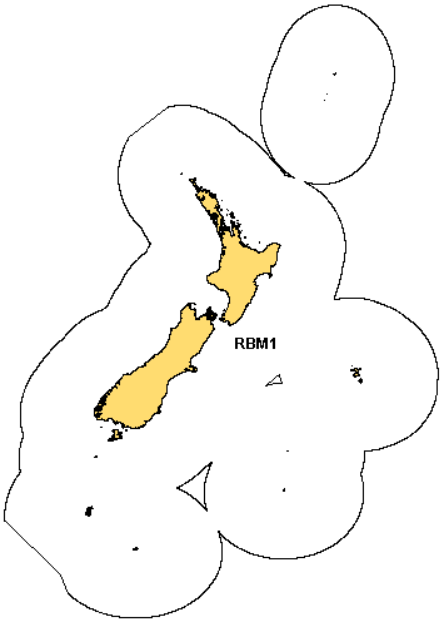
RAY'S BREAM (RBM)

(Brama brama)



1. FISHERY SUMMARY

Ray's bream (*Brama brama*) was introduced into the QMS on 1 October 2004 under a single QMA, RBM 1, with allowances, TACC and TAC in Table 1.

Table 1: Recreational and Maori allowances, TACCs and TACs for Ray's bream.

Fishstock	Recreational Allowance	Maori customary Allowance	Other mortality	TACC	TAC
RBM 1	10	5	50	980	1045

At least two closely related species are thought to be caught in New Zealand fisheries. One species from the genus *Brama* is southern Ray's bream (*Brama australis*), which is difficult to distinguish from external features and has been reported in both catch statistics and research survey data in unknown ratios. A second closely related species, bronze bream (*Xenobrama microlepis*), is more easily distinguished from the other two, but is also likely to have been recorded together in catch statistics.

1.1 Commercial fisheries

Ray's bream is a highly migratory species and has a wide distribution, being found throughout the subtropical to sub-antarctic waters across the whole South Pacific between New Zealand and Chile. The catch of Ray's bream, while fluctuating, appears to be stable within New Zealand fisheries waters, and has averaged around 223 t for the last five fishing years (refer Table 3). Over the period 1996-97 to 2000-01, the nominal total weights of Ray's bream reported by fishers (including tuna longlining catch effort returns where the catch cannot be adjusted to whole weight) ranged from 362 to 1001 t (some years contain anomalously high reported landings for some FMAs). Licensed fish receiver returns indicate between 421 and 926 t were processed for the same period.

Based on records since 2003/04, most (46%) Ray's bream is caught by mid-water trawl. Bottom trawling accounts for 27%, surface longlining 18%, trolling 5%, and bottom longlining 3%. Ray's bream is caught by mid-water trawlers in all FMAs around the South Island, with the largest amounts in mid-water trawls being taken from Stewart-Snares shelf (FMA 5) and the Chatham Rise (FMA 3). The major catches by bottom trawling have occurred on the Chatham Rise (FMA 3). Ray's bream is

taken on surface tuna longlines on the east coast of the North Island, especially in the Bay of Plenty-East Cape (FMA 1). Most of the South Island longline catch comes from the west coast in FMAs 5 and 7. It is also taken by tuna trolling, especially on the west coast of the South Island (FMA 7).

Table 2: Reported commercial landings and discards (t) of Ray's bream from CELRs and CLRs, and LFRRs (processor records) by fishing year.

	Reported by fishers			
	CELR and CLR		Total	Processed
Year	Landed	Discarded	reported	LFRR
1988-89	9	0	9	16
1989-90	328	<1	328	284
1990-91	239	<1	239	211
1991-92	297	<1	297	295
1992-93	340	1	341	342
1993-94	151	3	154	160
1994-95	462	8	470	460
1995-96	717	3	720	693
1996-97	356	7	362	421
1997-98	546	8	554	520
1998-99	425	10	435	431
1999-00	444	23	467	423
2000-01	941	60	1001	926

Table 3: LFRR and MHR data on Ray's bream catches by fishing year.

Year	LFRR Data	MHR Data
2001-02	541	536
2002-03	347	357
2003-04	154	157
2004-05	257	259
2005-06	212	215
2006-07	148	149

1.3 Recreational fisheries

Recreational fishers take Ray's bream infrequently, generally as bycatch when targeting bluenose, hapuku and bass over deep reefs. The recreational harvest is assumed low, and is likely insignificant in the context of the total landings.

1.4 Maori customary fisheries

There is no quantitative information available to allow the estimation of the harvest of Ray's bream by customary fishers, however the harvest is assumed to be insignificant in the context of the commercial landings.

1.5 Illegal catch

There is no known illegal catch of Ray's bream.

1.6 Other sources of mortality

Ray's bream is a desirable species, and only a small percentage (about 1-5% annually) has been reported or observed as having been discarded. Most of the trawl catch of Ray's bream that is reported on CELR and CLR forms is retained. Most of the discarding appears to occur in the tuna fisheries, but those fisheries only take a small proportion of the total catch of Ray's bream.

2. BIOLOGY

Until recently, little was known about the biology of Ray's bream in New Zealand waters. A recent otolith study examined growth rates, natural mortality, and maturity for Ray's bream. Unfortunately, the actual species examined in this study could not be determined. It is possible that more than one species was involved, and the one (or more) species may not have been representative of the New Zealand catch recorded as Ray's bream. Until further samples are collected, the identification cannot

be confirmed, but it is likely that the study was based wholly or partly on Southern Ray's bream (*Brama australis*).

It is expected that the main biological characteristics of Ray's bream will be similar to Southern Ray's bream, so the general findings of the recent study are reported here (Table 3). The small otoliths proved to be extremely difficult to age; notwithstanding this, Southern Ray's bream appear to have rapid initial growth, reaching 40-50 cm in 3-5 years, with little increase in length after this time. The maximum age observed was 25 years.

Table 3. Estimates of biological parameters.

Parameter			Estimate	Source
1. Weight = $a \cdot (\text{length})^b$ (Weight in t, length in cm)				
	Both sexes	$a = 5.31 \times 10^{-9}$	$b = 3.320$	(Livingston et al. 2004)

3. STOCKS AND AREAS

Ray's bream probably come from a wide-ranging single stock found throughout the South Pacific Ocean and southern Tasman Sea. The catch of Ray's bream elsewhere in the South Pacific needs to be considered when assessing the status of Ray's bream within the New Zealand's fisheries waters.

4. STOCK ASSESSMENT

No assessments are available for Ray's bream; therefore estimates of biomass and yield are not available.

4.1 Estimates of fishery parameters and abundance

A time series of relative abundance estimates is available from the Chatham Rise trawl survey, but these estimates may not be a reliable index of relative abundance because Ray's bream are thought to reside in the mid-water and their vulnerability to the trawl survey gear is unknown, and could be extremely low. Similarly, a time series of unstandardised CPUE from the tuna longline fishery is highly variable and may not reflect relative abundance.

4.2 Biomass estimates

No biomass estimates are available for Ray's bream.

4.3 Estimation of Maximum constant yield (MCY)

There are no estimates of biomass on which to base an estimate of MCY. Similarly most of the Ray's bream caught is a bycatch in the mid-water trawl fisheries and tuna longline fisheries. Given the mix of fisheries, it is not possible to determine a stable period where the average catch of Ray's bream can be used as a proxy for abundance or standing stock. It is therefore not appropriate to estimate MCY.

4.4 Estimation of Current Annual Yield (CAY)

CAY cannot be estimated because of the lack of current biomass estimates.

4.5 Other yield estimates and stock assessment results

There are no other yield estimates or stock assessment results available for Ray's bream.

4.6 Other factors

At least three closely related species are thought to be caught in New Zealand fisheries. Two species from the genus *Brama*, Ray's bream (*Brama brama*) and southern Ray's bream (*Brama australis*), are difficult to distinguish from external features and have been reported together in both catch statistics and research survey data in unknown ratios. A third closely related species, bronze bream (*Xenobrama microlepis*), is more easily distinguished from the other two, but is also likely to have been recorded together in catch statistics.

As none of the reported catch is from target fishing, the quota allocated under the QMS system will cover bycatch of mid-water trawl fisheries for squid, hoki, and jack mackerels, and target tuna longline fisheries.

5. STATUS OF THE STOCKS

Total catches in the South Pacific Ocean for the Ray's bream stock range up to 16 000 t, the majority of which is taken by Chile in the southeast Pacific area (whether this includes one or more species is unknown). The New Zealand contribution (averaging 640 t annually) compared to total annual removals from the stocks is low (5-10%). It is not known whether overall removals from the stock are sustainable or if they are at levels that will allow the stock to move towards a size that will support the maximum sustainable yield.

6. FOR FURTHER INFORMATION

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