

MANAGEMENT OPTIONS FOR BASKING SHARKS TO GIVE EFFECT TO NEW ZEALAND'S INTERNATIONAL OBLIGATIONS

Executive Summary

- 1 Both the Ministry of Fisheries (MFish) and the Department of Conservation (DoC) propose the following management options, to provide protection for basking sharks, (*Cetorhinus maximus*) both in New Zealand fisheries waters and from New Zealand vessels fishing on the high seas.
- 2 New Zealand is a member state of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). By ratifying this Convention New Zealand acknowledged the importance of conserving migratory species, and agreed to take action to protect such species wherever appropriate and possible. In 2005, concern over the conservation status of basking sharks prompted the CMS Eighth Conference of the Parties to list the basking shark on Appendices I and II¹.
- 3 New Zealand subsequently made a commitment to establishing protection measures for the basking shark in 2008, through publication of the National Plan of Action-Sharks (NPOA-Sharks)².
- 4 New Zealand currently manages basking sharks through the Fisheries Act 1996, although the species is not within the quota management system (QMS). Fishers can legally utilise incidental captures of basking sharks, but targeting this species is not permitted. By continuing to allow such utilisation of basking sharks, New Zealand will not fulfil its obligations to the CMS.
- 5 Incidental captures of basking sharks are known to occur in New Zealand's trawl and set net fisheries³. Recent research shows an estimated 922 basking shark captures have occurred in New Zealand's deepwater and middle-depth trawl fisheries in the 14 years to 2007-08⁴.

¹ Migratory species that are in danger of extinction are listed on Appendix I of the Convention, and states should strive to strictly protect these animals. Migratory species that have an unfavourable conservation status, or whose conservation status would significantly benefit from international co-operation, organised by international Agreements, are listed on Appendix II of the Convention.

² The NPOA-Sharks is an operational procedure developed by MFish in response to the United Nations Food and Agriculture Organisation (FAO) producing an International Plan of Action-Sharks (IPOA-Sharks). The overarching goal of the IPOA-Sharks is 'to ensure the conservation and management of sharks and their long-term sustainability. Copies of the NPOA sharks can be found at: <http://www.fish.govt.nz/en-nz/Consultations/Archive/2008/NPOA+Sharks/default.htm?WBCMODE=PresentationUnpublished>

³ Francis, M.P. & Duffy, C. (2002) Distribution, seasonal abundance and bycatch of basking sharks (*Cetorhinus maximus*) in New Zealand, with observations on their winter habitat. *Marine Biology* (2002) 140:831-842

⁴ M.P. Francis and M.H. Smith, DRAFT New Zealand Aquatic Environment and Biodiversity Report 2009

- 6 To give effect to these international obligations, it is proposed that a combination of the following legislation be used to prohibit any remaining utilisation of basking sharks and their products:
 - a) The Wildlife Act 1953 – The primary legislation for protection of wildlife in New Zealand, the powers under which are limited to within New Zealand fisheries waters (which includes New Zealand’s Territorial Sea and exclusive economic zone (EEZ)).
 - b) The Fisheries Act 1996 – Regulations under the Fisheries Act apply to all fishing vessels operating within New Zealand waters, and can apply to all New Zealand flagged vessels operating on the High Seas.
- 7 Specifically, this proposal is considering the following regulatory changes:
 - a) amendment to Schedule 7A of the Wildlife Act, to include basking shark;
 - b) drafting of new Fisheries (Basking Shark – High Seas Protection) Regulations 2010; and
 - c) amendment to Part 2C of Schedule 3 to the Fisheries (Reporting) Regulations 2001, to include basking shark.

Regulatory Impact Analysis Requirements

- 8 This IPP required a Regulatory Impact Statement which was reviewed internally by MFish
- 9 For more information on the Regulatory Impact Analysis Requirements and the meaning of the word ‘significant’ with reference to an IPP, please refer to the Treasury website www.treasury.govt.nz.

The Issue

- 10 New Zealand ratified the CMS on 1 October 2000. In 2005, concern over the conservation status of basking sharks prompted the CMS Eighth Conference of the Parties to list the basking shark on Appendices I and II. New Zealand subsequently made a commitment to establishing protection measures for basking sharks in 2008, through publication of the NPOA-Sharks.
- 11 As a member state of the FAO that frequently takes sharks, there was also an onus on New Zealand to develop an NPOA-Sharks. The NPOA-Sharks specifies 11 actions that, once completed, will help New Zealand’s fisheries management regime satisfy the objectives of the IPOA-Sharks. Included in these actions are those New Zealand must deliver to meet the CMS obligations, such as protecting basking sharks.
- 12 As a signatory to the CMS, New Zealand is obliged to “*endeavour to provide immediate protection for migratory species listed in Appendix I*”, and specifically, to “*prohibit the taking of animals belonging to species listed on Appendix I*” both within New Zealand fisheries waters, as well as by New Zealand flagged vessels operating outside national jurisdictional limits. New Zealand is also obliged to act cooperatively with other parties to improve the conservation status of the basking

shark, through developing international agreements to benefit species listed on Appendix II.

- 13 “Taking” in the context of the CMS means all hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct⁵. The definition encompasses any commercial or recreational targeting of listed species, as well as the *deliberate killing of any basking shark accidentally taken*. The Convention does provide limited exceptions, such as taking for use in scientific research, conservation efforts or for customary use.
- 14 Currently, the management of New Zealand’s basking sharks allows fishers to legally utilise basking shark products, although the species cannot be directly targeted⁶. Prohibiting utilisation of this species, to meet our international obligation, would prevent any further utilisation of basking sharks caught as incidental bycatch. Fishers would not be penalised for incidental captures, provided the correct recording and reporting requirements are met.
- 15 The basking shark is the second largest fish in the world, and is considered to be extremely vulnerable to overfishing, perhaps more so than most sharks, mainly due to their long-lived nature. More detailed information on the biological characteristics of basking sharks is provided in Appendix 1.
- 16 Documented basking shark target fisheries have operated overseas, and are characterised by strong “boom-bust” cycles. Local populations are rarely able to support more than a few hundred removals a year, for a few years, before the fisheries collapse, with very slow or no recorded population recovery following exploitation. No target basking shark fishery has operated in New Zealand, but incidental captures have occurred. As there is little information on the size or distribution of the basking shark population around New Zealand waters, it is unknown whether the current level of fishing-related mortality is a sustainability risk to the population.
- 17 The report on recent research to quantify the level of basking shark captures in New Zealand (Francis & Smith 2009), indicated that 99 captures have been observed in the deepwater and middle-depth trawl fisheries between 1994-95 and 2007-08.
- 18 The observed captures were modelled, to estimate the total number of captures predicted to have occurred over the 14 years. Modelling resulted in an estimate of 922 captures since the 1994-95 fishing year. Irrespective of whether this level of mortality is sustainable, New Zealand is obliged to prohibit utilisation of the basking shark since it is listed on Appendix I of the CMS.
- 19 Low observer coverage in the inshore trawl and set net fisheries mean similar analyses cannot be completed for these fisheries. Estimates of captures given by this recent research may therefore underestimate the actual level of basking shark fishing-related mortality in New Zealand’s fisheries.

⁵ Article I(i) of the Convention on the Conservation of Migratory Species:

http://www.cms.int/documents/convtxt/cms_convtxt.htm

⁶ The basking shark was listed on Schedule 4C of the Fisheries Act in 2004. Schedule 4C lists those stocks and species subject to a permit moratorium under section 93 of the Fisheries Act. As there were no current permits for basking shark at the time of its listing on Schedule 4C, no commercial targeting is permitted in New Zealand, or by New Zealand flagged vessels on the high seas.

- 20 This recent research also indicated some trade of basking shark products still operates in New Zealand. Large single basking shark fins reportedly fetch up to US\$57,000 on international markets⁷, a sum which could encourage opportunistic utilisation of fins, or other products from basking sharks that are landed as accidental bycatch.

Options for management

- 21 In cases such as this, where international concerns dictate, utilisation can be prohibited through the use of two statutes currently in force:
- a) The *Wildlife Act 1953* (the Wildlife Act) can be used to prohibit utilisation of species in New Zealand fisheries waters.
 - b) The *Fisheries Act 1996* (the Fisheries Act) provides for the protection of marine species through regulation. Fisheries Act regulations can be applied to vessels operating within New Zealand fisheries waters, and can apply to all New Zealand vessels fishing on the High Seas (under the Fisheries Act).
- 22 The Wildlife Act is the primary legislation for wildlife protection, and provides for both full and partial protection of a species, either through its listing on the Schedules to the Act or its recognition as wildlife in the Act itself. The Wildlife Act is administered by DoC.
- 23 Using only the Wildlife Act to protect basking sharks, it would only be possible to prohibit utilisation by vessels operating within New Zealand's EEZ, but would leave New Zealand flagged vessels operating on the high seas unregulated. Using only the Wildlife Act in this case would therefore mean New Zealand would only partially fulfil its obligations to the CMS.
- 24 Retaining the Fisheries Act alone to prohibit utilisation of basking shark would enable implementation of regulations applicable to New Zealand flagged vessels on the High Seas, as well as within the EEZ. However, the defence provisions for any incidental taking of basking shark as part of fishing operations under the Fisheries Act are stringent, and the penalty regime is severe. Given the risk of bycatch, MFish and DoC believe the defence under the Wildlife Act is more appropriate. Defence provisions of both Acts are discussed in more detail below.
- 25 MFish and DoC believe a more appropriate option would be to create new regulations using the Fisheries Act in conjunction with the Wildlife Act. The Wildlife Act provides sufficient protection to be used as the primary legislation for management of basking sharks within the EEZ, through listing basking shark on Schedule 7A.
- 26 Regulations enacted using powers under section 297(1)(o) the Fisheries Act can then be applied to New Zealand flagged vessels beyond the outer limits of New Zealand's fisheries waters. Should basking shark be listed on Schedule 7A to the Wildlife Act, an amendment to the Fisheries (Reporting) Regulations 2001 would be required, to include basking shark on Part 2C of Schedule 3.

⁷ Clarke, S (2004). *Shark Product Trade in Hong Kong and Mainland China and implementation of the CITES Shark Listings*. TRAFFIC East Asia, Hong Kong, China

- 27 If management action under both Acts were implemented, New Zealand would fulfil our international obligations to the CMS. In addition, if further protection is required, various tools are available under the Fisheries Act.
- 28 A combination of the two statutes was used in 2007 to prohibit utilisation of the white pointer shark, after this species was also listed on Appendices I and II of the CMS. Consequently MFish and DoC's preferred option is that the same measures be taken for the protection of the basking shark.
- 29 The majority of submissions received during consultation on the management measures for white pointer sharks (also known as great white sharks) indicated support for management using both Acts. There was also general agreement that listing the white pointer shark on Schedule 7A of the Wildlife Act was the most appropriate primary management measure, and a necessary step for the protection of this species.

Summary of Options

Option 1 – Status Quo

- 30 Retaining the status quo:
- a) would allow commercial fishers to utilise basking sharks or their products when this species is landed as bycatch of a legal fishing operation, provided all reporting and recording requirements of the Fisheries Act are satisfied.
 - b) means New Zealand would not fulfil its obligation to the CMS, which states that all utilisation of species listed on Appendix I to the Convention should be prohibited by range states of that species.

Option 2 – Prohibiting utilisation using the Wildlife and Fisheries Acts

- 31 Implementing option 2:
- a) would enable the Minister of Conservation to use the Wildlife Act to prohibit utilisation within New Zealand fisheries waters, by listing the basking shark on Schedule 7A to the Act.
 - b) would require new regulations to be drafted under section 297(1)(o) for the Fisheries Act. Drafting the new Fisheries (Basking Shark – High Seas Protection) Regulations 2010 would prohibit utilisation of basking sharks on the High Seas by New Zealand citizens and permanent residents, as well as companies and vessels registered in New Zealand.
 - c) would require an amendment to the Fisheries (Reporting) Regulations 2001, to include basking shark on Part 2C of Schedule 3. Inclusion requires any incidental captures of basking shark to be reported on the non-fish and protected species catch return.
- 32 Such management action would fulfil New Zealand's international obligation to the CMS. MFish would also achieve one of the actions required by the NPOA-Sharks.

Rationale for Management Options

- 33 New Zealand has an obligation to implement protection measures for basking sharks, since this species' listing on Appendices I and II of the CMS. The listing indicates global concern for the conservation status of basking sharks and, as a member state of the CMS, New Zealand has an obligation to prohibit all "taking" of basking sharks. The obligation to protect basking sharks has arisen because of New Zealand's obligation under the CMS, not because there is evidence indicating New Zealand fisheries pose a sustainability risk to the local basking shark population.
- 34 Retaining the status quo would be inconsistent with New Zealand's international obligation but could be considered if there was a need to: (1) delay these protection measures, or (2) propose a change in the listed status of basking shark to the parties to the CMS. Based on current information MFish and DoC do not consider there is compelling information at this stage to suggest that a delay in implementation or a change in listed status is appropriate.
- 35 Option 2 is therefore DoC and MFish's preferred option. The rationale for implementing option 2 is that these measures will ensure New Zealand has fulfilled its international obligations under the CMS, to prohibit all utilisation by vessels within and outside New Zealand fisheries waters. In MFish and DoC's opinion, this will be delivered most effectively by utilising both the Wildlife and Fisheries Acts and this will contribute to global efforts to ensure that the conservation status of basking shark is improved.
- 36 If option 2 is decided, implementation of regulation changes to support the management measures for basking shark will be given effect from 01 October 2010.

Assessment of Management Options

Option 1

- 37 Should the status quo be retained, trade and export of basking shark products harvested from incidental captures would continue. The current extent of basking shark utilisation in New Zealand is unknown, but it is not thought that trade of this kind operates on a routine basis. The likely economic benefits that will be incurred through continuing to allow trade of basking shark products is unclear and MFish and DoC would like to invite stakeholder views on this matter, through the consultation process.
- 38 The prices basking shark products are traded for, on both domestic and international markets are also unclear, although prices up to US\$57,000 have been reported for single large fins⁸. Given the infrequent capture rate, any trade in basking shark products is thought to be minimal in this country. Table 1 shows the exported basking shark products recorded from New Zealand between 2004 and 2006⁹. Currently,

⁸ Clarke, S. (2004). Shark product trade in mainland China and Hong Kong and implementation of the CITES shark listings. Hong Kong, China: TRAFFIC East Asia

⁹ Source: UNEP World Conservation Monitoring Centre trade database. All recorded specimens in table 1 were for commercial trade and were harvested from the wild.

export of these products requires a permit from the Convention on International Trade in Endangered Species (CITES), as basking shark is listed on Appendix II to CITES.

Year	Species	Origin	Destination	Number	Unit
2004	Basking shark	NZ	Singapore	21	Fins
2005	Basking shark	NZ	Singapore	8	Fins
2006	Basking shark	NZ	Singapore	39	Fins

Table 1: Records of trade in basking shark specimens from New Zealand from 2004-2006.

Option 2 (MFish/DoC preferred option)

- 39 DoC and MFish believe that using a combination of the tools available from both the Wildlife and Fisheries Acts will provide the strongest and most comprehensive protection measures for basking sharks, fulfilling New Zealand's international obligations, and importantly contributing to the process of improving the global conservation status of this species. Such management action was used in 2007 to prohibit utilisation of the white pointer shark; a species also listed on the Appendices to the CMS.
- 40 The following section provides further detail regarding the provisions available under the Wildlife and Fisheries Acts, for managing the prohibition of utilisation of the basking shark.

The Wildlife Act 1953

- 41 This Act is the primary legislation for the protection of wildlife in New Zealand and is currently used to absolutely protect the following marine species:
- a) Those species defined as wildlife by the Act including seabirds (except six coastal species with varying levels of protection) and reptiles (including all species of marine turtle); and
 - b) Those species listed in Schedule 7A as marine animals absolutely protected (Black coral: all species in the Order Antipatharia, Red coral: all species, spotted black grouper (*Epinephelus daemeli*) and the white pointer shark (*Carcharodon carcharias*)).
- 42 Listing of basking shark on Schedule 7A of the Wildlife Act is likely to be regarded as an appropriate and necessary step to meeting New Zealand's obligations under the CMS. Protection under the Wildlife Act means that any person taking, or attempting to take, any animals identified as having absolute protection is committing an offence against the Act. The penalties include fines up to \$250,000 or imprisonment for no longer than six months.
- 43 A defence is provided where the accidental taking of marine wildlife occurs as part of fishing operations in accordance with section 68B¹⁰, as long as the recording and reporting requirements of section 63B¹¹ of the Wildlife Act are complied with. The

¹⁰ Section 68B of the Wildlife Act provides the possible defences available for anyone charged with an offence under the Wildlife Act. Section 68B(4)(b) states "It is a defence to the charge if the defendant proves that the death or injury to, or possession of, such wildlife took place as part of a fishing operation and the requirements of section 63B of this Act were complied with.

¹¹ Section 63B of the Wildlife Act details the reporting and recording requirements for any person who, in the

requirements of section 63A of the Wildlife Act mean fishers must return any captured shark to the sea, with no deliberate attempts made to injure or kill the animal. If the recording and reporting provisions are not followed then there are provisions for fines of up to \$10,000. This would mean that any basking shark accidentally killed could not be sold or traded in any form.

- 44 The Wildlife Act also provides for the development of Population Management Plans (PMPs) that can include an assessment of the biology and status of a protected species, its known fisheries interaction and the degree of risk caused by fishing-related fishing mortality can be specified. If required, the development of PMPs would be undertaken by DOC. Recommendations can then be made to the Minister of Fisheries on measures to mitigate the fishing related mortality and the standard of information to be collected can be specified.

The Fisheries Act 1996

- 45 As noted previously, sole management under the Fisheries Act is inappropriate as a tool to achieve species protection. As the purpose of the Wildlife Act is analogous to the purpose of the CMS, and this Act can provide sufficient protection within New Zealand fisheries waters, this would be the primary legislation used to provide species protection in New Zealand fisheries waters. Beyond the EEZ the Fisheries Act can be used to regulate High Seas fishery interactions with basking sharks.
- 46 Regulation under section 297(1)(o) can be used to provide protection for basking sharks on the High Seas. This section of the Act provides for regulations to be enacted that implement provisions of agreements or conventions that New Zealand is a signatory to. MFish proposes to draft the Fisheries (Basking Shark – High Seas Protection) Regulations 2010, to prohibit all New Zealand flagged vessels from taking basking sharks on the High Seas.
- 47 Any such regulation would apply to New Zealand flagged vessels operating outside waters under New Zealand jurisdiction. Regulatory offences can incur a fine of up to \$100,000, with defence provisions for any of the protection options contained in section 241.
- 48 Under section 241, it would be a defence if a fisher who accidentally caught a basking shark could demonstrate that they had taken reasonable precautions and exercised due diligence to avoid contravening the Act. Under section 241 (b) such a fisher must have also immediately returned the captured shark to the waters from which it was taken and complied with all recording and reporting requirements under the Fisheries Act.
- 49 Should option 2 be implemented, and basking shark is listed on Schedule 7A to the Wildlife Act, therefore becoming a protected species, an amendment to Part 2C of Schedule 3 to the Fisheries (Reporting) Regulations 2001 would be required. Part 2C lists those fish species that are absolutely protected under the Wildlife Act. Incidental captures of species listed on Part 2C of Schedule 3 require reporting on the non-fish and protected species catch return.

course of legal fishing operations, accidentally causes injury or death to any animal defined as wildlife in the Wildlife Act or its Schedules.

Using both the Wildlife and Fisheries Acts

- 50 Adding the basking shark to Schedule 7A of the Wildlife Act would prohibit utilisation of basking sharks and their products within New Zealand fisheries waters. Regulation pursuant to section 297(1)(o) of the Fisheries Act would prohibit all utilisation by New Zealand flagged vessels on the High Seas. It is MFish and DOC's view that combining both pieces of legislation will provide the most comprehensive protection for basking sharks and will enable New Zealand to meet the obligations required under the CMS.
- 51 Using a dual legislative approach also provides for future management of this issue. If further management intervention is required to address the effects of fishing on the basking shark population, then sections 11 and 15 provisions under the Fisheries Act can be used. Section 11 measures could include fishing method, area or seasonal restrictions while section 15 (1) supports the implementation of a PMP for basking sharks developed under the Wildlife Act. In the absence of a PMP section 15 also permits the Minister to set measures which are considered necessary to further protect sharks from the effects of fishing, such as setting a limit on the number of sharks that can be accidentally killed.
- 52 At this time MFish and DoC do not consider that the additional management measures, described above, are necessary.

Other Management Issues

Customary considerations

- 53 Provisions are available under the CMS for the taking of a protected species if it is to accommodate the needs of traditional subsistence users of such species. Both MFish and DOC believe Maori customary use would reflect this, although currently there is no information on the extent of customary use.
- 54 Shark species historically formed an important food source for Maori, however cultural prohibitions on the killing of large sharks are widespread throughout Polynesia and Melanesia, and reflect the beliefs that these animals are reincarnated ancestors, and/or guardians (kaitiaki) of particular tribes or coastal features. Shark kaitiaki occur in a number of areas, including Moremore the guardian of Pania Reef in Hawke Bay. Generally the species of shark kaitiaki is not specified.
- 55 MFish and DoC would like to invite stakeholders to comment on customary fisheries interactions with basking sharks, through the consultation process.

Recreational considerations

- 56 There is currently little information available on the recreational use of basking sharks in New Zealand. There is no set recreational bag limit for this species, and MFish and DoC are unaware of any recreational targeting of basking shark. However, incidental captures of basking sharks are known to have occurred in New Zealand's set net fisheries (Clinton & Duffy 2002), therefore recreational set net fishers could

potentially “take” a basking shark. In this case the defence provisions under the Wildlife Act would be applicable .

- 57 MFish and DoC would therefore like to invite stakeholder comment on any evidence of recreational use, through the consultation process.

Beach netting

- 58 Currently, a beach-netting programme is run by the Dunedin City Council and operated off Brighton, St Clair and St Kilda beaches. The programme has been running since December 1969, and was a response to a series of fatal attacks by white pointer sharks around the Otago Peninsula occurring between 1964 and 1969. The netting programme runs from the months December to February inclusive. Two shark nets are set off each beach giving a total of six nets in the water. The nets are 100 metres long, eight metres deep and are anchored in 15 metres of water, with a mesh size of 300 millimetres.
- 59 Shark nets are set in order to kill sharks; however the nets are targeted at shark species that pose a risk to human life, which basking sharks do not. The Dunedin beach-netting programme has no records of incidental capture of basking sharks, and the nets are not thought to pose a sustainability risk to this species.
- 60 If the basking shark is listed on Schedule 7A of the Wildlife Act, the defence of “accidental or incidental” death or injury, in section 68B(4), would apply to the beach-netting programme. MFish and DoC would also like to invite comment from stakeholders regarding this matter.

Summary

- 61 The Ministry of Fisheries and Department of Conservation have proposed two options for the management of basking sharks. Only one of these options (option 2) would fulfil the New Zealand’s obligation under the Convention on the Conservation of Migratory Species of Wild Animals. This option would entail protection using a combination of measures under the Wildlife Act 1953 and the Fisheries Act 1996.

Consultation

- 62 MFish and DoC would like to invite stakeholders’ views on the management options proposed within this joint IPP. All submissions will be considered before the final advice is prepared for the Minister.
- 63 Should you have any questions on the consultation process or the IPP, please contact Vicky Reeve at the Ministry of Fisheries on (04 819 4606 or vicky.reeve@fish.govt.nz) or Ian Angus at the Department of Conservation on (04 471 3121 or iangus@doc.govt.nz).
- 64 The closing date for submissions is Wednesday 16 June 2010. Submissions can be sent by email/post to Trudie Macfarlane at trudie.macfarlane@fish.govt.nz or Trudie Macfarlane, Ministry of Fisheries, PO Box 1020, Wellington 6140.

Appendices

Appendix 1 – Background information

- 1 The basking shark is a circumglobal species, found mainly in temperate waters of continental and insular shelf slopes of the Atlantic and Indo-Pacific oceans (figure 1). Once globally common, this species was listed on the 2004 IUCN Red List as Vulnerable throughout its range, and Endangered in the north Pacific and north-east Atlantic where it has previously been a heavily targeted fisheries resource.

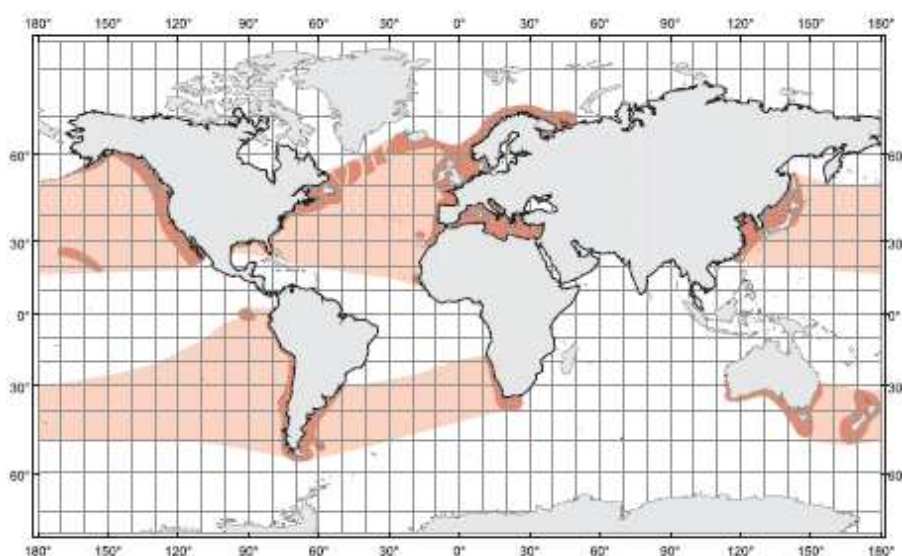


Figure 1: Distribution of the basking shark (*C. maximus*) Source: Proposal for inclusion of species on the Appendices of the Convention on the Conservation of Migratory Species of Wild Animals (Proposal I/11 and II/16)

- 2 Life cycle characteristics such as late maturity, low fecundity, low natural mortality and longevity are characteristic of long-lived species such as the basking shark (table 1). All of these characteristics indicate, even more so than with other sharks, a low productivity and ability to recover from population depletion. Even low levels of fishing induced mortality can be sufficient to prevent population growth of the species.
- 3 Basking sharks occur throughout New Zealand, being most common in cool temperate latitudes. It is likely that the individuals observed around New Zealand form part of a wider population, although it is unclear what level of mixing occurs between oceanic basins. Recent genetic studies indicate low levels of diversity among this species, with widely distributed individuals sharing high levels of genetic similarity. This could indicate high levels of population exchange, or could be evidence of a genetic bottleneck event in the evolutionary past of the species.

Category	Statistic
Maximum length	10m (33ft)
Age/size at sexual maturity	Males: 12-16 years / 5-7 m Females: 18 years / 8-9 m
Gestation period	18 months – 3 years (Pauly, 2002)
Litter size	5-6 pups (Pauly, 2002)
Size at birth	1.6 m (FAO, 2004)
Population productivity	0.013-0.023 (Musick <i>et al</i> , 2000)
Minimum population doubling time	14 years (Musick <i>et al</i> , 2000)
Temperature range	8-14 degrees C
Depth range	0-2000m

Table 2: Biological characteristics of the basking shark (*C. maximus*) Source: Proposal for inclusion of species on the Appendices of the Convention on the Conservation of Migratory Species of Wild Animals (Proposal I/11 and II/16)

- 4 The basking shark is the second largest fish in the world, and is likely to be the only extant species of the Cetorhinidae family, from which several fossil species have also been described. It is one of only 3 species of shark that feed on the zooplankton that becomes trapped as seawater is filtered through enlarged gill slits.
- 5 Basking sharks are thought to undergo large vertical and geographical migrations on a seasonal basis as they actively track dense patches of zooplankton prey. Global observations are more frequent during summer months and rare during winter time. These sharks are thought to follow and feed on the blooms of zooplankton that occur at the surface during summer and at depths of up to 900m during winter. As such, catch records from New Zealand show incidental capture has been more frequent during summer months.
- 6 Tagged individuals have been recorded travelling over thousands of kilometres over periods of a few months. As populations of this species occur over such wide geographical areas, local population depletion could have effects on a much larger area. Given the large distances that are travelled by this species, the proposed management options may not be effective over the entire range of this species.