

BLACK SEA 4 FISH

PRESENTATION SERIES 4

"Biological Reference Points"

by

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Questions and answers session

1. Cemal Turan, Iskenderun Technical University, Turkey

“(1) May I learn where the Black Sea turbot data is from, (2) and I am asking your opinion that the Black Sea turbot productivity change over time with uncertainty, would it be indicting the existence of different species which is fished differentially each year, or existence of genetically different or unique stocks which are ignored”

Niels: Regarding the first question, I have been part of the turbot benchmark meeting and these were the data that the group has been used for this exercise. About the second question, unfortunately I am not going to be able to answer this question, since I am not the Black Sea expert, nor am I a turbot expert. I think this is a question the local experts should be discussed.

Cemal Turan: For the stock estimation, usually we assumed that there is no migration between stocks, because if there were such a migration this would affect the uncertainty of the data.

Niels: Definitely! In the moment that you make sure of populations that are genetically different, and they are exploited in a mixed sense, this would be a problem for the stock assessment and hence it would be a problem for the estimation of the reference points as well. It may not be too problematic if you got two similar species with similar life history, characteristics and reasonably similar productivity regime. Even, there are small genetic differences between the stocks, but if you catch them all in the same fishery, and they look the same, and behave the same, you should treat them for fishery management the same. There should not be a massive problem.

Nazli Demirel: BS4F coordinator

The turbot unit stock is very important topic for the BS4F project.

Betulla Morello: GFCM Secretariat

Just a short clarification on how the process of the assessment has been going on. The Black Sea turbot unit stock is a big question and is raised repeatedly during the working process of the Black Sea assessment activities. For now, until there is a hard evidence of different turbot populations, the working group and the assessment group of the Black Sea have agreed to assess the turbot as one single stock. This is the reason why there is one assessment of the turbot stock for the entire Black Sea. The data for this assessment are official data provided by each country to the GFCM. In the assessment, the whole of the Black Sea turbot population is assessed together.

Cemal Turan: This was my point and, answer to my question.

2. Mikhail Piatinskii, AzNIIRKH", Kerch Branch, Russian Federation

"Can you shortly explain how did you estimate "Risk probability" performing MSE scenarios by Btrigger/Btarget?"

Niels: What is often done is that the managers indicate the kind of the risk – that would be the risk your spawning stock biomass to drop below your biomass limit reference point (let say B_{lim} falls). So usually, we try to stay away from your B_{lim} . You try to be with 95% certainty above your B_{lim} . That is the risk probability. At the end, while running my MSE, I can for each scenario to run a thousand iterations and to calculate in how many cases of those thousands of iterations does my biomass drops below B_{lim} . If it drops more than 50 times over the 100 B_{lim} , my risk is too high for that scenario to be accepted by managers. I need to find scenario that must drop only 49 times out of a thousand at max, below my limit reference point.

4. Yevhen Leonchuk, Ukraine, Odesa YugNIRO

"Is there an R-library to figure out reference points of SPR (spawning potential ratio)?"

Niels: Yes, there are! I will look up for that reference in our library and will share with you.

5. Ali Gucu, Middle East Technical University, Çankaya (METU), Turkey

"I have not exactly a question but need of recommendation from your side, concerning small pelagic fish (as anchovy) in the Black Sea. These species are very short lived – max 3-4 years, and are exploited from the age of 1 year. They have very high fecundity. For such a small fish they can spawn up to 2000 000 eggs per female per season. The Black Sea is productive enough to sustain them. Obviously, because of this high productivity, we believe that the recruitment is controlled by the environment rather than SSB. Therefore, I believe that we never get no good stock recruitment relation for these species. When we have tried to have one we always see circles or spirals or string like projections. The reason is, to my opinion, the recruitment is oscillating. There is very clear pattern of oscillation with a frequency of 5 to 8 years. I managed to get good correlation between these oscillations and some climate indices as NAO. The question is: Is it worth to try to remove these climate effects from the equation and then try to fit a model of classical kind. I can guess you can answer but probably you would say if the data are noisy you would add some uncertainty to you data, but I would like to hear your recommendations. What we should do if we believe that the recruitment is more controlled by the environment and is more climate driven?"

Niels: It is an interesting situation! There are few publications on this topic where climate or temperature were used as a management trigger, in anchovy/sardine fishery in Portugal and some other cases in the west of the US. The problems are the predictive power is low when you try to find a good correlation between reproduction and some climatic driver. I am aware of example that strong winters are good species, because the metabolism is a bit lower and they got a little bit longer time to



wait for the right plankton to arrive. In addition, there are biological reasons for that, but the predictive power of those relationships are usually small. So, before you standardizing these things could be done: to incorporate climatic dynamics in you stock recruitment relationships - it is just a statistical model so you could just include it as next covariance and fit to get a climate information and recruitment information and hopefully get a dissent fit out of that. Then the question is will this hold in the near future? I think you need to do substantial high casting predictive modeling. What if you fit time series for 20 years, and try to predict what would be recruitment in the years to come. Did you model get it right? If, your model gets it right over and over, you may have something in hands that is pretty unique, and you can used it for a couple of years to come. Therefore, yes you can use it! I would suggest not standardizing your time series but using it as an extra covariate in your model and getting grip of the predictive power of your model working from the existing data rather than hoping for the best in future.