



Economic Study of Recreational Fishing in Victoria Murray Cod Assessment

VRFish

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Private and confidential

Dear Christopher

Subject: Economic Contribution of Recreational Fishing - Murray Cod Assessment

As per our discussions, this letter outlines the estimated economic contribution of recreational fishing for Murray Cod in Victoria, and the likely impact that removing Murray Cod recreational fishing would have on the Victorian Economy.

1. Background

Murray Cod are large, long-lived, carnivorous fish which inhabit a remarkably wide variety of habitats, from cool, clear streams with riffle-and-pool structure and rocky substrates in upland areas to large, slow flowing rivers in the extensive alluvial lowland reaches of the Murray-Darling Basin.

Presently, there are proposals under consideration which would effectively stop Murray Cod recreational fishing. These proposals include the creation of marine parks, and adding the fish to the protected species list.

The banning of Murray Cod recreational fishing will potentially impact on the Victorian economy, given:

- ▶ **the large economic contribution of recreational fishing to Victoria** - estimates by Ernst & Young indicated that for 2008-09, recreational fishing in Victoria contributed:
 - ▶ \$2.3 billion in direct expenditure;
 - ▶ \$825 million to Gross State Product (GSP); and
 - ▶ 5,200 jobs in Victoria, when the industry and flow-on jobs are considered; and
- ▶ **the large number of Murray Cod recreational fishers in Victoria** - a survey developed by Ernst & Young indicating that 44% of fishers participating in inland recreational fishing in Victoria target (not exclusively) Murray Cod.

This document provides information on the following:

- ▶ the impact of Murray Cod recreational fishing on the Victorian economy;
- ▶ the likely range in which the Victorian economy will be affected if Murray Cod recreational fishing is banned;
- ▶ the methodology applied for determining this range; and
- ▶ limitations of this analysis.

2. Value of Murray Cod recreational fishing to the Victorian Economy

The value of Murray Cod recreational fishing to the Victorian economy was assessed based on:

- ▶ Direct expenditure on the activity; and
- ▶ Overall economic contribution to GSP and employment.

The approach and results are discussed below.

2.1 Direct Expenditure

The estimated direct expenditure of Murray Cod recreational fishing industry is based primarily on the outcomes of the recreational fishing survey developed by Ernst & Young and completed in 2008-09.

The recreational fishing survey was used to determine the demographic and economic characteristics of Victorians who participate in recreational fishing. This survey received 1,037 responses, making the results statistically significant for the Victorian population.

The purpose of the survey was to gain insight into three main characteristics of Victorians who participate in recreational fishing. These aspects were:

- ▶ characteristics of recreational fishers and their fishing patterns;
- ▶ recreational fishers expenditure on fishing-related activities; and
- ▶ constraints restricting recreational fishers participating in recreational fishing more frequently.

As part of this survey, specific questions were asked in relation to Murray Cod recreational fishing. The survey results relating to Murray Cod indicated that:

- ▶ 44% of inland water recreational fishers target Murray Cod;
- ▶ An average of 1.4 Murray Cods were caught per inland water recreational fishing trip; and
- ▶ An average of 0.8 Murray Cods (or 57% of total Murray Cods caught per inland water recreational fishing trip) were released after being caught.

This data was used in conjunction with more general survey data relating to recreational fishing in Victoria to estimate the direct expenditure in Victoria attributable to recreational fishing on Murray Cod.

This survey data included:

- ▶ an estimated 721,000 Victorians participated in recreational fishing in 2008/09;
- ▶ Recreational fishers take an average of 12 fishing trips per annum;
- ▶ Inland water recreational fishing accounts for 39.9% of all recreational fishing in Victoria; and
- ▶ the average expenditure per trip per fisher is estimated to be \$250 inclusive of variable costs (such as accommodation, bait, fuel etc) and fixed costs (such as equipment and capital).

In order to estimate 2009-10 values from 2008-09 survey data, dollar values were escalated by the Compound Annual Growth rate (CAGR) of the Melbourne Consumer Price Index (CPI) for the past 5 years, and the 2008-09 number of recreational fishers were escalated by the CAGR of the Victorian population for the past 5 years.

While survey data showed that 44% of inland water recreational fishers target Murray Cod, respondents were able to select more than one type of fish. As a result, this 44% was reduced to the number of inland water recreational fisher survey respondents who target Murray Cod as a percentage of every fish targeted, equating to 18%.

Based on the assumptions and approach above, the estimated direct expenditure on recreational fishing for recreational fishers who specifically target Murray Cod is estimated to be **\$166.7 million** in 2009/10.

Should the Murray Cods' natural habitat in Victoria be turned into a marine park or the fish be added to the protected species list, resulting in the banning of Murray Cod recreational fishing, the total direct expenditure will not reduce to zero. Rather, it is expected that a large percentage of recreational fishers will substitute targeting Murray Cod for other fish species. The actual percentage of recreational fishers of Murray Cod who will not substitute to alternative fish (that is, will cease recreational fishing) is not known. Therefore, a range of 5% to 20% has been analysed to present the possible outcomes.

Based on this range, the reduction in direct economic expenditure in Victoria by Murray Cod recreational fishers, based on the 2009-10 values estimated above, is shown in Table 1 below. As can be seen, the reduction in direct expenditure is estimated to be between \$8.3 million and \$33.3 million.

Table 1: Impact of banning Murray Cod recreational fishing

	% of recreational fishers of Murray Cod who will cease fishing if ban on Murray Cod recreational fishing is implemented			
	5%	10%	15%	20%
Reduction in direct expenditure (\$ millions)	8.3	16.7	25.0	33.3

It should be noted however it is likely that this reduction may be substituted to expenditure on other recreational activities within the Victorian economy.

2.2 Economic Contribution to Victoria

The contribution of Murray Cod recreational fishing to the Victorian economy, in terms of GSP and employment, was estimated using an input-output (I-O) model and methodology.

The I-O methodology involves placing the direct expenditure in an I-O model to determine the flow on impacts that the expenditure on recreational fishing activities has on the broader Victorian economy.

This process then allows for the calculation of the total economic contribution of recreational fishing on the Victorian economy.

For the economic contribution study, any direct expenditure which is undertaken on recreational fishing, but ultimately leaks out of the Victorian economy, is discounted as not having an economic contribution to Victoria.

The base I-O multipliers used for this study were developed by the Centre of Policy Studies (CoPS) from Monash University and are derived from their general equilibrium model.

The economic contribution of Murray Cod recreational fishing to Victoria based on current fishing patterns (i.e. 100% levels) is presented in Table 2 below.

Table 2: Overall economic contribution (2009-10)

Economic contribution	2009-10
Contribution to GSP (\$ millions)	59.0
Employment (industry and flow on jobs)	374

Applying the direct expenditure assumption of 5% to 20% of Murray Cod recreational fishers will not substitute to fishing for alternative fish, the reduction in Victorian GSP and employment are shown in Table 3 below.

Table 3: Impact of banning Murray Cod recreational fishing

	% of recreational fishers of Murray Cod who will cease fishing if ban on Murray Cod recreational fishing is implemented			
	5%	10%	15%	20%
Reduction in GSP (\$ millions)	2.9	5.9	8.8	11.8
Reduction in employment (industry and flow on jobs)	19	37	56	75

3. Conclusions

The economic impact of Murray Cod recreational fishing in Victoria for 2009-10 is estimated to be:

- ▶ **\$166.7 million** in direct expenditure;
- ▶ **\$59.0 million** in contribution to GSP; and
- ▶ **374 jobs**.

Should Murray Cod recreational fishing in Victoria be banned, the impact on the Victorian economy (in 2009-10 dollars and values) is likely to range in a reduction of between:

- ▶ **\$8.3 million and \$33.3 million** in direct expenditure;
- ▶ **\$2.9 million and \$11.8 million** in contribution to GSP; and
- ▶ **19 and 75 jobs**.

It should be noted however it is likely that this reduction may be substituted to expenditure on other recreational activities within the Victorian economy.

4. Limitations

Ernst & Young have not done a specific economic study for Murray Cod. Outcomes in this study have been based on the general study *Economic Study of Recreational Fishing in Victoria* undertaken in 2008-09.

No data was available relating to the likely substitution impact should Murray Cod recreational fishing be banned. In order to make the estimates above more reliable, it is recommended a further survey is undertaken specifically relating to Murray Cod fishers.

In addition, it may be beneficial to undertake Computable General Equilibrium (CGE) modelling to obtain a more precise economic impact of Murray Cod recreational fishing. This is due to the fact that I-O modelling is not as exact as CGE modelling.

5. Basis of Our Work

We have performed research and analysis using publicly available information drawn from a wide range of literature research, databases, surveys and on-line information services which were available to us within the timeframe specified for preparation of the report in order to provide you with the economic research.

We have not independently verified, or accept any responsibility or liability for independently verifying, any such information, nor do we make any representation as to the accuracy or completeness of the information.

We accept no liability for any loss or damage which may result from your reliance on any research, analyses or information so supplied.

Yours sincerely

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