CHAPTER B REVIEW OF THE EXISTING OPERATION OF THE FISHERY

Introduction

The Lobster Share Management Fishery (Lobster Fishery) is a quota managed fishery which targets the eastern rock lobster, *Jasus verreauxi* and is characterised by inshore and offshore components. A share management plan commenced for the Lobster Fishery in 2000.

This chapter describes the existing fishery and the potential risks associated with the fishery. The first part of the chapter describes the species that are taken, the gear that is used and the current management arrangements that apply. The second section uses a risk-based approach to identify aspects of the existing operation of the fishery that should be modified or changed because of their potential impact on various aspects of the environment. Sections three and four examine the economic and social aspects of the fishery, respectively.

B1 Description of the Lobster Fishery

B1.1 Extent of the fishery

Rock lobsters are caught across a wide range of depths, from reefs in shallow inshore waters out to the continental slope. Although a small component of the commercial catch is taken by hand picking, the majority of the catch is taken using baited traps. To take lobsters commercially, fishers must be endorsed in the Lobster Fishery. Fishers who catch rock lobsters as a bycatch in another commercial fishery (e.g. by the methods of fish trapping or trawling) must return them to the ocean.

B1.1.1 Number of shareholders and fishers

In January 2004 there were 161 shareholders in the fishery with shareholdings ranging from 12 to 259 (Lobster Share Register). Eligible shareholders fish their entitlement themselves or may nominate another person to take rock lobster on their behalf. In January 2004, 149 fishers were endorsed in the Lobster Fishery. Of these, 123 were shareholders with their own endorsement and the remaining 26 were nominated fishers. Most lobster fishers also hold endorsements in other commercial fisheries.

The NSW Lobster Fishery differs significantly from fisheries for similar species elsewhere in Australia. Whilst in other states lobster fisheries have become highly specialised with very few fishers engaging in other fisheries, in NSW the reverse is the case, with only a small number of shareholders considered specialist lobster fishers. Some shareholders do not attempt to catch their lobster quota allocations at all and may lease quota to other lobster shareholders. Most shareholders have access to other commercial fisheries and actively fish for other species using other gear types. The number of lobster shareholders residing in each coastal region is outlined in Table B1.1.

Table B1.1 Number of shareholders for each region in January 2004.

(Source: Lobster Fishery Share Register, 2004)

District Office	Total No of Shareholders
Tweed	2
Richmond	1
Clarence	9
Coffs Harbour	14
Hastings	5
Manning	11
Wallis Lake	11
Port Stephens	25
Hunter	5
Central Coast	11
Sydney North	2
Sydney South	7
Illawarra	22
Shoalhaven	3
Batemans Bay	18
Montague	7
Far South Coast	8
TOTAL	**161**

B1.1.2 Area of operation of the Lobster Fishery

The Lobster Fishery extends the length of the coastline of NSW, from the Queensland border to the Victorian border. It includes all waters within the jurisdiction of NSW under the Offshore Constitutional Settlement (OCS) agreement to around 80 nautical miles (nm) from the coast (see Figure B1.1). The fishery is not permitted to operate in inland waters.

Before 1991, the Commonwealth Government controlled all fishing in waters greater than 3 nautical miles from shore. In January 1991 the Commonwealth and NSW Governments signed the OCS, which gave jurisdiction of all lobster fishing activities within the 4000 metre isobath (about 80 nm offshore) to NSW. The Commonwealth retained jurisdiction of the tuna and oceanic squid fisheries beyond 3 nm.

Resolution of the OCS meant that many fishers who previously held both NSW and Commonwealth licences needed only to renew their State licence each year, resulting in significant licence fee savings. Under OCS agreements, fishing boats that were previously licensed to fish outside 3 nm under Commonwealth jurisdiction were automatically issued an authority on their State boat licence (called an 'OG1') to continue to work in offshore waters.

There is no zoning within the Lobster Fishery, however, there are distinct inshore and offshore components, within which the fishery operates quite differently. The stock is managed as one unit along the coast of NSW. Area fished is reported daily by fishers using a grid system where each grid code corresponds to 10 minutes of latitude along the NSW coast. Fishers also record approximate distance from the shore and average depth fished.

Lobster fishers work out of ports along the entire NSW coast and can relocate their operations within the area of the fishery, without restriction. In January 2004, the major regions for commercial lobster fishing activities included: Coffs Harbour, Port Stephens, Illawarra and Batemans Bay which each have 14 or more lobster shareholders and the highest numbers of active fishers.

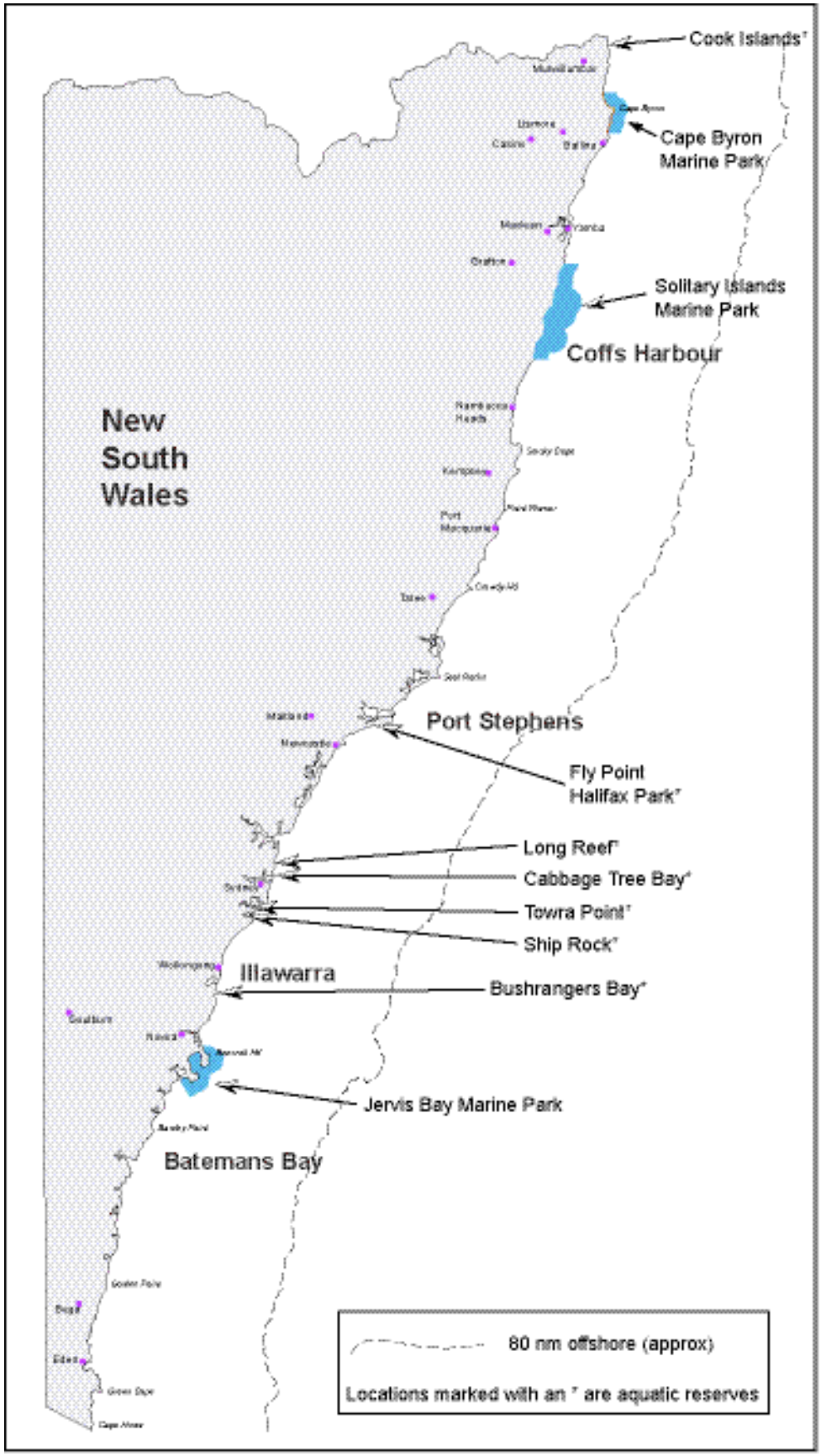

Figure B1.1 Map of area of operation for the Lobster Fishery including identification of major lobster fishing regions, existing marine parks and aquatic reserves where lobster trapping is prohibited.

The Lobster Fishery does not have a closed season. Fishing effort and catch are, however, concentrated at different times within different depths along the NSW coast (see Figure B1.2 below and Figures B4.10-13 in section B4 of this EIS).

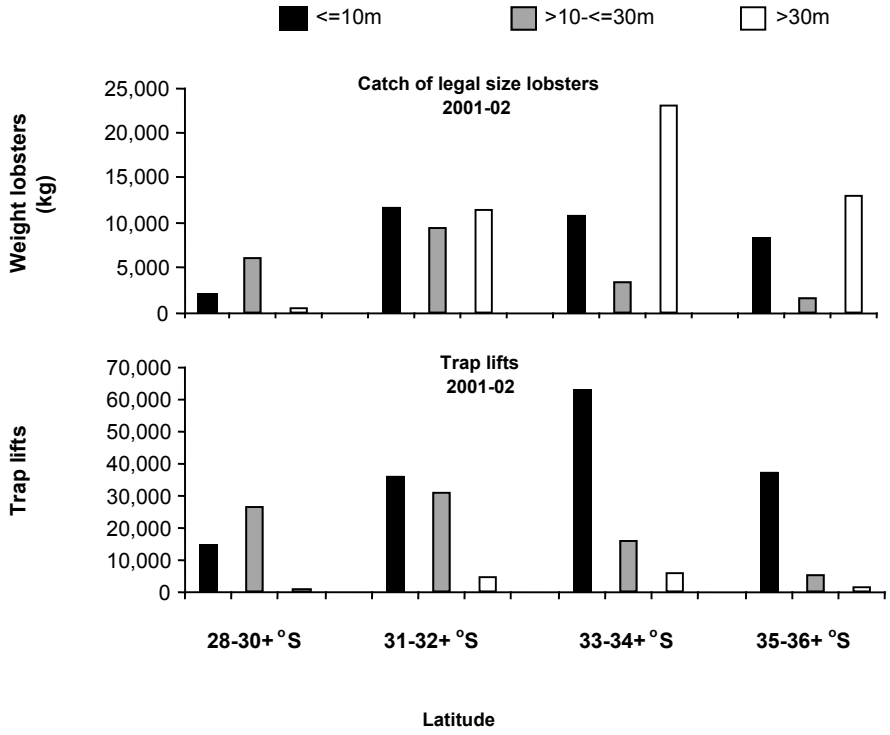

Figure B1.2 Reported catch (weight of eastern rock lobsters) and reported effort (number of trap lifts) during 2001-02, for 3 depth strata along the coast by four latitude strata.

(Source: Liggins *et al.*, 2003)

Apart from general area closures to commercial fishing, such as sanctuary zones in marine protected areas, there are currently no fishery specific closures in place. Sanctuary zones in declared marine parks are closed to all commercial fishing including the Lobster Fishery. Of the State's existing 13 aquatic reserves the Lobster Fishery is prohibited in the following:

- Cook Island Aquatic Reserve
- Cabbage Tree Bay Aquatic Reserve
- Fly Point-Halifax Aquatic Reserve
- Long Reef Aquatic Reserve
- Towra Point Aquatic Reserve
- Shiprock Aquatic Reserve
- Bushrangers Bay Aquatic Reserve.

It should be noted that not all of these aquatic reserves include rock lobster habitat.

B1.2 Species of the Lobster Fishery

The following table identifies the species of rock lobster taken in the Lobster Fishery:

Table B1.2 Lobster species taken by the NSW Lobster Fishery.

Common name	Scientific name
Eastern rock lobster	*Jasus verreauxi*
Southern rock lobster	*Jasus edwardsii*
Painted rock lobster	*Panulirus longipes and Panulirus ornatus*

Catches of the eastern rock lobster represent more than 99% (by weight) of the total commercial rock lobster catch. Less than 1% of the catch comprises the southern rock lobster (taken in the south of the state) and species of painted rock lobster (taken in the north of the state).

Other species of fish may be taken using a lobster trap in ocean waters more than 10 metres (m) in depth, except for species with a regulated size limit. Species with a regulated size limit are listed in the *Fisheries Management (General) Regulation 2002*.

B1.2.1 Eastern rock lobster

Eastern rock lobster is the sole target species in the NSW Lobster Fishery. Section B2.3 of this EIS documents the biology and ecology of the eastern rock lobster.

Eastern rock lobster may only be taken for commercial purposes by fishers endorsed in the Lobster Fishery. Although eastern rock lobsters may be caught as bycatch in other fisheries, such as the Ocean Trap and Line Fishery, they must be returned to the water. There is no indication of the magnitude of eastern rock lobsters caught as bycatch in other fisheries.

B1.2.2 Byproduct

All retained species other than eastern rock lobster are considered byproduct species in the fishery. The fishery does not report byproduct other than southern and painted rock lobster species, however estimates of catches have been recorded through an observer survey completed for the Lobster Fishery during the period 1999-00 to 2001-02 (Liggins *et al*., in prep.). Table B1.3 identifies the most common species (other than rock lobsters) recorded in recent observer surveys as either byproduct or bycatch.

B1.2.3 Bycatch

Bycatch consists of those animals that are discarded from the catch. The only bycatch associated with hand picking lobsters are non-retainable lobsters (refer to section B1.2.3.1) which may be removed from their shelter by the diver and then released if found to be non-retainable. The magnitude of bycatch from lobster trapping is considered inconsequential in comparison to catch and bycatch from other less selective fishing methods (Kennelly and McVea 2001). Although not considered to be a cause of significant mortality, there is notable capture and subsequent release of undersized lobsters (approximately 100,000 individuals per year) in the inshore fishery (Liggins *et al*., 2003; Liggins *et al*., in prep.). Bycatch in the Lobster Fishery can generally be classified as either ‘non-retainable lobsters’ or ‘other fish species’.

B1.2.3.1 Non-retainable lobsters

Lobsters in the categories listed below may not be retained by any fisher in NSW.

- Rock lobsters carrying eggs (known as 'berried females')
- Eastern rock lobsters less than 104 mm CL (undersized lobsters)
- Eastern rock lobsters greater than 200 mm CL (oversized lobsters)
- Southern rock lobsters less than 110 mm CL (males) and less than 105 mm CL (females).

Lobster fishers are required to record quantities of all discarded eastern rock lobsters in various categories in their daily reporting.

B1.2.3.2 Other fish species

Although rock lobsters are targeted in the fishery, a wide variety of fish species[1] may be inadvertently captured in lobster traps. The main species identified by the observer survey as captured (i.e. either bycatch and/or byproduct) in the Lobster Fishery are listed in Table B1.3. The observer program estimated annual total weights in excess of 1 tonne for these species (Liggins *et al*., in prep). A more extensive list of species recorded during the observer surveys, including estimates of annual retained and discarded catch is provided in section B2 of this EIS.

Table B1.3 Main species (byproduct and/or bycatch) captured in the Lobster Fishery.

(Source: Liggins *et al*., in prep.)

Common name	Scientific name
Hermit crabs	Family: Paguridae
Catsharks, swellsharks	Family: Scyliorhinidae
Wobbegong sharks	*Orectolobus* spp.
Redfish	*Centroberyx affinis*
Leatherjacket spp. (mainly six-spined and Chinaman leatherjackets)	Family: Monacanthidae (mainly *Meuschenia freycineti* & *Nelusetta ayraudi*)
Blind shark	*Brachaelurus waddi*
Rubberlip (blue) morwong*	*Nemadactylus douglasi*
Jackass morwong*	*Nemadactylus macropterus*
Octopus	Order: Octopoda
Conger eel	Family: Congridae
Eastern wirrah	*Acanthistius ocellatus*
Port Jackson shark	*Heterodontus portusjacksoni*
Snapper*	*Pagrus auratus*
Eastern red scorpioncod	*Scorpaena cardinalis*

* = Species with regulated size limit.

When trapping in waters of less than 10 m depth, species other than rock lobster are not permitted to be retained as byproduct by lobster fishers. When trapping in waters deeper than 10 m, lobster fishers may choose to retain as byproduct, species other than rock lobster (except protected species, threatened species or species with a regulated size limit).

1 Fish is defined in the FM Act as marine, estuarine and freshwater fish or other aquatic animal life at any stage of their life history (whether alive or dead), including aquatic molluscs, crustaceans, echinoderms, beachworms and other aquatic polychaetes, but excluding mammals, reptiles, birds and amphibians.

Species with a regulated size limit (see Table B1.4) may not be retained by lobster fishers from any depth. Whilst lobster fishers are not permitted to take rubberlip morwong, jackass morwong, snapper or other species with a regulated size limit, fishers with an endorsement in the Ocean Trap and Line Fishery generally do retain these species when taken out of their lobster traps.

B1.2.4 Size limits

The eastern rock lobster is subject to regulated minimum and maximum size restrictions. Carapace length (CL) is used to measure the size of lobsters. The length of the carapace of a rock lobster is measured along the straight line from the point of union of the second antennae to the centre of the posterior margin of the carapace ignoring any hairs attached to the carapace (see Figure B1.3). Lobster fishers are required to carry a suitable measuring device whilst operating in the fishery.

The legal minimum size for eastern rock lobster is 104 mm CL. It is also subject to a legal maximum size of 200 mm CL. The maximum size limit aims to protect the older mature animals from fishing as they contribute more strongly to egg production. Eastern rock lobsters at the smaller end of the legal size range generally receive a higher price per kg at market, due to consumer preference.

The minimum legal size for southern rock lobster is 110 mm CL for males and 105 mm CL for females. No maximum size limit applies to this species.

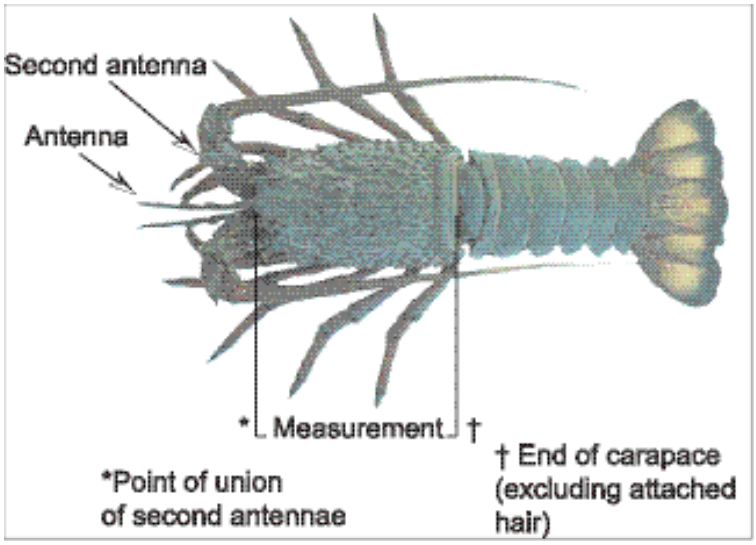

Figure B1.3 Measurement of carapace length.

Size limits apply to a number of finfish species (see Table B1.4), some of which are captured as bycatch in the Lobster Fishery.

Table B1.4 Marine finfish species with a regulated size limit.

(Source: *Fisheries Management (General) Regulation 2002*)

Common name	Species	Minimum measurement - total length (cm)
Blackfish, rock	*Girella elevata*	30
Bream, black or southern	*Acanthopagrus butcheri*	25
Bream, yellowfin	*Acanthopagrus australis*	25
Flathead, common or dusky	*Platycephalus fuscus*	36
Flathead, sand	*Platycephalus caeruleopunctatus*	33
Flathead, tiger	*Platycephalus richardsoni*	33
Luderick (or blackfish)	*Girella tricuspidata*	25
Morwong, jackass fish	*Nemadactylus macropterus*	28
Morwong, red or sea carp	*Cheilodactylus fuscus*	25
Morwong, rubberlip	*Nemadactylus douglasii*	28
Mullet, sea or bully	*Mugil cephalus*	30
Mulloway (or jewfish)	*Argyrosomus japonicus*	45
School shark	*Galeorhinus galeus*	91
Snapper	*Pagrus auratus*	30
Tailor	*Pomatomus saltatrix*	30
Tarwhine	*Rhabdosargus sarba*	20
Teraglin	*Atractoscion aequidens*	38
Whiting, sand or silver	*Sillago ciliata*	27
Yellowtail kingfish	*Seriola lalandi*	60

B1.2.5 Protected fish and threatened species

The *Fisheries Management (General) Regulation 2002* identifies a number of species which are protected, either from commercial fishing, or fishing by all sectors (see Table B1.5 and Table B1.6).

Table B1.5 Fish species protected from fishing by all sectors under section 19 of the FM Act.

(Source: *Fisheries Management (General) Regulation 2002*)

Common name	Scientific name
Marine or estuarine species	
Ballina angelfish	*Chaetodontoplus ballinae*
Eastern blue devil fish	*Paraplesiops bleekeri*
Elegant wrasse	*Anampses elegans*
Estuary cod	*Epinephelus coioides*
Ghost pipefish	All species of the family *Solenostomidae*
Giant Queensland groper	*Epinephelus lanceolatus*
Grey nurse shark**	*Carcharius taurus*
Herbsts nurse shark	*Odontaspis ferox*
Black rock cod*	*Epinephelus daemelii*
Pipefish, pipehorse, seadragon & seahorse	All species of the family *Syngnathidae*
Seamoth	All species of the family *Pegasidae*
Weedy seadragon (or common seadragon)	*Phyllopteryx taeniolatus*
Freshwater species	
Australian grayling	*Prototroctes maraena*
Eastern freshwater cod	*Maccullochella ikei*
Isopod	*Crenoicus harrisoni*
Trout cod	*Maccullochella macquariensis*
Macquarie perch	*Macquaria australasica*

* = Listed as a vulnerable species in Schedule 4 of the FM Act

** = Listed as an endangered species in Schedule 5 of the FM Act

Table B1.6 Fish species protected from commercial fishing only under section 20 of the FM Act.

(Source: *Fisheries Management (General) Regulation 2002*)

Common name	Scientific name
Marine or estuarine species	
Black marlin	*Makaira indica*
Blue marlin	*Makaira mazara*
Striped marlin	*Tetrapturus audax*
Blue groper	*Achoerodus viridis*
Freshwater species	
Atlantic salmon	*Salmo salar*
Australian bass	*Macquaria novemaculeata*
Eel-tailed catfish	*Tandanus tandanus*
Estuary perch	*Macquaria colonorum*
Murray cod	*Macquaria ambigua*
Golden perch	*Maccaullochella peeli peeli*
Silver perch	*Bidyanus bidyanus*
Brook trout	*Salvelinus fontinalis*
Brown trout	*Salmo trutta*
Rainbow trout	*Oncorhynchus mykiss*
Freshwater crayfish	*Euastacus* spp., *Cherax* spp. (except *Cherax destructor*)

Commercial fishers are not permitted to take protected fish or fish protected from commercial fishing. Many protected species are primarily freshwater species and therefore do not interact with the Lobster Fishery. Because of the selective methods of fishing utilised, the Lobster Fishery is unlikely to catch any of the marine protected species other than small incidental catches of blue groper.

One of the ways that the FM Act (Part 7A) aims to conserve biological diversity is by listing threatened species, populations and ecological communities and their habitats. While most listings are freshwater species, populations and communities, the following saltwater fish species are listed as threatened in the following categories:

Endangered Species

Green sawfish	*Pristis zijsron*
Grey nurse shark	*Carcharius taurus*

Vulnerable Species

Black rock cod	*Epinephelus daemelii*
Great white shark	*Carcharodon carcharias*

The only protected or threatened species which has been identified in any of the trap lifts observed during the observer survey conducted for the Lobster Fishery in the years 1999-00 to 2001-02 is blue groper with an estimated 429 kg caught (and released) by the fishery each year (Liggins *et al.,* in prep.).

A range of threatened species, other than fish, are protected by other legislation including the NSW *Threatened Species Conservation Act 1995*, the NSW *National Parks and Wildlife Act 1974*, and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Threatened species that could be encountered by the Lobster Fishery will be discussed in detail in the risk assessment in section B2 of this EIS.

B1.3 Methods of Harvest

Lobsters may only be taken in the Lobster Fishery by hand picking or by use of a commercial lobster trap. In NSW commercial and recreational fishers are prohibited from using SCUBA or hookah apparatus to take lobsters. Diving for lobsters is only permitted without use of underwater breathing apparatus. Relatively few endorsement holders take lobsters by diving; however, in recent years it has become more viable (in the south of the state) for some inshore fishers to take lobsters by this method and, therefore, the number of fishers diving for lobster has increased. Table B1.7 demonstrates that the proportion of lobster catch taken by diving over recent years is low but has increased.

Table B1.7 Percentage (calculated by weight) of annual commercial catch of rock lobsters taken by diving.

(Source: NSW Department of Primary Industries Fish Catch Records, 2003)

Year	Portion of lobster catch taken by diving
1998-99	0.8%
1999-00	0.9%
2000-01	1.4%
2001-02	1.6%
2002-03	1.4%

B1.3.1 Permitted fishing gear

In waters 10 m or less a lobster trap must consist of a rectangular base or floor not exceeding 1.2 m by 1.2 m (or a circular base not exceeding 1.2 m in diameter). There are currently no restrictions on the height or mesh size of traps used in these waters. In waters more than 10 m depth a lobster trap