

**Statement of Peru and Russia Delegations
regarding the Operating Models (OMs) of the Jack Mackerel Management Strategy
Evaluation (MSE) and the consideration of the various stock structure hypotheses**

To the Scientific Committee, from Peru and Russia delegations:

- We are strongly committed to the development of the Management Strategy Evaluation (MSE) of the Jack mackerel, as envisaged since the first Scientific Committee meetings. Although the specifications of the Operating Models (OMs) are still under development, it has been clear since the 11th Science Working Group (Lima, Perú, 2012) that, pending a clear definition of what is the Jack mackerel stock structure, the SPRFMO assessments were to be made on the basis of the two main stock structure hypothesis, i.e., of 1-stock in the whole distribution range in the SE Pacific, and of 2-stocks, with a northern and a southern stock in the same distribution range. Therefore, as a minimum, the MSE should consider these two hypotheses. And, furthermore, given the more recent developments and proposals, it is our belief that other hypotheses, such as the one of a metapopulation could and should also be considered as part of the MSE exercise. Noting that during the various MSE technical meetings, the JM WG has been open and never restricted the possible inclusion of more OMs or alternative specifications to be considered. Stressing, however, that any further suggestions could be discussed and included, but must be based on solid scientific information (e.g.: as discussed and agreed in the Scientific Committee or peer-reviewed research articles).
- It is generally accepted that sound fisheries management requires the development of robust assessment models based on the best scientific evidence and information available, which should include a clear definition and sound knowledge of the population structure of the stock or stocks in question. The main uncertainties regarding the population structure of Jack mackerel (i.e., the 1-stock and 2-stock hypotheses) have been incorporated since the initial planning and development of MSE. And, in addition, the JM WG has already considered the development of an OM considering the metapopulation hypothesis.
- We also support the JM and SC chairs request made during the second MSE technical workshop ([G93-2023](#)) to consider the structural uncertainty (i.e., stock structure) in the OMs. Noting that on that occasion the invited expert, Dr. Iago Mosqueira, confirmed that up to three structurally different OMs are already being considered for future projections (i.e., regarding the 1-stock, 2-stocks, and metapopulation hypotheses).
- We share the view that the identification of the population genetic structure, connectivity, admixture, and the delimitation of geographical boundaries of divergent groups of Jack mackerel, are important goals to pursue for an effective management of the species ([SC9-](#)

[JM08](#)). Also agree that discussions related to the Jack mackerel connectivity be addressed in the Connectivity Task Group, which has developed and submitted a proposal for the holistic and multidisciplinary study “Characterization of the population variability of jack mackerel *Trachurus murphyi* on a spatio-temporal scale, in order to determine the existence of stocks or population units and their level of connectivity” ([SC11-JM02](#)).

- With regards to the bullet five of the Chile Declaration being derived from paper [SC11-JM14](#) of the genetic studies, in the sense that “..recent genetic evidence indicates a highly connected jack mackerel population throughout the South Pacific Region”, we acknowledge that genetic technologies are recognized for their usefulness in multidisciplinary studies of population structure, but we also stress that the great importance of the sampling design for its correct interpretation is also widely recognized. In this sense, we express our great concern regarding the sampling design, the population statistical results interpretation, and the conclusions presented in the above mentioned document, and we challenge their estimates of migration rates, among other estimations.
- Although, there are several other aspects that need to be more critically examined, our main specific concerns regarding the above mentioned document are: (1) the comparison between groups was made wrongly considering a mixture of samples collected in different years, i.e., in 2007 in some Peruvian locations combined with others collected in Chile during 2022, without taking into account that several different generations have passed through during those 15 years, whose population dynamics and genetic variability could also have been affected by environmental changes; (2) the strange and unexplained finding that some estimated migration rates between Peru and New Zealand were higher than between Peru and Chile; (3) the authors overlooked and have not considered the significant F_{st} values reported between groups from different longitudinal distribution areas, which could be a parameter related to the existence of a population differentiation along its longitudinal distribution, suggestive of results opposite to that of a single stock claimed and intended in the Chilean statement; (4) their estimated migratory rates are contradictory and changing depending on the sampling years. Indeed, the reported migration rates based on samples collected during 2007 were much higher than those reported for 2010 (i.e., migration rate of 1 between the north of Peru and New Zealand and of 0.7-0.8 between Peru and Chile was reported during 2007, while a lower rate of 0.3 between Peru and New Zealand and of 0.15-0.37 between Peru and Chile was reported for 2010). Although this possibility is ignored in the paper, we note that this might be an indication of a possible metapopulation structure; (5) conclusion 6 of the [SC11-JM14](#) clearly indicates that “the results obtained suggest that Chilean jack mackerel shows population structure and adaptation despite considerable gene flow in the South Pacific Ocean...”, which partly contradicts the observation on which the 5th bullet of the statement presented by the Chilean delegation is based.

- Furthermore, we firmly confirm our commitment with the objectives and relevant work of the SC, and of the SPRFMO as a whole, and wish to commend the objectivity and seriousness with which the scientific work of this Committee has been conducted.