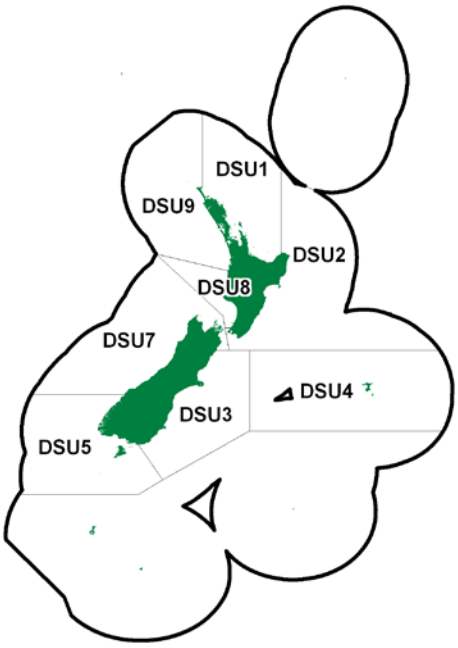
FINE (SILKY) DOSINIA (DSU)

(*Dosinia subrosea*)



1. FISHERY SUMMARY

This species is part of the surf clam fishery and the reader is guided to the surf clam introductory chapter for information common to all relevant species.

Fine Dosinia (*Dosinia subrosea*) were introduced into the Quota Management System on 1 April 2004 with a TAC of 8 t and TACC of 8 t (Table 1). There were no allowances for customary, recreational or other sources of mortality and no changes to any of these values have occurred since.

Table 1: Current TAC and TACC for *Dosinia subrosea*.

QMA	TAC (t)	TACC (t)
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
7	1	1
8	1	1
9	1	1
Total	**8**	**8**

1.1 Commercial fisheries

Landings have only ever been reported from DSU 1 and DSU 7. In 1993-94 total landings were 235 kg and since 1994-95, landings have been only been reported from DSU 7 and all have been less than 100 kg (Table 2).

1.2 Recreational fisheries

There are no known records of recreational use of this surf clam.

1.3 Customary fisheries

Offshore clams such as *D. subrosea* are likely to have been harvested for customary use only when washed ashore after storms (Carkeek 1966). There are no estimates of current customary use of this clam

Table 2: TACCs and reported landings (t) of Fine Dosinia by Fishstock from 1993-94 to 2011-12 from CELR and CLR data for Fishstocks where landings have been reported. DSU 2, 3, 4, 5, 8 and 9 all have TACC of 1 t.

	DSU 1		DSU 7		Total	
Fishstock	Landings	TACC	Landings	TACC	Landings	TACC
1993-94	0.123	-	0.112	-	0.235	-
1994-95	0	-	0.026	-	0.026	-
1995-96	0	-	0.011	-	0.038	-
1996-97	0	-	0	-	0	-
1997-98	0	-	0	-	0	-
1998-99	0	-	0	-	0	-
1999-00	0	-	0	-	0	-
2000-01	0	-	0	-	0	-
2001-02	0	-	0	-	0	-
2002-03	0	-	0	-	0	-
2003-04	0	1.0	0.089	1.0	0.089	8.0
2004-05	0	1.0	0.078	1.0	0.110*	8.0
2005-06	0	1.0	0.061	1.0	0.169*	8.0
2006-07	0	1.0	0.003	1.0	0.003	8.0
2007-08	0	1.0	0	1.0	0	8.0
2008-09	0	1.0	0.001	1.0	0.001	8.0
2009-10	0	1.0	0	1.0	0	8.0
2010-11	0	1.0	0	1.0	0	8.0
2011-12	0	1.0	0	1.0	0	8.0

*In 2004-05 and 2005-06 32.4 and 90 kg were reported but the QMA is not recorded. This amount is included in the total landings for these years.

1.4 Illegal catch

There is no known illegal catch of this clam.

1.5 Other sources of mortality

There is no quantitative information on other sources of mortality, although this clam is probably sometimes taken as a bycatch in inshore trawling. Harvesters claim that the hydraulic clam rake does not damage surf clams and minimises damage to the few species of other macrofauna captured. Surf clam populations are also subject to localised catastrophic mortality from erosion during storms, high temperatures and low oxygen levels during calm summer periods, blooms of toxic algae and excessive freshwater outflow (Cranfield & Michael 2001).

2. BIOLOGY

D. subrosea has not been found in high densities in any survey work. It is found around the New Zealand coast in deeper softer sediment habitats. In the North Island it is found between 6 and 10 m in depth, and in the South Island between 5 and 8 m (Cranfield & Michael 2002). It is smaller and smoother than *D. anus*, and is usually found in more stable habitats. Maximum length is variable between areas, ranging from 41 to 68 mm (Cranfield *et al*. 1993). The sexes are believed to be separate, and they are likely to be broadcast spawners with planktonic larvae (Cranfield & Michael 2001). Anecdotal evidence suggests that spawning is likely to occur in the summer months. Recruitment of surf clams is thought to be highly variable between years.

For information on, growth, age and natural mortality of this species and general statements about relative biomass of all surf clam species around the country (excluding *Bassinia yatei)* see the introductory surf clam chapter.

3. STOCKS AND AREAS

For management purposes stock boundaries are based on QMAs, however, the boundaries of stocks of surf clams are likely to be the continuous lengths of exposed sandy beaches between geographical

features (such as rivers and headlands). Circulation patterns may isolate surf clams genetically as well as ecologically.

4. ENVIRONMENTAL AND ECOSYSTEM CONSIDERATIONS

See the introductory surf clam chapter.

5. STOCK ASSESSMENT

All stocks are considered in effectively virgin state and an *MCY* is estimated from the surveyed biomass estimates. All stocks were considered in an effectively virgin state in 1993-4 when the initial biomass estimates were made (Cranfield *et al.* 1993). Total catches of DSU have not exceeded 1 t in any Fishstock since then.

5.1 Estimates of fishery parameters and abundance

No fisheries parameters or abundance estimates are available for any DSU stocks.

5.2 Biomass estimates

Biomass has been estimated from 11 km of beach at Cloudy Bay (DSU 7) with a stratified random survey using a hydraulic dredge (Cranfield *et al.* 1994b). The virgin biomass for this area was estimated to be 21 t. Subsequent surveys estimated biomass from one site in DSU 3 and a number of sites in DSU 2 (Table 3).

Table 3: A summary of biomass estimates greenweight (t) from the surveys in DSU 2 and 3 (Triantifillos 2008a, Triantifillos 2008b). Note: Unless otherwise stated the CV is less than 0.2.

Location	Five sites (DSU 2)	Ashley River to 6 nm south of the Waimakariri River (DSU 3)
Area surveyed (km^2)	28.0	13.4
Biomass (t)	5.9	12.2*

* CV is 0.29.

5.3 Yield estimates and projections

Estimation of Maximum Constant Yield (*MCY*)

Growth and mortality data from Cloudy Bay in Marlborough and the Kapiti Coast in Manawatu (Cranfield *et al.* 1993) have been used in a yield per recruit model to estimate the reference fishing mortality $F_{0.1}$ (Cranfield *et al.* 1994b, Triantifillos 2008a, 2008b). The shellfish working group did not accept these estimates of $F_{0.1}$ as there was considerable uncertainty in both the estimate and the method used to generate them. The *MCY* estimates of Triantafillos (2008b) that use the full range of $F_{0.1}$ estimates from Cranfield *et al.* (1993) are shown in Table 4 but should be interpreted cautiously.

Estimates of *MCY* are available from numerous locations and were calculated using Method 1 for a virgin fishery (Annala *et al*. 2001) with an estimate of virgin biomass B_0, where:

$$MCY = 0.25 * F_{0.1} B_0$$

Table 4: Mean *MCY* estimates (t) for *D. subrosea* from virgin biomass at locations sampled around New Zealand (Triantifillos 2008a and b).

Location	$F_{0.1}$	*MCY*
Five sites (DSU 2)	0.27/0.54	0.4/0.8
Ashley River to 6 nm south of the Waimakariri River (DSU 3)**	----------	--------

Estimation of Current Annual Yield (*CAY*)

CAY has not been estimated for *D. subrosea*.

6. STATUS OF THE STOCKS

- DSU-*Dosinia subrosea*

There is no evidence of appreciable biomass of this species in any area.

Table 5: Calculated *MCY* estimates, TACC, and 2011-12 reported landings for DSU.

Fishstock	QMA	*MCY*	2011-12 Actual TACC	2011-12 Reported Landings
DSU	1	< 1	1	0
	2	< 1	1	0
	3	< 1	1	0
	7	< 1	1	0
	8	< 1	1	0

7. FOR FURTHER INFORMATION

Annala J.H., Sullivan K.J., O'Brien C.J., Smith N.W.McL (compilers.) 2001. Report from the fishery assessment plenary, May 2001: stock assessments and yield estimates. 515p. (Unpublished report held in NIWA library, Wellington).

Brierley P. (Convenor) 1990. Management and development of the New Zealand sub-tidal clam fishery. Report of the surf clam working group, MAF Fisheries (unpublished report held in NIWA library, Wellington). 57p.

Carkeek W.C. 1966. The Kapiti coast. Reed, Wellington. 187 p.

Cranfield H.J., Michael K.P. 2001. The surf clam fishery in New Zealand: description of the fishery, its management, and the biology of surf clams. New Zealand Fisheries Assessment Report 2001/62: 24p.

Cranfield H., Michael K. 2002. Potential area boundaries and indicative TACs for the seven species of surf clam. NIWA unpublished report to the Ministry for Primary Industries.

Cranfield H.J., Michael K.P., Stotter D.R. 1993. Estimates of growth, mortality, and yield per recruit for New Zealand surf clams. New Zealand Fisheries Research Assessment Document 1993/20: 26p.

Cranfield H.J., Michael K.P., Stotter D.R., Doonan I.J. 1994a. Distribution, biomass and yield estimates of surf clams off New Zealand beaches. New Zealand Fisheries Research Assessment Document 1994/1: 17p.

Cranfield H.J., Doonan I.J., Michael K.P. 1994b. Dredge survey of surf clams in Cloudy Bay, Marlborough. New Zealand Fisheries Technical Report 39: 18p.

Haddon M., Willis T.J., Wear R.G., Anderlini V.C. 1996. Biomass and distribution of five species of surf clam off an exposed west coast North Island beach, New Zealand. Journal of Shellfish Research 15: 331–339.

Triantifillos L. 2008a. Survey of subtidal surf clams in Pegasus Bay, November-December 2007. . In, p. 43p. Prepared by NIWA for Seafood Innovations Limited and SurfCo. limited.

Triantifillos L. 2008b. Survey of subtidal surf clams in Quota Management Area 2, June - August 2008. . In, p. 40p. Prepared by NIWA for Seafood Innovations Limited and SurfCo. Limited.