# The Recreational Fishing Alliance of NSW

**"Promoting Sustainable Fishing"**

**PO Box 328 Matraville, NSW 2036**
**Email: secretary@rfansw.com.au**
**Website: www.rfansw.com.au**
A.B.N. 52 142 674 484
NSW Incorporations No. 9874764


Fisheries Scientific Committee
C/- NSW Department of Primary Industries
PO Box 1305
CROWS NEST NSW 1585
Attention: Chairperson Dr Jane Williamson
Email: fsc@dpi.nsw.gov.au

13th June 2014

**NSWDPI Fisheries Scientific Committee FSC – Submission on the Proposed Determination of Gemfish Rexea *solandri* – listing it as a Vulnerable Species**

To whom it may concern,

The Recreational Fishing Alliance of NSW RFA in its capacity as the peak NSW Recreational Fishing representational and advocacy body, welcomes the opportunity to be engaged in and provide a response towards the future management of Gemfish Rexea *solandri* in New South Wales Fisheries managed waters. See **Appendix A** for these consultation arrangements and related links to the information and resources made available.

The Alliance would like to acknowledge and thank a number of recognised members of the scientific and fishing community who have been heavily involved in the gemfish discussions, and worked collaboratively to establish the scientific information provided within this submission;

- Dr Ian Knuckey and Dr Matt Koopman - Fishwell Consulting
- Simon Boag – CEO South East Trawl Fishing industry Association
- Dr Beth Fulton – CSIRO - Marine and Atmospheric Research
- Dr Kevin Rowling – a research scientist in stock assessments and Gemfish expert previously employed by NSWDPI
- Bryan Van der Walt - NSWDPI – Fisheries Recreational Fisheries Manager
- Recreational Fishing Saltwater Expenditure Committee – who jointly funded the Gemfish scientific response prepared by Fishwell Consulting

It would be of interest to all involved, to ascertain the overall time, effort and associated costs for this consultation process. Many have questioned the validity of the NSW Fisheries Scientific Committee FSC to again reconsider the status of gemfish in NSW, considering that the species is under a number of significant state and commonwealth, recreational and commercial fisheries input or output restrictions and stock rebuilding strategies, due to its 'conservation dependant' listing under the Environment Protection and Biodiversity Conservation EBPC Act and Australian Fisheries Management Authority AFMA arrangements since the late 2000's.

Concerns have also been raised, relating to the;

- duplication of threatened species management as a 'shared fish species' by the FSC, and the EPBC Act Threatened Species Scientific Committee TSSC actions,
- the jurisdictional coverage of the FSC, whether this relates to only NSW State waters <3NM, or 'all waters' under NSWDPI-Fisheries care control and management i.e. <200NM or Australia's Exclusive Economic Zone EEZ, and
- the transparency afforded to the public consultation process, where a number of referenced technical papers and correspondence were not made available publicly, allowing submissions authors to review the same material.

**RFA recommends** that the NSW Government conducts an administration and consultative review of the Fisheries Management Act Part 7A[1] relating to the establishment, current operations and consultation processes of the Fisheries Scientific Committee FSC see **Appendix B**, with the view to improve and provide a more transparent process of this independent committees activities in the future.

This will also be dependent upon the outcomes and actions relating to the 71 recommendations and several findings made in the 2011 Report of the Independent review of the EPBC Act 1999 by Dr Hawke[2], and the Commonwealth Governments response[3]. Along with, the numerous proposed state and commonwealth government commitments to reduce 'Red Tape & Duplication' across all departments and agencies.

RFA agrees that there this is a need for protection of the our countries fish stocks from overfishing, once this has been established, along with a sustainable harvest of wild caught fish to be supplied to the NSW or Australian public. The overall world seafood market has changed significantly over the past several decades. Aquaculture is producing more and more fish annually, Australia imports significant quantities of fish products, as we also export our fish products under numerous free trade agreements. We recognised there will always be a niche market for fresh local commercially caught seafood providing consumer's with the choice to purchase quality local wild caught fresh seafood at a price the industry values its services at, way above similar imported comparable seafood products.

The RFA Chairman is in a unique position and sits as the recreational fishing representative on AFMA's two commonwealth fisheries consultative committee's, the South East Management Advisory Committee SEMAC - which covers the Trawl Sector, Gillnet, Hook and Trap Sectors, Small Pelagic Fishery and Southern Squid Jig Fishery and the Shelf Resource Assessment Group. This is where the majority of fisheries and resource assessment decisions are analysed and discussed in detail, providing sound recommendations directly, and indirectly, to the AFMA Commission in relation to these Commonwealth Fisheries.

Gemfish was extensively covered during a series of meetings and prepared correspondence during 2013/14 ShelfRAG[4] and SEMAC[5]. These deliberations resulted in setting the 2014/15 fishing season Total Allowable Catches TACs for gemfish and fishing interactions for a number of commonwealth managed species.

**Gemfish Rexea *solandri*** is a deep sea species interacted with by recreational, charter boat operators who provided a 'fee for service' to the recreational fishing community, and commercial state and commonwealth endorsed fishers with statutory fishing rights, in oceanic waters along the east coast of Australia, and the NSW coastline, generally in depths >100m, and >3NM from the coast.

**Recreational Fishing -** In NSW there are around 1 million recreational fishers, who assist in generating through a predictive model an average annual expenditure of '$1.626 billion dollars towards the NSW economy'[6], against the 'NSW wild harvest commercial fishing industries worth around $80-90 million dollars at the first point of sale'[7].

As an indicative estimate around 30-70,000 of these fishers would fish our NSW offshore coastal offshore, with a small amount of these anglers venturing out to the depths and gemfish habitat along the continental shelf and beyond to target deep sea fish.

The recreational catch is also highly variable, very seasonal, greatly weather dependent, and requires a considerable investment in fishing and boating equipment to access the coastal

[1] http://www.austlii.edu.au/au/legis/nsw/consol_act/fma1994193/
[2] http://www.environment.gov.au/system/files/resources/5f3fdad6-30ba-48f7-ab17-c99e8bcc8d78/files/final-report.pdf
[3] http://www.environment.gov.au/system/files/resources/605a54df-7b33-4426-a5a8-51de24b29c71/files/epbc-review-govt-response.pdf
[4] http://www.afma.gov.au/managing-our-fisheries/consultation/resource-assessment-groups/southern-and-eastern-scalefish-and-shark-resource-assessment-groups/Shelf-Resource-Assessment-Group/
[5] http://www.afma.gov.au/managing-our-fisheries/consultation/management-advisory-committees/south-east-mac/
[6] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/499302/UOW-statewide-economic-survey-final-report.pdf
[7] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/512815/General-information-relating-to-the-reform-options-for-NSW-commercial-fisheries.pdf

fishing grounds containing the canyons and sea mount habitat that Gemfish and other deep sea companion species like Hapuku, Blue-Eye Trevalla, Banded Rockcod, Bass Groper range in.

It is reported in several documents that the recreational catch is somewhere between 0 and 10t annually, however no accurate or annual records have ever been established by NSWDPI – Fisheries. The Charter Boat Industry believes, their gemfish catch levels are less than 2t annually, in any good season.

The NSW current bag and possession limit for Deep Sea Fish is 5 in total, Gemfish only 2 per person and a Boat Trip Limit of 10 fish applies across recreational and charter boats see **Appendix C**. Gemfish are a prohibited species in Victoria, Queensland it is rarely taken and only in small quantities in the south east, and rarely recorded or taken by anglers around Tasmania's north eastern waters.

There is also no size limit, as returning any deep sea fish to the water alive would be impractical due to the results of barotrauma fish would experience when being removed from such great depths. It is also a requirement by law that any fish that is caught over an anglers bag/trip limit is required to be discarded; again there are no estimates or data available on this level of fish mortality either.

On a more positive note and with the improvements in technology, recreational fishers continue to report anecdotally, sharing screen shots from fish sounders and heir photos of gemfish catches on social media, of verified significant gemfish schools at a number of NSW and Southern Qld fishing grounds.

**Commercial Fishing -** For Gemfish it is generally taken in the NSW Trap & Line and Ocean Trawl Fisheries, in the Commonwealth it is taken predominantly in the Southern and Eastern Scalefish and Shark Fishery SESSF which includes gill netting, auto long lining and trawl.

A number of industry initiatives have been adopted to reduce the commercial fishing impacts on eastern gemfish stocks since its listing as a 'conservation dependant' species under the EPBC Act since 2009.

As an example South East Trawl Fishing Industry Association SETFIA have introduced a code of conduct on reporting gemfish, see **Appendix D**, with the view to avoiding gemfish during commercial fishing operations. Along with AFMA's ongoing resource assessments, its on-board observer program, industry being encouraged to estimate and report discard species quantities, and compliance and enforcement strategies to reduce illegal fishing and under reporting, there has been a considerable improvement in the overall management and reporting of gemfish catches and interactions at all levels, leading to downward trend in overall commercial landings for gemfish.

This has changed the industry ways of the past, targeting spawning aggregations of gemfish, it has also required alternative scientific interpretations of the current commercial fishing data to review how these avoidance changes impact current and future resource assessments.

A further complication that requires consideration is the various fishing closures which have been imposed on the fishery relating to other companion species management e.g. Upper Slope and Dogfish Management Strategy and Closures, and the current Australia's marine regions - South-west, North-west, North, South-east and Temperate East process, where additional areas will be closed to commercial fishing along the east coast of Australia offering additional protection to known gemfish habitat and aggregations locations.

In the most recent Status of fisheries resources in NSW 2011–12 Summary Status of Fisheries released April 2014[8], gemfish continue to be shown as OVERFISHED, see **Appendix F**.

During the recent NSW Commercial Fishing Reform[9] short consultative period where recreational fishers finally allowed to review numerous possible commercial fishing changes, the Alliance was not supportive of any proposed changes to the Gemfish trip limit for the

[8] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/516752/status-of-fisheries-resources-nsw-2011-12.pdf
[9] http://www.dpi.nsw.gov.au/fisheries/commercial/reform

Ocean Trawl or Trap and Line Fishery which accounts for some 20t of gemfish being landed in NSW and the setting of Interim Total Commercial Access Levels ITCALs[10].

*Abridged table from submission*

| Common Name Species | Status of Fisheries | Proposed NSW ITCAL | 2014/15 Commonwealth TAC |
|---|---|---|---|
| Gemfish | Overfished | 20.2t | Recovery strategy incidental catch 100t |

***Ocean Trap and Line Fishery***

***RFA does not support to the following*** *changes to current management arrangements under the reform options:*

- ***Gemfish trip limit removal*** *– the NSWDPI – Fisheries Scientific Committee has just released a proposed determination to list Gemfish as Vulnerable under the FMA, along with being classified as recruitment overfished. It is also listed as Conservation Dependant under the EPBC Act, and currently under a Australia Fisheries Management Authority AFMA stock rebuilding strategy with the Commonwealth fisheries on an 'avoid where possible fishing strategy', to minimise catch and discard rates, as any increase in catch and reported discard levels would trigger a rethink by fisheries managers, stock resource assessment scientific committee's an possibly by the EPBC Act Threatened Species Scientific Committee TSSC.*

***Ocean Trawl Fishery***

***RFA does not support to the following*** *changes to current management arrangements under the reform options:*

- ***Gemfish trip limit*** *– as noted in the Trap and Line fishery any management changes must be consistent with a stock rebuilding strategy with the hope to rebuild stocks back to suitable sustainable levels removing some if not all fishing restrictions.*

## Executive Summary

The scientific species report prepared by Dr Ian Knuckey from Fishwell consulting is included in full at **Appendix E.** This was a collaboratively arrangement between the commercial fishing industry and recreational fishers to provide a scientific and somewhat independent assessment on gemfish. It is clearly recognised that gemfish are interacted with by both sectors to provide seafood to Australia's public or for the enjoyment and experience of catching a variety of deep sea fish.

*(excerpt taken from the report referred to above)*

☐ Due to the current management arrangements within the Commonwealth fishery the Eastern Gemfish stock has rebuilt from a low of about 5% SSB during the early 2000s to about 16% by 2010. These arrangements include reductions in Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF) quota, reductions in CTS vessel numbers (the predominant catcher) from 81 to 49 and a more than halving trawling hours, 87% CTS area closures, an AFMA stock rebuilding strategy (more selective fishing gear and larger mesh in fishing gear) and a CTS industry code of conduct preventing targeting that has reduced catches year on year for the three years of its existence. CSIRO analysis shows that CTS targeting of Eastern Gemfish has reduced to an extent where only less than 10 t of catch per annum could possibly be construed as targeted.

☐ The most detailed assessment of the Eastern Gemfish stock is the 2011 Commonwealth stock assessment which estimates it will slowly increase and recover to the limit reference point at some point during the mid-2020. Recruitment residuals over the past ten years have been generally above or close to the average over the long term. There has not been one year where there has been recruitment failure in this fishery.

☐ Landings by the recreational fishery are unknown but thought to be below 10 t and are largely immaterial given the 5,448 tonne biomass projected in 2016.

☐ After reviewing the best available science the ESSS, the RAG, and the TSSC have made explicit statements to the affect that Eastern Gemfish is not threatened by extinction.

[10] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/512881/Technical-Paper-Setting-the-Interim-Total-Commercial-Access-Levels.pdf

☐ CSIRO's Atlantis model proposes that Eastern Gemfish will increase by approximately 50% by 2042.

☐ The only evidence that the stock will decline to extinction in the medium-term future is the Atlantis model which proposes that under various sensitivities (mostly relating to climate change) widely ranging outcomes from stock doubling to extinction. However, CSIRO has stated that the stock assessment will likely be much more closely fitted to species specific information, whereas Atlantis has to find a parameterisation that does reasonably well for all groups simultaneously.

The Alliance also consulted verbally and by email with, Dr Beth Fulton CSIRO, and Kevin Rowlings who were referenced in the FSC gemfish proposed determination, as well as several other resources assessment scientists, and fisheries managers who all shared similar concerns with the proposal.

Dr Beth Fulton also noted in her correspondence with the RFA, that she did reiterate –

> *'that Atlantis is very uncertain. While many simulations do see gemfish biomass decline to extirpation (i.e. lost from the modelled area which does not mean extinct necessarily) by 2070, very few see it before 2040. These parameterisations are based on a mix of species specific information collected in the past for gemfish, fitting the model to historical observations and then bringing in information (from other species) on what potential future responses might be. So we do a broad range of scenarios to use the model as a what-if world to understand potential changes. It is not a specific stock assessment model that says there will be exactly x amount of a fish in year y. Its more like the ecology equivalent of a flight simulator to understand what might happen if things went one way or another and to try out (in a virtual world) management options for recreational and commercial fisheries.'*

In terms of the recreational catch, the Alliance agrees it is largely unknown, more could or should be done to reduce the knowledge gaps and look at cost effective methods using various improvements in technology and social media to obtain better recreational fishing data, relating to catch, effort, fishing trips and discard rates, that maybe used to assist 'point in time options' with any fisheries stock assessment of our commonly caught important share fish resources.

Whilst the catch of gemfish is thought to be between 0-10t annually, it is also relatively small in terms of the stock rebuilding strategies or resource assessment modelling.

**Conclusion**

The Alliance thanks the NSWDPI– Fisheries and the Fisheries Scientific Committee for this consultative arrangement, however we will continue to question the FSC's decision to once again review gemfish for listing as a 'vulnerable species in NSW', considering the consistent position and level of advice received to date by the relevant experts over the course of preparing this submission.

**The Recreational Fishing Alliance of NSW cannot agree with the Fisheries Scientific Committee's findings to list Gemfish as a 'vulnerable species' under the Fisheries Management Act 1994 Part 7A**.

The Alliance has no alternative but to support the conclusions reached by Dr Ian Knuckey noted above, and those opinions of Kevin Rowlings and Dr Beth Fulton - that there exists insufficient stock assessment, or sound scientific evidence, that Gemfish (Eastern stocks) are under any short to medium threat of extinction in NSW, i.e. by 2040.

The level of fisheries management controls at a recreational and commercial fishing operational level reasonably significant for gemfish, and other deep sea companion species. Gemfish is under a well-managed commonwealth stock rebuilding strategy, the recreational catch is somewhat limited along the east coast particularly in NSW. Both the commonwealth and state fisheries maintain a sound compliance and enforcement strategy with a gemfish emphasis around risk, and state commercial fishers are under strict trip limits with the consideration to improve their management with some reform towards a total allowable catch which would reduce discarding.

Along with regular and significant research investment across all sectors in reviewing gemfish stocks and its changing/improving bio mass, ecosystem based modelling, commonwealth catch records and industry gemfish support, tends to reinforce some of the recreational fishers anecdotal evidence that over the past several years that the species is slowly recovering, and it is hopeful that this trend continues as anticipated.

Should there be a need to clarify any of the comments or positions within this submission as noted above then please contact the undersigned.

Kind regards

Malcolm Poole
Chairman
Recreational Fishing Alliance of NSW

## Appendix A

# Notice of determination - Gemfish proposed listing as a vulnerable species

The Fisheries Scientific Committee (FSC) has made a proposed determination (PDF 58.7 KB) to list Gemfish (*Rexea solandri*) in the Threatened Species Schedules of the *Fisheries Management Act 1994*.
In accordance with criteria prescribed by the Fisheries Management (General) Regulation 2010, the FSC reviewed information and found that the Gemfish is facing a high risk of extinction in NSW in the medium-term future, and the species is eligible to be listed as Vulnerable in Part 1 of Schedule 5 of the Act.
The committee invites written submissions on the proposed determination which should be forwarded by:

**Email:** fsc@dpi.nsw.gov.au

**Post:** Fisheries Scientific Committee
c/- NSW Department of Primary Industries
PO Box 1305
CROWS NEST NSW 1585

The Fisheries Scientific Committee has extended the closing date for submissions to **Friday 13 June 2014**.
Please note that all submissions may be made public unless confidentiality is specifically requested.
For further information contact the FSC's Executive Officer by emailing: fsc@dpi.nsw.gov.au

## Appendix B

# Fisheries Scientific Committee

- Final determinations
- Guide to nominating threatened fish and marine vegetation
- Nomination forms
- Nomination process
- Proposed determinations
- Student research grants program

The Fisheries Scientific Committee is an independent body established under Part 7A of the *Fisheries Management Act 1994*. The main functions of the Committee are related to:

- the listing of species, populations, ecological communities and key threatening processes in the schedules of the *Fisheries Management Act 1994*;
- advising the Minister on the identification of critical habitat;
- reviewing draft joint management agreements and the performance of parties under the agreements;
- Advising the Director-General on the exercise of Department of Primary Industries functions under threatened species legislation of the *Fisheries Management Act 1994*; and
- Advising the Minister and the Natural Resources Commission on matters relating to the conservation of threatened species, populations or ecological communities.

The Committee consists of seven scientists, with expertise in the biology of fish, aquatic invertebrates and marine vegetation; population dynamics, aquatic ecology and genetics of small populations.

## The Committee comprises:

- Dr Jane Williamson (Chairperson)
- Dr Don Colgan (Deputy Chairperson)
- Dr Matthew Taylor
- Dr Andrew Davis
- Dr Alan Millar
- Assoc. Prof. Mark Lintermans
- Dr Dean Gilligan

## Contact the committee

*Executive Officer, Fisheries Scientific Committee*
*c/- NSW Department of Primary Industries*
*PO Box 1305*
*CROWS NEST NSW 1585*
*Email: fsc@dpi.nsw.gov.au*

## Appendix C

Taken from the NSW Recreational Saltwater Fishing Guide.



### Deep-Sea Fish: Hapuku (Hapuka), Banded Rockcod (Bar Cod), Bass Groper, Gemfish, Blue-Eye Trevalla (Cod)

Hapuku

**Legal length:** None.
**Bag limit:** 5 in total*, Gemfish: Only 2 and boat trip limit of 10.
**Habitat:** Deep offshore waters, usually on or over the continental shelf.
**Good baits:** Squid, oily fish such as tuna or mackerel.

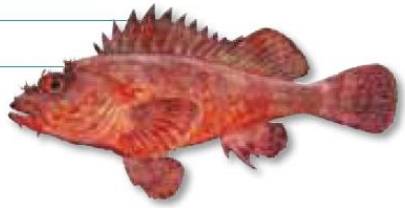
Banded Rockcod

Gemfish

Blue-Eye Trevalla

Bass Groper

### Eastern Red Scorpionfish (Red Rock Cod)



**Legal length:** None.
**Bag limit:** 5.
**Habitat:** Inshore and offshore reefs.
**Good baits:** Pilchards, prawns, squid or fish strips.

## Appendix D

Industry Code of Practise to:

# Rebuild Eastern Gemfish

SETFIA
SOUTH EAST TRAWL FISHING INDUSTRY ASSOCIATION
sustainable fishing practises protect our future

**Introduction:**

The code of conduct sets down what SETFIA considers to be reasonable steps, in line with the Eastern Gemfish Stock Rebuilding Strategy, to rebuild stocks of Eastern Gemfish. This code was adopted by members in June 2011 following a series of meetings on NSW's south coast. It is in industry's interests to rebuild the stock to commercial levels. Also that the rebuilding occurs under the current level of management, rather than with more precautionary measures (see "Stages" over page).

**The TAC is by-catch only!**

Unlike a normal TAC the allowable catch for Eastern Gemfish is set at a level sufficient to cover unavoidable by-catch whilst targeting other species.

**What is a Stock Rebuilding Strategy and why is it needed?**

The current stock assessments on the eastern stock of this species place the biomass at less than 20% of the unfished biomass. Because of this the Commonwealth Fisheries Harvest Strategy states that there must be a formal recovery plan. The existence and adherence to this rebuilding strategy is also a requirement of the SESSF's Wildlife Trade Operation certification – this allows the fishery to export fish. The species is also listed as conservation dependant under the *Environmental Protection and Biodiversity Conservation Act 1999*.

**The stock will rebuild faster if incidental catches are reduced and there is no targeting. How will we know when the stock rebuilds?**

An improved assessment will be achieved by:

1. AFMA's commitment to increased observer coverage.
2. The Association will endeavour to run a survey within 2 years.
3. Improved data from better reporting (including discards).

**Approved fishing gear is one of:**

1. **90mm single**
2. **Double at 102mm (4 inch)**
3. **90mm double with 1 or more BRD's** (a by-catch reduction device such as rotated mesh like T90)

Part of the South East Trawl Fishing Industry Association Code of Conduct Series

Code 3.0 June 2011

Something similar could be developed and adopted for the recreational fishing sector who seek to experience and catch deep sea fish. This along with the development of a multi species simplistic electronic recreational catch/discard of fishing trip App could change the ways of recreational reporting in the future.

## Appendix E

Author Dr Ian Knuckey ( Fishwell Consulting)

# Submission Regarding the Proposed Determination of *Rexea Solandri* - Gemfish as a Vulnerable Species

## Background

The New South Wales Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to list *Rexea solandri* – Gemfish as a VULNERABLE SPECIES in NSW in Part 1 of Schedule 5 of the Act.

The listing of Vulnerable Species is provided for by Part 7A, Division 2 of the Act.

The Fisheries Scientific Committee, with reference to the criteria relevant to this species, prescribed by Part 16, Division 1 of the Fisheries Management (General) Regulation 2010 (the Regulation) contend that Gemfish in NSW has undergone a large reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon. They also contend that there are threatening processes that continue to operate within the geographic distribution of the species and that existing management measures do not protect the species and that management intervention since 1988 has not resulted in significant recovery of the species. Based on these contentions, it is the opinion of the Fisheries Scientific Committee that:

(a) *Rexea solandri* - Gemfish is facing a high risk of extinction in New South Wales in the medium-term future, as determined in accordance with the criteria prescribed by the Regulation as discussed above, and

(b) it is not eligible to be listed as an endangered or critically endangered species.

They recommend that Eastern Gemfish is eligible to be listed as a VULNERABLE SPECIES.

This submission disputes a number of the arguments put forward by the FSC and that the best available scientific evidence supports that Gemfish DO NOT face a high risk of extinction in New South Wales in the medium-term future, as determined in accordance with the criteria prescribed by the Regulation.

## Previous Nominations of Eastern Gemfish

This is not the first time that Eastern Gemfish has been nominated as a listed species.

In March 1994, a proposal was put forward to nominate gemfish as endangered under the Commonwealth Endangered Species Protection Act (1992) the Endangered Species Scientific Sub-committee (ESSS) considered the proposal and advised the minister that the species should not be listed. Subsequent to this, Eastern Gemfish was again nominated for listing in 1995 under the same act. However, this time as "vulnerable". The advice of the ESSS was to not the list the species stating:

***"there is no evidence that the species as a whole is in any way threatened with extinction due to this activity (fishing)".***

In 2009, again at the Commonwealth level, the Threatened Species Scientific Committee (TSSC) considered the nomination of *Rexea solandri* (eastern Australian population) for

inclusion as ENDANGERED in the list of threatened species referred to in section 178 of the Environment Protection and Biodiversity Conservation Act (EPBC act).

With regard to Criterion 5, a probability of extinction in the wild that is at least: a) 50% in the immediate future; or b) 20% in the near future; or c) 10% in the medium-term future, the TSSC concluded:

***"…..as the species has not been demonstrated to have met the required elements of Criterion 5, it is not eligible for listing in any category under this criterion".***

The overall recommendation from the TSSC was that Eastern Gemfish should be included as CONSERVTION DEPENDENT in section 178 of the EPBC Act.

The FSC (2008) has also considered a previous nomination of Eastern Gemfish (FSC 2008) as an ENDANGERED SPECIES under the New South Wales Fisheries Management act (1994). It concluded that pursuant to section 220F(3) of the Act:

***"In the opinion of the Fisheries Scientific Committee: Rexea solandri - Gemfish is not facing a very high or high risk of extinction in New South Wales in the near future***

***The species is not eligible to be listed as an ENDANGERED SPECIES".***

## Current Nomination

Six years on, it is now the opinion of the Fisheries Scientific Committee that Gemfish is facing a high risk of extinction in New South Wales in the medium-term future. The difference in the current opinion compared to their opinion six years ago, is that the risk is now in the "medium-term future", not the "near future".

To understand the implications of these terms, it is necessary to consider the NSW Regulation and Act. In considering the eligibility for listing of those species (Part 7A 220F), the terms "immediate future", "near future" and "medium-term future" relate to whether species is eligible to be listed as a "critically endangered species", "endangered species", or "vulnerable species" respectively. Eastern Gemfish is being nominated under the last of these categories. Unfortunately, definition of the terms "immediate future", "near future" and "medium-term future" are not present in either the Act or the Regulations. In reference to the IUCN redlist categories and criteria (IUCN 2012a, 2012b) it would reasonable to assume that these terms related to: Immediate – 3 years or 1 generation (whichever is longer); Near future – 5 years or 2 generations (whichever is longer); and Medium-term future – 10 years or 3 generations (whichever is longer).

Mean generation time is defined as the average age of spawners weighted by fecundity in an unfished population (Babcock et al. 2007). In the analysis by Little (2011), this works out to be 9.24 years. Based on this we understand the definition of medium-term future for gemfish would equate to 28 years in the future, being 2042.

## Criteria – reduction in abundance, geographic distribution or genetic diversity

### Current status

Although it is widely recognised that eastern gemfish has suffered significant depletion as a result of overfishing during the 1970s and 1980s and reduced recruitment levels, there is no scientific evidence that Eastern Gemfish is facing a "high risk" of extinction in New South Wales in the medium-term future (2042).

The best quantitative information on the stock status of Eastern Gemfish is contained in the recent stock assessment for Eastern Gemfish (Little and Rowling, 2011) based on data from 2010. This assessment shows that the stock has recovered considerably from its low of about 5% spawning stock biomass (SSB) during the early 2000's and has now increased to a point where the base-case estimate is 15.6% SSB (with sensitivity tests ranging up to 41.6%). This is the best estimate we currently have of the stock status, regardless of various arguments about whether it might be an over-estimation[1] due to CPUE hyperstability or overestimation of the 2002 cohort or underestimation due to avoidance behaviour by commercial fishermen or the inability of the model to capture high discard rates (Morison *et al.* 2012).

So, based on the most recent stock assessment, we now have a reasonably good understanding of the stock status of Eastern Gemfish. Being less than 20% of virgin biomass, they are categorised as "overfished" under the criteria of the Commonwealth Harvest Strategy Policy (HSP). Also, because fishing mortality cannot be reduced to zero, due to catches by recreational fishers and bycatches in commercial fisheries, eastern gemfish is classified as "subject to overfishing." (Woodhams *et al.* 2013).

## Future predictions.

Regardless of the current status, the important question regarding the nomination of Eastern Gemfish as vulnerable is what will happen in the future?

The FSC contends that there is a high risk of extinction of eastern gemfish in the medium term future, yet provides no scientific evidence upon which it bases this opinion. As we show below, all of the current scientific literature available suggests there is virtually no risk of extinction in the near future (2042).

### *Stock Assessment Projections*

The most recent stock assessment model predictions do not indicate a reduction in stock biomass – the stock is estimated to slowly increase and recover to the limit reference point at some point during the mid-2020s (Figure 1). It is important to understand the assumptions that underlie this projection. There is concern that potential hyperstability in the winter targeted CPUE indicator will over-estimate recovery but it is difficult to quantify this. Certainly, the huge declines witnessed in this indicator subsequent to the 1980s do not suggest hyperstability. The model also assumes a bycatch of 100t but does not account for recreational catches. Indeed, bycatch (including discards) has been higher than 100t in recent years which will slow the projected recovery. This will also lead to optimistic future projections.

There is also discussion that the future projections assume average recruitment into the future but previous recruitment levels were well below average. It must be remembered that this average included periods of both high recruitement and low recruitment. Recent years' recruitment residuals appear to be more in line with the average than those

Opposing the potential for over-estimation, Morison et al. (2012) recognize the assessment's inability to fit the recent high discard rates in both the summer and winter bycatch trawl data sets may result in an under–estimation of any stock rebuilding. It was highlighted that prior to

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[1] FMC (2012) suggest that the model results may overestimate biomass because of "the assumption of the stock assessment model that recruitment is equal to the average recruitment when recent recruitment levels are well below the historical average". In fact, this only relates to future recruitment and does not affect the estimate of current stock biomass, only the forward predictions.

the 2007 survey, these discard rates were one of the main indicators that pointed to some level of rebuilding of the stocks. In sensitivity runs during 2009 that explored a better a fit to the discard data by allowing a change in selectivity or retention post-2002 resulted in 2009 spawning biomass indices of between 23-27%.

Recruitment levels are also an important issue. Following a strong period of recruitment between 1970 to the mid-1980s subsequent recruitment for a period of 15 years was well below average. Since 2000, eight of the 10 recruitment residuals has been above the long term average, but coming from a heavily depleted stock, recruitment has remained low but relatively stable over the last twenty years. There has been no indication of missing cohorts (Rowling 2012). There is no indication that this will change in the future.

Thus, it is difficult to weigh up the factors that may cause model over- or under-estimation in rebuild rates. In the end, all that is able to be stated is that the most recent assessment is the best scientific information on the current status and future trends in eastern gemfish biomass. This assessment shows stock levels are slowly increasing, certainly not reducing to extinction. As pointed out by FMC (2012), "The opinion of the Resource Assessment Group is that there is no appreciable risk of catch levels under the current management that would cause Eastern Gemfish to become extinct (Morison *et al.* 2012, Rowling 2012)". Dr Rowling and the scientists involved on the resource assessment group are world-renowned experts in this field.

The projections used in the assessment, however, do not go beyond 2030 and cannot be used to explore the medium term future of eastern gemfish stocks. The FSC has used Atlantis models to explore the medium-term future scenarios.

### *Atlantis Projections*

Atlantis is an ecosystem model that considers all parts of marine ecosystems - biophysical, economic and social. Originally focused on the biophysical world and then fisheries, it is now used for multiple use and climate questions. Because it is such a complex model, Atlantis is trying to "fit" information derived from an extremely large range of biophysical, economic and social parameters – not just Eastern Gemfish. For this reason, Atlantis can't use all of the same parameter values as the stock assessment; it represents ecology in a different way. Thus, the trajectories estimated for Eastern Gemfish might be similar to the more detailed trajectories of a sock assessment, but they can't be the same. It is also important to realise that the comparison between the stock assessment biomass trajectories and Atlantis outputs were compared up until 2000, fourteen years ago. There has been no comparison of these trajectories since the recovery of Eastern Gemfish up to 16% SSB. There has been a number of significant revisions to the stock assessment since this time, including the incorporation of two winter spawning survey points that have had a large impact on the model outputs and biomass estimates. This is likely to have caused divergence between the stock assessment model and Atlantis, therefore, we don't know how well Atlantis has been able to capture this increase.

Regarding the use of Atlantis for the purpose of estimating extinction of Eastern Gemfish, Fulton (pers com.) has stressed that the assessment as will likely be much more closely fitted to species specific information, whereas Atlantis has to find a parameterisation that does reasonably well for all groups simultaneously.

Acknowledging the above issues, Atlantis projections do not show a high risk of extinction in the medium term future. In fact, very few parameterisations lead to that outcome by 2042 (Figure 2) and more importantly, the most plausible parameterisations certainly did not see extirpation by 2042. Those parameterisations that do ultimately lead to extirpation typically don't see that outcome until close to 2070 – far beyond the medium term future.

There is so much uncertainty about finfish responses to climate drivers and ocean acidification. While some of that variability is quite pessimistic there are increases in shown by the model

as well. Put simply, Atlantis just does not have the information that allows it to predict with any certainty which scenario will actually happen. That's why the uncertainty bounds in Figure 2 range from a doubling of the current Eastern Gemfish stock by 2042 (ie. taking it to 32% SSB), through the prediction of about 1.5 current levels, right through to extirpation. Figure 2 shows, however that the risk of extirpation is extremely low in the medium term future – it does not show a "high risk of extinction".

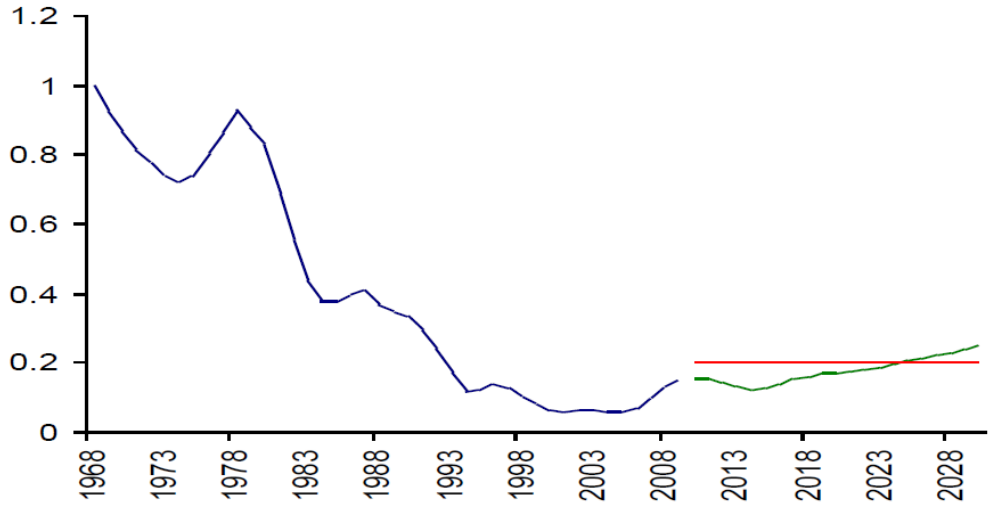


Figure 1. Relative spawning biomass of Eastern Gemfish projected 20 years into the future from 2009 (Little and Rowling 2011), under 100 t TAC, split among fleets according to the historical catch.

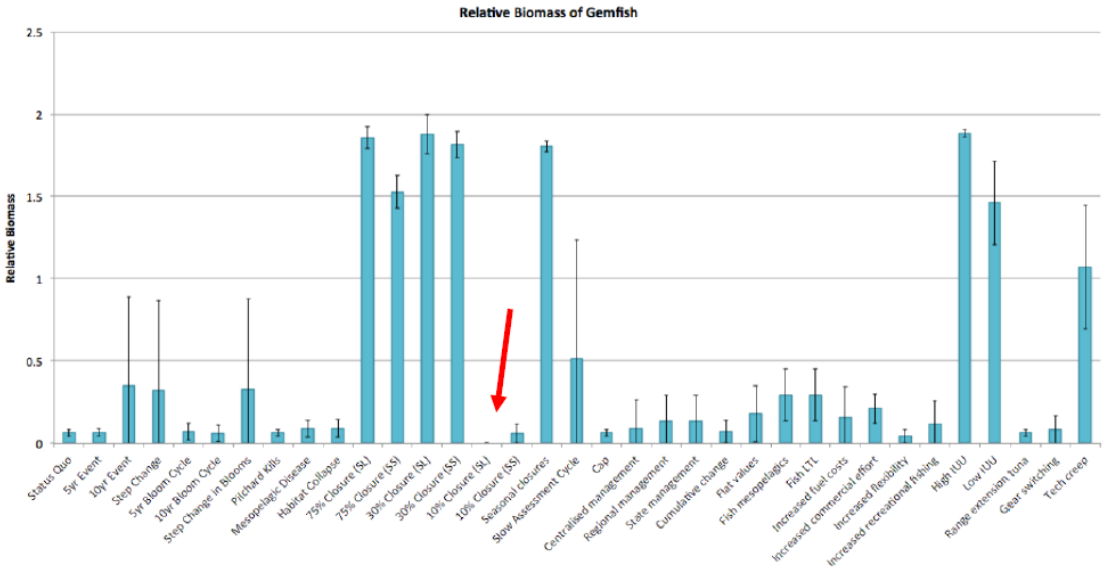


Figure 2. Mean biomass state in 2070 (relative to biomass in 2010) in Atlantis-SE simulations. The simultions that show extirpation by 2070 are highlighted.

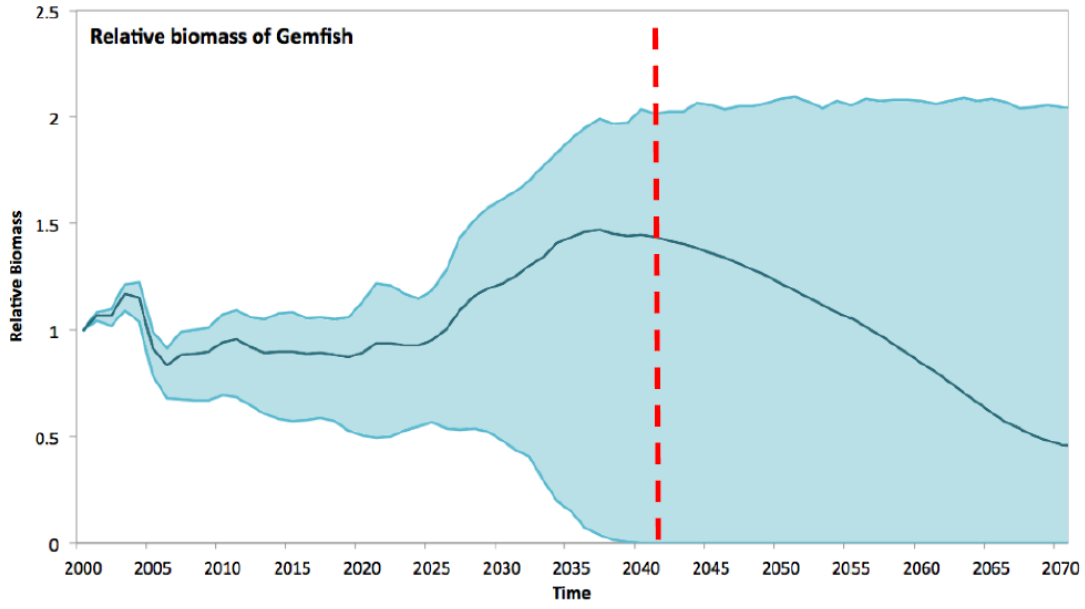


Figure 3. Time series of relative biomass of gemfish across simulations run using Atlantis-SE.

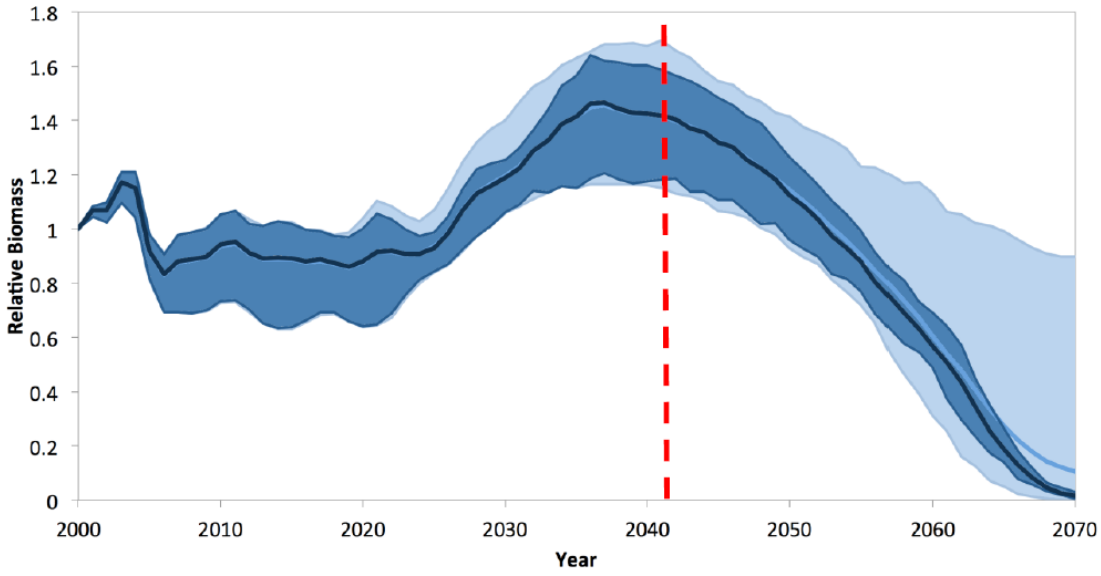


Figure 4. Time series of relative biomass of gemfish across status quo simulations run using Atlantis-SE and alternative parameterisations (i) with potential extreme events due to climate change (light blues) and (ii) without such events (dark blues). The thick centre lines are means, bands are range of min-max.

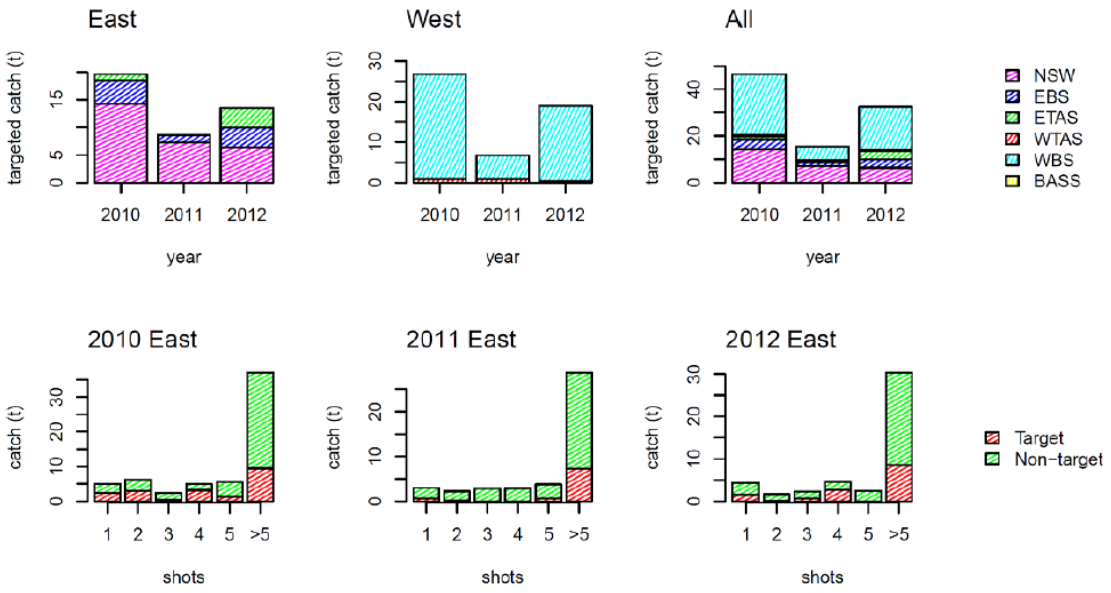


Figure 5. Receent target and non-target catches of Eastern Gemfish in the east off NSW. From Klaer (2013).

The FSC has previously found (under item 721 of the Act) that Eastern Gemfish is not Critically Endangered which implies a "extremely large reduction", nor is it Endangered, which requires a "very large reduction". The FSC is now purporting that Gemfish in NSW has undergone a only a "large" reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon. It also says in the Act that "The Fisheries Scientific Committee must have regard to the following in determining the extent of the reduction referred to in subclause (1):

(a) the rate of and trends in the reduction,

(b) the potential of the species to maintain relatively stable abundance under high levels of mortality….",

If it is to consider the rate and trend in the reduction, surely the FSC must recognize that the trend of reduction is no longer evident and the current trend is rebuilding. The species is now showing a stable and slowly increasing biomass under current levels of mortality. The management arrangements now in place prevent high levels of mortality.

In presenting this nomination, we believe the FSC has used numerous incorrect or misleading assertions to support its case with regard to the following in determining the extent of the reduction:

a. Depletion from historic stock levels of 84 - 95% of the spawning stock biomass;

The current assessment (Little and Rowling 2011) indicates the stock biomass is at 84% depletion. There is no estimate of current biomass being at 95% depletion in the most recent assessment. All of the sensitivity tests in the current assessment indicate less depletion.

b. Low potential for recruitment from the western population to replace the eastern population;

The potential that there is even some recruitment from the western population reduces the risk of extirpation.

c. Little progress in stock rebuilding despite 20 years of restrictive fisheries management;

The FSC acknowledges that "current management strategies for rebuilding include the zero-targeted and low bycatch TACs, trip limits for NSW fishermen, escape panels and increased cod-end mesh sizes, closures in the gulper shark fishery to protect Eastern Gemfish during the pre-spawning winter run, research into bycatch reduction in the Royal Red Prawn fishery, and monitoring of discards using onboard observers. However, these measures have not been successful in rebuilding the stock".

Because of restrictive management intervention has seen the recovery of the stock from a low of about 5% SSB during the early 2000s to about 16% by 2010.

d. The possibility of much higher harvest levels than are currently reported due to unknown catches in the recreational fisheries and discarding in both commercial and recreational fisheries;

Landings by the recreational fishery are unknown but thought to be below 10t (Rowling et al. 2010). Discarding in the recreational fishery could exist due to the strict bag and trip limits but nobody considers this would be substantial. Rowling et al. (2010) suggests that landings of Eastern Gemfish by the charter boat fishery are likely to be 'significant', but in the last determination for Eastern Gemfish (FSC 2008) the FSC stated "Records of retained catch of eastern gemfish from the NSW recreational Charter Boat Fishery from 2000/01 to 2004/05 for all recorded charter fishing activities (nearshore, deepsea and gamefishing) show an increasing catch from 186 (~0.6t) fish to 792 (~2.5t) fish per year". Although there may be higher harvest levels in more recent years these figures cannot be considered to be substantial. None of the experts in Eastern Gemfish considered that these catch levels could be a key threat to the recovery of the stocks.

e. The possibility that the current stock assessment models overestimate the stock due to hyperstability in the indices;

Yes, but there is also a number of reasons that the stock assessment may underestimate the stock as discussed above.

f. The inability of fishermen to successfully avoid catching Gemfish as bycatch in directed fisheries;

We strongly disagree with this ill-informed opinion. Fishermen still fish off the NSW coast throughout the period of the winter spawning run targeting a range of other species but catch minimal eastern gemfish. Commercial fishermen have reduced targeting to an extent where they now catch <10t of eastern gemfish that could be construed as targeted (Klaer 2013, Figure 5). This does show that targetted catch in the east is very low and very consistent for each of the 2010, 2011 and 2012 calendar years. What might truly be called targetted catch (from more heavily fished area/time/depth cells that are sampled with more than 5 shots) is consistently less than 10t - probably at the limit of any reasonable categorisation using this method. Figure 5 also demonstrates that most of the eastern gemfish catch overall comes from heavily fished cells, the amount targetted off NSW has decreased in each year, but there may have been an increase in the targetted catch off Eastern Bass Strait and Tasmania in 2012. However, again, the tonnes of targetted eastern gemfish catch is very low in any year.

g. Continued poor recruitment, such that 'strong' year classes are now only a fraction of historic average recruitment levels;

Recruitment residuals in recent ten years have been generally above or close to the average over the long term.

h. The stock-recruitment relationship indicating that the population will likely continue to experience low recruitment unless stock size is above a level of about 5000t SSB (4-5 times higher than current levels);

i. High mortality of immature fish;

Mortality of juvenile fish is factored into the most recent assessment that indicates stocks are rebuilding slowly.

j. The possibility of a 'regime shift', a change in environmental conditions that prevents the stock from rebuilding;
k. The lack of 'buffering' in the population due to small stock sizes and poor recruitment, such that a recruitment failure of even one year could have large impacts on the population;

There has not been one year where there has been recruitment failure in this fishery – even when stocks were estimated to be at their lowest point (5%SSB).

l. The small but present risk of extinction shown by the Atlantis projection model over the next 30 years; and

How can the FSC hinge its determination of Vulnerable on their being a high risk of extinction in the medium term future when it recognizes in the statement above that it is only a "small but present risk"?

m. Under the above conditions, while the current management strategies may prevent further significant depletion of the stock, the stock may still decline to extinction due to low stock sizes or environmental conditions that prevent rebuilding or recovery.

There is simply no evidence that the stock will decline to extinction in the medium term future. All of the evidence available from Atlantis suggests that the stock will increase in the medium term future and there are only one or two scenarios that present as a risk of extirpation by 2042. The most plausible parameterisations certainly did not see extirpation by 2042.

## Criteria – threatening processes (Regulation clause 272)

The FSC has cited that current threatening processes affecting the species are non-targeted commercial and recreational fishing in eastern Australian waters, and predicted changes in climate.

There are currently management controls in place at the Commonwealth and State level that limit the catch by commercial and recreational fishing. We disagree with the FSC that management intervention since 1988 has not resulted in significant recovery of the species. Management intervention has seen the recovery of the stock from a low of about 5% SSB during the early 2000s to about 16% by 2010. Further, the projections from this assessment indicate that the stock will continue to increase at a slow rate at least until the mid 2020s. Again, recognizing there are uncertainties about these assessments and projections, this is the best available science we have on Eastern Gemfish.

The FSC states that threatening processes continue to operate within the geographic distribution of the species and existing management measures do not protect the species.

We argue that the only direct process impacting Eastern Gemfish stocks is the bycatch and low level of targeting by commercial and recreational fishermen. Although the actual amount is not exactly known, it is largely controlled by the current recreational and commercial harvest strategies and rebuilding plans. We have not seen any evidence that this direct impact in terms of catches, is a process that can be threatening the stocks with extinction. In fact, we have seen that the current management arrangements have completely arrest the decline in gemfish stock and have enabled them to rebuild from 5% SSB to 16% SSB over the last decade. The future impacts of climate change appear to the one major threatening process potentially affecting eastern gemfish in the medium to long-term future. The Atlantis modeling supports this.

The future effect of climate change is a major threatening process for nearly all of the marine ecosystems along the east coast of Australia. Investigation of climate impacts on south-east demersal fisheries suggest this is an area where clear impact from climate change will occur. (Hobday et al. 2008) The southeast area is also the region where climate models indicate rapid warming (Tasman Sea warming), and considerable social disruption would occur if key fisheries were affected. Under such a scenario, just focussing on a single species where there is no evidence for immediate, short-term or medium-term extinction is a waste of resources and time.

Were it to be successful, the nomination of Eastern Gemfish as Vulnerable would likely only introduce a number of ineffective and practically unfeasible additional controls on commercial and recreational fishing that would ultimately make very little difference to the total mortality. This is the lesser of the processes that will impact on the future stocks of eastern gemfish when compared to climate change and warming waters around south east Australia.

## Conclusion pursuant to section 220F(4) of the Act

In our opinion there is a significant amount of evidence to suggest that Gemfish is not facing a high risk of extinction in New South Wales in the medium-term future, as determined in accordance with the criteria prescribed by the Regulation as discussed above.

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# Appendix F

## Stock exploitation categories

| Category | Characteristic |
|---|---|
| **Overfished** | • Recruitment is being significantly suppressed as a result of a small spawning biomass (as determined by a population model or measured stock-recruitment relationship).<br>• Fishing mortality rates are significantly greater than natural mortality rates.<br>• Estimates of spawning biomass are less than 20–30% of the estimated unfished spawning stock.<br>• The 'Spawning Potential Ratio' is less than 20–40% (depending on life history characteristics).<br>• Catch rates are less than 30% of the initial catch rates.<br>• Length and age distributions unstable (excessively affected by recruitment, too few age or size classes in the exploitable population given a species' life history).<br>• Trends in length/age compositions are evident which indicate increasing (and/or excessive) fishing mortality. |
| **Growth overfished** | • Yield per recruit would increase if length at first capture was increased or fishing mortality decreased.<br>• A population model has determined that sustainable yield would increase if fishing mortality was decreased or size at first capture were increased. |
| **Fully fished** | • Fishing mortality is approximately the same as Natural mortality.<br>• Estimates of the spawning biomass are greater than 30% of the estimated unfished spawning biomass.<br>• Catch rates have been steady for 5–10 years and/or catch rates are greater than 30% of initial catch rates.<br>• Length and age distributions are stable.<br>• Species are fished throughout their entire geographic range. |
| **Moderately fished** | • Fishing mortality is less than half of natural mortality.<br>• Estimates of the biomass are greater than 70% of the estimated unfished biomass.<br>• Catch rates are greater than 70% of initial catch rates.<br>• Species are fished in most of their geographic range but non-fishing areas are known to exist.<br>• Markets may limit catch and effort. |
| **Uncertain** | • A significant amount of evidence has been collected and considered, but there are inconsistent or contradictory signals in the data that preclude determination of exploitation status. |
| **Undefined** | • Commercial catch data are available but no reasonable attempt has been made to determine exploitation status.<br>• Recreational species – some data are available but no reasonable attempt has been made to determine exploitation status. |

[1] Further details on the NSW resource assessment framework can be found in Scandol 2004 at www.dpi.nsw.gov.au/research/areas/fisheries-and-ecosystems/wild-fisheries/outputs/2004/382

| Species | Stock Status | | | | | |
|---|---|---|---|---|---|---|
| | 2009–10 | | 2010–11 | | 2011–12 | |
| | RAC | Exploitation Status | RAC | Exploitation Status | RAC | Exploitation Status |
| Dogfish (*Squaliformes*) | Five | Undefined | Five | Undefined | Five | Overfished |
| Dusky Flathead (*Platycephalus fuscus*) | Three | Fully Fished | Three | Fully Fished | Three | Fully Fished |
| Eastern Australian Salmon (*Arripis trutta*) | Two | Fully Fished | Two | Fully Fished | Three | Fully Fished |
| Eastern Blue Groper (*Achoerodus viridis*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Eastern King Prawn (*Melicertus plebejus*) | Two | Growth Overfished | Two | Growth Overfished | One | Growth Overfished |
| Eastern Pigfish (*Bodianus unimaculatus*) | Three | Fully Fished | Three | Fully Fished | Three | Fully Fished |
| Eastern Red Scorpionfish (*Scorpaena cardinalis*) | Two | Fully Fished | Two | Fully Fished | Two | Fully Fished |
| Eastern Rock Lobster (*Jasus verreauxi*) | One | Fully Fished | One | Fully Fished | One | Fully Fished |
| Eastern School Whiting (*Sillago flindersi*) | One | Fully Fished | One | Fully Fished | One | Fully Fished |
| Eastern Sea Garfish (*Hyporhamphus australis*) | Two | Overfished | Two | Overfished | Two | Overfished |
| Estuary Perch (*Macquaria colonorum*) | Three | Undefined | Three | Undefined | Three | Undefined |
| Flounders (*Paralichthyidae* and *Pleuronectidae*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Frigate Mackerel (*Auxis thazard*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Gemfish (*Rexea solandri*) | One | Overfished | One | Overfished | One | Overfished |
| Ghost Nipper (*Trypaea australiensis*) | Three | Moderately Fished | Three | Moderately Fished | Four | Undefined |
| Ghostsharks (*Chimaeriformes*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Giant Mud Crab (*Scylla serrata*) | Three | Undefined | Three | Undefined | Three | Uncertain |
| Goatfish (*Mullidae*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Goldspot Mullet (*Liza argentea*) | Three | Moderately Fished | Three | Moderately Fished | Three | Uncertain |
| Greentail Prawn (*Metapenaeus bennettae*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Grey Morwong (*Nemadactylus douglasii*) | Two | Overfished | Two | Overfished | Two | Overfished |
| Gummy Shark (*Mustelus antarcticus*) | One | Fully Fished | One | Fully Fished | One | Fully Fished |
| Hairtail (*Trichiurus lepturus*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Hammerhead Sharks (*Sphyrna* spp.) | Five | Undefined | Five | Undefined | Five | Undefined |
| Hapuku (*Polyprion oxygeneios*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Jackass Morwong (*Nemadactylus macropterus*) | One | Overfished | One | Overfished | One | Fully Fished |
| John Dory (*Zeus faber*) | Three | Fully Fished | Three | Fully Fished | Three | Fully Fished |
| Leatherjackets – other (Monacanthidae) | Four | Fully Fished | Four | Fully Fished | Five | Undefined |
| Longtail Tuna (*Thunnus tonggol*) | Four | Undefined | Four | Undefined | Four | Undefined |
| Luderick (*Girella tricuspidata*) | Three | Fully Fished | Three | Fully Fished | Three | Fully Fished |

## Referenced Documents

**Status of fisheries resources in NSW 2011–12** Summary Status of Fisheries - April 2014

http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/516752/status-of-fisheries-resources-nsw-2011-12.pdf

**Developing a cost effective state wide expenditure survey method to measure the economic contribution of the recreational fishing sector in NSW.**

http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/499302/UOW-statewide-economic-survey-final-report.pdf

**This inquiry is a completed Legislative Council inquiry conducted by the Recreational Fishing Committee. This Inquiry was established on 24 November 2009 to inquire into and report on the benefits and opportunities that improved recreational fisheries may represent for fishing licence holders in New South Wales.**

http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/ca6bab0c1fc14e7eca2577f5000239ad/$FILE/101210%20FINAL%20COMPILE.pdf

**The Fisheries Management Act 1994 (extract)**
**3 Objects of Act**

(1) The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations.

(2) In particular, the objects of this Act include:

(a) to conserve fish stocks and key fish habitats, and

(b) to conserve threatened species, populations and ecological communities of fish and marine vegetation, and

(c) to promote ecologically sustainable development, including the conservation of biological diversity,

and, consistently with those objects:

(d) to promote viable commercial fishing and aquaculture industries, and

(e) to promote quality recreational fishing opportunities, and

(f) to appropriately share fisheries resources between the users of those resources, and

(g) to provide social and economic benefits for the wider community of New South Wales, and

(h) to recognise the spiritual, social and customary significance to Aboriginal persons of fisheries resources and to protect, and promote the continuation of, Aboriginal cultural fishing.

At common law, the public has a right to fish in the sea, the arms of the sea and in the tidal reaches of all rivers and estuaries. The public has no common law right to fish in non-tidal waters--the right to fish in those waters belongs to the owner of the soil under those waters. However, the public may fish in non-tidal waters if the soil under those waters is Crown land. In the case of non-tidal waters in rivers and creeks, section 38 declares that the public has a right to fish despite the private ownership of the bed of the river or creek. However, the right to fish in tidal or non-tidal waters is subject to any restriction imposed by this Act.

http://www.austlii.edu.au/au/legis/nsw/consol_act/fma1994193/