

**OPERATIONAL PLAN TO MANAGE
THE INCIDENTAL CAPTURE
OF NEW ZEALAND SEA LIONS
IN THE SQU6T FISHERY
FOR THE 2004–2005 FISHING YEAR**

29 October 2004

Purpose of Paper

1 This paper outlines the management process to address New Zealand sea lion interactions in the southern squid trawl fishery (SQU6T) during the 2004-05 fishing year. This process continues the use of a limit on fishing-related mortalities to constrain New Zealand sea lion deaths within the SQU6T fishery to a biologically acceptable level.

Background Information

2 Previous operational plans have used the term “Maximum Allowable Level of Fishing Related Mortality” (MALFiRM) to describe the limit on fishing related mortality applied under s 15(5)(b) of the Fisheries Act 1996 (the Act). This has created confusion because a MALFiRM proper is an output of a Population Management Plan (PMP) the Minister must enforce under s 15(5)(a) of the Act. In the absence of a PMP, references to MALFiRM for actions under s 15(5)(b) are inaccurate. The terminology adopted in this operational plan is fishing-related mortality limit (FRML).

3 The New Zealand sea lion is classified under section 2(3) of the Marine Mammals Protection Act 1978 as a “*threatened species*”. Under this classification, this species is considered not immediately threatened with extinction, but is potentially still vulnerable to population decline.

4 The southern squid trawl fishery (SQU6T) operates on the shelf around the Snares Islands and the Auckland Islands. The fishery runs from February to April/May each year. A 12 nautical mile exclusion zone around the Auckland Islands prevents fishing close to the major breeding areas of the New Zealand sea lion. This area became part of the Auckland Islands – Motu Maha Marine Reserve in January 2004, continuing the existing prohibition on all fishing activities within the 12-mile exclusion zone. Outside the 12-mile exclusion zone, there are active commercial fisheries for various species, including arrow squid in quota management area SQU6T.

5 The New Zealand sea lion foraging area extends beyond the 12-mile exclusion zone, where it overlaps the squid trawl fishery on the Auckland Islands Shelf and results in the incidental capture and drowning of sea lions in trawl nets. The capture of threatened species in this fishery has raised public concerns over New Zealand sea lions in the last decade, including the role of the Ministry of Fisheries (MFish) in managing the associated squid fishery. Under s 15(2) of the Act, the Minister of Fisheries may take such steps that he considers necessary to avoid, remedy or mitigate the effects of fishing-related mortality on protected species. Under s 8 of the Fisheries Act 1996, the Minister of Fisheries must balance concerns over sustainability in the sea lion population with measures to provide for the utilisation of the squid 6T fishery when making a decision under s 15.

6 The incidental capture of New Zealand sea lions in the SQU6T fishery has led to the development and implementation of operational plans extending back to the 1992–93 season. The principal objective of these plans has been to constrain the number of sea lion deaths in the SQU6T fishery to a biologically acceptable level. These operational plans have been developed and implemented given the absence of a Population Management Plan from the Department of Conservation.

7 Prior to 2002, the management objective established for sea lions was to retain existing breeding locations, establish at least two additional breeding sites, and allow

population size to increase with the aim of moving this species towards a ‘non-threatened’ status over a 20 year timeframe. In practice, the Minister has little direct ability or authority to bring about an increase in the number of sea lion breeding locations but is able to manage the interaction between fishing and the sea lion population through management of the SQU6T fishery. In 2003, MFish sought more explicit objectives for managing SQU6T sea lion interactions in the Operational Plan.

8 A group comprised of industry, environmental, Department of Conservation, and MFish interests was established in early 2003 within the MFish Aquatic Environment Working Group (AEWG) to examine research findings and scientific matters relating to bycatch of the New Zealand sea lion. For purposes of the sea lion Operational Plan, the AEWG adopted the following objective for gauging the effectiveness of SQU6T sea lion management:

Management interventions will be designed to ensure the sea lion population remained above 90% of its carrying capacity, K, or else remained above 90% of the level it would obtain in the absence of fishery bycatch, 90% of the time in 20- and 100-year runs.

Legal Considerations

9 The purpose statement of the Act describes its overriding objective of providing for the utilisation of fisheries resources while ensuring sustainability. The Act defines “ensuring sustainability” as to “maintain the potential of fisheries resources to meet the reasonably foreseeable needs of future generations”, and “avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment”. “Utilisation” of fisheries resources is defined as “conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural well-being”.

10 Within the parameters of sustainability, there is a positive obligation to provide for the use of fisheries resources. In the context of a harvestable species, this requires utilisation to the extent that is sustainable. However, it is inappropriate to consider the incidental capture of a protected species in the same way that one considers harvesting a fish stock¹.

11 Complicating this balancing exercise is the difference in the sustainability standard for fisheries resources, and that for other aquatic life including protected species. Most fish stocks are managed towards a level that will produce the maximum sustainable yield, but the Act sets no quantifiable criteria for considering sustainability as it relates to threatened species. S 9(a) of the act provides that all persons exercising or performing functions, duties, or powers under the Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the environmental principal that associated or dependent species should be maintained above a level that ensures their long-term viability.

12 Consistent with the purpose and principles of the Act, s 15 provides the specific facility for the Minister of Fisheries to fulfill his obligations with respect to managing the effect of fishing-related mortality on marine mammals or other wildlife. Section 15 is driven first by an interaction with another statute (discussed below) but otherwise provides scope to meet the utilisation obligation of the Act while providing for the sustainability of associated fish stocks.

¹ Squid Fishery Management Company Ltd. v Minister of Fisheries; Court of Appeal 2004 (CA39/04).

13 A *Population Management Plan* (PMP) is developed under the Marine Mammals Protection Act 1978, and approved by the Minister of Conservation after concurrence from the Minister of Fisheries. Under a PMP, the Minister of Fisheries shall take all reasonable steps to ensure the maximum allowable fishing-related mortality level set by the PMP is not exceeded, and may take such other measures as are considered necessary to further avoid, remedy, or mitigate any adverse effects of fishing on the relevant protected species (s 15(1) of the Fisheries Act 1996).

14 Without a PMP, the Act provides alternative mechanisms to manage the effects of fishing-related mortality on the New Zealand sea lion. In particular, s 15(2) states that in the absence of a PMP, the Minister of Fisheries, after consultation with the Minister of Conservation, may take such measures as are considered necessary to avoid, remedy or mitigate the effect of fishing-related mortality on any protected species and this may include setting a limit on fishing related mortality. To give effect to any established limit on fishing related mortality (MALFiRM or FRML), s 15(5) allows the Minister, by notice in the Gazette, to prohibit all or any fishing or fishing methods in an area to ensure the limit is not exceeded.

15 There is no PMP for the New Zealand sea lion at present, although the Department of Conservation is developing one. Because a PMP is not available, MFish has in the past, developed options for the Minister of Fisheries to implement a FRML-based approach to manage the effects of the SQU6T fishery on the New Zealand sea lion population under s 15(2) of the Fisheries Act 1996. This approach is being adopted again for the 2004-05 fishing year.

FRML for the 2004-05 Season

16 The 2004-05 operational plan uses the Breen & Kim² model to establish an appropriate FRML. In the Breen & Kim research, the sea lion population is modeled using a fully-age-structured Bayesian approach. It differs from the previous work of Breen and others by taking into account the full range of biological and fisheries data available to date, including observed maturity schedules, variable pupping rates, vulnerability at age information from by-caught animals, survival rates, and late-season pup mortality data.

17 Criteria for acceptance of management strategies were developed by the AEWG to determine if a given strategy satisfied the intent of the interim management objective. The probabilities of different outcomes were determined for several criteria. Specific criteria were chosen to ensure a successful management strategy:

- a) Provide for an increase in the sea lion population to more than 90% of carrying capacity (K), or to within 10% of the proportion of K that would have been attained in the absence of fishing;

² Breen, P.A., Kim, S.W. (2004) Exploring alternative management procedures for controlling bycatch of New Zealand or Hooker's sea lions in the SQU 6T arrow or Wellington flying squid fishery. Final Research Report to the New Zealand Ministry of Fisheries.

- b) Attain the levels in (a), with 90% certainty, over 20-year and 100-year projection periods (*crit20* and *crit100*, respectively);
- c) Attain a mean number of mature animals that exceeded 90%*K* (*crit Nmat/K*)%, in the second 50 years of 100-year projection runs (to allow for build-up of numbers in depleted, hypothetical populations over time).

18 Aside from these three primary criteria, evaluation of the management strategies was made using a larger suite of performance indicators identified by the AEWG including: mean annual and maximum bycatch during 100 year projection runs, population level at the end of 100 year runs as a proportion of *K* (*N100/K*), percentage of lost fishing effort, and the percentage of fishing seasons closed.

19 Using the values from the 2004 sea lion pup production count and applying harvest control rule 4 (described in the advice papers), the Minister of Fisheries has decided that a fishing-related mortality limit of 115 New Zealand sea lions will be set for the 2004-05 SQU6T Operational Plan, pursuant to s 15(2) of the Fisheries Act 1996.

20 The decision to formally impose the limit pursuant to section 15(2) is made to ensure that this level of mortality will not be exceeded. Without the formal imposition of a FRML, there is a reasonable probability of fishing-related mortality in the SQU6T fishery exceeding the 115 sea lion limit.

Arrangements to Monitor the 2004-05 FRML

21 The FRML will be monitored using a predetermined strike rate.

22 The procedure for estimating sea lion captures for the SQU6T fishery will rely on the application of a predetermined 5.3% strike rate. This means that for every 100 tows undertaken in the SQU6T fishery, 5.3 sea lion mortalities will be assessed towards the FRML, calculated as follows:

- a) (predetermined strike rate) * (total number of tows in SQU6T by all vessels)

Reporting Arrangements

23 The requirements of a master of the fishing vessel and the MFish observer, respectively, in reporting New Zealand sea lion captures are as follows:

- a) Masters of all vessels must submit a report to MFish on any encounter with a marine mammal that resulted in death or injury, at the end of the voyage as required under the Marine Mammal Protection Act 1978, and;
- b) Ministry of Fishery observers will immediately inform (by email or fax) the Fisheries Communication Centre following any observed New Zealand sea lion capture on their vessel.

24 The Squid Fishery Management Company Limited, through the New Zealand Seafood Industry Council, will coordinate a vessel daily voluntary reporting regime. This information is required to generate the in-season calculation of New Zealand sea lion mortalities against the FRML, based on the predetermined strike rate. For the 2004-05 season, all vessel masters fishing in SQU6T will be required to report the following information:

- a) each tow undertaken
- b) whether the tow was observed by a Ministry of Fisheries' observer
- c) whether a SLED was used on the tow, and
- d) whether a sea lion was caught during a tow.

25 Up to the point where 70% of the FRML is reached, the reporting period used to monitor sea lion mortalities is to be the seven day calendar week commencing at 0001 hours Monday and ending at 2400 hours the following Sunday. At the point when 70% of the FRML is reached, the reporting period will switch to a daily basis. MFish anticipates that fishers will begin fishing in SQU6T on 1 February 2005.

Discount Factor

26 A 20% discount factor adjustment will be made to the 5.3% predetermined strike rate of approved SLED-equipped vessels, resulting in an effective strike rate of 4.24% for tows undertaken by qualifying vessels.

27 Monitoring SLED use will be conducted through representative MFish observer coverage of squid vessels intending to fish in SQU6T, or through the use of alternative monitoring measures agreed with the Ministry. The 20% discount to the 5.3% predetermined strike rate is applicable only to those vessels using an approved SLED.

28 In order to qualify for the discount strike rate, SQU6T vessels must use a SLED device approved by MFish, and the escape hatch on the SLED must remain open during fishing operations.

29 Qualification for and granting of the 20% discount factor will be conducted according to the following procedure:

- a) It is the responsibility of the Squid Fishery Management Company (SFMC) to provide recommendations about appropriate SLED design specifications to MFish no later than 1 December 2004. In the event SFMC has not supplied SLED design specifications prior to 1 December 2004, MFish will act on the specifications used in the 2003-04 sea lion operational plan.
- b) MFish will identify the relevant specifications from the SFMC recommendations that constitute an approved SLED for purposes of allowing the 20% SLED discount. The MFish-approved SLED specifications will be used for purposes of observer briefings and as the standard for establishing compliance with design requirements.
- c) SQU6T vessels seeking the SLED discount will be required to:
 - i) notify the MFish observer program of their intentions to obtain the SLED discount providing at least *two working days advance notice* (not including Saturdays, Sundays and holidays) of fishing intentions and voyage dates.
 - ii) declare their intended SLED use, and

- iii) describe the SLED device to be used such that it can be verified by MFish against the approved SLED design. SLEDs that do not satisfy the approved design will not be eligible for the 20% discount.

Observer Coverage

30 In order to coordinate availability and placement of MFish observers on SQU6T vessels requesting the 20% SLED discount factor, SFMC is required to notify the MFish observer programme with a list of all likely SQU6T vessels by 1 December 2004.

31 The role of MFish observers is to ensure that each vessel accurately records and reports any New Zealand sea lion captures in accordance with the 2004-05 operational plan. Observers will also record net configuration and deployment relating to SLED use as appropriate.

32 Should there be insufficient MFish staff available to place observers on all SQU6T vessels qualifying for the SLED discount, the MFish observer programme will coordinate with SFMC to ensure the placement of available observers on SQU6T vessels in a manner representative of normal fishing activities. The MFish objective is to provide approximately 30% observer coverage of all tows undertaken in the SQU6T fishery, which is the level achieved in the 2003-04 season.

33 In situations where MFish is unable to provide observer coverage for all SQU6T SLED vessels qualifying for the strike rate discount factor, MFish will endeavor to utilise alternative monitoring procedures such as on-board video surveillance or gear inspections. Qualifying SLED-equipped vessels will be allowed to operate without an observer and will obtain the discount factor.

34 Any additional expenditure related to observer coverage above the planned level, while not specifically consulted, is provided solely for the benefit of industry (ie, the fishery will stay open for a longer period, and the SQU6T catch will be greater). As such, the assumption is that this expenditure should be 100% recoverable from industry by way of the annual under and over recovery process as a recoverable under recovery (ie, the Ministry delivered more observer days than planned/levied). As the additional coverage related to documenting SLED use is requested by industry, and for the benefit of industry, the expenditure will be exempt from the agreed principles for management of under and over-recovery of cost recovery levies.

Possible Closure Process

35 MFish will develop weekly reports of cumulative estimated sea lion mortalities up to the point where 70% of the FRML has been reached, at which point monitoring will be conducted on a daily basis. The Minister of Fisheries will close the fishery by Gazette notice under s 15(5) of the Fisheries Act 1996 if the point estimate indicates that the FRML is about to be reached.

36 Given timing constraints in which to effectively monitor estimated total sea lion catch against the FRML, and the requirement to immediately close the fishery upon reaching the limit, no consultation will be undertaken with stakeholders during the closure procedures. Nevertheless, MFish will closely coordinate the fishery closure process with the Squid Fishery Management Company Limited to ensure that vessel operators are kept informed as

to the status of the fishery in respect to the FRML. Stakeholders will also be regularly informed by email concerning the ongoing estimated number of sea lions mortalities that have occurred.

A handwritten signature in black ink, appearing to read 'D. Benson-Pope', with a long horizontal line extending to the right.

Hon David Benson-Pope
Minister of Fisheries

A handwritten signature in black ink, appearing to read 'Chris Carter', with a long horizontal line extending to the right.

Hon Chris Carter
Minister of Conservation