

FIMS indices for the rock lobster resource of South Africa: updated to include the 2009/2010 season

A. Brandão and D.S. Butterworth

*Marine Resource Assessment & Management Group (MARAM)
Department of Mathematics and Applied Mathematics
University of Cape Town
Rondebosch 7701, Cape Town*

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Introduction

In this paper the FIMS analysis reported in Brandão and Butterworth (2009) to obtain relative abundance indices for rock lobster is updated to include FIMS data for the 2009/10 season.

Data and Methodology

Data from the FIMS surveys carried over the period 1992/93 to 2009/10 are available for analysis. The overall CPUE index for each Zone (Dassen Island, Lambert's Bay, Saldanha Bay and Cape Point) is the combination of the weighted mean CPUE (as a proportion of the total area surveyed) for each stratum (where stratum here depicts whether a station in a particular Zone is within the 100 m contour (shallow), within the 100 to 200 m contour (deep, applicable to the Cape Point only), or if it lies within a "Hotspot"). The weighted mean CPUE for each stratum in a particular Zone is given by the average of the weighted mean CPUE for each leg in that stratum.

For each Zone, except for Lambert's Bay, CPUE indices were calculated considering each individual Hotspot stratum in that Zone. For Lambert's Bay this posed a problem when calculating standard errors of CPUE estimates as most Hotspot strata in this Zone only have one station surveyed in a particular leg and thus no standard deviation can be calculated. Therefore, for Lambert's Bay, it was decided to consider all Hotspot strata as one combined stratum.

In the Cape Point Zone, for the 1997/98 and the 2005/06 seasons, there was only one station in one of the legs and in one of the Hotspot strata. The standard deviation ($\sigma_{y,z,\ell}$) for these two records were estimated as the average of the observed (and computable) standard deviations or CVs for

that stratum. The choice between using the average of standard deviations or the average of the CVs was based on which measure was more constant over the years.

The 1999/00 FIMS data point (for Cape Point) is based on only a single leg (leg 2) as the first leg was not conducted.

Results

Table 1 reports the FIMS CPUE indices for each individual Zone for rock lobsters measuring more than 60 mm together with their standard errors. Figure 1 shows these indices together with 95% confidence intervals, calculated as ± 1.96 standard errors.

Reference

Brandão, A. and Butterworth, D.S. 2009. Re-analysis of the Fisheries Independent Monitoring Survey of the rock lobster resource of South Africa. Marine and Coastal Management Document: MCM/2009/AUG/SWG-WCRL/11b.

Table 1. FIMS CPUE series (for rock lobsters measuring 60mm or more) for each individual Zone and their corresponding standard errors.

Year	Zone			
	Cape Point	Dassen Island	Saldanha Bay	Lambert's Bay
1992/93	140.75 (17.30)	24.89 (4.370)	2.720 (0.871)	3.228 (1.233)
1993/94	128.18 (13.47)	13.16 (3.435)	0.615 (0.673)	0.137 (0.061)
1994/95	112.43 (20.97)	6.057 (1.730)	0.821 (0.443)	0.204 (0.067)
1995/96	120.07 (17.61)	2.543 (1.196)	0.185 (0.058)	4.341 (1.042)
1996/97	75.50 (9.572)	9.295 (2.733)	0.647 (0.471)	9.855 (2.205)
1997/98	132.26 (19.17) [†]	12.84 (3.382)	0.106 (0.047)	0.068 (0.046)
1998/99	141.64 (16.32)	22.97 (4.019)	3.403 (0.997)	1.495 (0.571)
1999/00	86.60 (20.02)*			
2000/01	100.71 (16.60)	4.809 (1.119)	0.176 (0.100)	1.344 (0.193)
2001/02	105.01 (18.17)	58.66 (7.127)	0.075 (0.058)	0.214 (0.097)
2002/03	52.02 (10.43)	14.49 (2.623)	0.192 (0.174)	0.473 (0.236)
2003/04	98.67 (14.48)	35.78 (6.696)	0.276 (0.386)	0.420 (0.223)
2004/05	89.05 (12.35)	25.36 (3.935)	0.071 (0.030)	0.375 (0.243)
2005/06	62.71 (35.89) [†]	15.79 (3.969)	0.241 (0.063)	1.725 (0.722)
2006/07	79.18 (21.90)	13.96 (3.393)	0.119 (0.144)	0.238 (0.098)
2007/08	106.65 (29.10)	21.88 (4.212)	1.267 (1.343)	0.277 (0.193)
2008/09	101.43 (33.20)	9.665(1.974)	0.756 (0.310)	1.207 (0.536)
2009/10	101.19 (23.59)	5.089 (1.177)	0.706 (0.592)	0.008 (0.007)

* Based on only one leg of the survey.

† Standard error based on an estimate because only one station was sampled in a leg for a particular Hotspot.

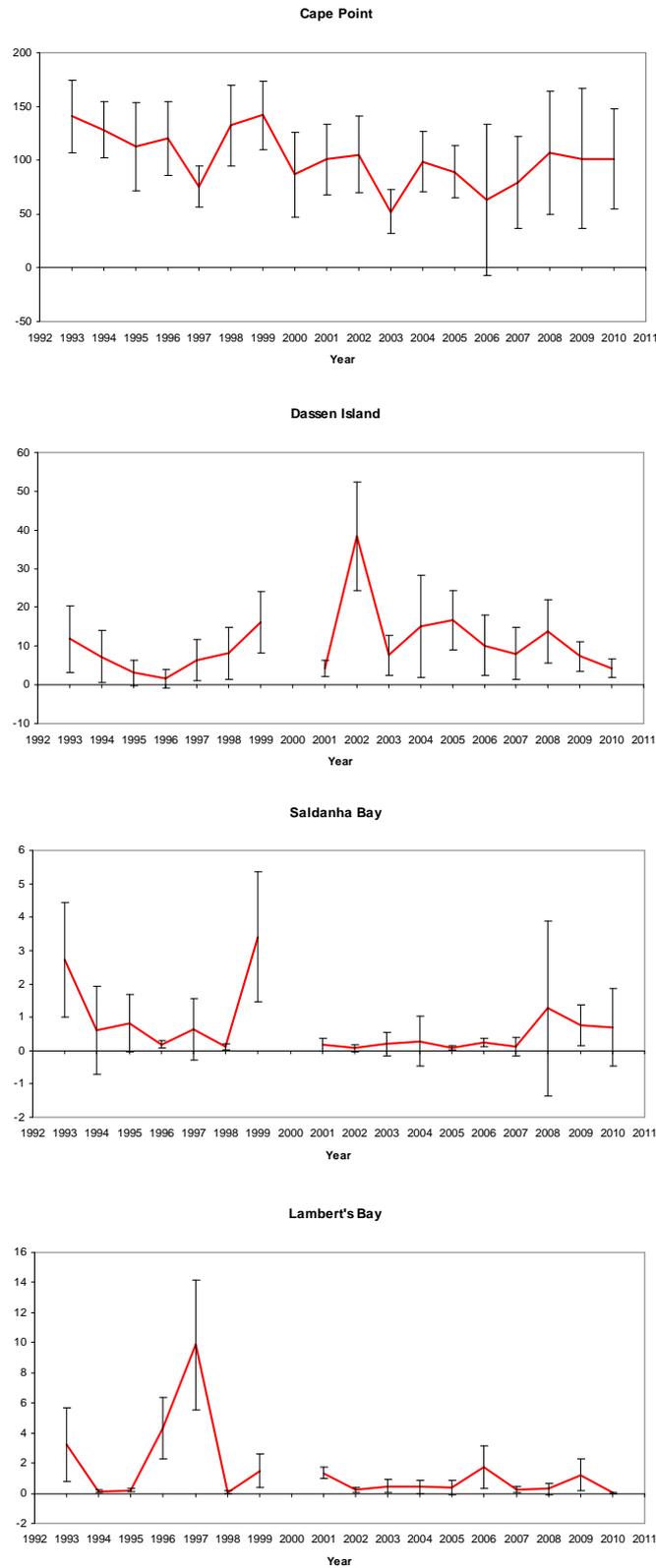


Figure 1. FIMS CPUE series (with 95% confidence intervals, calculated as ± 1.96 standard errors) for each Zone. In this plot the period 1993 corresponds to the season 1992/93, and so on.