



WWF-New Zealand

PO Box 6237
Marion Square
Wellington 6141
New Zealand

P: 0800 4357 993

P: +64 (0)4 499 2930

F: +64 (0)4 499 2954

info@wwf.org.nz

wwf.org.nz

Robert J. Trumble, Ph.D.
Vice President-Fisheries
MRAG Americas, Inc.
10051 5th St. N, Suite 105
St. Petersburg FL 33702

**WWF Global Fisheries Programme
Smart Fishing Initiative (SFI)**

Moenckebergstraße 27
20095 Hamburg
Germany

p: +49 40 530200-310

Fax: +49 40 530200-313

annika.mackensen@wwf.de

www.panda.org/smartfishing

Via email: bob.trumble@mragamericas.com

8. June 2015

Orange roughly assessment: additional information June 2015

Dear Dr Trumble,

WWF welcomes the opportunity to provide feedback on the additional information that was provided after our earlier stakeholder submission, dated July 30th, 2014.

Principle 1 Comments

WWF offers the following for consideration by the assessment team when assessing the fishery against P1:

- An implicit assumption in the stock analysis is that spawning biomass at age is proportional to the number of eggs spawned by fish at that age. This is a standard initial assumption in many assessments. However, if fecundity changes disproportionately as the fish ages, the contributions to recruitment may be altered. This may be especially important for OR where older ages and their spawning contributions may be significantly affecting recovery, depletion, etc. We suggest that fecundity ogives be developed to determine whether the initial assumption regarding spawning biomass and eggs spawned holds true for slow-growing, long-lived orange roughly, as this could have a large impact on the population productivity parameters.
- Another life history consideration is natural mortality and how it is distributed across ages. In the assessment and in the management strategy evaluation, M was assumed to be constant for all ages. The model is assuming that somewhere between spawning and

WWF-New Zealand is part of the international conservation organisation World Wide Fund for Nature (WWF).



recruitment (one year) the natural mortality reduces from a high rate implied by the stock recruitment relationship to an M at age one of 0.04. Alternative M -at-age schedules likely would not impact the general dynamics over time for the stock, but could change the rate of trend and the perceptions of B_0 . We would generally expect B_{msy}/B_0 to be higher than 25% for a slow-growing, long-lived species and wonder if this might have to do with the selectivity curves mentioned above.

- In an analysis done for WWF of B_{msy}/B_0 it was found that the yield at B_{msy}/B_0 is very similar to that at a rather wide range of values of B/B_0 (from 10 to 40%). Thus, foregone yield is relatively small within this range of risk. Therefore, accepting B_{40} (or higher) would minimize risk without sacrificing yield. We believe that the value used for management should be at least 40% under the precautionary principle.
- As with all Bayesian analyses, the structure of the priors can be important. In this case the difference between the prior and posterior for M and for the catchability quotients (q 's) is relatively large. This suggests that these priors have influence on the analysis. In these cases, the priors were defined by a modal distribution over a relatively restricted range of the variable (M or q 's). We would argue for more uniform distributions for these priors.
- The survey data are weak: some surveys are not conducted annually, many only index a portion of each stock, and size data are spotty, sometimes pooled over several years. These affect the estimates of q . This again accentuates the importance of the priors on those q 's, which we believe should be developed further.
- We note that several of our earlier concerns presented to the assessment team were addressed to some extent in the MSE document (Cordue, P.L. 2014. A management strategy evaluation for orange roughy. ISL Client Report for Deepwater Group Ltd., 42 p) and its development of harvest control rules (HCRs). A remaining issue, however, is the selection of reference points. The current management scheme seems to have arisen from a generic management approach and not specifically for orange roughy. As far as limit reference points, there can be no "limit" without a consequence of exceeding that limit (hence the difference between hard and soft limits). Therefore, one can argue that a more appropriate limit for orange roughy is 25% since B_{msy}/B_0 is about 25%. Such an action implies B_{msy} is a limit and is consistent with international agreements.
- In the original management scheme the aforementioned consequences were not very well evaluated. To some extent the MSE report addressed this by evaluating probabilities of exceeding various B/B_0 s. Nevertheless, as the MSE document points out, the consequences of unforeseen reductions in B/B_0 can have ramifications for many years. The MSE report used the current limit/target reference points, depletions below them, and recovery to them as indicators in defining the HCR. But because they arose from the original management scheme, then arguably these should be modified to reflect alternate schemes.
- It is unclear to WWF whether the HCR has been implemented and is deserving of a score of 80. Since the assessment indicates that the orange roughy stock was depleted, then there



should have been a recovery plan implemented to recover to the target. The more ad hoc recovery has been marginally successful in that the target 40% is just now being reached. One might argue that median recovery is now 40%, which means that there is a 50-50 chance that recovery has occurred. This supports the need for formally implementing the HCR, and suggests that scoring of the harvest strategy or HCR at 80 or above is problematic.

Principle 2 Comments

WWF offers the following for consideration by the assessment team when assessing the fishery against P2:

Bycatch

- In our original stakeholder submission for the OR fishery WWF raised the issue of whether key information is available to determine whether a number of less resilient bycatch species are likely to be within their biologically based limits (PI 2.2.1, scoring issue a). In particular we listed the following species as examples of species with low reproductive capacity and “high to very high vulnerability” and “low” resilience (e.g. shovelnose spiny dogfish, *Deania calcea*; pale ghost shark, *Hydrolagus bemisi*; dark ghost shark, *Hydrolagus novaezealandiae*; smooth skate, *Dipturus innominatus*). The additional data analysis provided by the Ministry for Primary Industries (MPI) indicates that Baxter’s lantern dogfish (*Etmopterus baxteri*) and the Deepwater dogfish group also warrant consideration as main species due to their “low” resilience and “high to very high vulnerability.” The observed catch of these species met the MPI criteria of more than 1% of total catch averaged over the years with adequate data. WWF strongly recommends that, under a precautionary approach, less resilient species such as these should be considered as main bycatch species due to their particular vulnerability (GCB 3.8.2) and the fact that these species and groups are data deficient and not actively managed under the Quota Management System (QMS).
- The additional data analysis provided by the MPI for Baxter’s lantern dogfish in the East and South Chatham Rise UoC may provide additional insight into the potential risk to highly vulnerable species from even low levels of bycatch. When the annual observed catch is scaled up to total estimated catch for the fishery, the average annual catch for this UoC is estimated at 88.4 tons with an estimated catch over five years of 441.8 tons. This may present a high level of risk for a high vulnerability species for which there is inadequate information on its status in regards to biological limits. The MPI analysis estimates that the scaled up catch of Baxter’s lantern dogfish in the East and South Chatham Rise UoC amounts to 51.6% of the total catch for the species in the UoC and 24.5% of the catch in the New Zealand EEZ. This analysis indicates that even the low catch levels observed in the OR fishery represent a substantial portion of the overall catch for this species. WWF remains concerned that the management strategy for species exhibiting similar life history characteristics (such as low productivity and high susceptibility to fishing mortality) does not meet the MSC requirements for 1) a ‘partial strategy’ sufficient to maintain these



species within biologically based limits and not hinder recovery (PI 2.2.2 scoring issue a) and 2) evidence that the strategy is being implemented successfully (scoring issue c).

Habitat

- WWF acknowledges the effort the Deepwater Group has undertaken to provide a better picture of the overall trawl footprint and fishing impacts on UTFs. However, as pointed out previously, our interest is more related to the different habitat types potentially covering the UTFs. The more important metric is the proportional area of each habitat type that has been and is swept by trawls. We are looking forward to understanding how the assessment team scores the different habitats affected (e.g. a supposed overlap between ORH3B NWCR UoA area and *Antipatharia* corals according to Baird et al 2015). As you know, the protection of habitats is a topic of crucial importance for us and we will thus also be trying to gain a good understanding of the fishing operations of the Deepwater Group on the unit of assessment. We will do so with the help of the available satellite data and are of course willing to share our findings with the assessment team pending the signature of a non-disclosure agreement.

Best regards,

Peter Hardstaff
Head of Campaigns
WWF-New Zealand

Dr Annika Mackensen
Fisheries Certification and Livelihoods Manager
WWF Smart Fishing Initiative