



Further revisions to abalone data on poaching for Zones A-D in 2007

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SUMMARY

At the previous abalone WG, concerns were expressed regarding the poaching trend and confiscation estimate assumptions, particularly as regards the sharing out of “Unknown” category confiscations among the other zones. It was noted that the revised method proposed by A. Mackenzie would assist in improving the reliability of these data. The revised data provided by A. Mackenzie have thus been reworked in the same way as previously and the “revised” trend and minimum numbers confiscated are given in this document. The revised trends are compared to the previous trends used.

Tables 1 and 2 show the poaching trend based only on the location-known zonal confiscation data, and represent the Confiscations Per Unit of Policing Effort (CPUPE).

Table 3 shows the total number of abalone confiscated (after adjusting for the Zone D effect and scaling the 2007 values linearly upwards) per Zone per Model year. The Table shows the TOTAL number of abalone confiscations per Zone if the Zone “Unknown” confiscation component is assumed allocated to the various Zones in the same proportion as the relative number of confiscations per Zone. The values shown in Table 3 are also used as a diagnostic check in scenarios in which the poaching level is estimated within the model: they represent the minimum realistic poaching estimates (i.e. the actual amount poached must be greater than the corresponding confiscation estimates).

Figure 1 shows the revised CPUPE plots.

Acknowledgements

Data were provided by Angus MacKenzie, MCM and is gratefully acknowledged.

Table 1. Summary of “Zone-known” confiscations for each of Zones A-D, for a) the old reference case and b) the revised case. The data include adjustments to account for takes from Betty’s Bay and Dyer Island. These data are used to compute the poaching trend scenarios given in the next table.

(a) Old reference case

Model Year	Zone A	Zone B	Zone C	Zone D
1994	0	415	9852	1081
1995	0	2633	15145	2654
1996	0	1502	12658	1560
1997	5843	4470	15961	2969
1998	24673	7663	10674	3521
1999	13470	3656	6843	2393
2000	8952	17650	11962	4939
2001	6132	25915	4652	4266
2002	30344	62242	9549	6996
2003	19272	23134	5109	5830
2004	37478	13189	6329	2678
2005	22188	10411	2973	2794
2006	20225	12743	2817	3478
2007	41224	6139	1787	1587

(b) Revised case

Model Year	Zone A	Zone B	Zone C	Zone D
1994	0	415	9852	1081
1995	0	2633	15145	2654
1996	0	1502	12658	1560
1997	5843	4470	15961	2969
1998	24673	7663	10674	3521
1999	13470	3656	6843	2393
2000	8316	22756	7373	5811
2001	11757	62245	7521	13255
2002	53515	175770	8211	14089
2003	45293	97508	12589	11019
2004	45948	99474	3304	2858
2005	29450	67260	2479	3847
2006	88819	120254	7315	2839
2007	28766	59601	2561	1403

Table 2. Summary of a) old reference case and b) revised 2007 reference poaching trend scenarios for each of the abalone fishery Zones A-D. Note that the proportions in each column represent the poaching intensity in that Zone relative to the maximum poaching level observed for that Zone. The "policing efficiency levels" shown in the last two columns were proposed by the Abalone Working Group and have been used to derive modified time series representing confiscations-per-unit-policing. For all Zones A-D, all years from 1980 to 1993 are set to 10% of the 1997 value; and for Zone A , years from 1994 to 1996 are similarly set to 10% of the 1997 Zone A value.

a) Old reference case

	<u>Zone A</u>	<u>Zone B</u>	<u>Zone C</u>	<u>Zone D</u>	Policing efficiency level
Pre-1980	0	0	0	0	
1980-1989	0.013	0.008	0.096	0.048	
1990	0.013	0.008	0.096	0.048	
1991	0.013	0.008	0.096	0.048	
1992	0.013	0.008	0.096	0.048	
1993	0.013	0.008	0.096	0.048	
1994	0.013	0.008	0.651	0.193	1
1995	0.013	0.053	1	0.474	1
1996	0.013	0.030	0.836	0.279	1
1997	0.129	0.082	0.958	0.482	1.1
1998	0.544	0.140	0.641	0.572	1.1
1999	0.261	0.059	0.361	0.342	1.25
2000	0.174	0.284	0.632	0.706	1.25
2001	0.119	0.416	0.246	0.610	1.25
2002	0.589	1.000	0.504	1.000	1.25
2003	0.374	0.372	0.270	0.833	1.25
2004	0.909	0.265	0.418	0.478	1
2005	0.538	0.209	0.196	0.499	1
2006	0.491	0.256	0.186	0.621	1
2007	1.000	0.123	0.118	0.284	1

b) Revised case

	<u>Zone A</u>	<u>Zone B</u>	<u>Zone C</u>	<u>Zone D</u>	Policing efficiency level
Pre-1980	0	0	0	0	
1980-1989	0.006	0.003	0.096	0.024	
1990	0.006	0.003	0.096	0.024	
1991	0.006	0.003	0.096	0.024	
1992	0.006	0.003	0.096	0.024	
1993	0.006	0.003	0.096	0.024	
1994	0.006	0.003	0.65	0.10	1
1995	0.006	0.019	1.00	0.24	1
1996	0.006	0.011	0.84	0.14	1
1997	0.06	0.03	0.96	0.24	1.1
1998	0.25	0.05	0.64	0.28	1.1
1999	0.12	0.02	0.36	0.17	1.25
2000	0.07	0.13	0.39	0.41	1.25
2001	0.11	0.35	0.40	0.94	1.25
2002	0.48	1.00	0.43	1.00	1.25
2003	0.41	0.55	0.66	0.78	1.25
2004	0.52	0.71	0.22	0.25	1
2005	0.33	0.48	0.16	0.34	1
2006	1.00	0.86	0.48	0.25	1
2007	0.32	0.42	0.17	0.12	1

Table 3. Total confiscation estimates per Zone for a) old reference case and b) revised case, after adding contribution from “Undefined zone” category. Confiscations per zone have been adjusted to account for takes from Betty’s Bay and Dyer Island. Values in this table are used to set the minimum number of poached animals that must have been taken from a particular zone in a particular year.

(a) Old reference case

Model year	Zone A	Zone B	Zone C	Zone D	Total
1994	0	415	9 852	1 081	11 348
1995	0	9 792	56 322	9 870	75 983
1996	0	6 786	57 185	7 048	71 019
1997	11 943	9 137	32 625	6 069	59 774
1998	73 452	22 813	31 777	10 482	138 524
1999	36 079	9 793	18 329	6 410	70 611
2000	46 299	91 285	61 867	25 544	224 996
2001	28 134	118 893	21 342	19 572	187 941
2002	145 595	298 649	45 818	33 568	523 629
2003	144267	173172	38245	43642	399325
2004	243752	85781	41163	17420	388116
2005	221429	103901	29670	27888	382888
2006	341888	215414	47619	58785	663706
2007	803944	119722	34841	30947	989454

b) Revised case

Model Year	Zone A	Zone B	Zone C	Zone D
1994	0	415	9852	1081
1995	0	9792	56322	9870
1996	0	6756	56939	7017
1997	11597	8872	31679	5893
1998	70883	22015	30665	10115
1999	33748	9160	17145	5995
2000	51701	141474	45838	36127
2001	35288	186824	29988	33053
2002	131863	433102	26153	29482
2003	115623	248915	41765	23788
2004	125283	271228	11819	8750
2005	87698	200291	9797	12932
2006	289994	392629	32044	10517
2007				
<i>(extrapolated)</i>	117607	243678	14364	6575

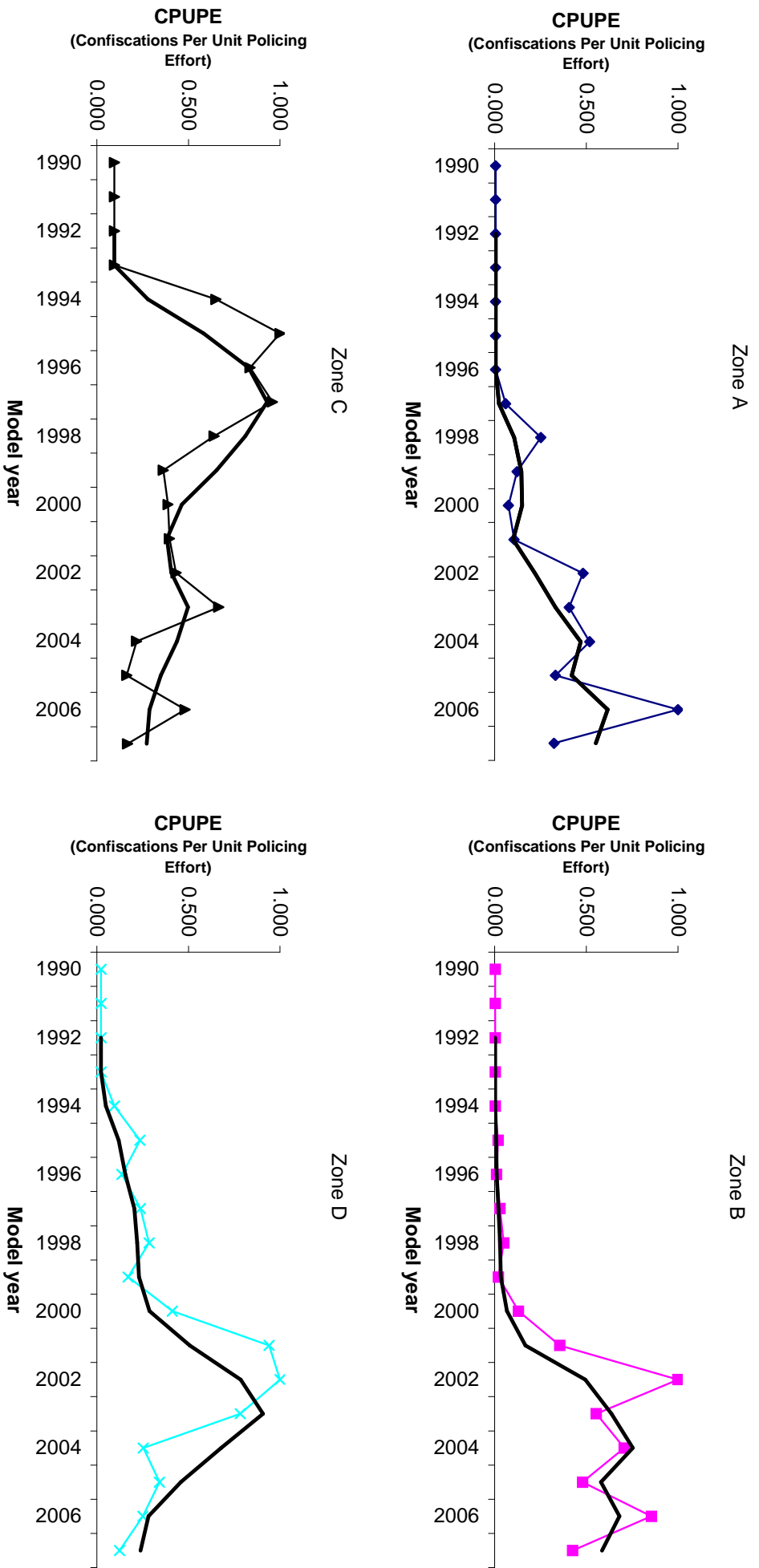


Fig. 1. Plots of revised CPUIPE for each of Zones A-D. The solid black line shows a 3-point moving average.