

Resource Survey of the Great Australian Bight Trawl Fishery – 2008

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2008



Australian Government

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10% lower than the 2006 and 2007 estimates (8,415 t and 8,540 t). It is unclear whether the decline in relative biomass estimates represents a decline in the population or simply seasonal variability in the estimate.

The CV obtained for relative biomass estimates during 2008 for day and night shots combined (0.06) was similar to CVs in other years which ranged 0.05–0.06.

Other species

There was considerable annual variation in relative biomass estimates of other main species. Common sawshark, gummy shark, latchet, ornate angelshark and spikey dogfish have showed an overall decrease in relative biomass estimates since 2005. Relative biomass estimates of ocean jacket, jackass morwong and knifejaw have changed very little over the four survey years.

Conclusions

The 2008 Great Australian Bight resource surveys achieved all objectives. The target CVs for relative biomass estimates were achieved for both Bight redfish and deepwater flathead and the relative biomass estimates were comparable to results from previous years. In addition, relative biomass estimates of other main species were estimated with low to medium CVs. Sufficient length-frequency and otolith samples were collected for both target species.

The survey also demonstrated that a scientifically rigorous fishery-independent survey can be consistently conducted by the fishing industry.

Acknowledgments

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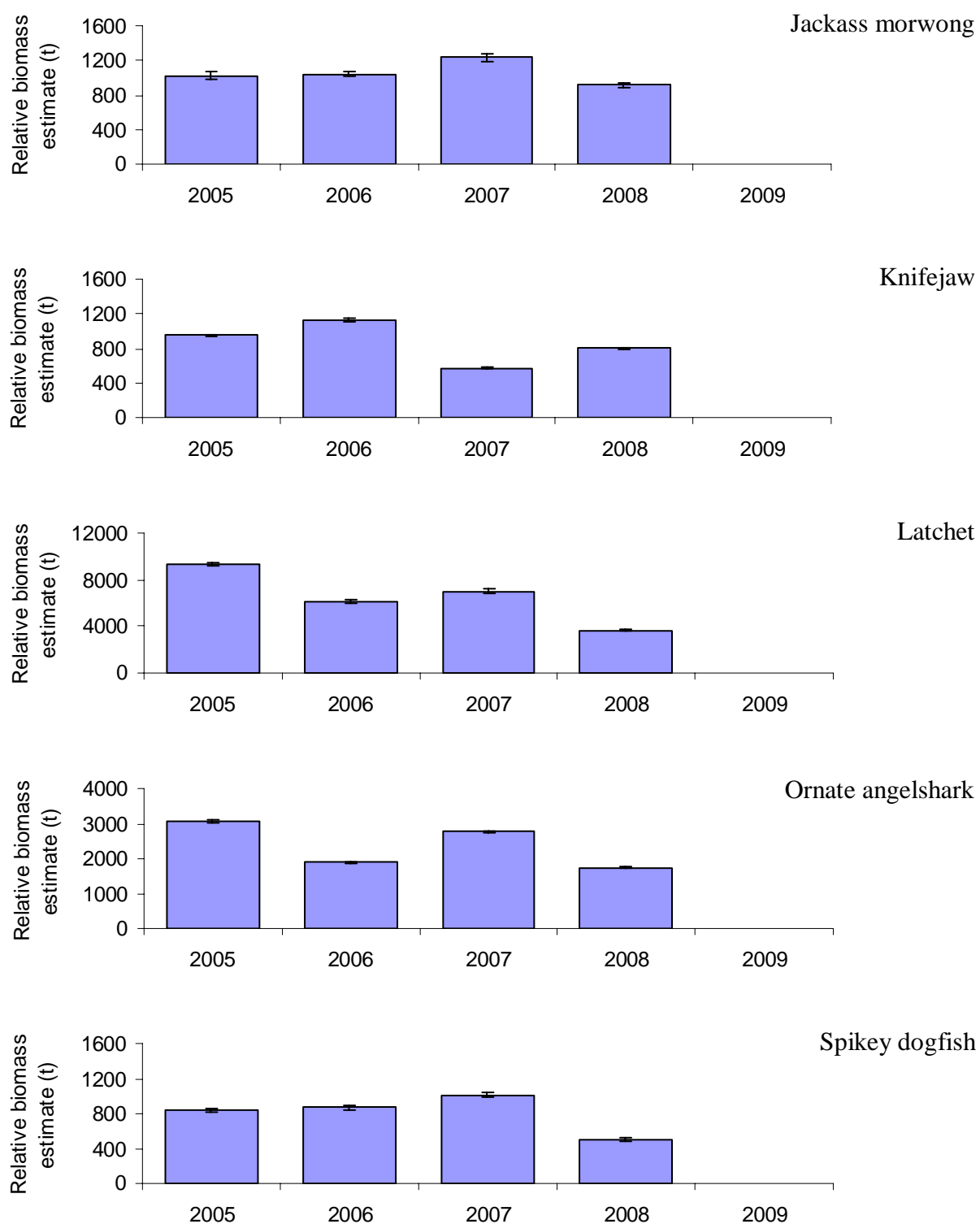


Figure 10. Relative biomass estimate ($t \pm SE$) of jackass morwong, knifejaw, latchet, ornate angelshark and spikey dogfish from annual surveys.

Table 1. Description of strata sampled during the 2008 survey.

Stratum	Depth (m)	Longitude	Area (km ²)	Number of shots
Central 2	120–200	130.75–132.50	5720	22
Central 1	120–200	129.00–130.25	3965	31
West 2	120–200	127.75–129.00	2700	10
West 1	120–200	126.00–127.75	2600	13

Table 2. Mean and standard deviation (SD) length (m), swept area (km²), speed (knots) and depths (m) of tows in each stratum.

Stratum	Month	Tow length		Area swept [†]		Tow speed		Tow depth	
		Mean (m)	SD	Mean (km ²)	SD	Mean (knots)	SD	Mean (m)	SD
Central 1	Feb	14743	845	0.240	0.007	3.18	0.05	134	8
Central 2	Feb	14981	675	0.238	0.004	3.15	0.05	140	8
West 1	Feb	14667	1143	0.239	0.015	3.23	0.05	130	7
West 2	Feb	15716	440	0.251	0.007	3.33	0.10	136	15
Central 1	Mar	13933	2580	0.229	0.036	3.17	0.06	131	6
Central 2	Mar	15262	439	0.240	0.003	3.20	0.00	138	11
West 1	Mar	15334	445	0.244	0.006	3.24	0.07	128	5
West 2	Mar	14767	719	0.241	0.001	3.20	0.00	133	13

[†] Note: Area swept calculated using width of net (16.3 m)

Table 3. Total catch (kg) of all species in each stratum and across all strata during the 2008 survey.

Species	Catch (kg)				
	Central 2	Central 1	West 2	West 1	Total
Barracouta	340	258	123	170	891
Bight redfish	5098	3834	2956	1091	12979
Blackspotted gurnard perch	88	96	51	6.8	241.8
Blue morwong	232	158	151	111	652
Calamari	6	3			9
Cardinalfishes				1	1
Southern chimaera				6	6
Common bellowsfish	1.1	2.2	0.1	1	4.4
Common sawshark	18.2	154.7	51.2	88.8	312.9
Coral	20	0.5	2		22.5
Cucumberfishes	1				1
Cuttlefish	28.8	40.2	11	7	87
Deepwater bug	12.1	2.6	0.2		14.9
Australian burrfish	90	125.2	26	80.5	321.7
Deepwater flathead	2863	3524	1099	1790	9276
Deepwater stargazer	86	82	15	62	245
Bluefin leatherjacket		7	1		8
John dory	7.8	5.8	4.7	21	39.3
Silver dory	40	38	16	11	105
Eel unknown	1				1
Conger eel	20	40	5	21	86
Elephantfish	2				2
Tiger flathead	1				1
Footballer sweep	2			2	4
Gemfish	6	2	32	38	78
Greeneye dogfish	8	2.5		3	13.5
Gummy shark	53	248.7	72.8	194	568.5
Red gurnard	74	91.6	32	63.1	260.7
Spiny gurnard	38	9	8	11	66
Hairtails				4	4
Hapuka			51	10	61
Hermit crab		1	1		2
Jack mackerel	516	250	71	136	973
Jackass morwong	235.2	233.1	294.5	229.6	992.4
Knifejaw	220	408.8	150	215	993.8

Species	Catch (kg)				Total
	Central 2	Central 1	West 2	West 1	
Latchet	1374	987	385	1507	4253
Sixspine leatherjacket		10			10
Velvet leatherjacket	2	17	10		29
Leatherjacket		2.5	2	3	7.5
Bigspine boarfish	136	142.5	72	133	483.5
Blue mackerel	5	1	11	5	22
Ocean jacket	1139	5209	2139	1524	10011
Ocean perch	5	27	68.5	2	102.5
Oreodories	2				2
Ornate angelshark	309	978	452	437	2176
Slender orange perch			0.5		0.5
Splendid perch		3	1.5		4.5
Eastern fiddler ray		2			2
Southern fiddler ray	55	72	34	50	211
Torpedo rays and Numbfishes	4				4
Red cod	5	12	9	16	42
Redbait	5	27	18		50
Ringed toadfish	53	145	58	76	332
Southern round skate	24.5				24.5
Bigscale rubyfish	17	8	11	107	143
Rusty carpetshark	50.5	97	20	90.5	258
Samsonfish	16		16		32
Sandpaper fish	4	12.5	232	7	255.5
Southern sawshark	11	8	20	65.5	104.5
Sawtail catshark	3				3
Seastars	3.2	0.4		5	8.6
Sergeant baker	41	35	27	36	139
Bronze whaler		60			60
Port Jackson shark	62	49	17	14	142
School shark	13	8.8			21.8
Sydney skate	5				5
Melbourne skate	80			9	89
Legskates	20				20
Smooth stingray	20	68		36	124
Snapper	15	18	5	4	42
Southern rock lobster			1	3.3	4.3
Spikey dogfish	232	117	39	168	556
Spiny boxfish	8.4	16.7	4.5	3.7	33.3
Sponge	1243	371	295	325	2234
Arrow squid	150	578	177	457	1362
Black stingray	105	178	106	98	487
Swallowtail	36	459	342	365	1202
Tarwhine	1		0.2	1	2.2
Thetis fish	34.1	29.5	8	12	83.6
Silver trevally	12	112.8	80	129	333.8
Tusk	37.2	101.1	31	25	194.3
Common veilfin	4	2	1	32	39
Volute shell				1	1
Blue warehou	21	9.5	16		46.5
Whitebarred boxfish	16.5	8		7	31.5
King George whiting				1.2	1.2
Wide stingaree	441	119	318	6285	7163
Spotted wobbegong			25	40	65
Yelloweye redfish	7	125	523	72	727
Yellowspotted boarfish	66	75.5	16	49	206.5
Total	16001.6	19919.7	10815.7	16575	63312

Table 4. Catch (kg) Bight redfish and deepwater flathead for each stratum point sampled during the 2008 survey.

Shot code	Shot	Stratum point		Shot date	Time of shot	Start Point		Finish Point		Catch (kg)	
		Lat	Long			Lat	Long	Lat	Long	Bight redfish	Deepwater flathead
C2-01-2008	1	33°55'	132°28'	13/02/2008	17:49	33°55.20'	132°28.20'	33°50.40'	132°21.00'	243	285
C2-02-2008	2	33°43'	132°10'	13/02/2008	21:45	33°46.20'	132°15.00'	33°40.80'	132°07.20'	278	71
C2-03-2008	3	33°07'	132°04'	14/02/2008	0:50	33°30.00'	131°55.80'	33°25.20'	131°48.00'	195	245
C2-04-2008	4	33°37'	131°46'	14/02/2008	6:34	33°25.80'	131°45.60'	33°27.00'	131°36.60'	217	167
C2-05-2008	5	33°23'	131°22'	14/02/2008	10:17	33°24.00'	131°28.80'	33°22.80'	131°19.20'	12	145
C2-06-2008	6	33°16'	130°13'	14/02/2008	17:21	33°16.20'	130°20.40'	33°16.20'	130°10.80'	109	78
C1-07-2008	7	33°07'	130°13'	14/02/2008	20:53	33°22.20'	131°13.80'	33°21.60'	131°04.20'	15	56
C1-08-2008	8	33°16'	130°07'	14/02/2008	0:03	33°16.20'	130°09.00'	33°14.40'	130°18.00'	271	167
C1-09-2008	9	33°13'	129°49'	15/02/2008	3:05	33°13.80'	129°57.00'	33°13.20'	129°48.00'	130	89
C1-10-2008	10	33°16'	129°41'	15/02/2008	6:42	33°12.00'	129°48.00'	33°07.80'	129°56.40'	163	145
C1-11-2008	11	33°13'	129°34'	15/02/2008	12:10	33°10.80'	129°42.00'	33°13.80'	129°33.00'	65	279
C1-12-2008	12	33°16'	129°25'	15/02/2008	15:30	33°13.80'	129°31.80'	33°15.60'	129°26.40'	6	134
C1-13-2008	13	33°16'	129°19'	15/02/2008	18:58	33°16.20'	129°22.20'	33°16.20'	129°12.00'	163	167
C1-14-2008	14	33°17'	129°10'	15/02/2008	22:08	33°16.20'	129°12.60'	33°18.60'	129°03.00'	163	112
C1-15-2008	15	33°19'	129°04'	15/02/2008	1:15	33°19.20'	129°04.20'	33°18.00'	128°55.20'	43	22
W2-16-2008	16	33°17'	128°33'	16/02/2008	6:06	33°17.40'	128°35.40'	33°16.20'	128°25.80'	217	123
W2-17-2008	17	33°13'	128°04'	16/02/2008	10:19	33°13.20'	128°10.80'	33°13.20'	128°00.60'	43	67
W1-18-2008	18	33°10'	126°58'	16/02/2008	18:10	33°09.60'	126°59.40'	33°12.00'	126°49.80'	8	78
W1-19-2008	19	33°16'	126°19'	16/02/2008	22:57	33°13.80'	126°27.00'	33°16.20'	126°18.00'	434	167
W1-20-2008	20	33°17'	126°13'	17/02/2008	2:06	33°16.80'	126°13.20'	33°18.60'	126°05.40'	109	112
W1-21-2008	21	33°13'	126°17'	17/02/2008	5:15	33°16.80'	126°09.00'	33°12.60'	126°17.40'	217	167
W1-22-2008	22	33°10'	126°42'	17/02/2008	10:02	33°10.20'	126°37.80'	33°10.20'	126°48.00'	2	167
W1-23-2008	23	33°13'	126°58'	17/02/2008	13:23	33°12.00'	126°52.20'	33°13.20'	127°01.80'	4	134
W2-24-2008	24	33°13'	128°25'	17/02/2008	11:20	33°12.60'	128°24.60'	33°14.40'	128°34.20'	87	67
W2-25-2008	25	33°17'	128°37'	18/02/2008	14:17	33°16.20'	128°35.40'	33°17.40'	128°46.20'	195	33
C1-26-2008	26	33°19'	129°07'	18/02/2008	18:53	33°19.20'	128°58.80'	33°18.60'	129°09.60'	98	67
C1-27-2008	27	33°16'	129°13'	18/02/2008	21:55	33°15.60'	129°06.00'	33°15.00'	129°15.00'	56	67
C1-28-2008	28	33°16'	129°22'	18/02/2008	0:55	33°17.40'	129°16.80'	33°15.00'	129°25.80'	30	100
C1-29-2008	29	33°19'	129°31'	18/02/2008	4:15	33°15.60'	129°27.00'	33°19.80'	129°34.20'	0	78
C1-30-2008	30	33°19'	129°34'	18/02/2008	7:17	33°19.20'	129°33.60'	33°15.00'	129°40.20'	20	100
C1-31-2008	31	33°13'	129°43'	18/02/2008	10:15	33°15.00'	129°40.80'	33°07.80'	129°43.80'	130	134
C1-32-2008	32	33°08'	130°04'	19/02/2008	N/A	33°09.00'	129°44.40'	33°10.20'	129°54.00'	130	134
C1-33-2008	33	33°13'	130°10'	19/02/2008	17:07	33°12.00'	130°00.60'	33°13.20'	130°10.80'	163	134
C1-34-2008	34	33°13'	130°13'	19/02/2008	20:05	33°12.60'	130°11.40'	33°13.80'	130°21.00'	43	89
C2-35-2008	35	33°22'	131°13'	19/02/2008	3:13	33°21.60'	131°09.00'	33°22.20'	131°18.60'	0	134
C2-36-2008	36	33°22'	131°34'	19/02/2008	6:15	33°21.60'	131°30.00'	33°22.20'	131°39.60'	326	67
C2-37-2008	37	33°19'	131°33'	19/02/2008	9:15	33°24.00'	131°43.80'	33°28.80'	131°52.20'	434	112
C2-38-2008	38	33°38'	132°04'	20/02/2008	13:50	33°33.60'	131°59.40'	33°39.60'	132°06.60'	217	112
C2-39-2008	39	33°46'	132°13'	20/02/2008	16:52	33°41.40'	132°07.80'	33°47.40'	132°16.20'	20	223
C2-40-2008	40	33°47'	132°16'	19/03/2008	19:27	33°48.00'	132°16.80'	33°42.00'	132°10.20'	45	170
C2-41-2008	41	33°37'	131°58'	19/03/2008	22:54	33°40.20'	132°06.60'	33°36.60'	131°57.60'	660	149
C2-42-2008	42	33°28'	131°49'	20/03/2008	2:08	33°33.60'	131°49.20'	33°27.60'	131°48.60'	390	191
C2-43-2008	43	33°19'	131°26'	20/03/2008	6:11	33°20.40'	131°35.40'	33°19.20'	131°25.20'	270	66
C2-44-2008	44	33°22'	131°10'	20/03/2008	9:29	33°22.80'	131°19.20'	33°21.60'	131°09.60'	5	70
C2-45-2008	45	33°19'	131°00'	20/03/2008	12:27	33°20.40'	131°09.00'	33°18.60'	130°59.40'	9	105
C1-46-2008	46	33°16'	129°46'	20/03/2008	20:29	33°16.20'	129°54.60'	33°15.60'	129°44.40'	64	210
C1-47-2008	47	33°16'	129°34'	20/03/2008	23:31	33°15.00'	129°43.20'	33°15.60'	129°33.00'	320	88
C1-48-2008	48	33°15'	129°31'	21/03/2008	2:51	33°15.00'	129°31.20'	33°11.40'	129°25.20'	192	105
C1-49-2008	49	33°13'	129°22'	21/03/2008	5:30	33°12.00'	129°24.00'	33°16.20'	129°16.20'	160	105
C1-50-2008	50	33°19'	129°16'	21/03/2008	8:35	33°19.20'	129°16.20'	33°17.40'	129°07.80'	480	103
C1-51-2008	51	33°17'	129°05'	21/03/2008	11:36	33°17.40'	129°07.20'	33°16.80'	129°03.60'	4	38
W2-52-2008	52	33°16'	128°58'	21/03/2008	13:40	33°16.20'	129°04.20'	33°15.60'	128°52.20'	270	88
W2-53-2008	53	33°15'	128°43'	21/03/2008	17:06	33°15.00'	128°45.60'	33°15.00'	128°36.00'	96	175
W2-54-2008	54	33°19'	128°34'	21/03/2008	20:26	33°16.20'	128°36.00'	33°16.20'	128°25.80'	64	105
W1-55-2008	55	33°13'	127°25'	22/03/2008	5:36	33°13.80'	127°28.20'	33°12.00'	127°19.20'	50	35
W1-56-2008	56	33°15'	126°52'	22/03/2008	11:29	33°10.20'	126°46.20'	33°09.60'	126°36.00'	0	64
W1-57-2008	57	33°10'	126°34'	22/03/2008	14:30	33°09.60'	126°34.20'	33°12.00'	126°25.20'	0	70
W1-58-2008	58	33°16'	126°12'	22/03/2008	19:42	33°16.20'	126°12.00'	33°15.00'	126°21.60'	96	315
W1-59-2008	59	33°15'	126°19'	22/03/2008	22:50	33°15.00'	126°18.60'	33°13.20'	126°28.80'	61	140
W1-60-2008	60	33°10'	126°46'	23/03/2008	4:09	33°09.60'	126°45.00'	33°12.60'	126°54.60'	101	131
W1-61-2008	61	33°16'	127°22'	23/03/2008	9:24	33°15.60'	127°20.40'	33°16.20'	127°30.60'	9	210
W2-62-2008	62	33°17'	128°34'	23/03/2008	17:07	33°16.20'	128°19.80'	33°15.00'	128°29.40'	1710	235
W2-63-2008	63	33°13'	128°35'	23/03/2008	20:00	33°15.00'	128°28.20'	33°12.00'	128°36.60'	34	140
W2-64-2008	64	33°12'	128°45'	23/03/2008	0:07	33°11.40'	128°42.00'	33°14.40'	128°51.00'	240	66
C1-65-2008	65	33°16'	129°01'	23/03/2008	3:46	33°15.60'	128°55.20'	33°16.20'	129°05.40'	330	98

Shot code	Shot	Stratum point		Shot date	Time of shot	Start Point		Finish Point		Catch (kg)	
		Lat	Long			Lat	Long	Lat	Long	Bight redfish	Deepwater flathead
C1-66-2008	66	33°16'	129°13'	24/03/2008	6:55	33°18.00'	129°05.40'	33°16.20'	129°13.80'	229	105
C1-67-2008	67	33°17'	129°19'	24/03/2008	10:25	33°17.40'	129°13.80'	33°16.80'	129°23.40'	38	175
C1-68-2008	68	33°19'	129°28'	24/03/2008	13:30	33°18.00'	129°23.40'	33°15.60'	129°30.60'	4	38
C1-69-2008	69	33°10'	129°34'	24/03/2008	16:57	33°09.60'	129°34.20'	33°16.20'	129°30.00'	4	105
C1-70-2008	70	33°16'	129°43'	24/03/2008	20:10	33°16.20'	129°34.20'	33°15.00'	129°44.40'	160	140
C1-71-2008	71	33°12'	129°50'	24/03/2008	23:41	33°12.00'	129°48.00'	33°12.00'	129°58.80'	160	140
C2-72-2008	72	33°17'	131°10'	25/03/2008	9:07	33°16.80'	131°03.00'	33°18.00'	131°13.20'	672	70
C2-73-2008	73	33°23'	131°16'	25/03/2008	12:20	33°18.00'	131°13.20'	33°18.00'	131°18.60'	210	82
C2-74-2008	74	33°22'	131°40'	25/03/2008	15:40	33°21.60'	131°32.40'	33°22.20'	131°42.00'	3	107
C2-75-2008	75	33°34'	131°50'	25/03/2008	19:34	33°31.20'	131°45.60'	33°35.40'	131°54.00'	3	105
C2-76-2008	76	33°37'	132°01'	25/03/2008	22:35	33°37.20'	132°19.20'	33°40.80'	132°08.40'	780	109

Table 5. Species and numbers of fish for which length, sex, and otolith samples were collected during 2008 survey.

Species	Length frequency (unsexed)	Otoliths collected
Deepwater flathead	1552	254
Bight redfish	1300	294

Table 6. Estimated total relative biomass (t) with coefficient of variation (c.v.) of major commercial species in across all strata from 2005, 2006, 2007 and 2008 surveys assuming net width of 16.3 m.

Species	Estimated Relative biomass							
	2005		2006		2007		2008	
	t	c.v.	t	c.v.	t	c.v.	t	c.v.
Bight redfish ^A	20887	0.13	25380	0.16	25713	0.16	14591	0.11
Deepwater flathead	12152	0.05	8415	0.06	8540	0.05	7725	0.06
Ocean jacket	7163	0.14	9111	0.26	6701	0.37	7709	0.29
Common sawshark	298	0.16	138	0.23	462	0.24	231	0.14
Yellowspotted boarfish	349	0.19	181	0.15	142	0.26	170	0.25
Gummy shark	558	0.17	288	0.25	402	0.23	434	0.14
Jackass morwong	1025	0.34	1037	0.23	1236	0.31	916	0.30
Knifejaw	955	0.12	1133	0.14	570	0.13	806	0.11
Latchet	9401	0.13	6135	0.25	7040	0.21	3688	0.17
Ornate angelshark	3078	0.09	1887	0.10	2770	0.11	1742	0.10
Spikey dogfish	834	0.24	867	0.30	1006	0.23	508	0.33
Other species	11693	0.13	14405	0.14	22990	0.14	17558	0.12

^A night hauls only