PAUA (PAU 5D)

Figure 1. Map showing boundaries of PAU 5D

Management Proposal

1 For the 2002–2003 fishing year, the Ministry of Fisheries proposes to set a total allowable catch (TAC) and reduce the total allowable commercial catch (TACC) for paua in quota management area PAU 5D to a level that will halt the decline in biomass and begin to allow the stock to rebuild.

MFish proposes a phased reduction in the TAC and TACC over the next two fishing years. Options for setting the TAC and TACC have different probabilities of rebuilding the stock, and are set out in Table 1.

Each TAC option includes a non–commercial allowance of 45 tonnes; incorporating 3 tonnes for customary interests, 22 tonnes for recreational interests, and 20 tonnes for other sources of mortality.

In reducing the TACC, MFish wishes to ensure that the recreational catch remains within the recreational allowance. Consequently, MFish proposes to discuss with recreational fishers management options to constrain the recreational harvest. These options could involve reducing the daily bag limit, closed seasons, or closed areas.

Table 1: **Options for setting the TAC and TACC in PAU 5D for the 2002-03 and 2003-04 fishing years, and probabilities of an increase in biomass by 2007.**

Fishing Year		Option 1	Option 2	Status Quo
2002-03	TAC (tonnes)	169.0	159.0	192
	TACC (tonnes)	124.0	114.0	148.9
2003-04	TAC (tonnes)	154.0	134.0	192
	TACC (tonnes	109.0	89.0	148.9
Probability of the recruited biomass increasing by 2007		At a TAC of 154 tonnes = 61.0%	At a TAC of 134 tonnes = 77.5%	37.2%
Probability of the spawning biomass increasing by 2007		At a TAC of 154 tonnes = 57.5%	At a TAC of 134 tonnes =68.2%	41.8%

Current Information

Fishery Background

Commercial Fishery

Paua was introduced to the Quota Management System in 1986. A PAU 5 TACC of 390 tonnes was set, but quota appeals saw this increase to 485 tonnes by 1990–91. Quota owners considered that this TACC was not sustainable, and in 1991–92, when the Otago Southland Paua Management Working Group was established, PAU 5 quota owners took a voluntary 10% reduction in their quota, reducing the TACC to 443 tonnes. By 1994–95, it was estimated that at least 50% of the PAU 5 catch was being harvested from Stewart Island.

On 1 October 1995, PAU 5 was divided into three new QMAs (PAU 5A, PAU 5B and PAU 5D) and the TACC was divided equally among them allowing 148.81 tonnes for each QMA. This sub–division was designed to move fishing effort away from the more accessible Stewart Island fishery. It is widely considered that this led to a large redistribution of catch from Stewart Island to Fiordland and the Catlins/Otago coast. However, the exact increase in catch in the new PAU 5D caused by subdivision cannot be determined with certainty because several statistical areas used to report catch and effort straddled PAU 5B and PAU 5D.

The PAU 5D QMA covers an area from the Waiau River on the south coast of Southland around to the Waitaki River on the east coast of Otago. There are 8 areas closed to commercial fishing by regulation and 5 small voluntary non-commercial areas, with four of these voluntary areas in the Catlins and one at Shag Point. The areas closed by regulation are:

- Waipapa Point to Howells Point
- Waikouaiti Bay
- Seacliff
- Otago Harbour
- Otago Peninsula
- Taieri River Mouth
- Tokomairiro River Mouth
- Clutha River

Voluntary closed areas are:

- Mahaka Point
- Picnic Point
- Long Point
- Catlins River
- Shag Point

Only paua greater than 125mm in shell length can be harvested from the fishery and all paua must be taken by hand-gathering. The use of underwater breathing apparatus to harvest paua is strictly prohibited.

From 1 November 1997, PAU 5D was subdivided into 11 statistical areas for reporting purposes. The scale of reporting was further reduced from 1 October 2001 when it became mandatory to report catch and effort from the 47 fine-scale zones developed by the New Zealand Paua Management Company.

An economically significant commercial fishery has been developed around the PAU 5D fishery. PAU 5D quota is highly valued and is currently being bought at $207 032 per tonne (average in 2000/01 fishing year), with ACE traded for $14 627 per tonne (average 1 October 2001 to 28 February 2002). There are presently 61 quota owners in the fishery with holdings ranging between 0.06 tonnes and 25 tonnes (as at 30 Sept 2001). On 1 October 2001 there were 37 ACE holders with ACE holdings ranging between 0.001 and 23 tonnes.

Quota owners for PAU 5D are spread throughout New Zealand, and overseas.

The majority of paua from PAU 5D are processed in Dunedin and Bluff. However, as paua from PAU 5A and PAU 5B are also processed at these sites,

it is difficult to predict the effect of any reduction of catch in PAU 5D on paua processors.

Table 2: TACC and reported landings (tonnes) of paua in PAU 5D from 1995-96 to 1998-99. Data reported from CELR returns.

Year	Landings	TACC
1995–96	167.42	148.81
1996–97	146.60	148.81
1997–98	146.99	148.81
1998–99	148.78	148.81
1999–00	147.66	148.81
2000–01	149.00	148.81
2001–02	93.76*	148.81

*Catch as at May 2002

The TACC has been caught in PAU 5D since 1995–96 (Table 2).

Recreational Fishery

The recreational bag limit in PAU 5D is 10 paua per person per day. Recreational fishers are prevented from using UBA while harvesting paua.

Recreational surveys have been carried out in 1991–92, 1995–96 and 1999–2000 (report pending). In 1991–92, for 46% of trips the catch-rate was 10 and many diarists indicated that they were able to obtain the allowable catch. The 1995–96 survey estimated that, on average, each recreational fisher caught eight paua per day.

According to the 1991–92 survey, Kakanui and Shag Point in Otago, Kaka, Long, Slope and Nugget Points in the Catlins, and Bluff and Colac Bay in Southland were the most prominent paua collecting sites. Additionally, the 1991–92 recreational fishing survey found that fishing activity in the southern region is highest in summer when the temperatures are warmer and more people are on holiday.

Recreational catch has the potential to fluctuate yearly, depending on factors such as weather patterns. Around 117 000 paua were estimated as being taken in the 1991–92 fishing year, which equates to approximately 39 tonnes. MFish estimates that 22 tonne of paua were harvested by recreational divers in PAU 5D in the 1995–96 fishing year. It is likely the recreational harvest has increased since 1995–96. Approximately 23% of the recreational catch was estimated as coming from the areas closed to commercial shellfish harvesting in PAU 5D.

Recreational fishers report they are finding it increasingly difficult to find paua of harvestable size.

Mäori Customary Fishery

There is an important customary use of paua by Mäori for food, and the shells have been used extensively for decorations and fishing devices. Tangata tiaki now cover the PAU 5D fishery and estimates of customary harvest are starting to become available. Figures for the period 1st October 2000 to 30 September 2001 indicate that approximately 1 tonne of paua was taken for customary purposes. However, this figure should be interpreted with some caution as the returns from which the data is extracted do not necessarily represent the full potential of customary fishing. The timeline over which customary harvest reporting has been available is still relatively short and tangata tiaki report that they have been taking a precautionary approach when issuing authorisations because of their perception that the fishery is under pressure.

Concerns have been expressed that tangata whenua are finding it increasingly more difficult to harvest paua and that both catchability and size of paua has declined in recent years, particularly in shallow water, and on sheltered reef areas.

Illegal Catch

MFish Compliance estimates that illegal catch is around 20 tonne for PAU 5D.

Illegal fishing includes a variety of unlawful activities within both the commercial and recreational fisheries and includes mis- and under-reporting of catch and areas where paua are caught, poaching and the sale of paua on the black market, use of underwater breathing apparatus, taking paua below the 125mm MLS limit, and harvesting above quota holdings and recreational bag limits. All of these activities have the potential to raise the actual level of extraction. Illegal fishing can have a direct impact on the sustainability of paua stocks and affects all paua fishers. It is not known if illegal fishing activity is increasing in PAU 5D.

Other Sources of Mortality

Sub-legal paua may be subject to handling mortality by the fishery if they are removed from the substrate to be measured. Paua may die from wounds caused by removal, desiccation or osmotic and temperature stress at the surface or indirectly from being returned to unsuitable habitat or being lost to predators or bacterial infection.

Fishery Assessment

This review of the PAU 5D fishery is based on the 2002 stock assessment. The model used for the PAU 5D assessment in 2002 is a revision of the Bayesian length-based model first used in 1999 for PAU 5B and used in revised form for subsequent assessments in PAU 5B and PAU 7. The model generates a population and simulates its dynamics through 25 years of fishing, natural mortality and growth.

The model assumes an additional "constant over time" '*non-commercial*' catch of 43 tonnes over and above the TACC. This catch includes recreational harvest, customary harvest and illegal take.

Since 2001, the Shellfish Fisheries Assessment Working Group has concluded indicators using virgin recruited and spawning biomass (including B_{MSY}) were poorly determined using the current assessment model. Consequently, these indicators were replaced with those from a reference period. For this assessment spawning and recruited biomass indicators Sref and Bref were used. The period from 1985 to 1987 was chosen as a reference period because estimates of recruited and spawning biomass were higher than they are currently, and the period coincided with paua's entry to the QMS and a concomitant improvement in data quality. The 1985–87 period is a reference against which current and projected stock sizes and exploitation rates can be compared but should not be considered as a management target. Performance indicators for recruited biomass (B_{02} and B_{07}) and spawning biomass (S_{02} and S_{07}) were calculated for current (2002) and 5-year projections (2007). Exploitation rates in 2001 and 2007 were also used as indicators, and called U_{01} and U_{07}.

The 2002 assessment gives the following findings for the status of the 2001–02 PAU 5D fishery:

The current median recruited biomass estimate was 329 t; the current median spawning biomass estimate was 633 t. The median and upper percentiles for both current recruited and spawning biomass are less than the reference years 1985–87. The assessment indicated that the current median exploitation rate is about 57 %.

Projections show that at the current levels of catch and minimum legal size, in 2007 there is a 37.2% probability that recruited biomass will be greater than current biomass, and a 7.7% probability that it will be greater than the recruited biomass estimated for the period between 1985–87. Similarly, in 2007 there is a 41.8% probability that spawning biomass will be greater than current spawning biomass, and a 16.1% probability that it will be greater than the spawning biomass estimated for the period between 1985–87. Projections also indicate that the exploitation rate will increase to around 79% by the end of 2007.

At the current catch levels and minimum legal size, the biomass is likely to decrease further and is unlikely to move toward the reference levels. These results suggest that the current catch level is not sustainable and will likely cause the stock to decrease further from reference levels of biomass in the next five years. Model projections with five alternative catch levels indicate that lower catch levels increase the chance and speed of rebuilding the stock (Table 3).

Sensitivities to data and uncertainties not explicitly addressed by the model were tested and indicate that these conclusions are robust to the range of assumptions tested.

Table 3. **Probabilities for fisheries indicators derived from the stock assessment for PAU 5D for five alternative catch levels for projections to 2007, including the current catch of 192 t. B is recruited biomass (paua greater than 125 mm shell length), S is spawning biomass (paua greater than 90 mm shell length), U is exploitation rate.**

	115	**134**	**154**	**173**	**192**
U_{07} (%)	19.9	27.4	38.2	54.9	78.6
S_{02}/S_{ref} (%)	61.2	61.2	61.2	61.2	61.2
S_{07}/S_{ref} (%)	85.4	77.0	68.6	60.4	53.7
S_{07}/S_{02} (%)	138.5	124.7	110.7	98.4	88.0
B_{02}/B_{ref} (%)	37.8	37.8	37.8	37.8	37.8
B_{07}/B_{ref} (%)	66.4	56.5	46.4	36.4	28.0
B_{07}/B_{02} (%)	175.8	149.6	123.1	96.0	74.6
$S_{07}<S_{02}$ (%)	20.6	31.8	42.5	51.2	58.2
$S_{07}<S_{ref}$ (%)	64.3	70.9	75.7	80.5	83.9
$B_{07}<B_{02}$ (%)	9.3	22.5	39.0	52.1	62.8
$B_{07}<B_{ref}$ (%)	79.6	84.8	88.0	90.3	92.3

The state of the stock as confirmed by the assessment, is supported by anecdotal evidence of reduced catch rates and size of paua in recent years from customary, commercial and recreational sectors (ref. R Grindley).

The purpose of the Fisheries Act is to provide for utilisation of fisheries resources while ensuring sustainability. In providing for utilisation, the Act requires that the adverse effects of fishing on the aquatic environment are avoided, remedied or mitigated.

The Minister is also required to take into account the following three environmental principles, which specify an obligation to:

Maintain the long-term viability of associated or dependent species;

Maintain the biological diversity of the aquatic environment; and

Protect habitats of particular significance for fisheries management.

Associated or dependent species are defined by the Act as any non-harvested species taken or otherwise affected by the taking of any harvested species. The method for commercial harvest of paua in PAU 5D is hand-gathering while free-diving. Catch Effort Landing Return data indicates that there is no bycatch of any associated or dependent species in this fishery.

There is limited information to provide an assessment of the effects of the paua fishery on either biological diversity or associated and dependent species. There is evidence of an interdependence relationship between paua, kina, and seaweeds. The continued loss of large paua from reefs by fishing may have a localised displacement effect on kina and seaweeds. The effects of this displacement on the inshore benthic community structure are unknown.

No habitats of particular significance for fisheries management have been identified within PAU 5D. It is considered unlikely that the method of hand-gathering would have a demonstrable adverse effect on the environment.

Research

MFish has a research strategy to provide fishery-independent information on abundance and size, size frequency distributions of commercial catches, and growth data to underpin stock assessments and estimate yield for all major paua fishstocks. The most recent stock assessment for PAU 5D was carried out in March 2002.

Surveys of recreational fishers were carried out in 1991–92 and 1995–96. A national household and diary survey of recreational fishers was undertaken in 2000. This project will estimate the recreational catch from PAU 5D. However, the results of this survey are yet to be made available. The most recent survey results available are from 1995–96.

Other Information

Voluntary codes of practice covering harvesting techniques have been promoted within both the commercial and recreational fisheries since 1992.

There are no provisions applicable to the coastal marine area known to exist in any policy statement or plan under the Resource Management Act 1991, or any management strategy or plan under the Conservation Act 1987, that are relevant to the setting or varying of any sustainability measure for PAU 5D.

MFish is not aware of any issues arising under s 5 of the Fisheries Act – international obligations and the provisions of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which affect consideration of the management options for PAU 5D.

Assessment of Management Options

TAC Options and Allowances

Section 13(2)(b) of the Act outlines matters that the Minister is required to consider when setting or varying a TAC for a fishstock which is below B_{MSY}. Under current catch levels, both the recruited biomass and spawning biomass are expected to decline further by 2007. While the model does not explicitly estimate the biomass that will support the MSY (B_{MSY}), it is likely that the current biomass is less than the size that will support the MSY. A TAC is to be set that will enable the stock level to be altered in a way and at a rate that will move the stock towards or above B_{MSY}, having regard to the interdependence of stocks, and within a period appropriate to the stock, having regard to the stock's biological characteristics and any environmental conditions affecting the stock. In considering the way in which and the rate at which a stock is moved towards B_{MSY}, the Minister is required to have regard to such social, cultural and economic factors as he considers relevant.

It is generally acknowledged that paua fisheries should be managed with some caution. Paua are sedentary animals with a short larval phase, thus making populations susceptible to localised depletion. The low frequency of pre-recruits suggests that the productivity of paua stocks is low.

The 2002 stock assessment is the best information available on the status of the PAU 5D stock. However, it is possible the model results are over-optimistic. Serial

depletion, if it occurs, may cause model results to be overly optimistic with respect to the part of the population that is being fished or surveyed. Hyperstability in CPUE could also cause model results to be overly optimistic. The research diver survey index in fact declined at a greater rate than CPUE.

MFish proposes to set management controls that will:

halt the decline in recruited and spawning biomass;

optimise potential for commencing stock rebuild; and

reduce exploitation rate to provide greater protection to the spawning biomass.

MFish has used the 2002 assessment model as a basis to propose two options to set a TAC for the 2002–03 fishing year. It is intended that the TAC will be "stepped down" over a two- year period to halt the decline and begin to rebuild the PAU 5D stock. A "stepped down" approach is advocated to mitigate the social and economic consequences of a significant reduction in the current TAC. The proposed TAC options are presented in Table 4.

Table 4: Proposed options for setting a TAC for 2002-04

Fishing Year	Option 1	Option 2
2002-03 Proposed TAC (tonnes)	169.0	159.0
2003-04 Proposed TAC (tonnes)	154.0	134.0
Probability of recruited biomass increasing by 2007	At a TAC of 154 tonnes = 61.0%	At a TAC of 134 tonnes = 77.5%
Probability of spawning biomass increasing by 2007	At a TAC of 154 tonnes = 57.5%	At a TAC of 134 tonnes = 68.2%

The options presented in this proposal will halt the decline in the stock and allow it to begin to rebuild. At a total catch of 173 tonnes there is about a 50% chance that the spawning biomass and the recruited biomass will decline by 2007. Hence the assessment indicates as a minimum that the TAC should be set at a level below 173 tonnes. Both options incorporate a "stepped down" approach.

Option one proposes that the TAC be reduced to 154 tonnes over the next two years. At a TAC of 154 tonnes there is a 61.0 % probability that the recruited biomass will increase by 2007, similarly there is a 57.5 % probability that spawning biomass will increase by 2007. (MFish notes that the model estimates these probabilities assuming a constant catch of 154 tonnes)

Option two proposes the TAC be reduced to 134 tonnes over the next two years. At a TAC of 134 tonnes there is a 77.5 % probability that the recruited biomass will increase by 2007, similarly there is a 68.2 % probability that spawning biomass will increase by 2007. (MFish notes that the model estimates these probabilities assuming a constant catch of 134 tonnes.)

Under the two year phased reduction proposal for PAU 5D set out in Table 4, the probabilities of halting declines in recruited and spawning biomass could be expected to be slightly lower than those projected as a single reduction by the model.

The Minister's decisions in 1999 for PAU 5B and in 2001 for PAU 7 favoured a 70% probability that recruited or spawning biomass would increase.

The exploitation rate based on the current catch of 192 tonnes is estimated to be 78.6% of recruited biomass in 2007. At a total catch level of 154 tonnes the exploitation rate is estimated to decrease to 38.2% by 2007; and at 134 tonnes it is estimated to decrease to 27.4% by 2007. No information is available on "safe" exploitation rates for abalone fisheries.

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MFish proposes to update and review the PAU 5D stock assessment and review the PAU 5D management in 2005. However, MFish also strongly encourages PAU 5D fishers to collaborate in the development of a Fisheries Management Plan that includes a fishery rebuild strategy.

Allowances

Customary Catch - Customary harvest in the PAU 5D fishery is estimated from harvest returns to be approximately 1 tonne. MFish general criteria suggest that where the resource is of importance to customary fishers, the allowance for customary should be set at the level of the recreational allowance. However, the criteria are guidelines only. In this instance, it is not believed there is substantial customary harvest in PAU 5D. Therefore, MFish proposes to set an allowance of 3 tonnes for customary harvest for the 2002–03 fishing year.

Recreational Allowance - The recreational catch makes up a significant proportion of the current total catch with 22 tonnes estimated as having been harvested by recreational fishers in 1995–96. This is around 11% of the total catch. It is likely the recreational catch has increased since 1996.

A significant reduction in TACC is proposed for commercial fishers in PAU 5D. The Minister is required to act reasonably to ensure that TAC reductions for conservation/sustainability purposes are not undermined by a failure to consider corresponding controls on recreational and commercial stakeholders. Subject to this consideration, there is no legal requirement that a decrease or increase in the recreational allocation is to result in a corresponding proportional adjustment of the TACC, and vice versa. To allow for non-commercial fishing interests, arguably, does not necessarily mean that the allowance must fully satisfy estimated non-commercial requirements. Where there are competing demands, which will exceed the

availability of a resource, the Minister can allow for recreational use by dispensing less than complete satisfaction, thereby also allowing for commercial users. The Minister has the obligation of carefully weighing all competing demands on the TAC before deciding how much should be allocated to each interest group.

MFish considers it is necessary to constrain the recreational catch to 1995–96 levels. Therefore, MFish proposes to set an allowance of 22 tonnes for recreational harvest for the 2002–03 fishing year and to introduce measures to ensure the recreational catch remains within the recreational allowance.

In order to ensure that levels of recreational harvest contribute to, and do not undermine the rebuild of the fishery, there are a range of tools that could be implemented to constrain the level of recreational catch - such as fishing seasons, areas closures, or adjustment of bag limits. A potential option is to reduce the recreational bag limit from 10 to 8 paua per day. MFish requests recreational fishers to provide submissions on this issue.

Other Sources of Mortality — The extent of incidental mortality of paua in PAU 5D is unknown. The best available information from MFish compliance on illegal fishing in the fishery suggests an illegal harvest of at least 20 tonnes per annum. Mortality is also associated with the return of undersize paua but no quantitative figure has been derived for this source of mortality. MFish proposes to set an allowance for other sources of mortality at 20 tonnes for the 2002–03 fishing year.

Commercial Catch

Two options for reducing the TACC are proposed. The Minister is obliged to consider the social and economic effects when setting a TAC and TACC. No detailed analysis has been undertaken on the economic impacts of implementing each of the proposed two TAC options for the 2002–03 fishing year. MFish requests submissions on this issue from stakeholders.

The phased reduction in the TACC will help to mitigate the full economic and social consequences for fishers of a significant reduction of the TACC. It will also provide an opportunity to adjust business activities to take into account the measures required to halt further decline in the fishery.

Despite the lack of economic analysis, a reduced TACC will likely have an adverse economic impact on the PAU 5D industry through decreased revenue from the sale of paua. A decrease in export earnings will also result as a significant quantity of the PAU 5D catch is exported. This has the potential to lead to adverse employment and downstream economic implications to the fishing industry. There may be some effect on port prices, with a reduction having an adverse effect on commercial paua fishers.

A further consequence of a reduced TACC may be an increase in quota trade prices. The economic impact on owners of large parcels of quota may be lessened if there was an increase in the capital value of quota.

Although it is appropriate to take into account the social and economic implications of a reduction in TACC, MFish believes there is an urgent need

to halt the decline in stock biomass of the PAU 5D fishery and commence stock rebuilding. If measures are not taken, there is a high risk that the stock will continue to decline. This will have more serious long-term social and economic implications.

Shelving of quota, in lieu of TACC reductions, has been previously used in other paua fisheries. However, shelving may not be appropriate in the context of this fishery. The rate of rebuild is anticipated to be a long-term process. A phased reduction is being proposed to reduce economic consequences. The shelving of additional quota by fishers may serve as a useful conjunct to the TACC reduction if industry assess that additional steps could be taken to improve the probability or speed of a rebuild.

Compliance Implications

The proposed TACC reduction may increase the incentive for some commercial fishers to mis- or under-report catches by falsifying greenweights to harvest paua as they attempt to maximise returns on their reduced quota holdings. There may also be an increased incentive to harvest paua from PAU 5A and PAU 5B QMAs and report this catch as being from the PAU 5D fishery.

Until possible measures for restraining the recreational catch have been developed with recreational fishers, it is difficult to determine the compliance implications. However, there would be the cost of advertising, signage and reprinting recreational pamphlets.

Administrative Implications

The proposed TACC reduction may have some administrative implications for quota holders with respect to minimum quota holdings and quota aggregation limits resulting from a reduction in TACC. Paua 5D has a minimum holding requirement of one tonne. The effect of a TACC reduction will mean that some fisher's holdings will fall below the minimum holding requirements. However, if people held the minimum amount required before the reduction or held exemptions to the minimum holding requirements under the 1983 Act, they will be provided an exemption to the minimum holding requirements under the 1996 Act. However, the exemption ceases to apply if the fisher trades a portion of their ACE or sells their quota.

Conclusions

For PAU 5D the current biomass is less than the size that will support the MSY. Under current catch levels equal to the current TACC, both the recruited biomass and spawning biomass are expected to decline further by 2007. Measures are therefore required to halt the decline in stock biomass in the 2002–03 fishing year, with the intention of taking future measures to rebuild the stock to a level that will support the MSY.

MFish proposes to set a TAC for the 2002–03 fishing year. The 2002 stock assessment model is used as a basis on which to set this TAC. MFish proposes to set a non-commercial allowance of 45 tonnes; with a 3 tonne allowance for customary interests, a 22 tonne allowance for recreational interests, and 20 tonnes for other sources mortality.

Two options are presented to set a TAC and TACC for the 2002–03 fishing year. Each option has an associated probability (risk) of achieving the required management objectives of halting the decline in recruited and spawning biomass, and reducing the exploitation rate. The greater the reduction in TAC, the greater the probability of achieving these objectives. However, a reduction in TAC has social and economic implications that must be taken into account.

The recreational catch makes up a significant proportion of the current total catch with 22 tonnes estimated as having been harvested by recreational fishers in 1995–96. It is necessary to ensure that the recreational catch remains within the 22 tonne allowance. MFish proposes to consult with recreational fishers to develop management measures to achieve this.

MFish proposes to update and review the PAU 5D stock assessment and review the PAU 5D management in 2005. However, MFish also strongly encourages PAU 5D fishers to collaborate in the development of a Fisheries Management Plan that includes a fishery rebuild strategy.

Preliminary Recommendation

MFish recommends that:

For the 2002–03 fishing year the TAC and TACC be set in accordance with one of the following options:

Option One — TAC is set at 169 tonnes for the 2002–03 fishing year and the TACC is decreased from 148.81 tonnes to 124.0 tonnes.

OR

Option Two — TAC is set at 159 tonnes for the 2002–03 fishing year and the TACC is decreased from 148.81 tonnes to 114.0 tonnes.

For the 2003–04 fishing year, consistent with the previous options:

Option One - TAC to be further reduced to 154 tonnes for the 2003–04 fishing year and the TACC decreased from 124 tonnes to 109 tonnes.

Option Two - TAC to be further reduced to 134 tonnes for the 2003–04 fishing year and the TACC decreased from 114 tonnes to 89 tonnes.

Consultation be carried out with the recreational fishing sector to determine appropriate measures to constrain the recreational catch.

A new stock assessment be carried out in 2005, along with a review of the TAC, TACC and recreational management measures.

PAU 5D fishers are strongly encouraged to collaborate in the development of a Fisheries Management Plan that includes a fishery rebuild strategy, prior to 2005.