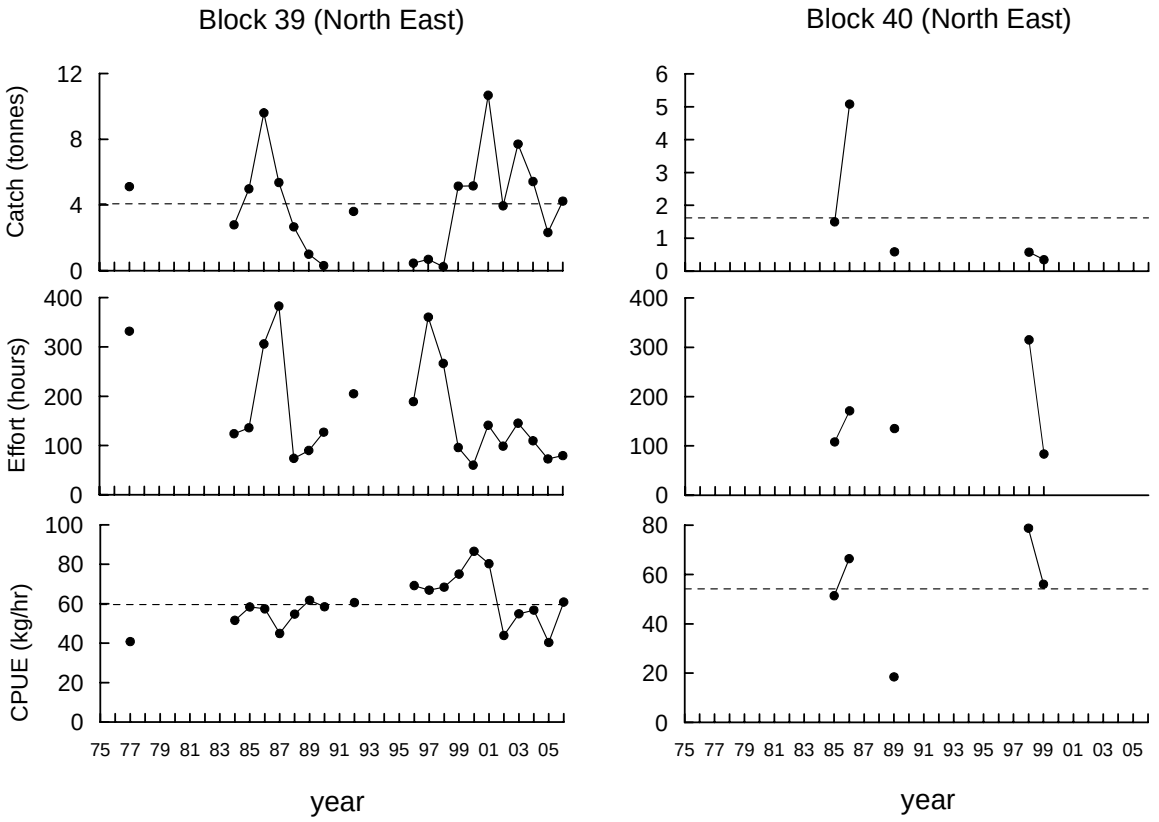
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Block 40 (North East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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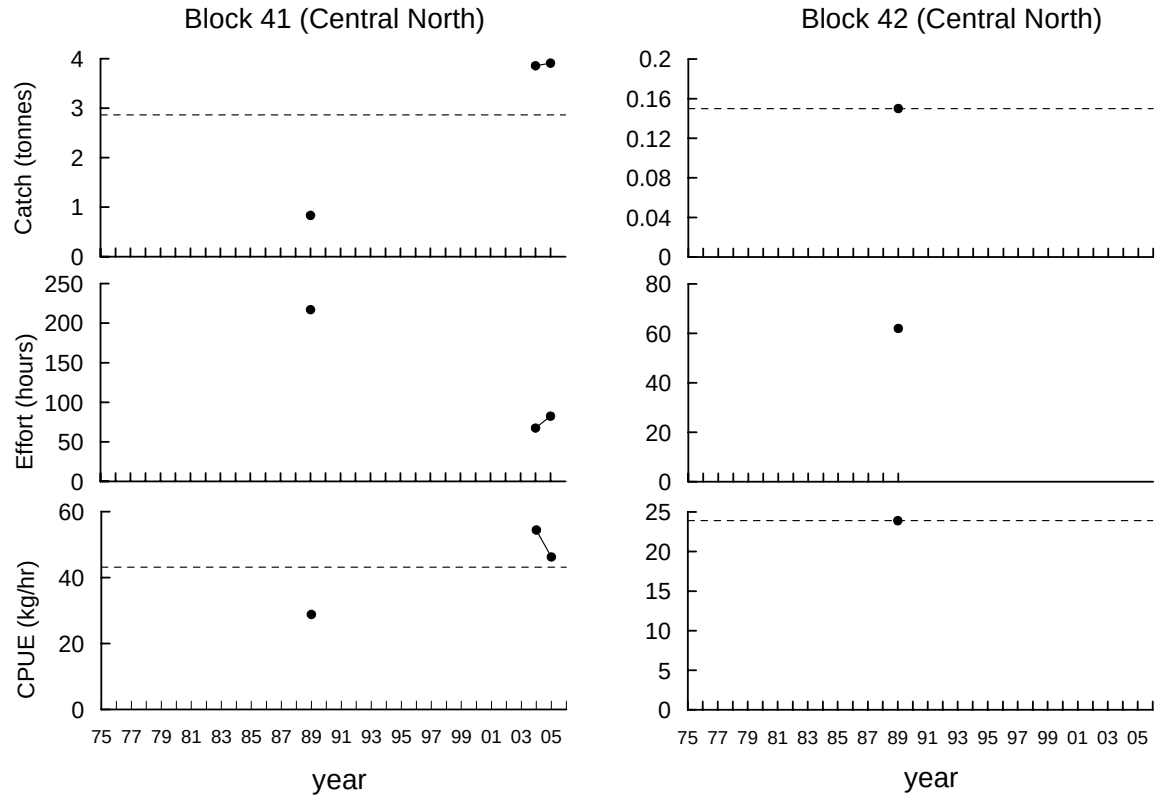
year


Block 41 (Central North)
Block 42 (Central North)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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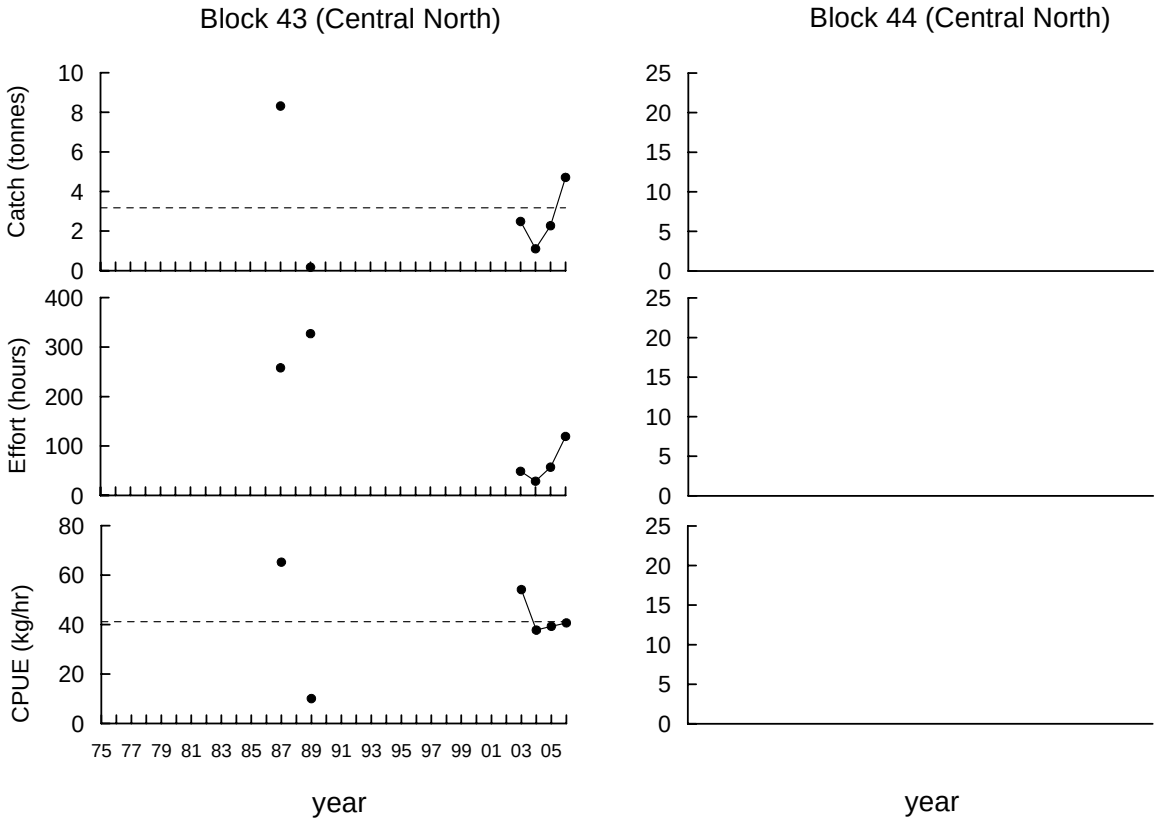
year


Block 43 (Central North)
Block 44 (Central North)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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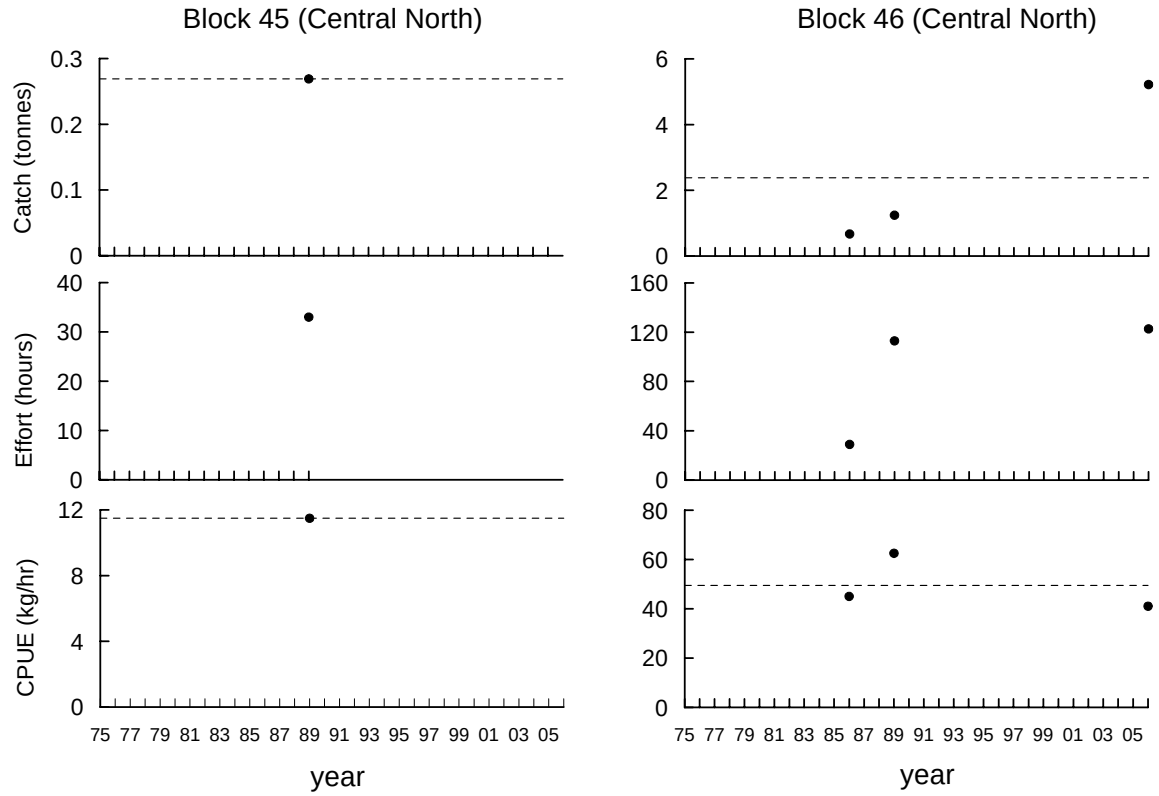
year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Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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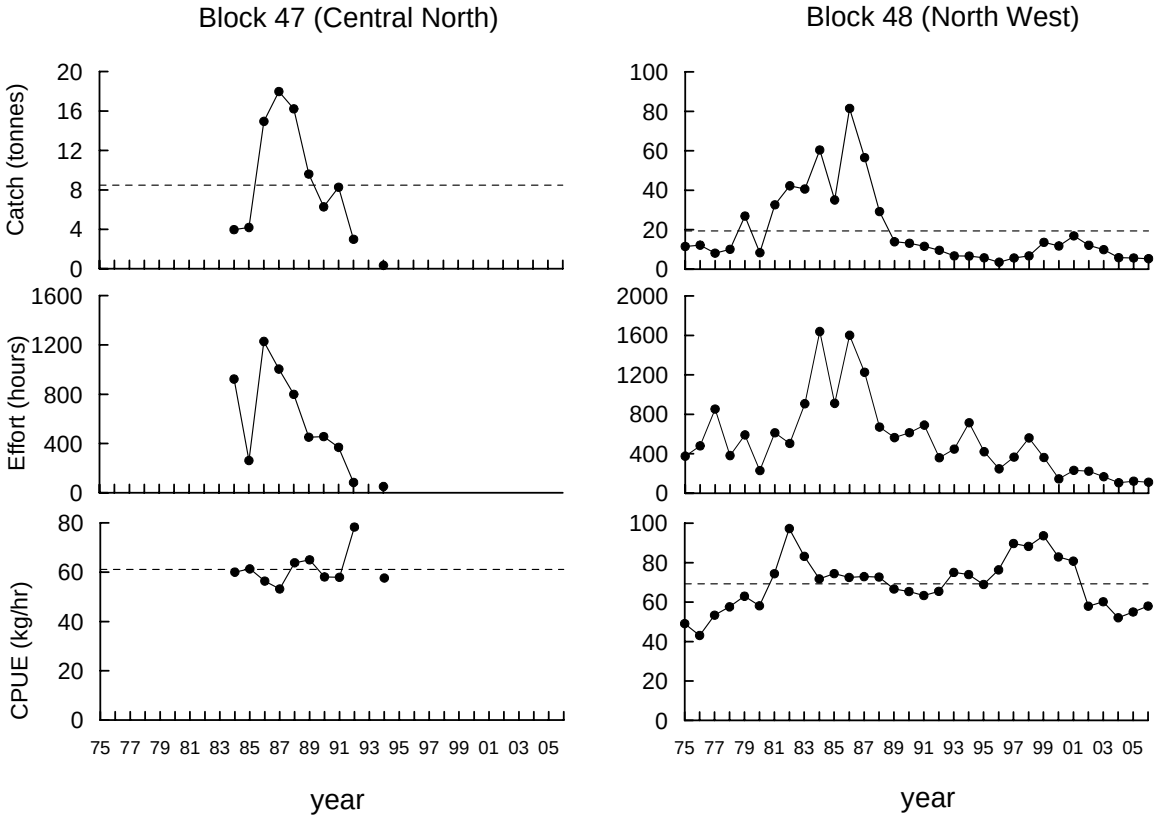
year


Block 47 (Central North)
Block 48 (North West)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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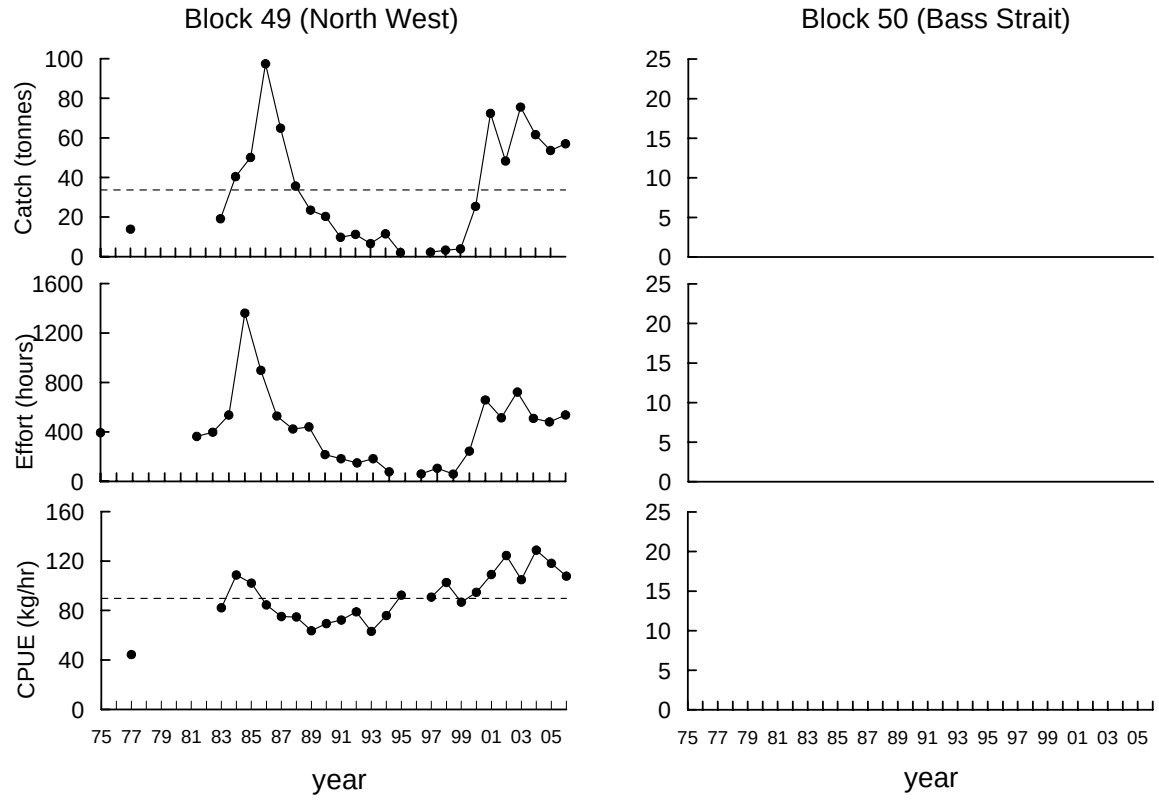
year


Block 49 (North West)
Block 50 (Bass Strait)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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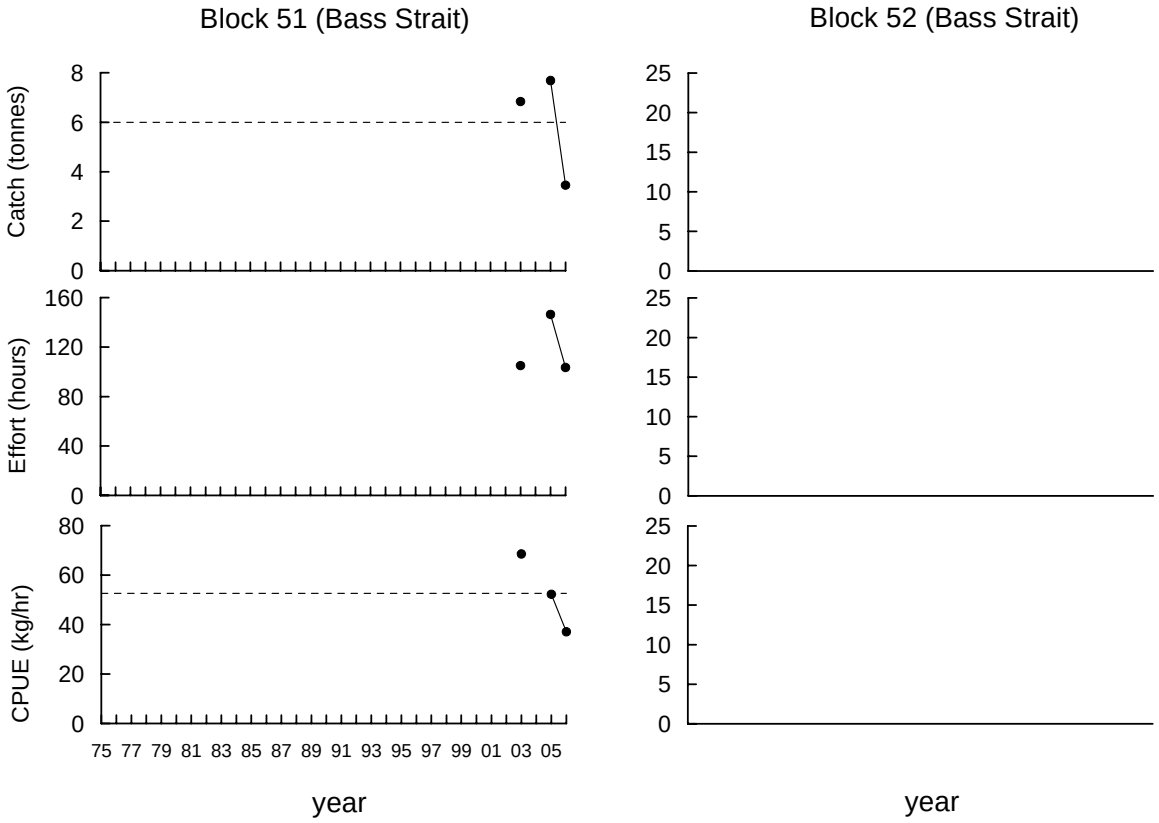
year


Block 51 (Bass Strait)
Block 52 (Bass Strait)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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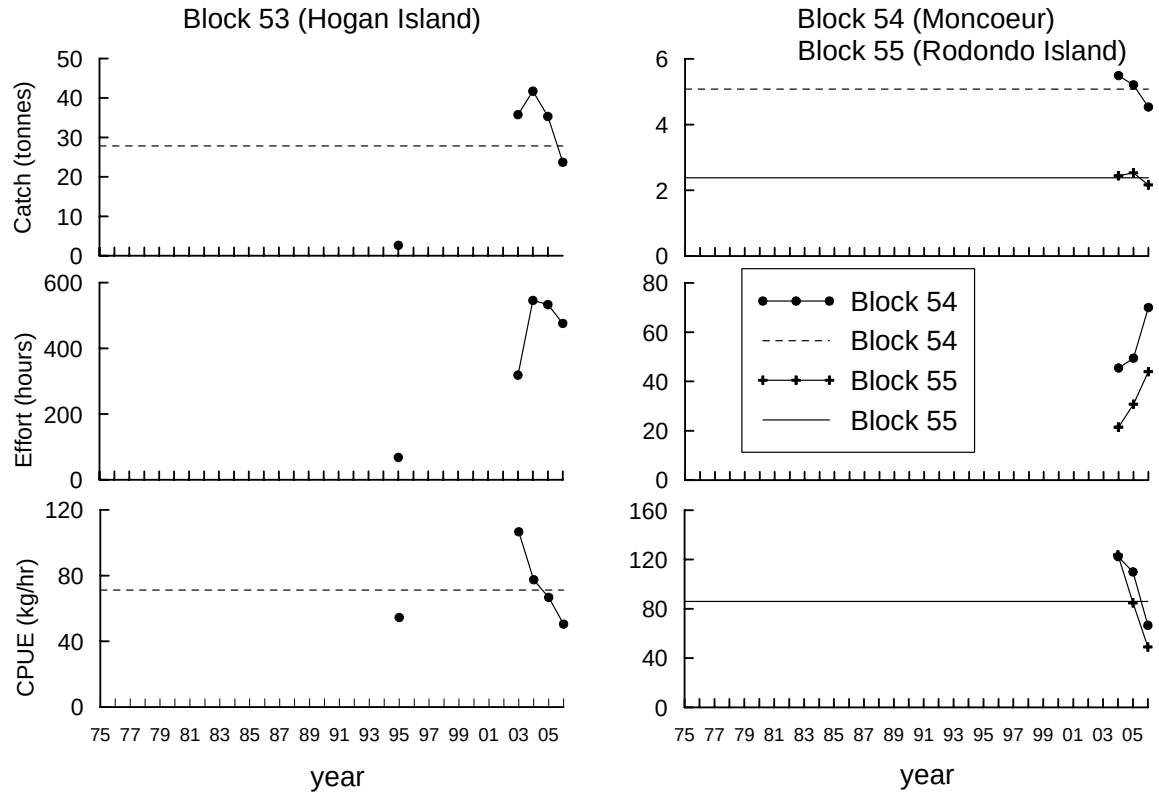
Block 53 (Hogan Island)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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year

Block 54 (Moncoeur)
Block 55 (Rodondo Island)
Block 54
Block 54
Block 55
Block 55
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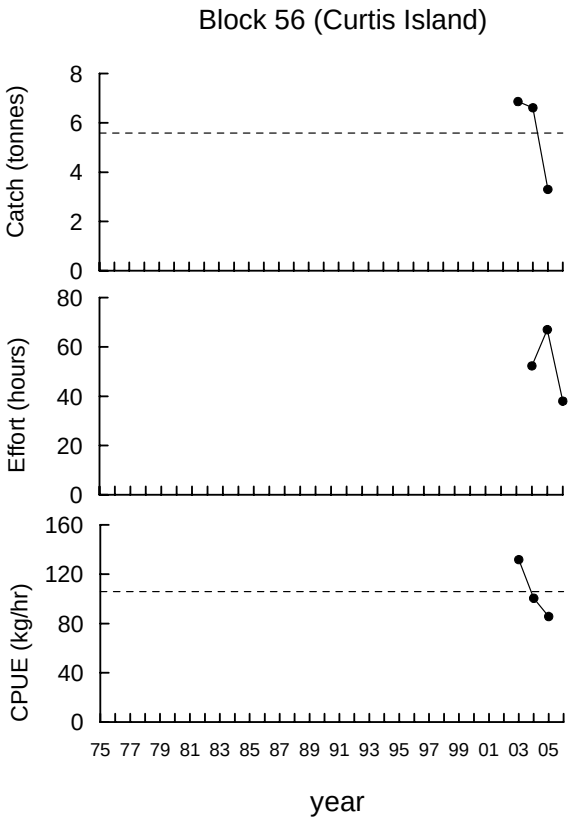
year


Block 56 (Curtis Island)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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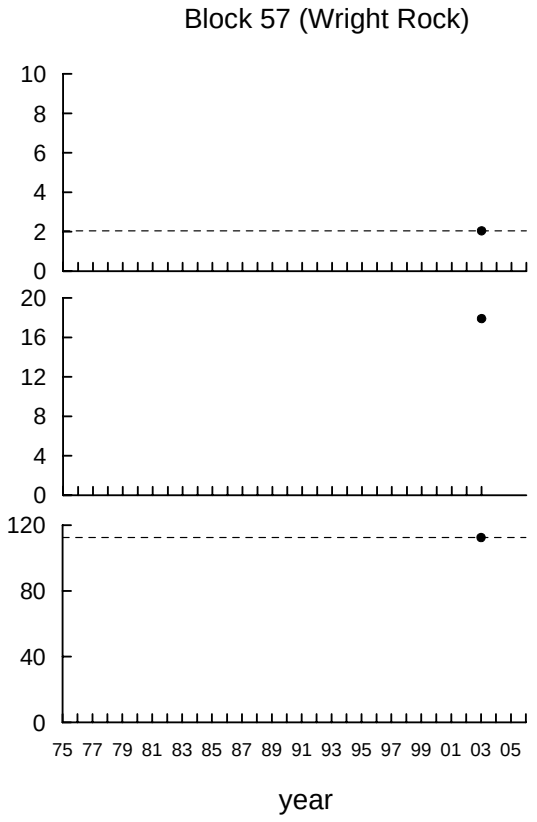
Block 57 (Wright Rock)
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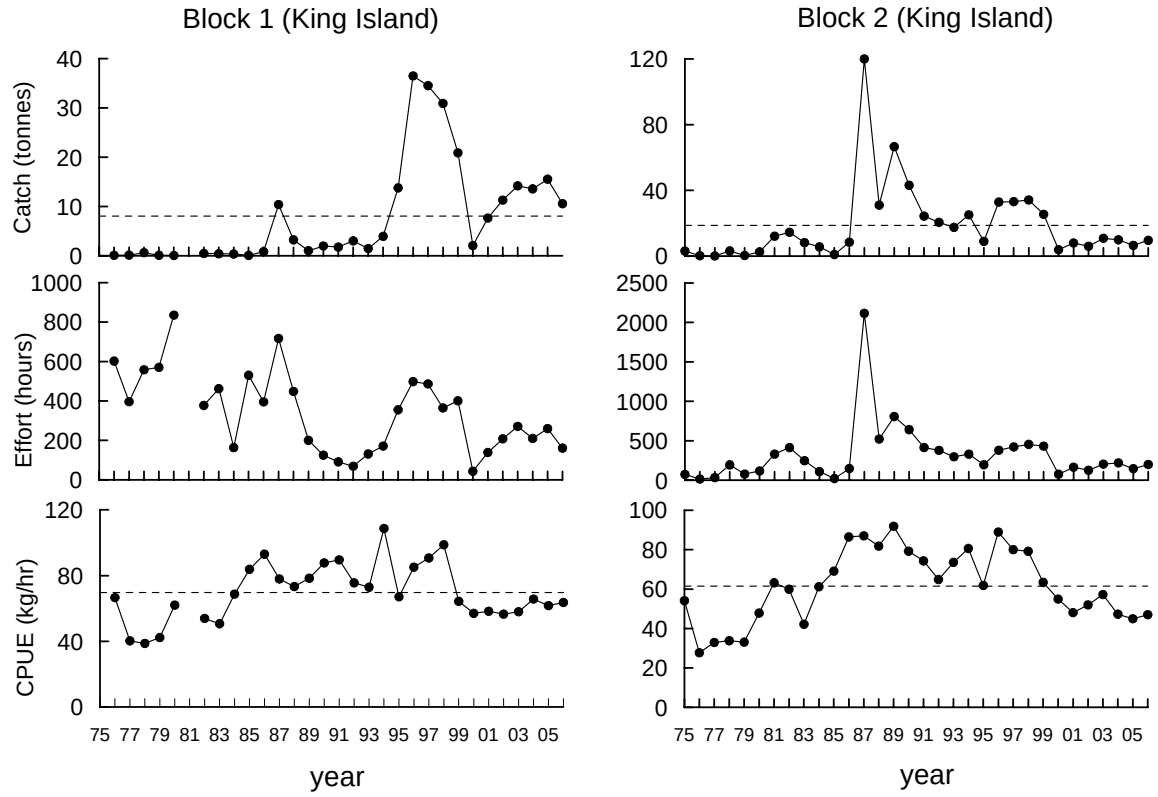
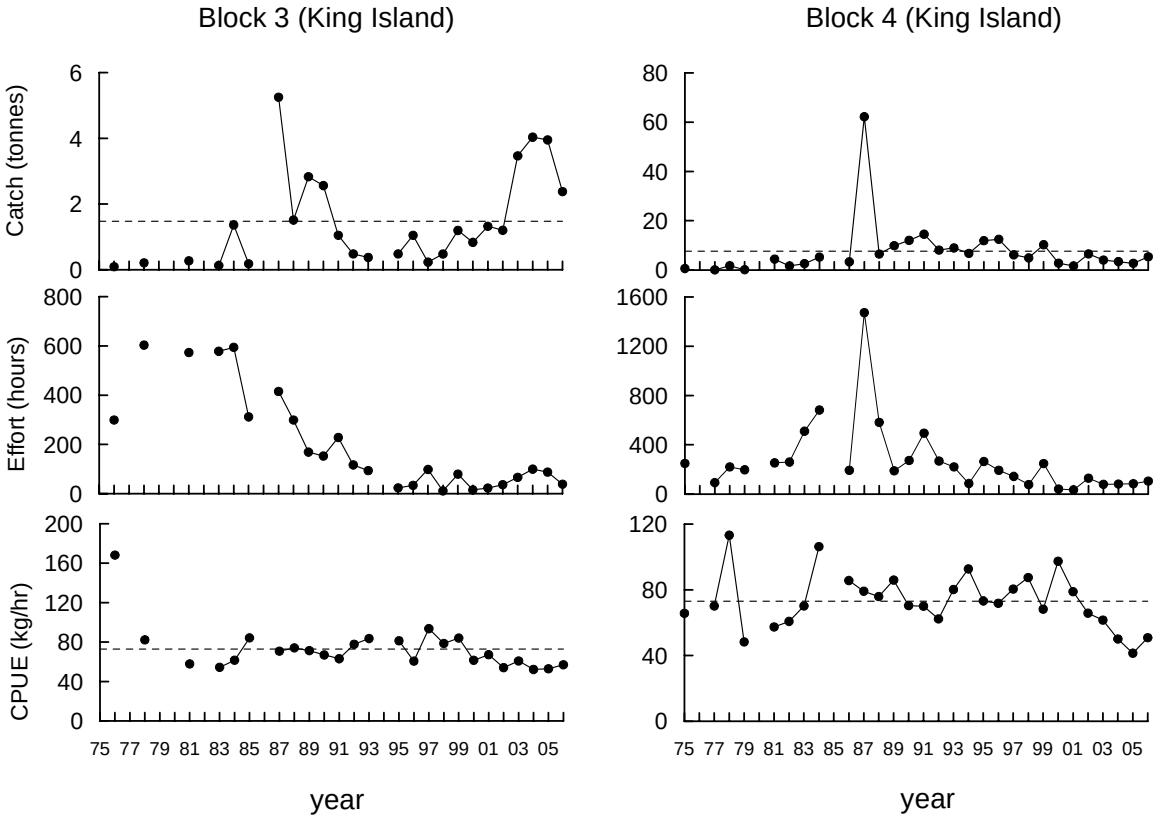
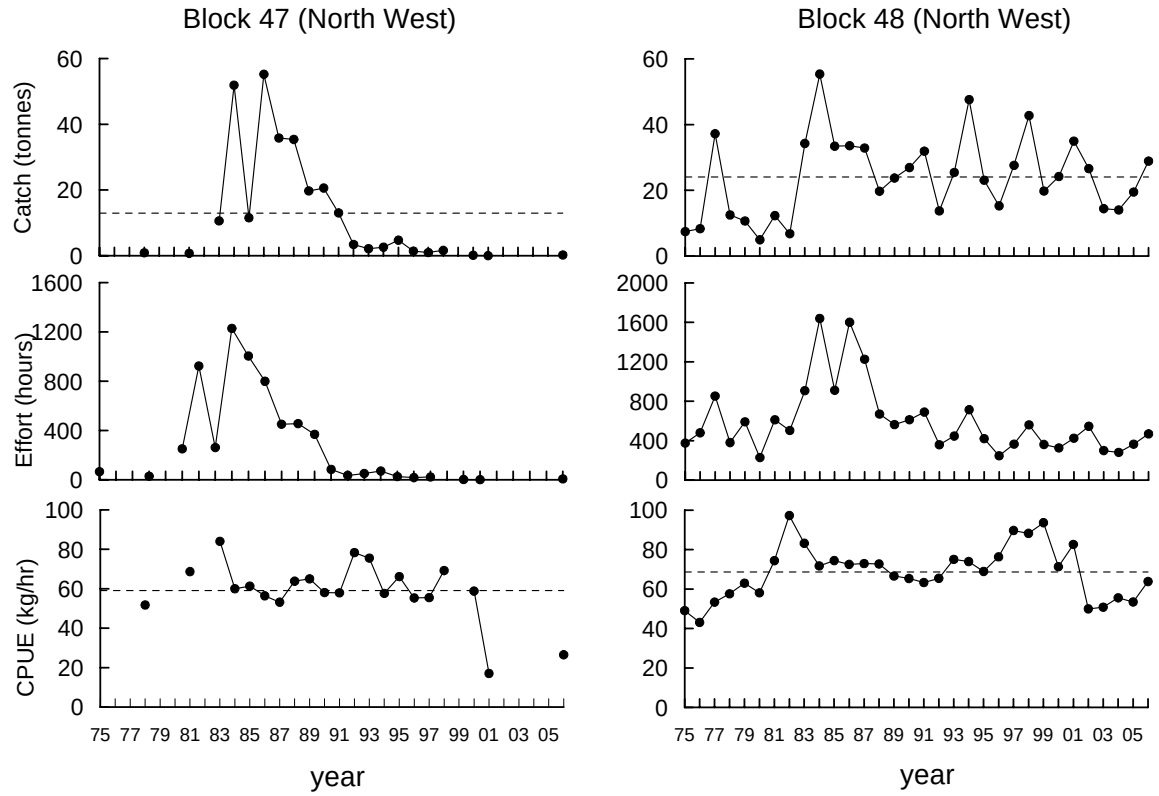
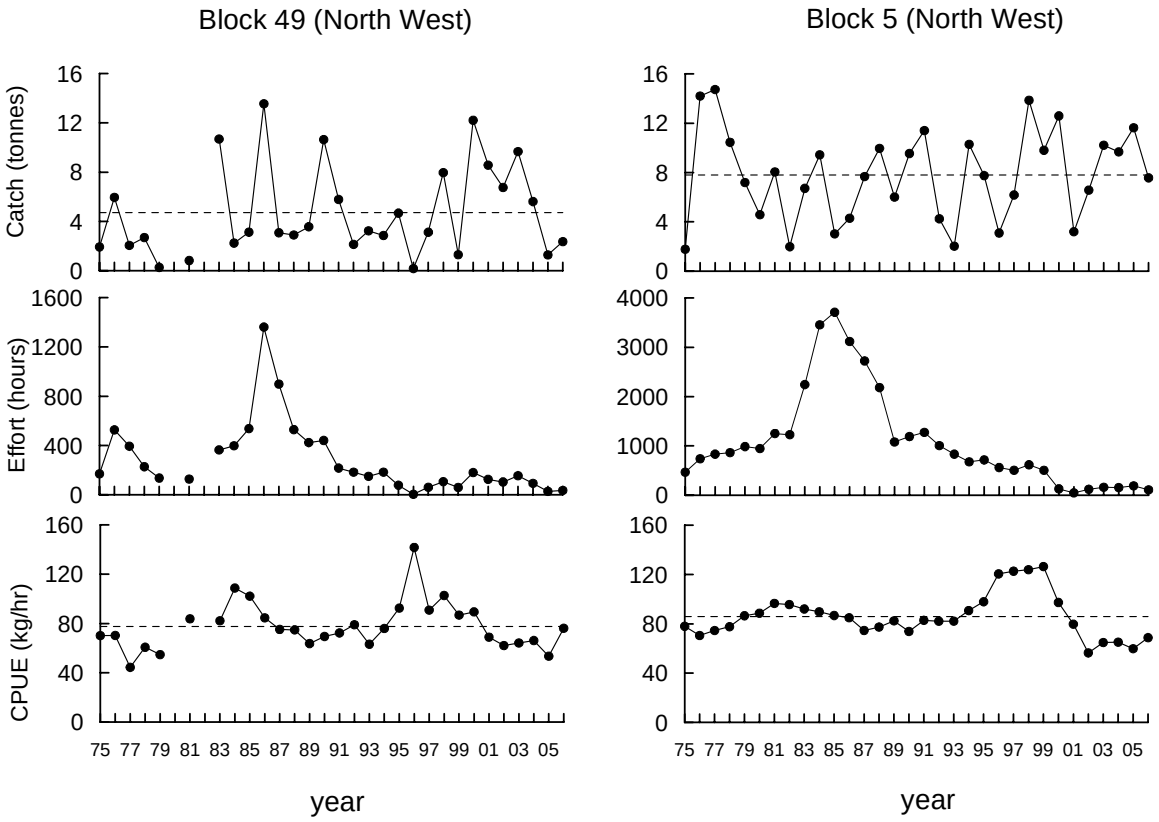
year

3. Greenlip: Blocks 1- 41






Block 47 (North West)
Block 48 (North West)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 49 (North West)
Block 5 (North West)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
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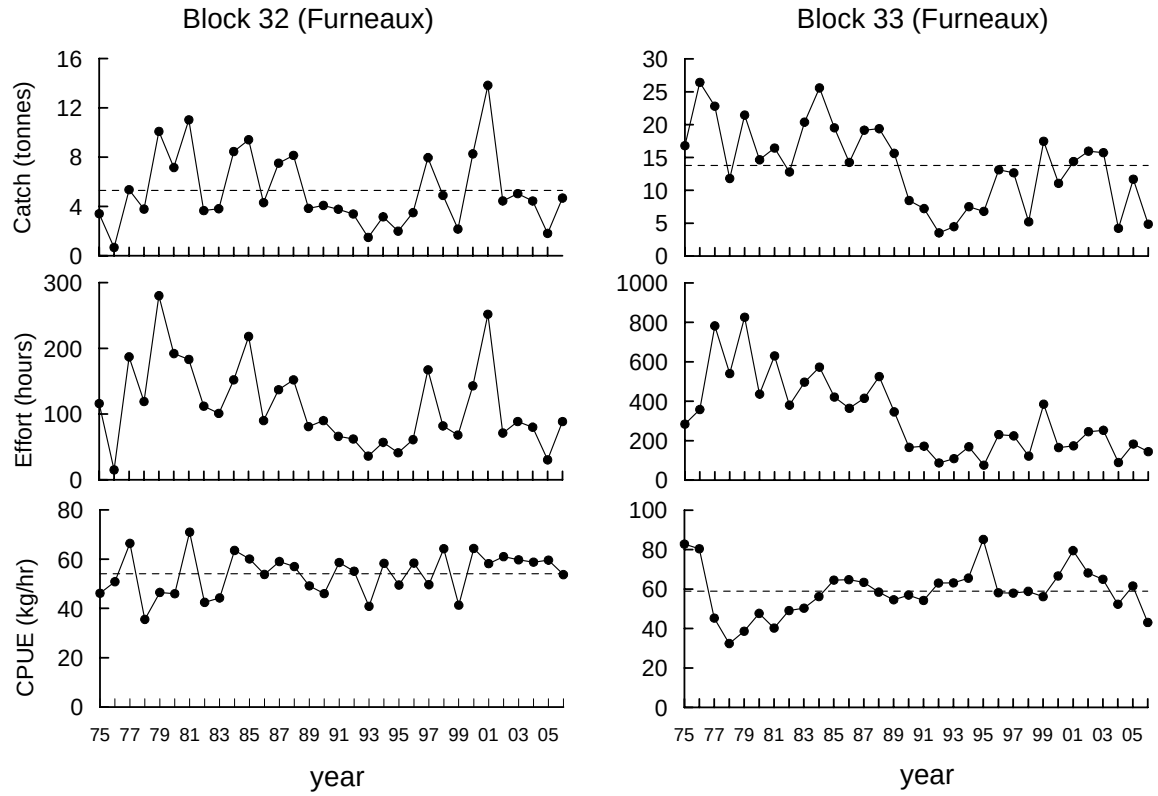
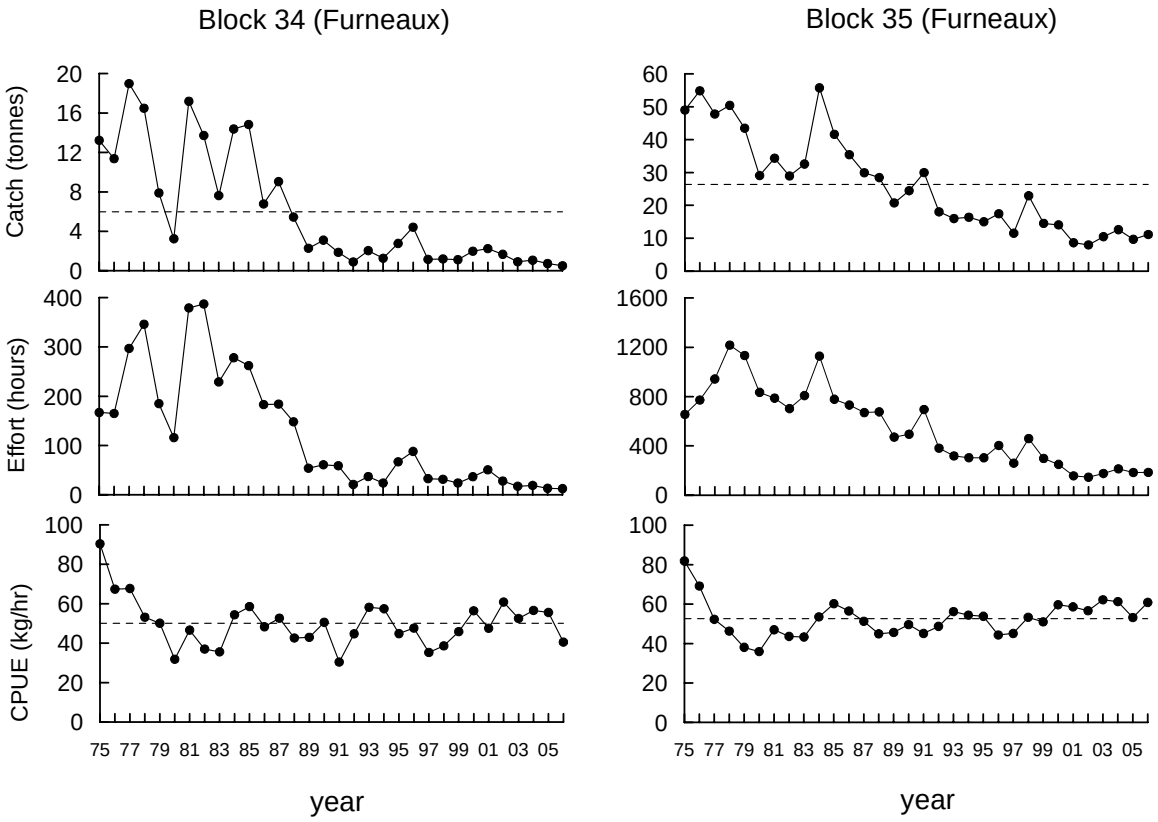
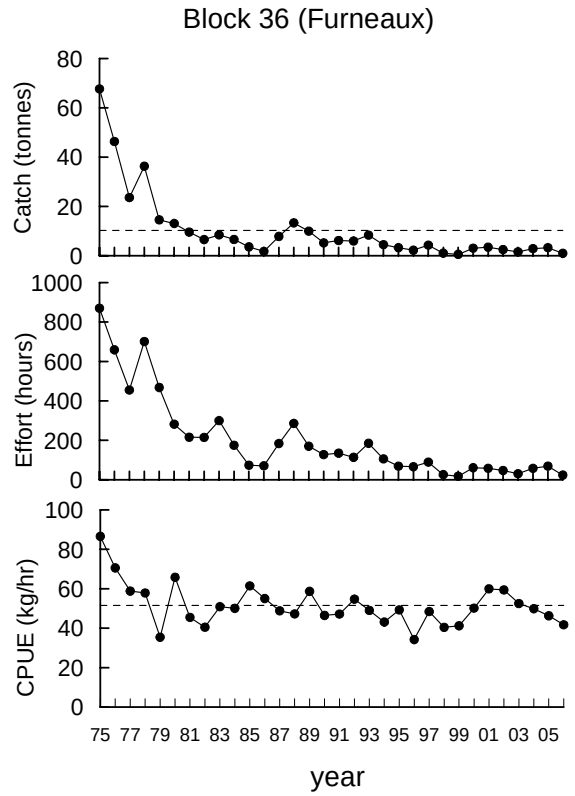
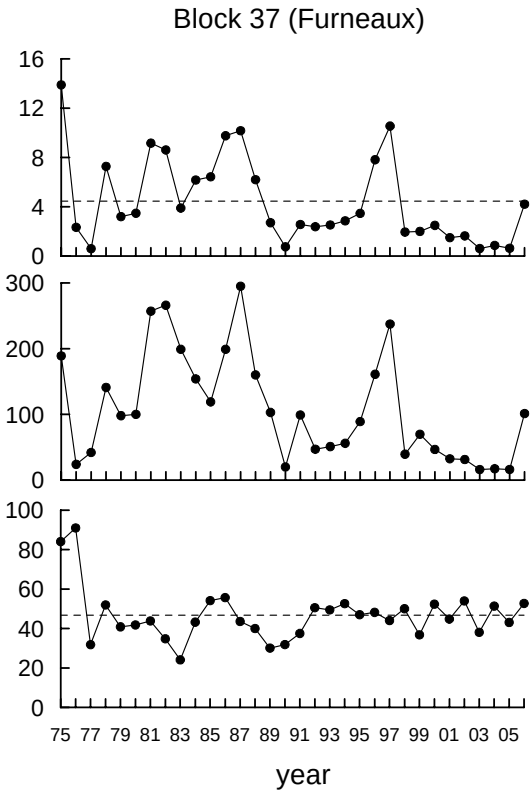
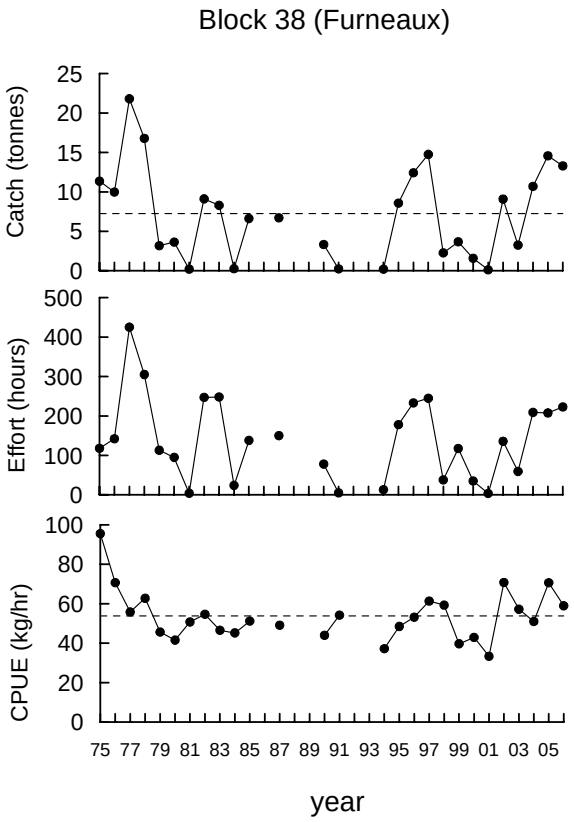
year

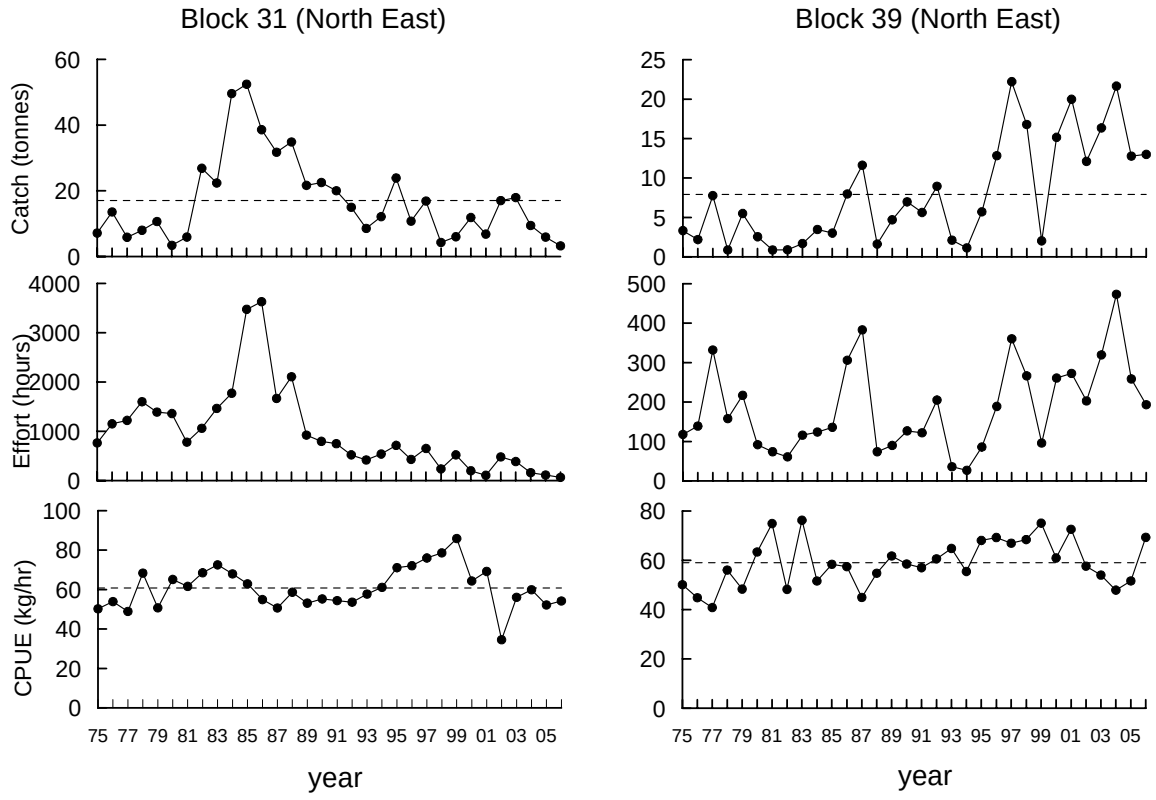

Block 32 (Furneaux)
Block 33 (Furneaux)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year

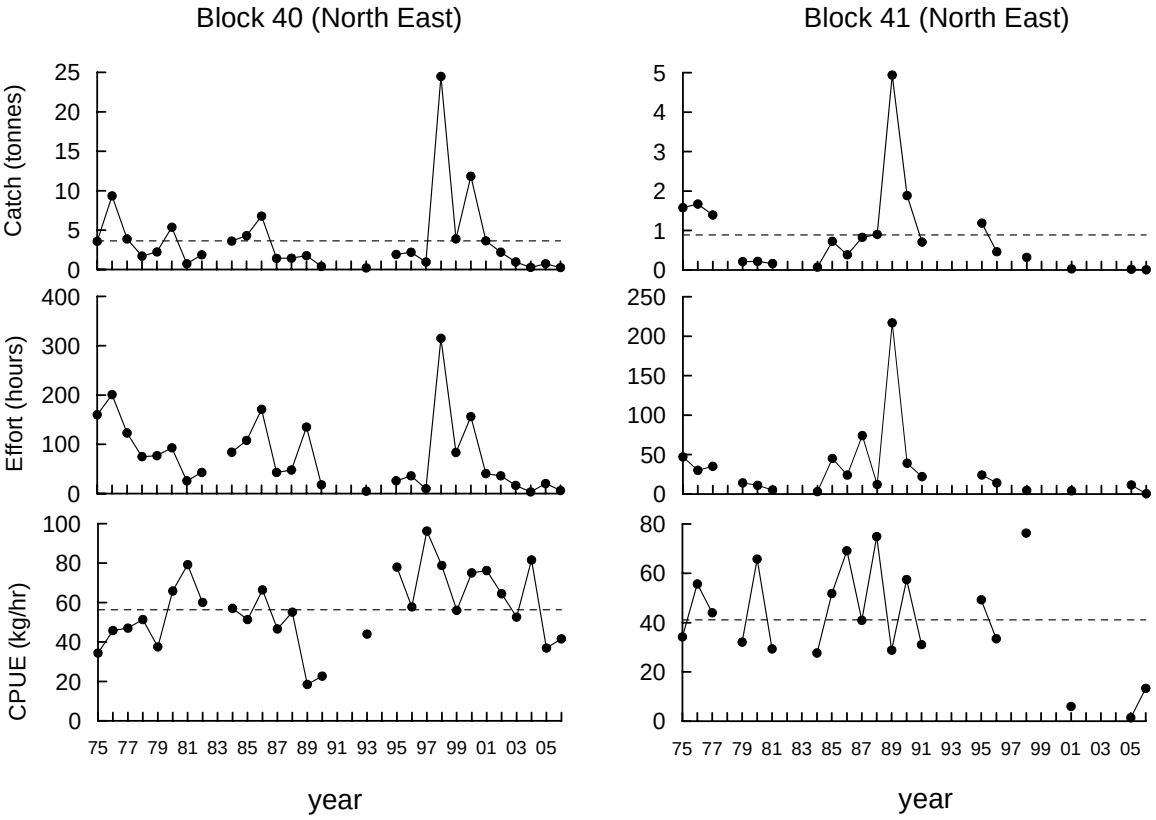

Block 34 (Furneaux)
Block 35 (Furneaux)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 36 (Furneaux)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 37 (Furneaux)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 38 (Furneaux)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 31 (North East)
Block 39 (North East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year


Block 40 (North East)
Block 41 (North East)
Catch (tonnes)
Effort (hours)
CPUE (kg/hr)
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05
year

Appendix 1: Blacklip annual catch 1975 - 2006

Annual tonnages of blacklip abalone caught within the statistical blocks. These tonnages are derived from estimated weights, which do not correspond exactly with landed weights. More information about this table is provided on page 2.

Block	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1975				15	34	110	34	37	124	126	178	127	228	110	
1976	39			7	39	63	41	70	247	176	227	129	194	153	
1977					49	50	24	22	122	97	144	163	229	228	2
1978	21	3	51	25	57	76	12	27	112	242	263	197	322	213	6
1979					80	112	19	23	151	139	248	302	361	235	8
1980	51	3			80	173	80	57	302	185	300	293	257	244	7
1981	19		32		114	242	83	78	432	239	405	216	243	283	18
1982	19	9	24	13	112	141	34	31	243	98	293	210	323	201	15
1983	22		29		198	207	102	58	181	159	421	219	247	295	10
1984			33	53	298	271	69	25	191	249	646	246	293	289	18
1985			26	11	315	304	98	16	230	137	465	155	253	260	4
1986	35	4	24	13	261	209	97		129	118	279	186	217	258	20
1987	44	59	23	52	192	182	81	43	248	81	333	193	222	228	7
1988	29	13	20	38	159	240	38	25	156	117	259	158	216	256	6
1989	14	6	10	5	83	190	39	41	119	104	199	132	153	168	2
1990	9	9	9	8	78	190	49	21	95	76	222	124	130	190	4
1991		5	14	20	93	169	53	30	101	100	214	138	126	206	2
1992	2	3	9	8	75	233	69	36	90	95	266	159	140	106	3
1993		3		9	65	152	64	37	109	65	197	177	256	116	4
1994	15	2		1	49	79	33	38	77	60	201	160	295	139	10
1995	11	3		8	62	112	30		44	68	185	182	310	247	
1996	7	2		2	63	103	67		59	75	145	148	391	195	
1997	10	1	10	6	56	98	75		140	66	224	227	471	137	
1998	3	1		2	61	126	51	27	78	47	163	199	502	130	
1999	5	1	6	6	57	149	60	24	115	58	220	251	491	66	2
2000					45	183	61	23	205	148	326	282	435	97	
2001	2			12	117	210	32	15	186	152	312	290	367	157	3
2002	10		35	16	105	173	51	17	174	143	360	236	389	101	
2003	25		62	10	73	97	104	27	142	239	345	229	358	116	
2004	10		85	34	58	88	89	22	130	181	374	250	317	104	7
2005	15		92	18	79	95	110	26	92	149	389	311	247	90	8
2006	11	3	57	8	100	109	76	6	142	198	384	228	274	84	3
Mean	18	7	33	15	103	154	60	32	155	131	287	204	289	178	7

Block	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1975	45	11			15	27	48	73	15	16	5	44	65	16	36
1976	56	19			16	25	44	55	17	11	9	40	71	9	37
1977	179	11			23	35	36	53	10	10	8	54	89	22	119
1978	113	22			31	64	59	83	22	13	7	88	83	24	137
1979	148	25			51	52	43	30	8	20	7	75	48	12	105
1980	143	29			31	29	36	44	152	34		103	91	26	145
1981	127	46			44	69	33	68	135	19	14	68	146	19	140
1982	143	24		3	35	59	58	41	93	18	9	86	99	31	166
1983	188	28		3	43	58	46	78	98	31	14	96	100	61	276
1984	160	35		5	47	63	63	60	107	10	11	101	103	47	131
1985	89	83		11	68	77	43	44	119	20	17	83	70	5	84
1986	82	91	2	4	64	66	69	56	87	12	20	50	57	14	120
1987	47	79			43	44	31	33	65	11	8	76	45	11	66
1988	76	56		4	62	43	42	34	77	6	6	65	52	15	92
1989	56	42			60	41	22	15	33	7	5	39	31	10	38
1990	75	29		3	33	51	40	36	60	1	2	60	76	21	52
1991	60	36		3	53	50	47	31	66		9	64	66	12	30
1992	28	20			51	43	48	23	67			67	43	7	10
1993	100	40			59	78	48	24	72	1		86	39	8	15
1994	114	46		1	109	80	55	16	53		3	103	24	8	11
1995	100	35			95	73	34	19	38			81	18	6	10
1996	78	18			71	55	44	28	67			89	39	11	28
1997	64	25			79	49	47	32	106		13	190	32	32	23
1998	116	23		2	85	64	63	44	160		25	180	77	31	10
1999	113	35		6	102	72	50	53	143		9	95	60	26	11
2000	71	29		4	62	60	69	44	104		8	101	16	21	10
2001	108	20		2	56	50	40	24	111		13	68	9	27	13
2002	72	16			62	58	46	15	46		2	53	7	15	12
2003	60	17	1		88	54	35	21	51		3	50	8	19	3
2004	50	20			92	52	35	19	51			43	11	24	6
2005	56	20			116	62	36	18	66			43	13	36	7
2006	67	13			73	66	71	23	88			40	10	41	
Mean	93	33	1	4	60	55	46	39	75	14	9	78	53	21	63

Block	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1975	32	1	10	1	5	6	0	2							
1976	50		5	0	1	1									
1977	51	6	11		0	3		2	5						
1978	99	1	5	2	6	4		3							
1979	60	2	9		0	2		2							
1980	97	2	6		1			0							
1981	44	1	6		1	0									
1982	45		5												
1983	85		3	0	1	5									
1984	69	0	6	0	1	2	0		3						
1985	167	3	6	1	2				5	1					
1986	161		9						10	5					
1987	53	0	7		2		2		5				8		
1988	90	0	11						3						
1989	27		3		0				1	*28*	*19*	*11*	*34*	*1*	*5*
1990	21	0	1			1			0						
1991	21		2	0	0		0								
1992	13								4						
1993	15		3				0								
1994	21														
1995	26	0	0		0		1								
1996	20	0	0		0	0	0		0						
1997	33	0	0		0		0		1						
1998	15	0	2		0				0	1					
1999	39	0	4		0		0	1	5	0					
2000	90		5						5						
2001	91	5	10						11						
2002	74	1	11					2	4						
2003	34		5				6		8				2		
2004	35		3				3		5		4		1		
2005	26		7				6		2		4		2		
2006	23		11				20	10	4				5		
Mean	54	1	6	1	1	2	3	3	4	2	3	0	3		0

Block	46	47	48	49	50	51	52	53	54	55	56	57
1975			11									
1976			12									
1977			8	14								
1978			10									
1979			27									
1980			8									
1981			33									
1982			42									
1983			41	19								
1984		4	60	40								
1985		4	35	50								
1986	1	15	81	97								
1987		18	57	65								
1988		16	29	36								
1989	*14*	10	14	24		*24*		*41*	*4*		*6*	
1990		6	13	20								
1991		8	12	10		*14*	*5*	*28*	*1*		*17*	*15*
1992		3	10	11								
1993			7	7		*21*	*4*	*37*	*1*		*6*	*8*
1994		0	7	12								
1995			6	2		*46*	*2*	*47*				*5*
1996			4									
1997			6	2								
1998			7	3								
1999			14	4								
2000			12	25								
2001			17	72								
2002			12	48								
2003			10	76		7		36			7	2
2004			6	62				42	5	2	7	
2005			6	54		8		35	5	3	3	
2006	5		5	57		3		24	5	2		
Mean	2	8	19	34		6		28	5	2	6	2

Appendix 2: Blacklip average CPUE 1975 - 2006.

Average annual catch rates (kilograms/hour) for blacklip abalone, by statistical block. More information about this table is provided on page 2.

Block	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1975				66	78	91	158	116	93	139	115	119	54	47	
1976	67			75	70	75	123	100	96	217	118	89	52	41	
1977					75	82	84	80	83	90	79	77	52	53	39
1978	39	34	82	113	78	84	111	113	98	99	91	65	52	48	44
1979					87	90	91	106	98	85	88	90	54	49	35
1980	62	48			89	101	129	135	116	107	104	73	50	44	54
1981	53		58		97	99	108	112	109	124	99	72	49	44	43
1982	54	60	64	61	96	102	95	99	92	95	96	68	52	45	55
1983	51		54		92	100	103	100	104	99	94	74	51	48	53
1984			62	106	90	98	99	78	93	95	89	80	54	42	60
1985			84	94	87	84	91	130	83	81	83	67	55	44	38
1986	93	86	88	86	85	81	95		85	88	87	78	52	46	58
1987	78	87	71	79	75	76	93	74	82	100	88	78	48	42	43
1988	73	82	74	76	77	85	81	75	88	98	88	78	47	42	34
1989	78	92	71	86	82	85	88	87	87	106	93	79	52	45	34
1990	88	79	67	70	74	91	87	99	89	96	94	82	55	49	33
1991		74	63	70	83	88	96	101	86	105	95	96	54	52	37
1992	76	65	78	62	82	94	103	99	101	103	99	97	69	52	25
1993		74		80	82	97	114	100	113	99	109	109	70	55	47
1994	109	81		93	91	98	108	117	121	132	119	111	81	64	63
1995	67	62		73	98	115	112		135	157	125	126	87	73	
1996	85	89		72	120	129	152		155	145	146	130	94	75	
1997	91	80	94	80	123	136	161		162	168	148	146	88	72	
1998	99	79		87	124	152	168	182	185	177	165	140	88	76	
1999	64	63	84	68	126	146	181	167	215	189	172	150	87	69	80
2000					137	149	185	170	177	214	174	146	79	70	
2001	145			88	109	135	181	167	162	196	160	140	69	63	54
2002	94		114	88	95	119	173	212	165	197	165	124	57	56	
2003	96		115	83	86	108	156	166	156	179	154	127	58	54	
2004	93		114	96	95	109	155	149	149	170	153	112	60	54	53
2005	92		109	82	96	112	149	154	161	158	147	112	71	64	65
2006	99	58	105	80	85	109	153	198	148	159	141	113	81	71	57
Mean	81	72	83	81	93	104	124	125	121	133	118	101	63	55	48

Block	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1975	51	54			46	58	53	36	47	59	31	42	39	50	44
1976	62	38			51	50	46	32	49	38	44	43	40	42	43
1977	54	42			46	48	44	36	40	47	44	47	42	49	52
1978	51	44			57	57	55	43	46	47	55	65	61	53	54
1979	51	38			47	49	41	36	34	43	46	49	49	45	43
1980	53	39			45	46	53	54	66	56		61	64	56	50
1981	50	46			51	61	47	55	57	63	52	58	68	59	55
1982	54	39		41	42	52	49	53	53	45	50	55	52	53	58
1983	60	53		53	52	59	56	59	55	49	54	64	62	60	60
1984	50	45		40	50	52	55	52	47	50	59	58	55	62	53
1985	51	42		54	48	61	53	46	46	52	55	53	52	46	52
1986	47	45	42	42	52	51	48	45	43	42	46	51	48	41	48
1987	46	42			49	55	46	42	44	38	47	47	49	41	40
1988	44	47		41	51	59	49	44	45	35	41	48	47	49	45
1989	43	47			50	67	52	44	41	39	39	50	51	46	44
1990	49	46		40	50	61	49	49	49	36	39	53	54	47	43
1991	54	56		53	61	61	57	52	49		62	59	54	43	39
1992	73	56			71	68	63	59	57			73	61	47	37
1993	76	66			76	70	58	63	61	32		69	57	47	43
1994	66	69		68	79	78	61	48	62		40	66	50	54	49
1995	75	57			62	74	55	53	69			72	63	64	57
1996	79	62			81	76	77	66	87			89	89	77	70
1997	71	66			70	79	65	67	84		102	95	87	78	70
1998	82	65		63	78	93	74	80	86		84	95	93	92	74
1999	78	74		65	76	80	73	71	80		71	86	93	73	64
2000	76	73		62	73	77	69	62	71		80	88	63	66	66
2001	61	56		37	56	63	47	42	53		64	59	55	61	60
2002	51	43			58	58	45	40	46		30	53	43	49	43
2003	48	48	36		57	58	47	46	52		41	52	47	51	44
2004	55	62			68	60	52	50	61			62	46	62	56
2005	67	65			80	79	67	61	79			76	58	74	56
2006	84	71			87	97	84	81	101			85	75	85	
Mean	60	53	39	51	60	64	56	52	58	45	53	63	58	57	52

Block	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1975	50	46	83	90	82	87	0	96							
1976	54		80	0	69	71									
1977	49	66	45		52	59		56	41						
1978	68	36	32	53	46	58		63							
1979	51	47	39		38	35		46							
1980	65	46	48		36			42							
1981	62	71	40		47	45									
1982	68		49												
1983	72		50	36	43	51									
1984	68	64	56	54	54	50	43		52						
1985	63	60	65	59	60				58	51					
1986	55		65						57	66					
1987	51	59	63		51		44		45				65		
1988	59	57	58						55						
1989	53		55		46				62	*18*	*29*	*24*	*10*		*11*
1990	55	46	57			46			58						
1991	54		54	0	45		37								
1992	54								61						
1993	58		63				49								
1994	61														
1995	71	49	85		54		47								
1996	72	58	58		44	0	0		69						
1997	76	50	58		45		0		67						
1998	79	64	59		0				68	79					
1999	86	41	56		51		37	40	75	56					
2000	94		82						87						
2001	79	59	79						80						
2002	52	61	68					73	44						
2003	51		58				54		55				54		
2004	71		55				63		57		54		38		
2005	71		59				46		40		46		39		
2006	82		48				45	72	61				41		
Mean	64	54	59	42	48	50	36	61	60	54	43	24	41		11

Block	46	47	48	49	50	51	52	53	54	55	56	57
1975			49									
1976			43									
1977			53	44								
1978			58									
1979			63									
1980			58									
1981			74									
1982			97									
1983			83	82								
1984		60	72	109								
1985		61	74	102								
1986	45	56	73	85								
1987		53	73	75								
1988		64	73	75								
1989	*63*	65	67	64		*89*	*30*	*53*	*64*		*71*	
1990		58	65	69								
1991		58	63	72		*83*	*41*	*38*	*59*		*44*	*34*
1992		78	65	79								
1993			75	63		*41*	*42*	*48*	*106*		*46*	*64*
1994		58	74	76								
1995			69	92		*28*	*18*	*38*				*37*
1996			76									
1997			90	91								
1998			88	103								
1999			94	87								
2000			83	95								
2001			81	109								
2002			58	125								
2003			60	105		69		107			132	113
2004			52	129				77	122	124	100	
2005			55	118		52		67	110	85	86	
2006	41		58	108		37		50	67	49		
Mean	50	61	69	90		53		71	100	86	106	113

Appendix 3: Greenlip annual catch 1975 - 2006

Annual tonnages of greenlip abalone caught within the statistical blocks. These tonnages are derived from estimated weights, which do not correspond exactly with landed weights. More information about this table is provided on page 2.

Block	1	2	3	4	5	6	31	32	33	34	35	36	37	38	39	40	47	48	49
1975				1	2	1	7	3	17	13	49	68	14	11				7	
1976	0				14	1	14		26	11	55	46						8	
1977					15	2	6	5	23		48	24		22	8			37	2
1978	1	3	0	2	10	2	8	4	12	16	50	36		17				13	
1979					7	1	11	10	21		43	15		3				11	
1980	0	3			5	1	3	7	15		29			4				5	
1981			0		8	7	6	11	16		34	10						12	
1982	0	14		2	2	0	27		13									7	
1983	0		0		7		22		20	8	33	8						34	11
1984			1	5	9	1	50	8	26	14	56	7	6		3		52	55	2
1985			0		3	2	52	9	20	15	42				3	4	12	33	3
1986	1	8		3	4		39		14						8	7	55	34	14
1987	10	120	5	62	8	0	32	8	19		30		10		12		36	33	3
1988	3	31	2	6	10	0	35	8	19						2		35	20	3
1989	1	67	3	10	6	0	22		16		21				5	2	20	24	4
1990	2	43	3	12	10	0	23	4	8			5			7		21	27	11
1991		24	1	15	11	0	20		7	2	30		3				13	32	6
1992	3	21	0	8	4	0	15								9		3	14	2
1993		17		9	2	0	9		4				3					25	3
1994	4	25		7	10	0	12										3	48	3
1995	14	9		12	8		24	2	7		15		3					23	5
1996	36	33		12	3		11	3	13		17	2	8		13			15	
1997	35	33	0	6	6		17	8	13		12		11		22			28	3
1998	31	34		5	14		4	5	5		23				17	24		43	8
1999	21	25	1	10	10		6	2	17		15		2	4	2	4		20	1
2000							12	8	11		14				15	12		24	12
2001	8	8			3		7	14	14				1		20	4		35	9
2002	11	6		7	7		17	4	16		8				12			27	7
2003	14	11	3		10		18	5	16						16			14	10
2004	14		4	3	10		9	4	4		13				22			14	6
2005	16		4		12		6		12		10				13			19	1
2006	11		2	5	8		3	5	5		11		4		13			29	2
Mean	10	27	2	10	8	1	17	6	14	11	29	22	6	10	11	8	25	24	5

Appendix 4: Greenlip average CPUE 1975 – 2006

Average annual catch rates (kilograms/hour) for greenlip abalone, by statistical block. More information about this table is provided on page 2.

Block	1	2	3	4	5	6	31	32	33	34	35	36	37	38	39	40	47	48	49
1975				66	78	91	50	46	83	90	82	87	84	96				49	
1976	67				70	75	54		80	67	69	71						43	
1977					75	82	49	66	45		52	59		56	41			53	44
1978	39	34	82	113	78	84	68	36	32	53	46	58		63				58	
1979					87	90	51	47	39		38	35		46				63	
1980	62	48			89	101	65	46	48		36			42				58	
1981			58		97	99	62	71	40		47	45						74	
1982	54	60		61	96	102	68		49									97	
1983	51		54		92		72		50	36	43	51						83	82
1984			62	106	90	98	68	64	56	54	54	50	43		52		60	72	109
1985			84		87	84	63	60	65	59	60				58	51	61	74	102
1986	93	86		86	85		55		65						57	66	56	73	85
1987	78	87	71	79	75	76	51	59	63		51		44		45		53	73	75
1988	73	82	74	76	77	85	59	57	58						55		64	73	75
1989	78	92	71	86	82	85	53		55		46				62	18	65	67	64
1990	88	79	67	70	74	91	55	46	57			46			58		58	65	69
1991		74	63	70	83	88	54		54	30	45		37				58	63	72
1992	76	65	78	62	82	94	54								61		78	65	79
1993		74		80	82	97	58		63				49					75	63
1994	109	81		93	91	98	61										58	74	76
1995	67	62		73	98		71	49	85		54		47					69	92
1996	85	89		72	120		72	58	58		44	34	48		69			76	
1997	91	80	94	80	123		76	50	58		45		44		67			90	91
1998	99	79		87	124		79	64	59		53				68	79		88	103
1999	64	63	84	68	126		86	41	56		51		37	40	75	56		94	87
2000							64	64	67		60				61	75		71	89
2001	58	48			80		69	58	80				45		73	76		83	69
2002	57	52		66	56		35	61	68		57				58			50	62
2003	58	57	61		65		56	60	65						54			51	64
2004	66		52	50	65		60	59	52		61				48			56	66
2005	62		53		60		52		62		53				52			53	53
2006	64		57	51	69		54	54	43		61		53		69			64	76
Mean	71	70	69	76	86	90	61	55	59	56	53	54	48	57	59	60	61	69	77

Appendix 5: Sub-blocks -annual catch and catch rates 2000 - 2006

These tables list annual catch and mean catch rates by sub-block. In accordance with DPIW's requirements that divers' catch and catch rates remain confidential, catch and catch rates are not shown where five or less divers have landed catch from a sub-block, but if catch has been landed, are represented by an asterisk (*).

Blacklip — Annual catch (tonnes)

Sub-block	2000	2001	2002	2003	2004	2005	2006	Mean
1A			*			*		*
1B	*	1	3	2	*	*	*	*
1C	*	*	*	23	7	13	10	*
2A			*		*		*	*
2B							*	*
2C		*	*	*	*	*	*	*
3A	*	*	22	43	31	43	32	*
3B	*			2	11	12	*	*
3C	*	*	13	17	44	37	24	*
4A		*	*	*	*	*	*	*
4B	*	*	3	*	11	*	*	*
4C	*	5	8	5	18	9	3	*
5A	13	27	31	19	14	12	27	21
5B	*	20	18	17	12	9	15	*
5C	*	70	55	37	27	51	54	*
5D	*		*	*	*	6	*	*
6A	79	91	56	16	15	33	32	46
6B	32	32	49	22	25	18	11	27
6C	50	39	37	24	24	18	15	29
6D	21	49	31	35	24	26	50	34
7A	14	*	14	25	19	18	*	*
7B	31	*	30	51	46	61	40	*
7C	*	*	*	28	25	31	28	*
8A	16	*	*	21	14	9	*	*
8B	*	8	9	7	8	10	*	*
8C		*				*		*
9A	*	*	*	*	*		*	*
9B	128	72	48	46	70	26	67	65
9C	76	113	126	96	60	66	74	87
10A	24	23	20	35	39	22	60	32
10B	35	20	10	22	15	27	12	20
10C	27	45	44	40	27	36	39	37
10D	62	64	69	143	100	64	87	84
11A	99	90	127	130	85	138	163	119
11B	85	76	61	46	102	87	67	75
11C	86	95	121	106	128	123	108	109
11D	26	20	15	23	32	31	28	25
11E	30	32	36	41	27	9	18	28
12A	57	76	61	60	50	63	61	61
12B	65	68	53	55	60	90	48	63
12C	40	34	31	42	43	60	43	42
12D	119	112	91	72	97	98	76	95
13A	27	26	44	28	41	29	47	34
13B	27	17	49	39	55	37	42	38

Mean catch rate (catch/effort)

Sub-block	2000	2001	2002	2003	2004	2005	2006
1A			*			*	
1B	*	102	44	82	*	*	*
1C	*	*	*	100	117	79	96
2A			*		*		*
2B							*
2C		*	*	*	*	*	*
3A	*	*	111	116	120	122	86
3B	*			94	100	95	*
3C	*	*	121	118	114	100	149
4A		*	*	*	*	*	*
4B	*	*	102	*	87	*	*
4C	*	87	86	96	107	83	76
5A	114	110	93	82	76	71	82
5B	*	122	113	91	96	85	93
5C	*	106	90	87	103	108	83
5D	*		*	*	*	127	*
6A	146	124	113	90	89	111	98
6B	136	130	111	92	106	114	111
6C	154	145	128	109	120	107	111
6D	185	164	137	133	123	115	118
7A	218	*	168	160	177	147	*
7B	164	*	176	158	151	150	157
7C	*	*	*	149	148	148	143
8A	156	*	*	166	145	138	*
8B	*	196	231	165	155	175	*
8C		*				*	
9A	*	*	*	*	*		*
9B	168	143	133	133	142	134	135
9C	198	175	182	170	159	174	162
10A	191	195	190	197	166	170	150
10B	201	174	165	158	158	185	141
10C	247	226	199	187	173	161	160
10D	219	184	205	175	172	144	168
11A	184	154	166	163	155	164	147
11B	194	169	155	153	169	147	126
11C	163	164	169	164	156	144	148
11D	169	170	166	141	133	120	144
11E	140	145	163	118	122	109	104
12A	200	182	166	154	152	131	149
12B	140	138	110	124	103	104	104
12C	163	163	127	133	115	107	111
12D	129	118	112	110	103	113	101
13A	115	111	100	96	96	87	103
13B	95	82	88	95	87	84	90

Sub-block	2000	2001	2002	2003	2004	2005	2006	Mean	Sub-block	2000	2001	2002	2003	2004	2005	2006
13C	43	35	76	66	27	17	20	41	13C	78	71	55	52	47	62	76
13D	99	91	63	46	32	19	18	53	13D	77	69	49	55	52	61	74
13E	239	198	158	180	162	145	146	175	13E	76	65	48	53	52	68	74
14A	20	34	16	19	19	15	16	20	14A	75	63	48	52	50	56	65
14B	16	13	11	17	17	21	12	15	14B	63	45	45	51	44	59	52
14C	9	6	7	5	9	10	5	7	14C	58	44	38	47	45	60	51
14D	23	29	20	23	22	23	24	23	14D	64	51	56	54	52	72	72
14E	30	76	47	52	37	21	27	41	14E	85	77	70	57	64	71	94
16A	11	35	28	23	8	7	14	18	16A	81	66	60	53	55	71	94
16B	32	49	24	18	25	25	25	28	16B	80	61	44	46	57	71	86
16C	16	14	10	11	8	11	14	12	16C	72	52	50	49	56	68	80
16D	12	10	11	8	10	13	14	11	16D	68	64	48	40	52	59	77
17A	*	*	*	6	7	5	5	*	17A	*	*	*	49	64	56	66
17B	28	19	15	11	13	15	8	16	17B	74	56	45	47	61	69	74
19A	*	*			*			*	19A	*	*			*		
19B	3	2	*	*	*	*	*	*	19B	62	39	*	*	*	*	*
20A	20	14	11	31	35	31	10	22	20A	69	53	53	60	66	72	78
20B	25	28	30	34	36	61	45	37	20B	70	59	54	52	69	82	88
20C	18	14	21	23	22	24	19	20	20C	86	56	66	63	67	89	92
21A	24	16	20	16	13	26	28	20	21A	89	65	55	57	56	80	103
21B	11	2	2	3	5	4	4	4	21B	55	38	40	34	49	52	86
21C	25	31	35	35	35	32	34	33	21C	79	65	61	62	63	83	93
22A	21	14	13	11	12	15	21	15	22A	79	55	56	49	57	66	95
22B	36	22	26	19	16	16	44	26	22B	64	43	40	46	46	70	82
22C	13	5	7	5	7	5	6	7	22C	74	45	47	48	61	58	68
23A	17	11	11	17	15	8	15	13	23A	65	44	43	48	50	64	86
23B	27	13	4	4	3	10	8	10	23B	60	40	33	41	48	59	72
24A	13	9	2	6	3	3	5	6	24A	60	44	36	58	56	63	97
24B	28	25	8	10	14	8	9	15	24B	69	47	34	49	60	65	89
24C	10	12	3	5	*	*	*	*	24C	59	42	32	43	*	*	*
24D	43	56	16	19	17	33	41	32	24D	82	61	50	53	62	84	113
24E	11	10	17	12	15	19	31	16	24E	67	51	55	56	65	82	93
26A	*	6	*	*			*	*	26A	*	77	*	*			*
26B	*	*	*		*	*		*	26B	*	*	*		*	*	
26C	*	2	*	*	*	*	*	*	26C	*	48	*	*	*	*	*
26D	5	5	2	*	*			*	26D	91	58	35	*	*		
27A	9	9	11	8	9	8	4	8	27A	79	59	54	54	55	89	70
27B	9	10	8	10	7	7	6	8	27B	87	57	53	56	70	90	90
27C	43	25	15	19	13	7	12	19	27C	97	67	53	49	64	62	84
27D	40	24	19	12	14	19	17	21	27D	85	53	51	52	63	76	88
27E	2	1		*	*	*		*	27E	55	40		*	*	*	
28A	7	5	3	7	9	9	6	7	28A	61	56	38	47	45	56	61
28B	2	*	*	*	*	*	*	*	28B	58	*	*	*	*	*	*
28C	7	3	*	*	2	*	*	*	28C	67	54	*	*	53	*	*
29A	9	10	7	11	14	29	29	16	29A	62	56	50	53	66	75	85
29B	*	*	*	*	3	2	7	*	29B	*	*	*	*	63	77	96
29C	*	*	*	*		*	*	*	29C	*	*	*	*		*	*
29D	10	15	*	6	8	*	5	*	29D	72	68	*	49	56	*	76
30A	5	8	7	2	*	*		*	30A	66	64	41	47	*	*	
30B	4	5	4	*	2	*		*	30B	69	61	46	*	46	*	
30C	*	1	*		*	*		*	30C	*	40	*		*	*	
31A	75	67	44	28	22	15	7	37	31A	98	76	52	53	70	87	83
31B	16	24	30	6	13	11	16	17	31B	79	87	54	47	74	56	82

Sub-block	2000	2001	2002	2003	2004	2005	2006	Mean	Sub-block	2000	2001	2002	2003	2004	2005	2006
32A	*	*	*	*	*			*	32A	*	*	*	*	*		
32B	*	*	*	*	*		*	*	32B	*	*	*	*	*		*
32C	*	*	*	*	*		*	*	32C	*	*	*	*	*		*
33A	*	3	2	*	*	*	1	*	33A	*	77	51	*	*	*	44
33B	3	*	7	4	*	5	8	*	33B	76	*	77	60	*	69	48
33C	*	*	*	*	*	*	2	*	33C	*	*	*	*	*	*	52
34A		*						*	34A		*					
34B	*	*		*	*			*	34B	*	*		*	*		
34D	*	*	*	*	*	*	*	*	34D	*	*	*	*	*	*	*
35A		*						*	35A		*					
35B	*	*	*	*	*			*	35B	*	*	*	*	*		
35C	*			*	*			*	35C	*			*	*		
35D	*	*	*			*	*	*	35D	*	*	*			*	*
35E	*	*	*	*				*	35E	*	*	*	*			
36A	*	*	*	*	*	*	*	*	36A	*	*	*	*	*	*	*
37A	*	*	*	*		*	2	*	37A	*	*	*	*		*	32
37B	*		*	*				*	37B	*		*	*			
37C	*			*		2	3	*	37C	*			*		35	44
37D	*		*	*	3	5	15	*	37D	*		*	*	63	52	49
38A	*	*	2	*	*	*	10	*	38A	*	*	73	*	*	*	72
39A	5	11	4	8	5	2	4	6	39A	87	80	44	55	56	40	61
39B			*		*			*	39B			*		*		
40A	*	*	*	*				*	40A	*	*	*	*			
40B	*	*	*	*	*	*	*	*	40B	*	*	*	*	*	*	*
40C			*		*			*	40C			*		*		
47A				*			*	*	47A				*			*
47B					*	*		*	47B					*	*	
48A	*	*	1	0	*	*	*	*	48A	*	*	32	57	*	*	*
48B	3	4	5	3	3	*	*	*	48B	81	77	64	64	59	*	*
48C	8	12	6	7	3	4	4	6	48C	89	85	63	60	53	53	59
49A	7	16	19	17	18	6	8	13	49A	101	91	89	91	94	87	92
49B	*	26	12	29	34	39	36	*	49B	*	133	94	115	175	133	123
49C	18	31	18	29	10	9	13	18	49C	94	107	180	105	84	80	85

Greenlip Annual catch (tonnes) Mean catch rate (catch/effort)

Sub-block	2000	2001	2002	2003	2004	2005	2006	Mean	Sub-block	2000	2001	2002	2003	2004	2005	2006
1A		*	*				*	*	1A		*	*				*
1B	*	6	8	7	*	*	*	*	1B	*	60	52	51	*	*	*
1C	*	*	*	7	*	5	3	*	1C	*	*	*	65	*	55	52
2A			*		*		*	*	2A			*		*		*
2B		*	*				*	*	2B		*	*				*
2C	*	8	5	11	*	*	*	*	2C	*	48	53	57	*	*	*
3A	*	*	*	3	3	4	*	*	3A	*	*	*	60	58	56	*
3B				*	*	*	*	*	3B				*	*	*	*
3C		*	*	*	1	*	*	*	3C		*	*	*	40	*	*
4A	*	*	*	*	*	*	*	*	4A	*	*	*	*	*	*	*
4B	*	*	*	*	1	*	*	*	4B	*	*	*	*	48	*	*
4C	*	*	1	*	*	*	*	*	4C	*	*	62	*	*	*	*
5A	*	3	7	10	10	12	8	*	5A	*	80	56	66	65	60	69
5C				*				*	5C				*			
31A	*	*	*	*	*			*	31A	*	*	*	*	*		
31B	11	7	17	17	9	6	3	10	31B	65	69	34	57	61	52	54
32A	*	*	*	*	*	*	*	*	32A	*	*	*	*	*	*	*
32B	4	*	*	*	3	*	*	*	32B	77	*	*	*	63	*	*
32C	3	*	*	3	*		*	*	32C	54	*	*	72	*		*
33A	4	11	12	8	3	8	1	7	33A	69	88	64	73	48	65	43
33B	7	*	4	7	*	3	4	*	33B	66	*	76	60	*	61	44
33C	*	*	*	*	*	*	*	*	33C	*	*	*	*	*	*	*
34A		*	*					*	34A		*	*				
34B	*	*	*	*	*			*	34B	*	*	*	*	*		
34D	*	*	*	*	*	*	*	*	34D	*	*	*	*	*	*	*
35A	*	*	*	*	*	*	*	*	35A	*	*	*	*	*	*	*
35B	*	*	*	*	*	*	*	*	35B	*	*	*	*	*	*	*
35C	*	*		*	*	*		*	35C	*	*		*	*	*	
35D	9	*	*	*	*	3	7	*	35D	59	*	*	*	*	56	60
35E	*	*	*	*	6	*	*	*	35E	*	*	*	*	70	*	*
36A	*	*	*	*	*	*	*	*	36A	*	*	*	*	*	*	*
36B	*	*	*	*	*	*		*	36B	*	*	*	*	*	*	
37A	*	2	*	*	*	*	3	*	37A	*	45	*	*	*	*	71
37B	*		*	*	*			*	37B	*		*	*	*		
37C				*		*	*	*	37C				*		*	*
37D				*	*	*	1	*	37D				*	*	*	34
38A	*	*			*	*	*	*	38A	*	*			*	*	*
38B	*		*	*	*	*	*	*	38B	*		*	*	*	*	*
38C	*		*	*	*	*	*	*	38C	*		*	*	*	*	*
39A	15	20	12	16	22	13	13	16	39A	61	73	58	54	48	52	69
39B			*		*			*	39B			*		*		
40A	*	*	*	*				*	40A	*	*	*	*			
40B	*	*	*	*	*	*	*	*	40B	*	*	*	*	*	*	*
40C	*		*					*	40C	*		*				
47B	*	*					*	*	47B	*	*					*
48A	8	18	10	4	4	7	16	10	48A	69	85	45	43	49	54	74
48B	4	5	9	2	3	3	*	*	48B	64	63	51	51	54	51	*

Sub-block	2000	2001	2002	2003	2004	2005	2006	Mean	Sub-block	2000	2001	2002	2003	2004	2005	2006
48C	12	13	8	8	7	10	10	10	48C	76	90	54	57	60	54	57
49A	*	*	*		*		*	*	49A	*	*	*		*		*
49B	*	*	*	*	*	*	*	*	49B	*	*	*	*	*	*	*
49C	10	8	6	10	5	1	2	6	49C	80	71	67	65	61	50	74

Appendix 6: History of the Tasmanian abalone fishery.

1962	Minimum size limit (MSL) of 5 inches (127 mm) minimum shell diameter introduced.
1964	MSL increased to 6 inches (152 mm).
1965	MSL reduced to 5 inches. Introduction of commercial abalone diving licenses. All abalone to be landed live (no processing at sea). Skippers of boats engaged in abalone fishing required to lodge monthly fish returns as part of their license conditions.
1966	abalone processing factories required to record the number of persons from whom abalone were bought.
1967	abalone divers required to carry a measuring device to measure the abalone before taking them. Special penalty introduced for possession of undersized abalone at $1 per fish. abalone to be sold in live condition to registered processors only.
1968	abalone catch returns were introduced. These recorded daily catches and effort by reporting block, and were lodged monthly by the skipper (not necessarily a diver) of an abalone fishing vessel. More than one diver's catch could be reported on a return. These returns replaced the general fish return on which earlier catches were reported.
1969	License limitation introduced. Rapid expansion of the fishery led to this first attempt to control effort. Only divers fishing the previous year were licensed to fish in 1969. This figure (120 divers) was maintained in subsequent years.
1971	Only licensed divers allowed to dive from a boat engaged in abalone fishing.
1972	License transfer from a retiring diver to his nominee allowable on grounds of health problems. Annual license fees calculated as 1.5% of the mean of the previous three years value of annual production. An additional five licenses were issued to divers living in the Furneaux Group. These divers were restricted to fishing the Furneaux Group, but the other 120 divers were not prevented from fishing there. Penalties for breaches of regulations in relation to abalone fishing increased. Permit to transfer licenses between divers revoked.
1974	License transfer from a retiring diver to his nominee permitted. Computerised catch records started from July 1974.
1979	Penalties for breaches of regulations in relation to abalone fishing increased, with special penalties rising to $2 per fish. Identification cards for divers introduced.
1982	Penalties for breaches of regulations in relation to abalone fishing increased, with special penalties rising to $10 per fish. Catch restricted by marketing crisis: processors limit divers to 24 tonnes pa.
1983	Penalties for breaches of regulations in relation to abalone fishing increased. Easing of market difficulties sees lifting of processor applied catch restrictions.
1985	Individual transferable quota (ITQ) and a total allowable catch (TAC) were introduced. Each of the 120 general license divers were allocated 28 units of quota, the Furneaux Group divers 20 units: therefore there were 3460 units. For 1985, the quota unit was set at 1100 kg *i.e.* the TAC was 3806 tonnes. –

	This amount was derived from an estimate of average catches, with a 10% bonus granted by the Minister to compensate for any financial difficulties caused by the new system. License fees were increased to 2.5% of the value of the annual landed catch, for each quota unit held. Quota unit transfers between Furneaux divers and non-Furneaux divers were prohibited. The 120 Tasmanian mainland divers were prohibited from diving in the Furneaux group. Divers were required to own at least 16 units, but could accumulate no more than 80. The catch (kg) per quota unit was determined by the Liaison Committee based upon advice from the government researchers. Catch dockets recording the catch weight landed by individual divers were introduced.
1986	Annual license fees set at 5% of value of annual landed catch. The catch per ITQ was reduced to 1000 kg (9% reduction) *i.e.* TAC was 3460 tonnes.
1987	MSL increased to 132 mm from 127 mm. The catch per ITQ was reduced to 950 kg (5% reduction) *i.e.* TAC was 3287 tonnes.
1988	The catch per ITQ was reduced to 855 kg (5% reduction) *i.e.* TAC was 2958.3 tonnes. The minimum legal weight for abalone meats was set at 90 g.
1989	The catch per ITQ was reduced to 600 kg (30% reduction) *i.e.* TAC was 2076 tonnes. A fishery for abalone in Bass Strait was held in April, with a MSL of 110 mm and a maximum size limit of 132 mm. Each diver was limited to 2.4 tonnes, with 198 tonnes caught. The fishery was free of fees, and while only licensed abalone divers could participate, was held to be distinct from the Tasmanian abalone fishery (hence the maximum size limit). The minimum meat weight regulation of 90g was amended to apply only to blacklip abalone.
1990	MSL for blacklip abalone on south and west coasts between the Wild Wave River (north of Sandy Cape) and Whale Head increased to 140 mm. MSL for greenlip in Furneaux Group waters increased to 140 mm. Furneaux Group boundary removed. The Furneaux Group divers were issued with an extra 8 units each, which could only be fished by the divers themselves and were not transferable. This increased the number of units in the fishery to 3500, and the TAC to 2100 tonnes.
1991	A fishery for abalone in Bass Strait was held in May, with a MSL of 118 mm. The TAC was 110 tonnes, with a fee of $1.40 per kg of quota. The license system was restructured: the diving entitlement was uncoupled form the entitlement to hold quota units and the lower and upper limits on the amount of units held was abolished.
1992	Minimum meat weight for greenlip was set at 70 g. Compliance catch database (SEALSPROD) that enabled auditing of catch from vessel to factory introduced by DPIF.
1993	A fishery for abalone in Bass Strait was held in May and June, with a MSL of 110 mm. The TAC was 100 tonnes, with a fee of $5.00 per kg of quota.

	Minimum meat weight regulation amended to 90g for all abalone other than greenlip. Penalties reviewed and significantly increased, with the option of prison terms for serious and repeat offenders. Special penalties increased to $50 per fish.
1994	Quota owners were given the choice of continuing with their annual abalone licenses or entering into a Deed of Agreement that applied for 10 years with the right of renewal for perpetuity. 90% of owners chose the Deed of Agreement. The Deed of Agreement set a fee structure that included both management costs and return to the community, based upon an increasing (but non-linear) proportion of beach price. At $6/kg, no fees were payable, at $35/kg fees were 10% at and at $200/kg, fees were 33% of beach price.
1995	A fishery for abalone in Bass Strait was held in May and June, with a MSL of 110 mm. Only 12 commercial divers (*i.e.* non-abalone) participated. While the TAC was 100 tonnes, only 21 tonnes was taken. The fee was $10.00 per kg of quota. Another Bass Strait fishery was held in November, with both abalone and commercial divers participating. The MSL was 100 mm, and the TAC was set at 140 tonnes, with a fee of $10/kg. Only 106 tonnes was taken before the fishery was closed. It was maintained by divers that a very high proportion of the fishable biomass had been taken, and that continuing the fishery could affect the sustainability of stocks.
1996	The *Living Marine Resources Management Act 1995* was introduced. Trigger points were introduced by DPIF to initiate a management response if catch and catch rates changed by a pre-determined quantity with respect to those from two earlier reference periods.
1997	The TAC was increased to 2520 tonnes (720 kg per quota unit). Differential in beach price between east coast and west coast blacklip first appears – is initially $2.00.
1998	The first abalone Fishery Management Plan was introduced. Among changes that it introduced were catch monitoring, which included: 1. Pre-fishing reporting by divers, 2. Post-fishing reporting of catch by divers and processors, 3. Processors required to maintain a daily balance of stock in, stock out and stock on hand, 4. Processors to report prior to movement of stock out and on receipt of stock, 5. Reports to be made by telephone, where information was immediately available to Compliance Audit Unit and Tasmania Police. For several years, greenlip abalone had attracted premium beach prices, causing a diversion of effort to that species. To enhance protection, a number of management changes were made: • For management purposes, the greenlip fishery was subdivided into two regions: the Furneaux Group and the remainder (North West, North East and King Island) • MSL was raised to 140 mm state-wide (except the North West, which was left at 132 mm), • The annual catch for the Furneaux Group was capped at 42 t based on

	estimates of sustainable yield. This cap was managed monthly, so that where more than one twelfth of the annual cap (3.5 t) was taken in any month, the Minister could close the fishery until the next month. Within the Furneaux Group, several other rules were introduced to reduce effort: • Divers could only work two days per week. Originally, the days were fixed, but because this forced divers to work in often hazardous conditions, divers were allowed to nominate which two days they could work. • A 200 kg/day bag limit was introduced, as was a 200 kg/day landing limit. This effectively meant that catch was not held on motherships overnight. • These rules were repealed in 1999. • The greenlip catch from the remainder of the State was to be limited to 106 tonnes. • Because the Department was unable to monitor catch closely enough, the monthly Furneaux Group catch usually overran its limit, and the fishery there was closed in August when the regional cap was met. The greenlip cap in the rest of the State was also overrun. Vessels over 10 m landing abalone at Smithton or Stanley had to make a prior report to the CAU reporting service so that Tasmania Police could inspect their catch. Fixed trigger points were abandoned as an assessment strategy as rising catch and catch rates indiscriminately fired triggers. Assessments have since used catch and catch rate trends to monitor stock levels. A new compliance catch database (LMM/QMS) introduced by DPIWE
1999	MSL for greenlip raised to 140 mm in North West, and 150 mm for the remainder. This applied to the commercial fishery only, the MSL for recreational fishers remaining at 140 mm. The greenlip fishery was divided into east (Furneaux Group and North East) and west (King Island and North West) with quarterly caps of 17 tonnes and 20 tonnes respectively. Overrun of caps led to a closure of the greenlip fishery in October. Within the Furneaux Group, Block 35 was closed to fishing between 1 October and 31 March to protect spawning abalone.
2000	The blacklip fishery was divided into two East and West management zones with boundaries at Whale Head and Port Sorell. The greenlip fishery was managed separately. Eastern blacklip units were set at 340 kg (TAC 1190 t), Western units at 400 kg (1400 t) and greenlip units at 40 kg (140t), with a TAC for the whole fishery of 2730 tonnes. Size limits for blacklip abalone remained unchanged. The zone boundaries meant that the Western Zone had a size limit of 140 mm from Whale Head to the Wild Wave River and 132 mm from there to Port Sorell. Following egg-per-recruit studies by researchers, MSL for King Island greenlip was raised to 155 mm, 140 mm for North West and 145 for both the North East and the Furneaux Group. The Block 35 (Franklin Sound - Furneaux Group) greenlip catch was capped at 20 tonnes. Catch were reported on a smaller spatial scale with the introduction of sub-

	blocks state-wide. Owners of fishing license (abalone dive) were allowed to hold more than one license and allow others to dive those licenses as supervisors.
2001	The Northern Zone (between Arthur River in the west and Musselroe Point in the east) for blacklip abalone was established, with a MSL of 127 mm except between Woolnorth Point and the Arthur River, where 132 mm prevailed. Catch per unit was 80 kg, with a TAC of 280 t. Because the Northern Zone covered coast that was previously included in the two other blacklip zones, catch for those zones was proportionally reduced, with a further allowance for declining Eastern Zone stocks. The TAC for the West was set at 1260 t (360 kg/unit), and the East at 1120 t (320 kg/unit). The greenlip TAC remained at 140 tonnes, so production from the entire fishery was 2800 t, or 800 kg/unit. In association with establishment of Northern Zone, research monitoring areas were set aside at the Inner Sister, Swan Island, Waterwitch Reef, and the Doughboys. MSL's for recreational divers were changed to 132 mm for blacklip state-wide, and 145 mm for greenlip in all areas except the North West, which remained at 140 mm. The regional catch for the greenlip fishery was limited in three of the main regions. The North West catch was capped at 40 t, the North East at 30 t, while the Furneaux Group catch remained fixed at 42 t. Catch from King Island and the Bass Strait islands (Kent, Curtis, Hogan Groups) was not capped.
2002	MSL for Eastern Zone was increased to 136 mm. MSL for greenlip on King Island was reduced to 150 mm. MSL for greenlip in the North West was increased to 145 mm. Eastern Zone TAC reduced to 857.5 t (245 kg/unit). Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC remained 140 t (40 kg/unit) Production for the whole fishery was set at 2537.5 t (725 kg/unit). Catch from the Actaeons (sub-blocks 13C, D and E) was capped at 350 t, managed firstly as a half-yearly cap, then quarterly. The fishery there was closed in September and then mid-October when those caps were reached.
2003	A Bass Strait blacklip zone (TAC 70 tonnes (20 kg/unit), MSL of 114 mm) was superimposed over the Northern Zone in central Bass Strait and part of the Furneaux Group. Its purpose was to enable the catching of abalone smaller than allowed by the Northern Zone size limit. The Bass Strait Boundaries were set at Cowrie Point in the west and Anderson Bay in the east. The Flinders Island boundaries were on an unnamed point north of Settlement Point on the western side of the island (40°00'36.32") and Foochow Inlet on the east. Eastern Zone TAC remained 857.5 t (245 kg/unit). Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC remained 140 t (40 kg/unit) Bass Strait Zone TAC set at 70 t (20 kg/unit)

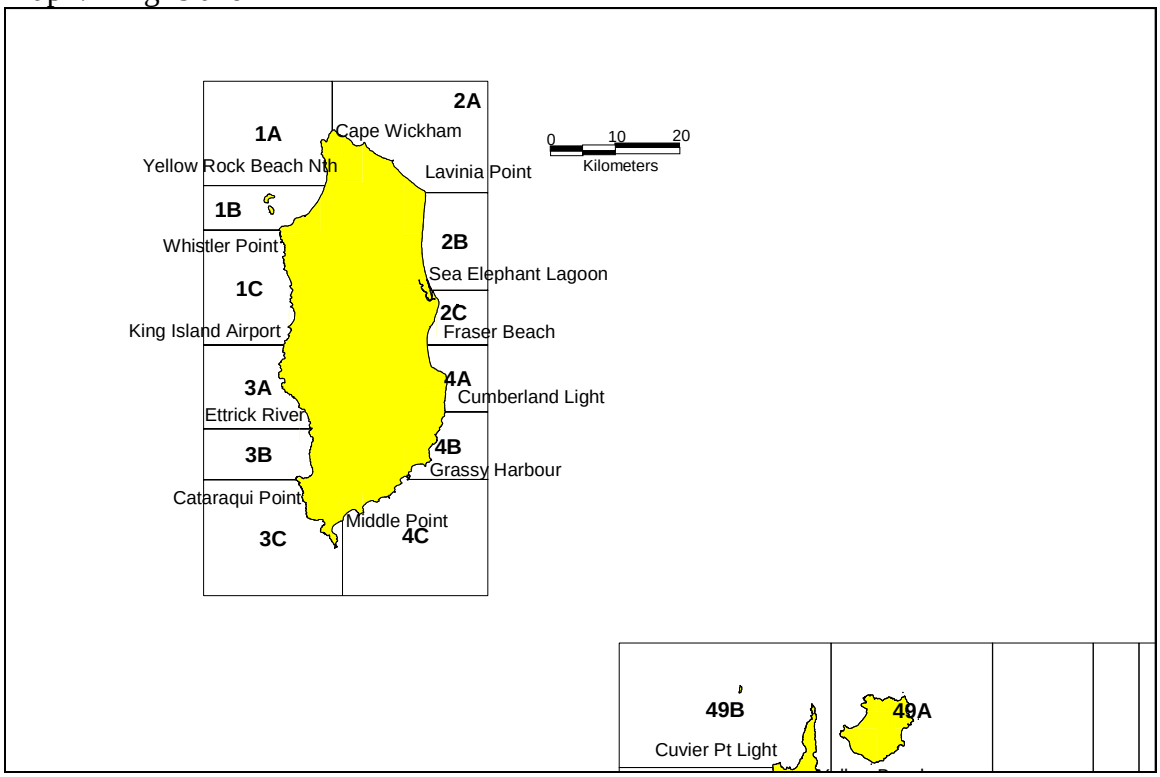
	Fishery production was set at 2607.5 t (745 kg/unit) state-wide. Blacklip catch from Block 5 (Northern Zone) was capped at 100 t. MSL for Western Zone between the Wild Wave River and Arthur River was increased to 136mm from 132mm. abalone taken from Western Zone subject to upper size limit of 160 mm by canners and live market buyers. Note that this was not rigidly enforced and market sampling showed most samples contained many abalone over this size.
2004	Eastern Zone TAC reduced to 770 t (220 kg/unit) Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC reduced to 129.5 t (37 kg/unit) Bass Strait Zone TAC remained 70 t (20 kg/unit) Fishery production was set at 2509.5 t (717 kg/unit) state-wide. The greenlip TAC reduction affected the North West only, where the annual cap was reduced by 10 t to 30 t. October-March closure for Franklin Sound greenlip fishery abolished. Block 35 cap reduced from 20 t to 15 t.
2005	Eastern Zone TAC remained 770 t (220 kg/unit) Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC reduced to 122.5 t (35 kg/unit) Bass Strait Zone TAC remained 70 t (20 kg/unit) Fishery production was set at 2502.5 t (715 kg/unit) state-wide. The greenlip TAC reduction affected the North East only, where the annual cap was reduced by 7 t to 23 t. Team diving (sharing catch from one quota unit by two divers) was introduced to legitimise the practise of divers catching abalone for others when they held no quota to which their catch could be assigned. Team dive dockets were submitted by teams, but not computerised. High grading (discarding large abalone in the catch from the deck) prohibited. Caufing prohibited. Introduction of cancellation reports where a prior reported trip is cancelled. Introduction of single (blacklip) zone fishing provisions. Overcatch provisions introduced to cover unintentional underestimation of catch weight. In Victoria in December, ganglioneuritis detected on two land-based (Portland and Port Fairy) and two offshore (Westernport) aquaculture sites.
2006	Eastern Zone TAC remained 770 t (220 kg/unit) Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC remained 122.5 t (35 kg/unit) Bass Strait Zone TAC remained 70 t (20 kg/unit) Fishery production was set at 2502.5 t (715 kg/unit) state-wide. On 1 January 2006, interim reduction in MSL for Perkins Bay greenlip area (Blocks 47, 48A), from 145 mm to 140 mm. On 20 September 2006, MSL for Bass Strait Zone in Blocks 41-46 (North Coast) reduced from 114mm to 110mm.

	On 1 November 2006, MSL for Eastern Zone was increased to 138mm from 136mm. MSL for greenlip abalone in Perkins Bay was reduced to 132mm from 140mm, with annual catch capped at 20t. Block 30 entirely closed to commercial abalone fishing and partially closed (except sub-block 30A) to recreational abalone fishing. The bag limit for recreational fishers in sub-block 30A reduced to 5 abalone per day. May 2006: Victorian ganglioneuritis outbreaks reported from wild stocks adjacent to land-based aquaculture site at Port Fairey. As a precautionary measure, from 16 August 2006, the Tasmanian wild fishery in Bass Strait closest to the Victorian coast was closed to abalone fishing, initially for three months but then extended to 28 February 2007. The closure was for waters within latitudes 39º 12' S and 39 º 33' S, and longitudes 146 º to 147 º 35' (Blocks 51 to 56, and part of Block 57, including Wright Rock and Endeavour Reef). The taking of abalone in Tasmanian waters from vessels used in the Victorian fishery was prohibited.
2007	Eastern Zone TAC remained 770 t (220 kg/unit) Western Zone TAC remained 1260 t (360 kg/unit) Northern Zone TAC remained 280 t (80 kg/unit) Greenlip TAC remained 122.5 t (35 kg/unit) Bass Strait Zone TAC remained 70 t (20 kg/unit) Fishery production was set at 2502.5 t (715 kg/unit) state-wide. Opening of the Bass Strait Zone fishery was postponed until 1 April for consideration of closure of the northern Bass Strait waters.

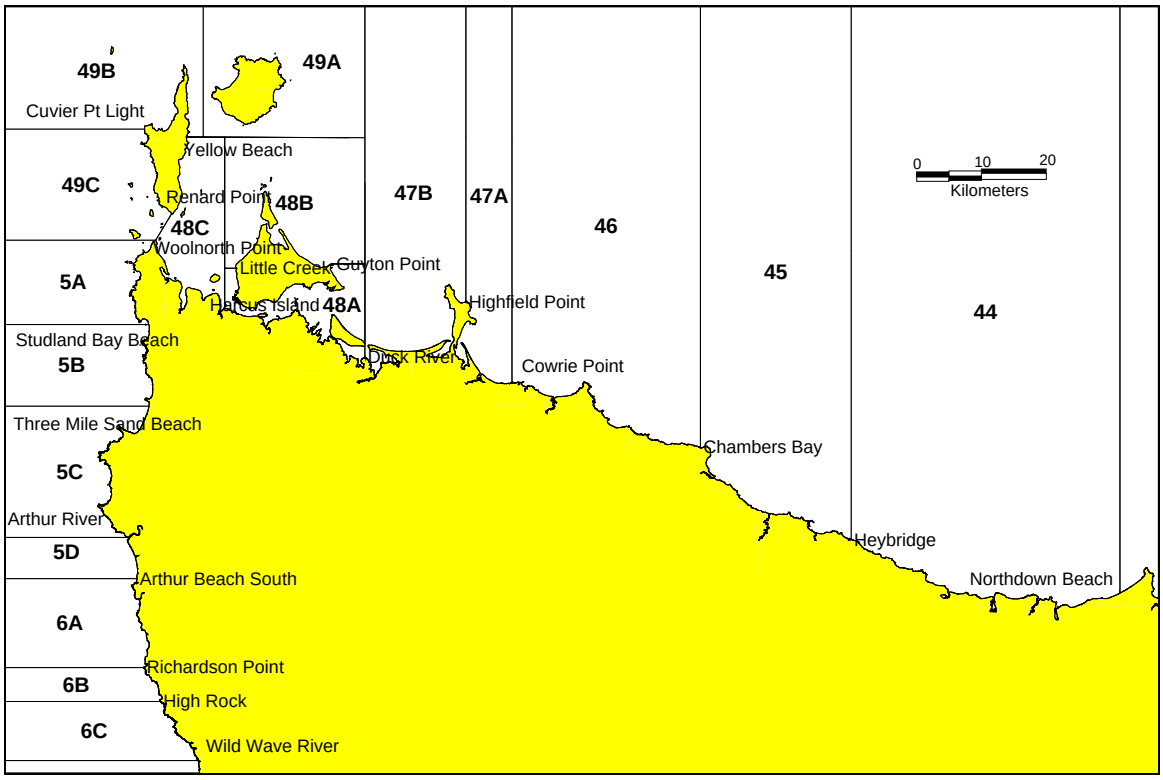
Appendix 7. Maps of catch-reporting blocks and sub-blocks.

It is not intended that these maps be used for any purpose other than identifying the position of sub-blocks mentioned in this report.

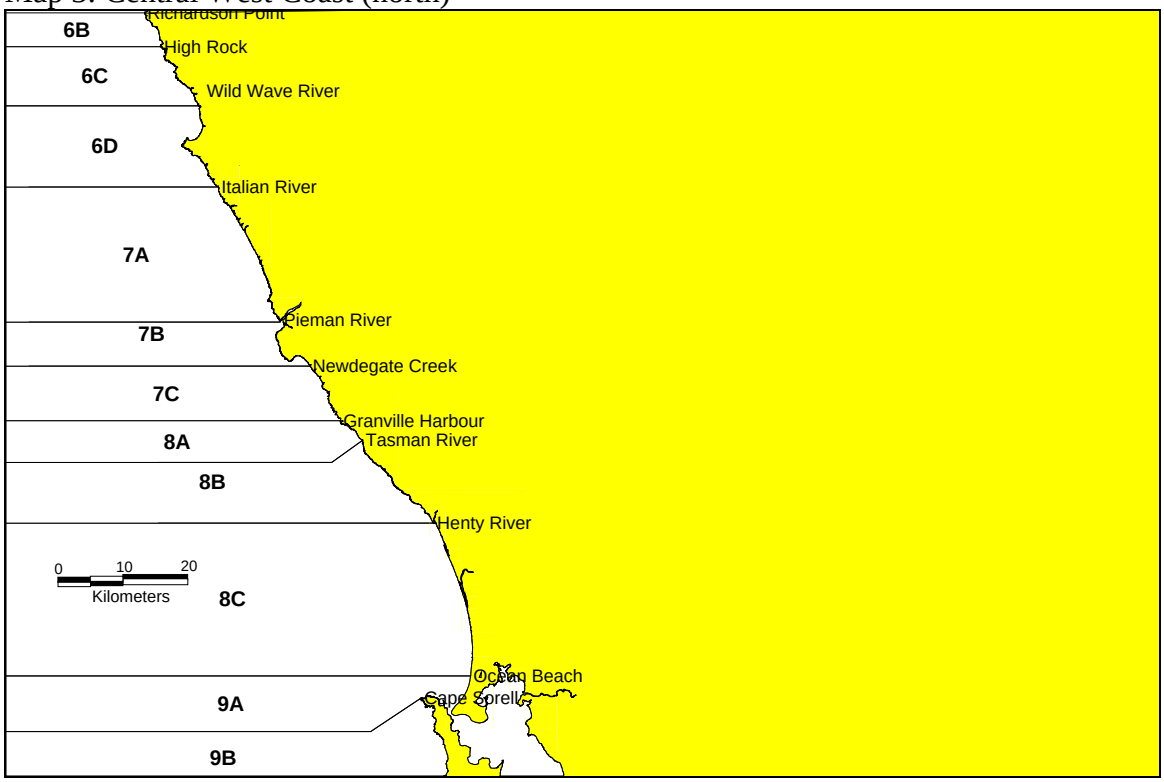
Map1: King Island



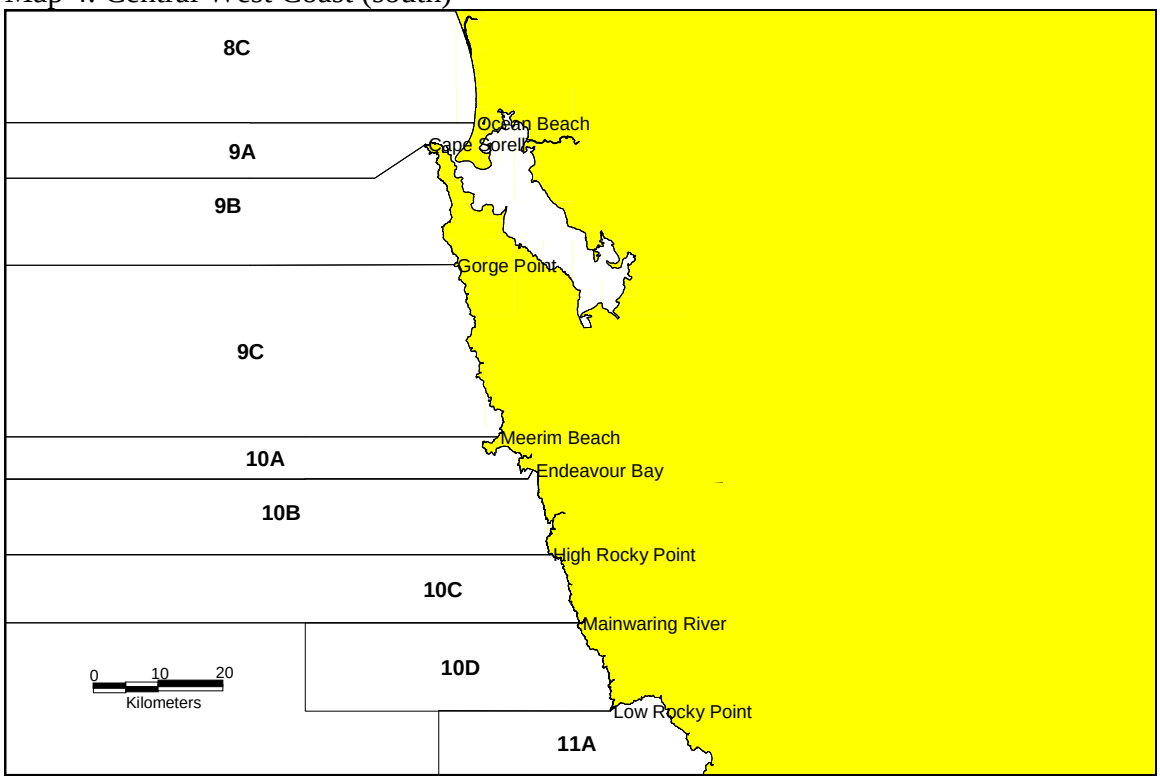
Map 2: North West Tasmania



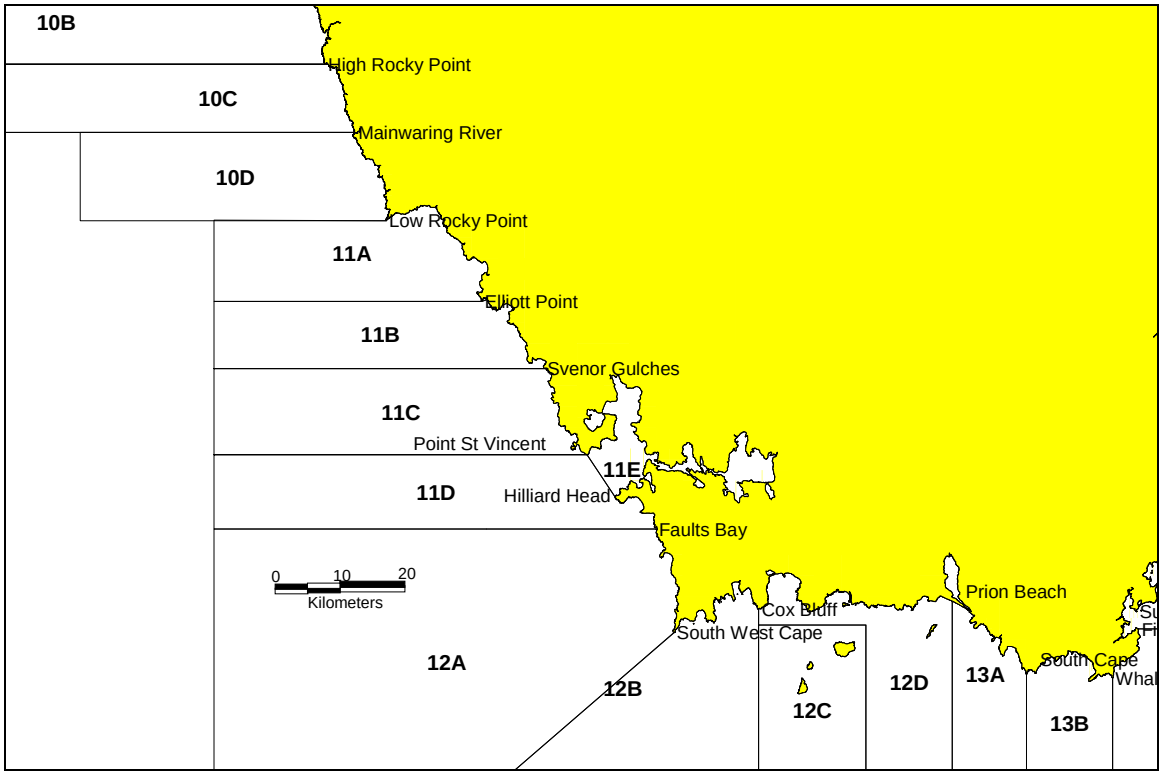
Map 3: Central West Coast (north)



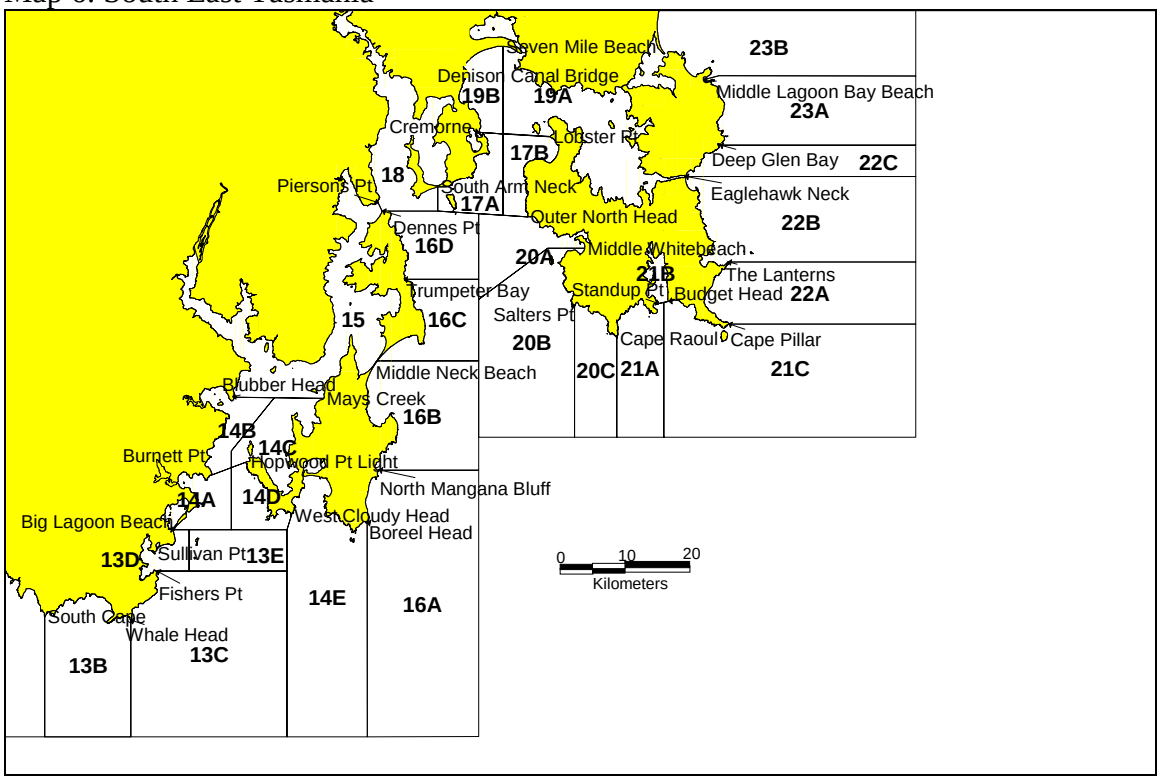
Map 4: Central West Coast (south)



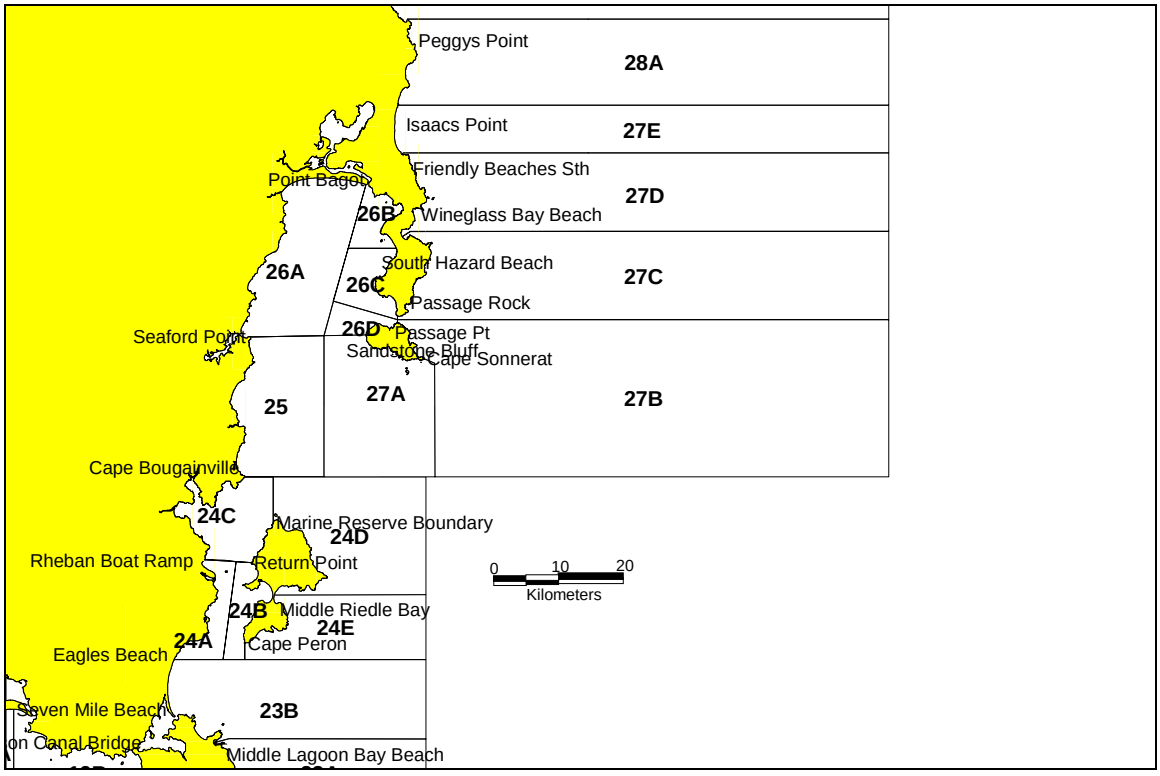
Map 5: South West Tasmania



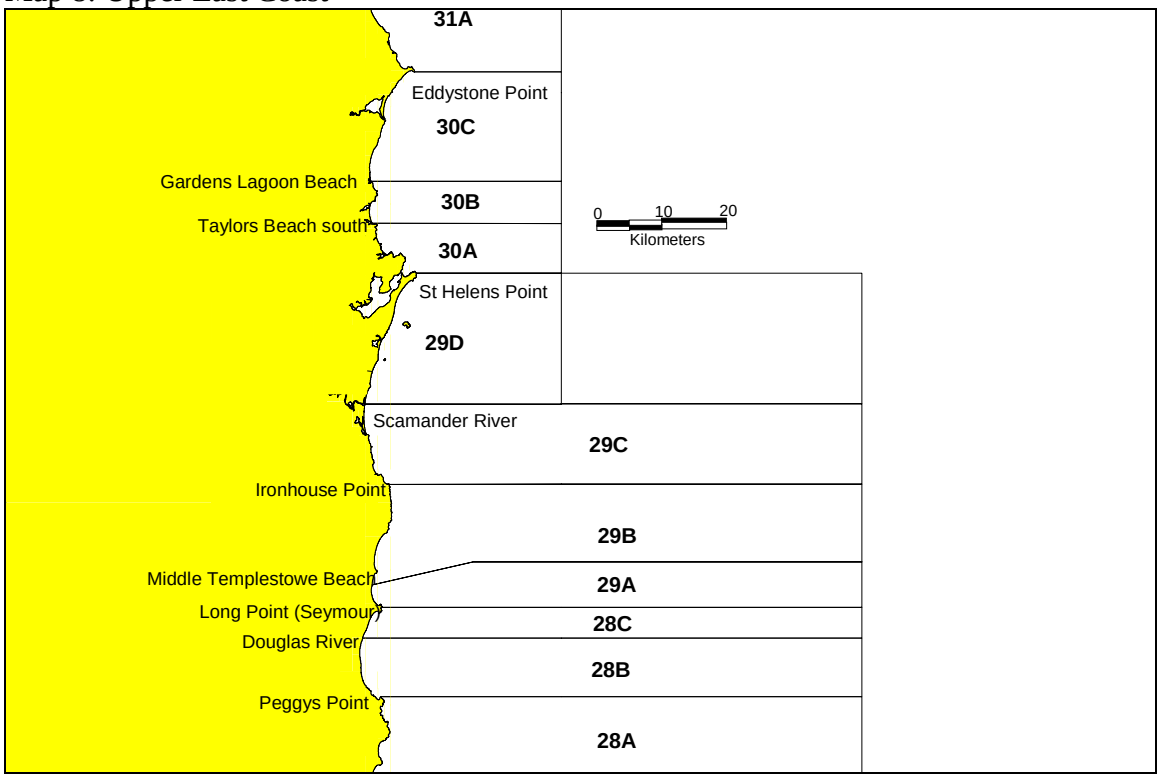
Map 6: South East Tasmania



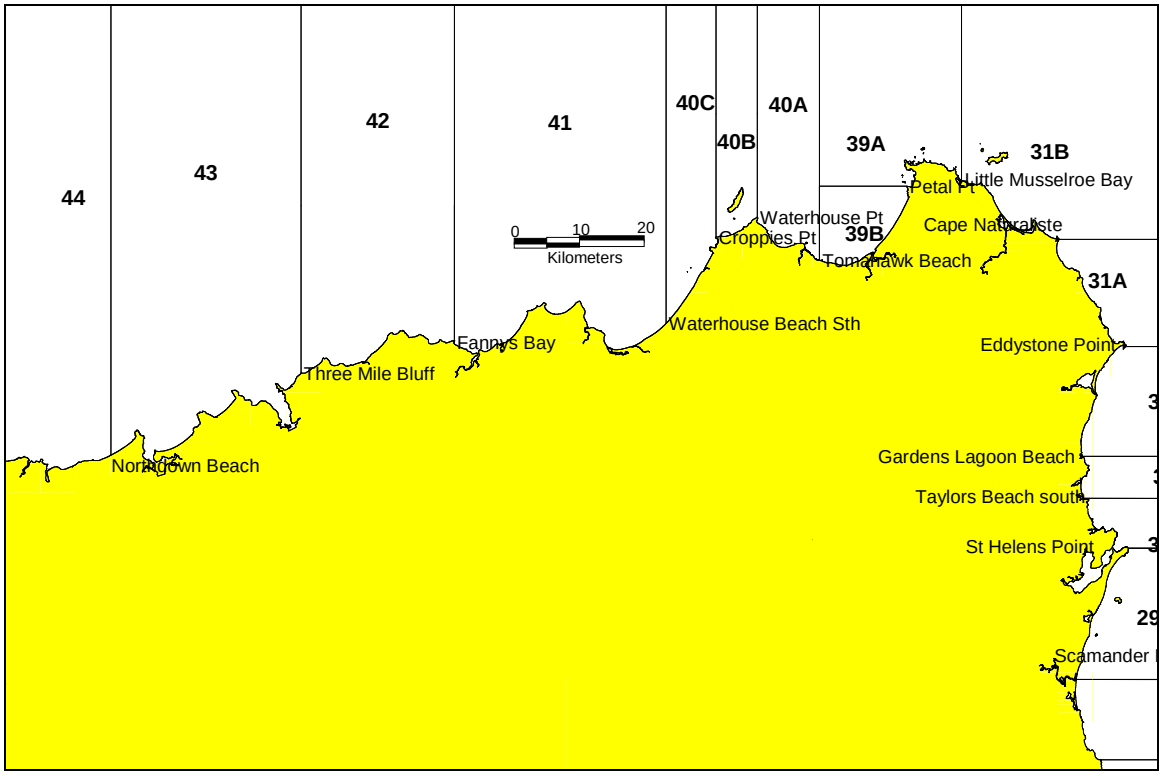
Map 7: Lower East Coast



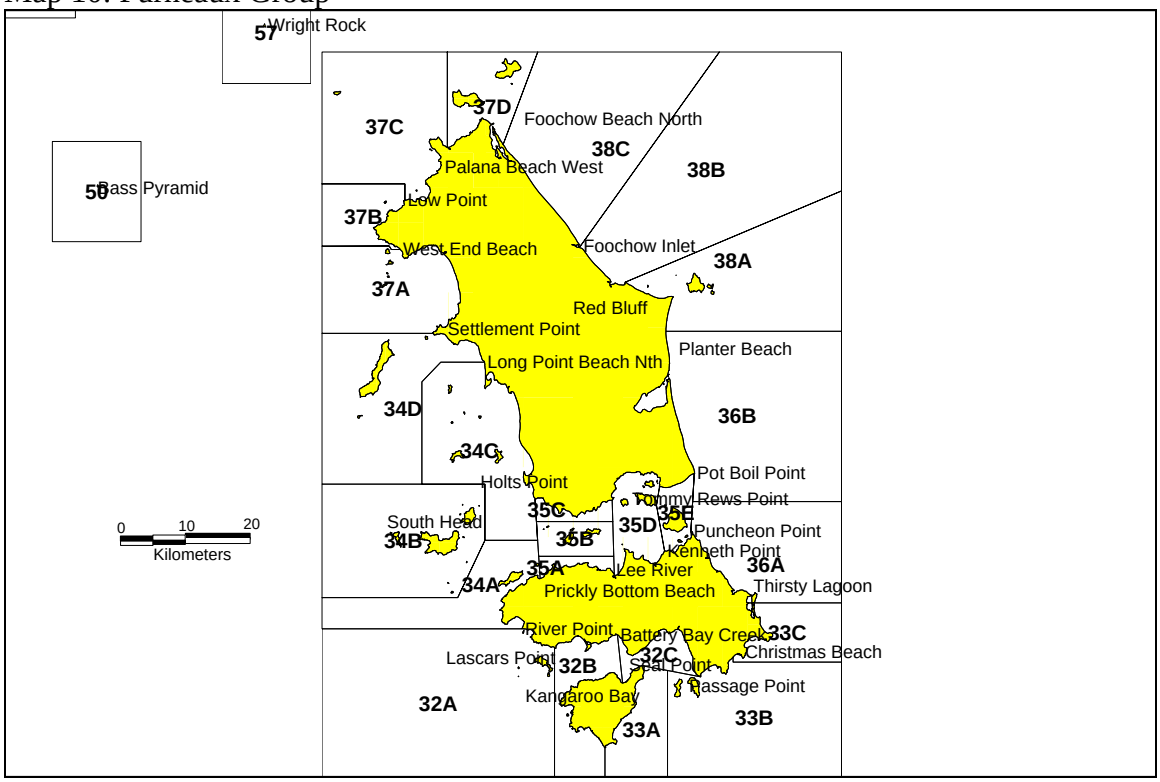
Map 8: Upper East Coast



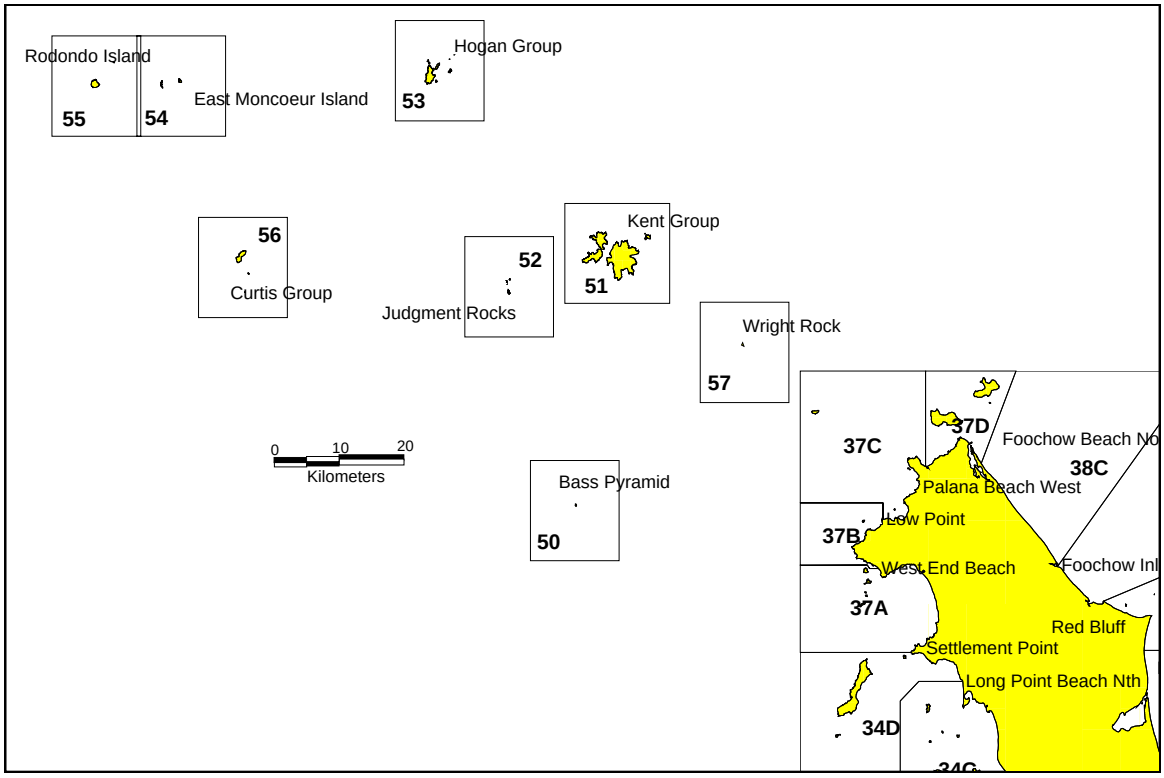
Map 9: North East Tasmania



Map 10: Furneaux Group



Map 11: Bass Strait Islands


Rodondo Island
55
54
East Moncoeur Island
Hogan Group
53
56
Curtis Group
52
Judgment Rocks
Kent Group
51
Wright Rock
57
0
10
20
Kilometers
Bass Pyramid
50
37C
37D
Foochow Beach No
38C
Palana Beach West
Low Point
37B
West End Beach
Foochow Inl
37A
Red Bluff
Settlement Point
Long Point Beach Nth
34D