

David C Cook, BSc (Hons1), Dp Fisheries Mgt, Dp Conservation & Land Mgt
Co-ordinator, Network for Sustainable Fishing in the Douglas Region
47 Marlin Drive, Wonga Beach,
Queensland 4873
Tel: 07 4098 7933 & 07 4098 7998
E-mail: davecook@bigpond.com

18 October 2011

Nathan Hanna
Director
Sustainable Fisheries Section
Department of Sustainability, Environment, Water, Population & Communities
GPO Box 787
CANBERRA ACT 2601

By email to: sustainablefisheries@environment.gov.au; and hard copy by post with attachments

Dear Mr Hanna,

***Environmental Assessment on the (QLD) East Coast Inshore Fin Fish Fishery (ECIFF)
under the Environment and Biodiversity Protection Act, 1999 and the
Guidelines for the Ecologically Sustainable Management of Fisheries, Ed. 2, 2007***

I attach the final report dated 25 November 2008, of a case study: '***The possible collapse of a grey mackerel population and the decline of an inshore fishery within the world heritage Great Barrier Reef Marine Park, demonstrating the need to implement the precautionary principle to immediately close inshore waters to all offshore and itinerant netting***'. This may be downloaded from the website of Fishers for Conservation at: www.ffc.org.au/Grey_Mackerel.html by selecting the prompt "*The whole story summarised in one document*". I request you examine this report in detail in relation to your above assessment as I still endorse its content and conclusions subject to comments below.

An earlier version of the case study report was submitted to the independent review of the proposed management arrangements for the ECIFF in October 2008. The main additions in the final report included Appendix 2 being records of attempts by community members to convince officers of the Northern Fisheries Centre, Cairns of the depleted condition of the inshore fish stocks of the Douglas region of Far North Queensland and to support a ban on offshore netting of inshore pre-spawning aggregations of grey mackerel and all itinerant gillnetting.

The main two **conclusions** from this report, being still fully supported are that:

- local inshore fish stocks cannot support the current level of fishing ... All evidence points to a continuing decline in fish stocks;
- the proposed new (in 2008) fisheries management measures are inadequate to ensure ESD ... the community should take its demands to the managers of the WHA and if this fails, into the legal, political and international arenas.

The report provided five recommendations, summarised below together with progress to date on their implementation.

1. '*The authorities need to recognize that local (inshore) waters are overfished.*' **Progress:** very little, GBRMPA seem aware of the problem but Fisheries Queensland (FQ) appear to be in denial.

2. *'Use the precautionary principle to close local waters to most forms of netting'*. **Progress:** Nil, although the large offshore boats did not attempt to net grey mackerel at Snapper in the 2009, 2010 and 2011 seasons, allowing numbers to rebuild by 2011. Closure to line fishing is therefore not necessary provided the net boats stay away.
3. *'Develop strategies and implement programmes to rebuild inshore fish stocks'*. **Progress:** attempts at implementing co-management failed for reasons discussed on page 6 section 6, below.
4. *'... collect and collate historical information on catch levels by fishers ... in local waters'*. **Progress:** JCU undertook the study in 2010 but have not revealed the results (see later). Is there political pressure to suppress/delay publication of the findings?
5. *'... review grey mackerel and other offshore and itinerant netting ...'*. **Progress:** GBRMPA carried out a **'Vulnerability Assessment for the Great Barrier Reef 2011: Grey Mackerel'** in 2011. A soft copy of this assessment is attached by email only with some important added comments by me, challenging some statements made in the report. The main conclusions are given later, page 3, section 2, supporting our concerns.

Whilst some progress has been made the information, conclusions and recommendations raised in the above case study remain valid today and I wish to request that you include the report in your reference material for the above assessment, including my comments added post-publication to the GBRMPA vulnerability assessment on grey mackerel.

Importantly, the case study was widely circulated and struck a chord with recreational, charter and line fishers working elsewhere along the urban coast of the GBRMP to the extent that the common response was one almost of exasperation. ***"What's so special about Douglas Region – exactly the same sort of thing has been going on in our area for years and it is not just offshore netting, it's all gillnetting"*** was the gist of many responses.

The **Network for Sustainable Fishing (NSF)** grew out of these responses. NSF is an informal network based along, but not restricted to the urban coast of the GBRMP from Rockhampton to Cooktown. Currently regional nodes of expanding informally affiliated networks are established in Rockhampton, Mackay, Cairns, Douglas Region and Cooktown. In a number of instances they go by a different name to suit local circumstances, e.g. **CAREFISH** of Cairns who are submitting their own concerns to your pending assessment.

Members of NSF in all areas have similar serious concerns about depleted and declining inshore fish stocks and the affects of gillnetting on turtle, dugong and inshore dolphin species. We also note the apparent risk to migrating humpback whales, including Migaloo, which has been observed passing through inshore localities frequented by offshore¹ gillnetters during the season they target grey mackerel using up to 1200m of large mesh gillnets (see Plate 3).

Last year NSF co-ordinators from five different regions collaborated to bring out a report entitled ***"A Review of Concerns relating to the (offshore) Gillnet Fishery in Inshore Waters of the Great Barrier Reef Marine Park with recommendations for early intervention"***. This is also available from the website of Fishers for Conservation at: www.ffc.org.au/Grey_Mackerel.html#latest. A file copy of this report, hereafter referred to as our ***Review of Concerns***, is attached with this submission and a hard copy attached to the copy of this letter mailed to you.

¹ offshore gill netting in Queensland fisheries terms means *"in water deeper than two metres"* ; note such netters are not obliged to stop netting during the barramundi closed season and are bound to at least inadvertently catch some barramundi during the closed season (which will be dead in their nets by the time they are retrieved).

Our **Review of Concerns**, section 8, pp 45-55 presents conclusions from an assessment of the offshore gillnet fishery operating in the inshore waters of the GBRMP, referring to the Principles, Objectives and general guidelines presented in the **Guidelines for the Ecologically Sustainable Management of Fisheries, Ed. 2, 2007** (hereafter referred to as **The Guidelines**).

Table 2 of our **Review of Concerns**, page 54, summarises that for offshore gillnetting, the authors consider the Queensland Fisheries management measures in place fail to meet any of the two Principles, three Objectives and 17 general guidelines laid out in **The Guidelines** even after the “improvements”, introduced to the fishery in 2009, are taken into account. Every year we have photographed grey mackerel approaching spawning condition during the period when they are targeted by netters. Plate 1 (ii) shows a grey mackerel in near spawning condition caught on 10 September this year at Snapper Island.

Over a year has passed since our **Review of Concerns** was published online. Presented below is a summary of what we have learned in the interim period that could influence the conclusions and recommendations arrived at in that report:

1. Inshore Gillnetting

With a few obvious exceptions relating to the size of the live-aboard offshore netters, the concerns raised in our report regarding offshore gillnetting apply equally to inshore gillnetting.

2. GBRMPA and our Review of Concerns

Our **Review of Concerns** was fully supported by members of the Douglas Local Marine Advisory Committee (LMAC) to the GBRMPA in 2010. The Douglas LMAC invited me to present an introduction of the report to the LMAC Chairs Meeting in Townsville in September 2010. Following this presentation, the Chairpersons from all the LMACs along the GBRMP urban coastline supported the request that GBRMPA provide a response to the LMACs regarding the concerns raised in the report.

So far the only formal response received from GBRMPA, being in the form of a letter dated 6 May 2011, has been concerning netting of pre-spawning and spawning aggregations of grey mackerel. GBRMPA indicate that following the Chairs meeting, and as indicated above, they “**initiated a vulnerability assessment to collate and assess the available information on grey mackerel in the Marine Park. The vulnerability assessment has been reviewed by independent scientific experts**”.

GBRMPA continue: “Recent research indicates that grey mackerel exist in two discrete populations on the eastern coast and there are further indications that there may be smaller meta-populations within these populations at the embayment scale. **This possibility presents managers with further considerations when undertaking stock assessments and developing management responses as intensive localised fishing pressure may have the potential to cause localised depletions.**”

The GBRMPA vulnerability assessment report on grey mackerel notes that: “**The GBR Outlook Report 2009 has identified that fishing of spawning aggregations is a ‘high risk’ activity.** The above findings vindicate all our concerns regarding netting of grey mackerel expressed in our **Review of Concerns**. To allow continue to allow virtually unrestricted netting of small spawning aggregations of grey mackerel such as occur in the Douglas Region, given the present level of knowledge, and when its exploitation status (and stock size) is “uncertain” (www.dpi.qld.gov.au/28_18377.htm) is a far cry from responsible fishing, especially in a WHA. This government webpage

suggests that the total allowable catch rate is “conservative” but NSF strongly challenges this assertion as being completely unfounded and considers it facilitates serial depletions of local populations.

NSF is still awaiting a formal response from GBRMPA with regard those concerns raised in our Review not relating to grey mackerel. This matter will be raised at the 2011 LMAC Chairs meeting later this month.

3. Grey Mackerel: local catches since 2007 and reports from elsewhere

For the first time since the grey mackerel were last heavily netted at Snapper Island (2007), the local grey mackerel line fishery had a reasonable year following 2008 and 2009 being the worst years ever and 2010 being poor. 2011 was the third year in a row that netters had not targeted the grey mackerel in the area. This allowed the line fishers to make a living and provide a sizeable recreational fishery with good sport.

During the grey mackerel season in 2010 reports were received by NSF that netters had taken about 100 tonnes of grey and spotted mackerel from the Bowen area after the Bowen greys, recorded by De Lacey (2005) as having been depleted for over 20 years by over-netting in the late 1960's to 1971, had recovered and been ring- and / or gillnetting. Apparently much of this was sent to Sydney “under the radar” i.e. unreported to Queensland Fisheries until complaints were fielded and passed on by Lance Murray of Sunfish, Mackay. Then apparently 50 tonnes was admitted as having been caught.

Following these reports being circulated widely through our various NSF and other e-networks, a **commercial mackerel line fisher** was heavily criticised by some in the netting industry for having spoken out. Here follows a quote from his email subsequently widely circulated. This amount of net-caught mackerel ***“flooding the market, the price for greys and spanish slumped from \$13 to \$4 on the Sydney Market. This flowed through to other species (spotties +) and meant fishers had to market over twice the amount to get anywhere near the same return.***

THIS IS NOT THE BEST WAY TO GET LONG TERM MAXIMUM RETURN AND SUSTAINABILITY OUT OF THE FISHERY and also decimates stocks. Smart, experienced, long term net fishermen (local) tell me stocks will take at least 20 years to recover from this overexploitation. So do I support a sensible transition to all mackerel being line only as they have been at Bowen for 8 years? YES I DO - IT'S COMMON SENSE.

I trust that this sort of rumour mill and rubbish will cease and that those who are responsible will begin to represent the REAL fishers' interests. Anyone who wishes to have a sensible and logical discussion on these matters, is welcome to call.”

“Please also feel free to widely disseminate this information to your members. Thanks,” (name, phone and email supplied with original to N. Hanna).

Because of the issues raised above relating to local populations of greys, it is inevitable that sooner or later regulations must be changed such that all mackerel must be fished by line only. This will help ensure sustainability of stocks and to prevent the temptation to target by netting other spawning mackerel species such as Spanish and spotted when netting for greys. This needs to be identified, during the forthcoming assessment, as a condition for issuing approval of the ECIFF as a legitimate Wildlife Trading Operation.

Lance Murray of Sunfish Mackay, reported the following on 10.10. 2010: *“Llewellyn Bay, off Sarina, is an acknowledged grey/spottie mackerel aggregation location. The annual*

season of aggregation is typically from the football grand final date until Melbourne cup day.

In 2006, 5 commercial fishers extracted between 50 and 60 Tonnes. In 2007, 12 operators turned up to kill the pig. In 2009, the weather restricted operations. Last week (i.e. early October 2010) 4 operators using 600m of net each, that's 2.4km of combined netting on one day caught..... Wait for it.... 4 fish between them, ...”.

Like others familiar with the history of boom and bust netting of localised pre-spawning aggregations of grey and spotted mackerel, Lance is convinced all mackerel should be designated as line only species thereby ensuring communities benefit from a regular and reliable source of these prime table fish benefiting both local line fishers and the recreational and charter fisheries, year in, year out, given acknowledged seasonal variations.

4. Threadfin research findings

Threadfin (salmon) form the second most important target species group for northern Australia's (inshore) gillnet fishery after barramundi. Recent research on threadfin salmon in Northern Australia by Welch et al (2010)² has indicated that both of the two species are “*highly resident and made up of a number of isolated, non-mixing stocks for the purposes of fisheries management*”. Furthermore, threadfin are protandrous hermaphrodites, i.e. they change sex from male to female with age. As an example, king threadfin from the Fitzroy River by the time they reach 100 cm in length at an age of about six years, 100% of those sampled were found to be still males. The total length when 50% were female was 136 cm being an average age of 8.8 years, whilst at 148 cm 95% were females, being an average age of 10.8 years.

From a management perspective this immediately rings alarm bells as to become a female all have to survive for six years, and only after about 8.8 years are 50% of the population female.

The authors state (page 135) that “*the site-specific nature of adult P. macrochir (i.e. king threadfin) observed in the current study renders the species vulnerable serial depletion*” (a process in fisheries management terminology whereby fishers move from one area to another, maintaining good catch rates on an annual basis, but serially depleting isolated populations of certain species). The authors continue “*As such the development of harvest strategies and establishment of suitable fishery regulations should be conducted in a way that recognizes the highly resident nature of adult P. macrochir in Australian waters... The historical lack of recognition of the fine scale population structure of P. macrochir may have already resulted in localised depletions in (some) populations ...*”. They conclude that “*with confirmation of the indicators of overfishing observed here, urgent and decisive management intervention is warranted.*” On page 150 the authors quote other fishery authors that the signs of overfishing (of threadfin in the current paper by Welch et al) “*warn that these indicators may be irreversible and should be seen as early warning signals for management intervention*”.

In a nutshell Welch et al have provided solid scientific data to vindicate what is written in our **Review of Concerns** regarding risks of serial overfishing under the current ECIF

² Welch et al, 2010. Defining the stock structure of northern Australia's threadfin salmon species. Final Report to the FRDC, Project 2007/032. Fishing and Fisheries Research Centre Technical Report No. 10, James Cook University, Townsville. 192 pp.

fishery management regime, especially for species showing philopatry (localised, non-mixing populations) and / or protandrous hermaphroditism.

The threadfin paper gives no detailed information regarding the spawning seasons of the two threadfin species but the literature indicates this occurs between October and early March. Plate 1 shows a blue threadfin with ripening roe photographed 25 March 2011 at Wonga Beach, indicating likely spawning during April. The literature cites October as being the main spawning season. Since the barramundi closure for inshore netting on the East Coast is for three months from 1 November to 1 February, these species are not adequately protected whilst spawning and, being communal spawners, are at high risk from overfishing by gillnetting of spawning aggregations.

5. Oral history study of fishing in the Douglas Region

This was undertaken through personal, on-site interviews by James Cook University researchers under Dr Renae Tobin, in August 2010 at the request of the Douglas NSF following the breakdown in co-management discussions. Respondents were assured that the results would be circulated within a reasonable time frame. To date we have been advised that the researchers have not had the time to analyse and report on the data. This is both extremely disappointing and worrying. Since there were apparently only about 60 respondents with any significant history of fishing in the region who were interviewed, it is not a big task to report on the data.

Of concern is whether there has been intervention to suppress the data. The results should show the extent of our community's observations regarding declining inshore fish stocks in the region. Gone or vastly reduced are the schools of queenfish, trevally, snub-nosed dart, large milkfish and threadfin whilst sizes and numbers of barramundi, fingermark, mangrove dart, jewfish, jumping cod, javelinfish and others are much reduced – probably by the order of 90% or more below their unfished levels.

Following the pressure on QF to recognize the state of our depleted inshore stocks, we are concerned that it may not be politically convenient to release the information prior to the forthcoming state elections.

6. Failure of Fisheries Co-management attempts and findings of new research

Following the failure of fisheries co-management talks in the Douglas Region, a senior QF official reportedly has 'named names' within higher circles as to the individual he considers is responsible for the failure of those talks. This is despite (some of) the reasons for the failure being adequately recorded in our **Review of Concerns**.

The results of some independent and extensive research on co-management are presented in the journal, *Nature*, by MacMillan Publishers, online on 5 January 2011. The paper, entitled '**Leadership, social capital and incentives promote successful fisheries**' is by Nicolas Gutierrez, Ray Hilborn & Omar Defeo who examined 130 co-managed fisheries in 44 countries where some had failed and others were successful.

The authors note a number of criteria which showed up as apparently necessary for the success of co-management efforts. These were the need for:

- i community ownership of the co-management process,
- ii strong local community cohesion,
- iii strong community leadership,
- iv good chances of enforcement (although that was one of the less important criteria).

Quite simply, none of the above is present in the Douglas Region. We were always led to believe that the process would be still controlled from Brisbane; it was not to be community management. There is absolutely no cohesion with the 'out-of-town' Cairns-based netters, who had broken a 30 year old community 'gentleman's agreement' never to net the grey mackerel because what had happened to the Bowen fishery in 1971. Their blatant disregard for this agreement saw the temporary collapse of the grey mackerel fishery in 2008 and 2009. The community was expected by the facilitators to trust the distrusted Cairns-based netters – who openly stated at the first meeting that many commercial fishers are prepared to write false data in their logbooks to suit their purposes (e.g. to claim history in an area where they had never fished), claimed never to have caught dugong and turtle in their nets and never to have caught grey mackerel with ripe roe.

Regrettably under the conditions that exist in the Douglas Region and in a number of other regions, under current QF management and enforcement funding levels, co-management is not the silver bullet which will allow administrators the opportunity to avoid the urgent need to make appropriate decisive adjustments to the fishery regulations. Decisive action is now urgently required to prevent irreparable damage to some inshore stocks and to halt the decline in iconic marine animal populations as a result of individuals becoming entangled in gillnets.

7. Dead Snubfin dolphins and dugongs found tied to concrete blocks in separate incidents

Two rare snubfin dolphins, an inshore species, were found dead, tied to mangroves, and weighed down by a slab of concrete near the mouth of Two Mile Creek, north of Townsville, probably the result of having been drowned in gillnets (www.abc.net.au/news/stories/2011/06/03/3234497.htm; 3.06. 2011). A similar incident was reported for dugong also near Townsville. We continue to ask is how often does this happen along the hundreds of miles of deserted coastline that are so rarely walked and go unreported?

Marlin Coast veterinarian, who has performed a number of autopsies on dugong caught in nets in the Cairns area, used the Cairns Post in April this year to call for a net ban around the Cairns area as shown in Plate 2.

8. 22 turtles die in commercial gillnets at the Boyne River in May 2011

A two-month emergency ban was placed on all net fishing near the mouth of the Boyne River in May 2011 to prevent further green turtle deaths following the death of 22 turtles to gillnetting in and around the estuary of the Boyne River:

www.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=74570).

9. Humpback Whales

Just as Migaloo was photographed at Snapper Island during the mackerel season last year, again this year humpback whales were recorded frequenting the area around Snapper Island during the grey mackerel season, see Plate 3, photographs taken whilst fishing for (and catching) grey mackerel at Snapper Island on 28 August, 2011. Already on record is video of two humpbacks and a calf passing within 300m of 600m of grey mackerel netting at Snapper Island in the presence of Port Douglas Fisheries Inspector, Stephen Pollard. NSF has since received news of a humpback whale being caught in a Cairns-based gillnet in the Cairns region.

10. Cyclone Yasi

About 95% of sea grass areas were destroyed during Cyclone Yasi in the greater Cardwell area. This has caused a migration of some dugong and turtles out of the area and caused death by starvation of numerous animals. The area north of Cairns was not significantly affected by the cyclone and the dugongs being found dead in these areas do not show signs of having died of starvation (see Plate 2).

However the death of dugongs from starvation has been given considerable coverage by the press presenting the possibility that members of the public will just assume that any dead dugongs are a result of starvation thereby reducing the chances of stranded dugong and turtle being reported. This may in turn encourage less scrupulous netters to be less careful about netting dugongs than normal.

Following the high level of dugong deaths as a result of Cyclone Yasi damaged sea grass, the population is even less capable of absorbing continued dugong mortality from gillnetting. Each and every death assumes greater significance as each individual represents a higher proportion of a decimated population. There is simply no place in most world heritage inshore waters for such a non-selective means of fishing as gillnetting at night with or without pingers which will inevitably fail at some stage.

11. The Value of Recreational Fishing to Communities

A widely held view along the urban coast of the GBRMP is that overfishing by netters is the primary cause of depleted fish stocks being experienced in inshore waters especially in estuaries and neighbouring inshore water. Les Marsh's letter at www.ffc.org.au/Grey_Mackerel.html#latest, dated 8.10.2010 gives an independent view of just how severe that decline in fish stocks has become. The value to communities of the fish being caught by gillnetters is a fraction of the potential value of the same fish caught by recreational fishers, including charter fishers. Inshore fish stocks will continue to decline at the expense of recreational fishing opportunities and community jobs if current levels of netting are allowed.

If this issue is not attended to as demonstrated by significant changes in government policy, backed up by concerted action, then the public can be expected to work even harder towards achieving a marked change in policy if necessary, by a change in government.

12. Net Free Areas around urban areas funded by Recreational Fishing licence fees

Given the level of knowledge of risks of gill netting to fish stocks and marine life and current levels of fish stock depletion in inshore waters, there are urgent needs to establish net free areas in and around estuaries and urban areas in North Queensland. There is a growing movement which recognizes the value of establishing an annual fishing licence fee provided this was used entirely for removing permanently all netting from such areas.

The fact that there is no legal requirement to compensate fishers for area closures when these closures are made on grounds of sustainability should not be overlooked but be factored in to any compensation package. Miners are not compensated when their resource runs out and exactly the same principle should apply where some fishers, often a minority, are using methods which other fishers have long since identified as unsustainable. The minority are mining the fishery resource at the expense of others.

13. Limiting netting operations to non-urban areas where netters have an established history

One of the major criticisms of the ECIFF is that netting effort cannot be controlled in most areas where netting is permitted. Allowing netters to roam at will along the east coast of Australia is facilitating serial overfishing. This factor alone should be sufficient to invalidate the fishery as a WTO.

In those areas where it can be shown that gill netting is environmentally responsible and sustainable, then only those netters with an established history of netting in that area should be allowed to operate there. Furthermore all netting licences should be tied permanently to given areas. This is the only reliable, enforceable way of controlling effort in any given area, as is required by the existence of significant vulnerable philopatric and/or protandrous resources.

Mr. Hanna, our members urge you to use your position of responsibility to ensure that prior to any award of environmental responsibility or legitimate WTO status to the ECIFF, the very significant changes indicated are made to the fishery to address these indisputable concerns.

We shall follow your attempts with keen interest and wish you well.

Yours sincerely,

David C. Cook,

Co-ordinator, Network for Sustainable Fishing in the Douglas Region

For the full story on our campaign to save our locals stocks of Grey mackerel see:

www.frc.org.au/Grey_Mackerel.html#latest

Attachments: as hard copies by mail and soft copies by email

1. Final report ***The possible collapse of a grey mackerel population and the decline of an inshore fishery within the world heritage Great Barrier Reef Marine Park, demonstrating the need to implement the precautionary principle to immediately close inshore waters to all offshore and itinerant netting: a case study*** (Dated 25 November 2008).
2. ***A Review of Concerns relating to the (offshore) Gillnet Fishery in Inshore Waters of the Great Barrier Reef Marine Park with recommendations for early intervention.***

Attachment by soft copy to email only:

GBRMPA (2011) ***Vulnerability Assessment for the Great Barrier Reef 2011 Grey mackerel*** with comments by D Cook.

Plate 1: Photos of two species showing philopatry /local populations which aggregate to spawn and may still be legally netted during their spawning season

(i) Blue threadfin showing ripening female roe, photographed at Wonga Beach by David Cook on 25 March 2011. The stage of development of the eggs indicates spawning during April.



(ii) Grey mackerel line-caught on 10 September 2011, showing very advanced roe, indicating possible imminent spawning. The school dispersed/moved away/could not be located during calm weather shortly after. This specimen given to QF per Stuart Hyland for analysis.



Plate 2: Marlin Coast veterinarian experienced in carrying out autopsies on dugongs drowned in fishing nets calls for a ban on use of nets in areas frequented by dugongs.



Dugongs continued to wash ashore in the Cairns and Douglas Region during 2011 with no obvious signs of trauma or starvation, examples: (i) below, Cairns, February 2011.



Plate 2 ii: Dugong with no obvious injuries and not starving (*pers. com.* veterinarian Jennie Gilbert) found on Cooya Beach 10 October, 2011.



Photographs of a Humpback whale passing through the grey mackerel fishing grounds on 28 August 2011; the very locality where offshore netters set 600m of large mesh gillnets for aggregating grey mackerel prior to and during spawning; photos taken by David Cook whilst fishing for grey mackerel.



Humpback whale shown at the east end of Snapper Island, 28 Aug. 2011



Humpback whale shown passing along the north end (above) and on the south side of Snapper Island (below), 28 Aug. 2011

