

**Required data inputs for an update of the current squid stock assessment model**

**J.P. Glazer and D.S. Butterworth**

The following data are required for an update of the squid stock assessment model:

- Jig catches split by period (Jan-March, April-December): 1983 – 2008
- Trawl catches split by period (Jan-March, April-December): 1971-2008
- Jig CPUE indices split by period (Jan-March, April-December): 1985-2008
- Trawl CPUE indices split by period (Jan-March, April-December): 1978-2008
- Spring abundance estimates from the Demersal surveys: 1986-2008
- Autumn abundance estimates from the Demersal surveys: 1988-2008

Tables 1-5 list the data that were included in the last assessment (run in 2005), as well as updated data as are currently available.

**Table 1: Jig catches (tons).**

Year	Source: Linefish Database			Source: SABS (from E. van Niekerk, SASMIA)		
	Jan-Mar	Apr-Dec	Total	Jan-Mar	Apr-Dec	Total
1983	85.2	414.8	500			
1984	170.4	829.6	1000			
1985	124.0	2976.0	3100	117	2487	2604
1986	238.0	3162.0	3400	248	3151	3399
1987	167.8	2628.2	4307	170	2627	2797
1988	193.0	4633.0	4826	213	4614	4827
1989	2056.3	7735.7	9792	2044	7534	9578
1990	623.6	2658.4	3282	459	1728	2187
1991	201.0	6499.0	6700	149	4330	4479
1992	388.2	2199.8	2588	218	1752	1970
1993	567.7	5740.3	6308	309	6402	6711
1994	2512.0	3929.0	6441	2493	4356	6849
1995	1781.0	5069.0	6850	1735	5578	7313
1996	1863.0	5037.0	6900	1828	4996	6824
1997	871.7	3036.8	3909			3774
1998	1438.7	5046.6	6485			6563
1999	1877.5	5084.3	6962			6635
2000	1110.2	5217.1	6327	1217	4844	6061
2001	659.2	2442.7	3102	719	2228	2946
2002	1341.5	5726.6	7068	1819	7795	9613
2003				2166	9654	11820
2004				5028	8233	13262
2005						
2006						9291
2007						9433

**Note:** Previous analyses have used the Linefish database catches. It has been agreed in principle to use the SABS catches in future assessments.

**Required:** Update to 2008 and fill in years where there are blanks in the SABS data (shaded cells).

**Table 2: Trawl catches (tons). Non-italicized catches are what were used in past assessments. Catches in italics are updated figures. Foreign catches are included over the period 1971-1992.**

<b>Year</b>	<b>Jan-Mar</b>	<b>Apr-Dec</b>
<b>1971</b>	26.64	46.36
<b>1972</b>	186.88	325.12
<b>1973</b>	342.00	595.00
<b>1974</b>	1322.00	2300.00
<b>1975</b>	1331.86	2317.14
<b>1976</b>	769.77	339.23
<b>1977</b>	1205.21	2096.79
<b>1978</b>	1021.20	3967.80
<b>1979</b>	2080.57	3035.43
<b>1980</b>	1006.84	2047.16
<b>1981</b>	1719.16	2036.84
<b>1982</b>	1536.75	2067.25
<b>1983</b>	2304.69	1810.31
<b>1984</b>	586.70	1528.30
<b>1985</b>	1633.12	2053.88
<b>1986</b>	222.88	715.12
<b>1987</b>	238.30	413.70
<b>1988</b>	169.36	651.64
<b>1989</b>	413.20	749.80
<b>1990</b>	290.36	454.64
<b>1991</b>	141.72	351.28
<b>1992</b>	90.22	196.78
<b>1993</b>	50.62	227.38
<b>1994</b>	220.10	266.90
<b>1995</b>	125.43	213.57
<b>1996</b>	155.23	205.77
<b>1997</b>	75.60	161.40
<b>1998</b>	128.37	187.62
<b>1999</b>	90.94	183.72
<b>2000</b>	81.80 ( <i>81.66</i> )	277.12 ( <i>272.30</i> )
<b>2001</b>	119.43 ( <i>119.41</i> )	124.43 ( <i>124.85</i> )
<b>2002</b>	62.84 ( <i>62.73</i> )	142.46 ( <i>142.43</i> )
<b>2003</b>	76.14	261.67
<b>2004</b>	123.38	267.91
<b>2005</b>	94.60	279.25
<b>2006</b>	134.22	223.97
<b>2007</b>	126.77	369.32
<b>2008</b>	169.43	353.78

**Table 3: Survey indices of abundance (tons). Source: MCM Demersal research survey database. Non-italicized indices are what were used in past assessments. Indices in italics are updated figures. Indices in bold were obtained from surveys that used the new trawl gear.**

	Autumn Index		Spring Index	
	Biomass	SE	Biomass	SE
<b>1986</b>			14478	3152
<b>1987</b>			11992	1704
<b>1988</b>	8957	1316	No survey	
<b>1989</b>	18979	4181	No survey	
<b>1990</b>	8960	1789	13410	1846
<b>1991</b>	14677	3501	23480	4002
<b>1992</b>	13128	1474	10018	1446
<b>1993</b>	22134	3926	14396	2436
<b>1994</b>	22191	5324	15368	2369
<b>1995</b>	23264	3014	14961	1989
<b>1996</b>	26831	2653	No survey	
<b>1997</b>	10021	1023	No survey	
<b>1998</b>	No survey		No survey	
<b>1999</b>	19455	2226	No survey	
<b>2000</b>	<i>13280<sup>1</sup></i>	<i>1552<sup>2</sup></i>	No survey	
<b>2001</b>	<i>No survey</i>		10606 ( <i>10583<sup>2</sup></i> )	1516 ( <i>1535<sup>3</sup></i> )
<b>2002</b>	<i>No survey</i>		No survey	
<b>2003</b>	<i>22448</i>	<i>2937</i>	<b>13840</b>	<b>1588</b>
<b>2004</b>	<b>15496</b>	<b>2369</b>	<b>18189</b>	<b>3826</b>
<b>2005</b>	<b>17099</b>	<b>2488</b>	No survey	
<b>2006</b>	<i>20168</i>	<i>2197</i>	<i>12960</i>	<i>1309</i>
<b>2007</b>	<b>21556</b>	<b>2436</b>	<b>23580</b>	<b>3324</b>
<b>2008</b>	<b>31379</b>	<b>3479</b>	<b>20649</b>	<b>2835</b>

<sup>1</sup> Nansen Survey

<sup>2</sup> Updated calculation

**Table 4: Jig CPUE index (kg/manhour). Source: Linefish Database.**

<b>Year</b>	<b>Jan-Mar</b>	<b>Apr-Dec</b>
<b>1985</b>	2.152	5.376
<b>1986</b>	2.930	2.825
<b>1987</b>	2.324	3.484
<b>1988</b>	3.075	3.597
<b>1989</b>	4.283	4.863
<b>1990</b>	3.527	2.453
<b>1991</b>	1.738	3.396
<b>1992</b>	2.459	2.433
<b>1993</b>	2.375	3.658
<b>1994</b>	5.382	2.808
<b>1995</b>	2.979	2.363
<b>1996</b>	2.104	1.889
<b>1997</b>	1.213	1.221
<b>1998</b>	1.593	2.049
<b>1999</b>	3.055	2.576
<b>2000</b>	1.490	1.963
<b>2001</b>	1.277	1.397
<b>2002</b>	2.035	2.891

**Note:** a fairly crude analysis was applied to derive these indices, using data pertaining only to those vessels that carried between 2 and 20 men to standardize effort.

**Required:** Re-analysis of the data. It was agreed that a core set of 19 vessels would be used to derive a standardized CPUE index by means of the application of Generalized Linear Models, and that pre-1995 data would not be used. The analyses will include data from both the Linefish Database (blue books) and the Squid Database (yellow books).

**Table 5: Trawl CPUE index (kg/hour).**  
**Source: MCM Demersal commercial database.**

<b>Year</b>	<b>Jan-Mar</b>	<b>Apr-Dec</b>
<b>1978</b>	13.77	7.46
<b>1979</b>	19.97	7.92
<b>1980</b>	14.52	4.31
<b>1981</b>	17.78	8.12
<b>1982</b>	16.50	4.94
<b>1983</b>	24.10	3.22
<b>1984</b>	8.90	4.02
<b>1985</b>	12.69	3.17
<b>1986</b>	6.20	2.80
<b>1987</b>	5.79	2.11
<b>1988</b>	5.60	3.15
<b>1989</b>	8.81	3.43
<b>1990</b>	6.25	2.07
<b>1991</b>	5.28	2.34
<b>1992</b>	3.84	1.72
<b>1993</b>	3.53	2.09
<b>1994</b>	6.58	2.14
<b>1995</b>	5.20	2.08
<b>1996</b>	5.25	2.10
<b>1997</b>	4.34	1.79
<b>1998</b>	4.83	2.21
<b>1999</b>	5.17	1.84

**Note:** These indices were derived from the application of General Linear Models to the data from each period.

**Required:** Re-analysis of the complete dataset since it is not possible to treat the post-2000 data in the same manner as they were treated up to 1999.