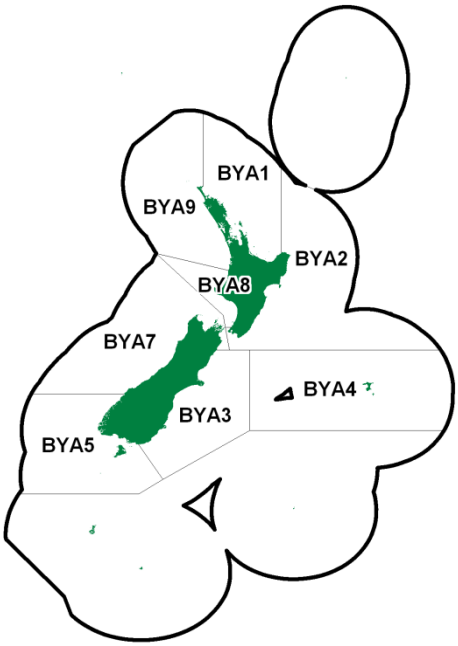
FRILLED VENUS SHELL (BYA)

(*Bassina yatei*)



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.

The Frilled Venus Shell (*Bassina yatei*) was introduced into the Quota Management System on 1 April 2004 with a combined TAC of 16 t and a TACC of 16 t. There were no allowances for customary, recreational or other sources of mortality. These limits have not been changed (Table 1).

Table 1: Current TAC and TACC for *Bassina yatei.*

QMA	TAC (t)	TACC (t)
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
7	9	9
8	1	1
9	1	1
Total	16	16

1.1 Commercial fisheries

Landings have been small (all around 1 t or less), from BYA 7 and only reported from 1992-5, 2001-5 and 2008-09. One landing of over 7 t was reported from BYA1 in 2002-3 (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 *B. yatei* are likely to have been harvested for customary use only when washed ashore after storms. Shells of this clam have been found irregularly, and in small numbers in a few middens. There are no estimates of current customary use of this clam.

Table 2: TACCs and reported landings (t) of frilled venus shell by Fishstock from 1992-93 to 2012-13 from CELR and CLR data. There have never been any reported landings in BYA 2, 3, 4, 5, 8 or 9. These stocks each have a TACC of 1 t and are not tabulated below.

	BYA 1		BYA 7		Total	
	Landings	TACC	Landings	TACC	Landings	TACC
1992-93	0	-	0.026	-	0.026	-
1993-94	0	-	0.007	-	0.007	-
1994-95	0	-	0.001	-	0.001	-
1995-96	0	-	0	-	0	-
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	7.473	-	0.049	-	7.522	-
2002-03	0	-	1.132	9	1.132	16
2003-04	0	1	1.295	9	1.296	16
2004-05	0	1	0.207	9	0.207	16
2005-06*	0	1	0	9	0.036*	16
2006-07	0	1	0	9	0	16
2007-08	0	1	0	9	0	16
2008-09	0	1	0.003	9	0.003	16
2009-10	0	1	0	9	0	16
2010-11	0	1	0	9	0	16
2011-12	0	1	0.350	9	0.350	16
2012-13	0	1	1.174	9	1.174	16
2013-14	0	1	1.106	9	1.106	16

*In 2005-06 36.4 Kg were reportedly landed, but the QMA is not recorded. This amount is included in the total landings for that year.

1.4 Illegal catch

There is no documented 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 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

B. yatei is endemic to New Zealand and is found around the coast in sediments at depths between 6 and 9 m. Maximum length is variable between areas, ranging from 48 to 88 mm (Cranfield & Michael 2002).The sexes are likely to be separate, and they are likely to be broadcast spawners with planktonic larvae. Anecdotal evidence suggests spawning is likely to occur in the summer months. Recruitment of surfclams is thought to be highly variable between years.

3. STOCKS AND AREAS

For management purposes stock boundaries are based on FMAs, however, the boundaries of stocks of surf clams are likely to be the continuous lengths of exposed sandy beaches between geographical features (rivers, headlands etc). 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

5.1 Estimates of fishery parameters and abundance

No estimates of fisheries parameters or abundance are available for this species.

5.2 Biomass estimates

Biomass has been estimated for two sites in the Marlborough Sounds with a stratified random survey using a hydraulic dredge. Estimates are shown in Table 3.

Table 3: A summary of biomass estimates in tonnes greenweight with standard deviation in parentheses from exploratory surveys of Cloudy Bay (Cranfield *et al.* 1994b), and Clifford Bay, both in Marlborough (Michael *et al.* 1994).

Area	Cloudy Bay (BYA 7)	Clifford Bay (BYA 7)
Length of beach (km)	11	21
Biomass (t)	123 (50)	0.2 (0.8)

5.3 Yield estimates and projections

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). 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.

CAY has not been estimated for *B. yatei*.

6. STATUS OF THE STOCKS

- BYA 7 - *Bassina yatei*

Stock Status	
Year of Most Recent Assessment	1994
Assessment Runs Presented	Survey biomass
Reference Points	Target: Not defined, but B_{MSY} assumed Soft Limit: 20% B_0 Hard Limit: 10% B_0
Status in relation to Target	Because of the relatively low levels of exploitation of *B. yatei*, it is likely that all stocks are still effectively in a virgin state, therefore they are Very Likely (> 90%) to be at or above the target.
Status in relation to Limits	Very Unlikely (< 10%) to be below the soft and hard limits
Historical Stock Status Trajectory and Current Status Unknown	

Fishery and Stock Trends	
Recent Trend in Biomass or Proxy	Unknown
Recent Trend in Fishing Mortality or Proxy	Fishing is light in all Fishstocks. In BYA 7 landings have averaged 0.34 t since 2001-02.
Other Abundance Indices	-
Trends in Other Relevant Indicators or Variables	-

Projections and Prognosis		
Stock Projections or Prognosis	-	
Probability of Current Catch or TACC causing decline below Limits	For all stocks fishing is Very Unlikely (< 10%) to cause declines below soft or hard limits.	
Assessment Methodology		
Assessment Type	Level 2 - Partial Quantitative Stock Assessment	
Assessment Method	Absolute biomass estimates from quadrat surveys	
Main data inputs	Abundance and length frequency information	
Period of Assessment	Latest assessment: 1994	Next assessment: Unknown
Changes to Model Structure and Assumptions	-	
Major Sources of Uncertainty	-	

Qualifying Comments
Stock size could fluctuate markedly as a result of catastrophic mortality from a number of causes. There is a need to review fishery parameters for this species. Virgin stock size in areas sampled has been small. It is not known if peak abundances may be outside the surveyed areas.

Fishery Interactions
BYA can be caught together with other surf clam species and non-QMS bivalves.

For all other BYA stocks there is no current evidence of appreciable biomass.

7. FOR FURTHER INFORMATION

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

Beentjes M.P., Baird S.J. 2004. Review of dredge fishing technologies and practice for application in New Zealand. New Zealand Fisheries Assessment Report 2004/37. 40p.

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

Cranfield H., 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 2002/62: 24p.

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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.

Michael K., Cranfield H., Doonan I., Hadfield J. 1994. Dredge survey of surf clams in Clifford Bay, Marlborough, New Zealand Fisheries Data Report, No. 54