8TH MEETING OF THE SPRFMO COMMISSION
Port Vila, Vanuatu, 14 to 18 February 2020

COMM 8 – Prop 02.1
Explanatory Note for Proposal 02
Vanuatu

Background

The TAC for jack mackerel set annually by the Commission is the maximum catch that should be taken from the stock throughout its range, including in waters outside the Convention Area under national jurisdiction. The TAC is implemented through the use of quota allocations to members participating in the fishery in the Convention Area. The sum of these quotas is less than the TAC. The difference, or unallocated quota, is an amount that is set aside to cover catches that may be taken in the EEZs of Peru and Ecuador.

In 2019, the TAC was breached for the first time as a result of Peruvian catches inside its EEZ, which were substantially in excess of the unallocated quota. This is a serious matter that undermines the ability of the Commission to effectively manage the jack mackerel stock.

As pointed out by the Review Panel hearing the Ecuadorian objection in 2018, this CMM uses the term "should be taken" in relation to the TAC in recognition of the sovereign rights of coastal states that have not given their consent pursuant to articles 20(4)(a)(ii)-(iii) and 21(2) of the Convention. In a similar vein, the Review Panel pointed out that "nothing precludes Ecuador from increasing its catch of *Trachurus murphyi* in areas under national jurisdiction, subject to its obligation to cooperate to ensure compatibility of measures established for the high seas and those adopted for areas under national jurisdiction." Clearly, this applies to Peru also.

While acknowledging Peru's and Ecuador's sovereignty over catches of jack mackerel within their respective EEZs, there is a need for SPRFMO to engage with these coastal states to gain agreement on how in-zone catches of jack mackerel will be managed to avoid exceeding the fishery-wide TAC. The purpose of this paper is to outline a potential means of at least partly achieving this aim.

Basic data

The unallocated portion of the TAC is currently 59,934t, changing in a pro-rata manner with the TAC. Changes in the TAC, the allocated quota in the Convention Area, the unallocated quota and catches since the formation of the Commission are shown in Table 1.

It can be seen from Table 1 that the combined catch of Peru and Ecuador has varied considerably from less than 9,000t in 2017 to 140,000t in 2019. Similar large fluctuations in catch are seen in a longer time series of data starting in 1970, which is shown in Figure 1.

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Table 1: TACs, Allocated Quotas, Unallocated Quotas and Catches since 2013

(data in red font indicate instances where the catch in areas of national jurisdiction has exceeded the unallocated quota)

Year	TAC	Convention Area		Unallocated		Aggregate
		Quota	Catch	Quota	Catch	Total Catch
2013	438,000	360,000	272,535	78,000	80,585	353,120
2014	440,000	390,000	336,166	50,000	74,537	410,703
2015	460,000	410,000	371,885	50,000	22,447	394,332
2016	460,000	410,000	373,980	50,000	15,087	389,067
2017	493,000	443,000	395,978	50,000	8,921	404,845
2018	576,000	517,582	469,160	58,418	57,163	526,323
2019[a]	591,000	531,061	497,811	59,939	140,000	637,811

a: Provisional 2019 data used by the Scientific Committee
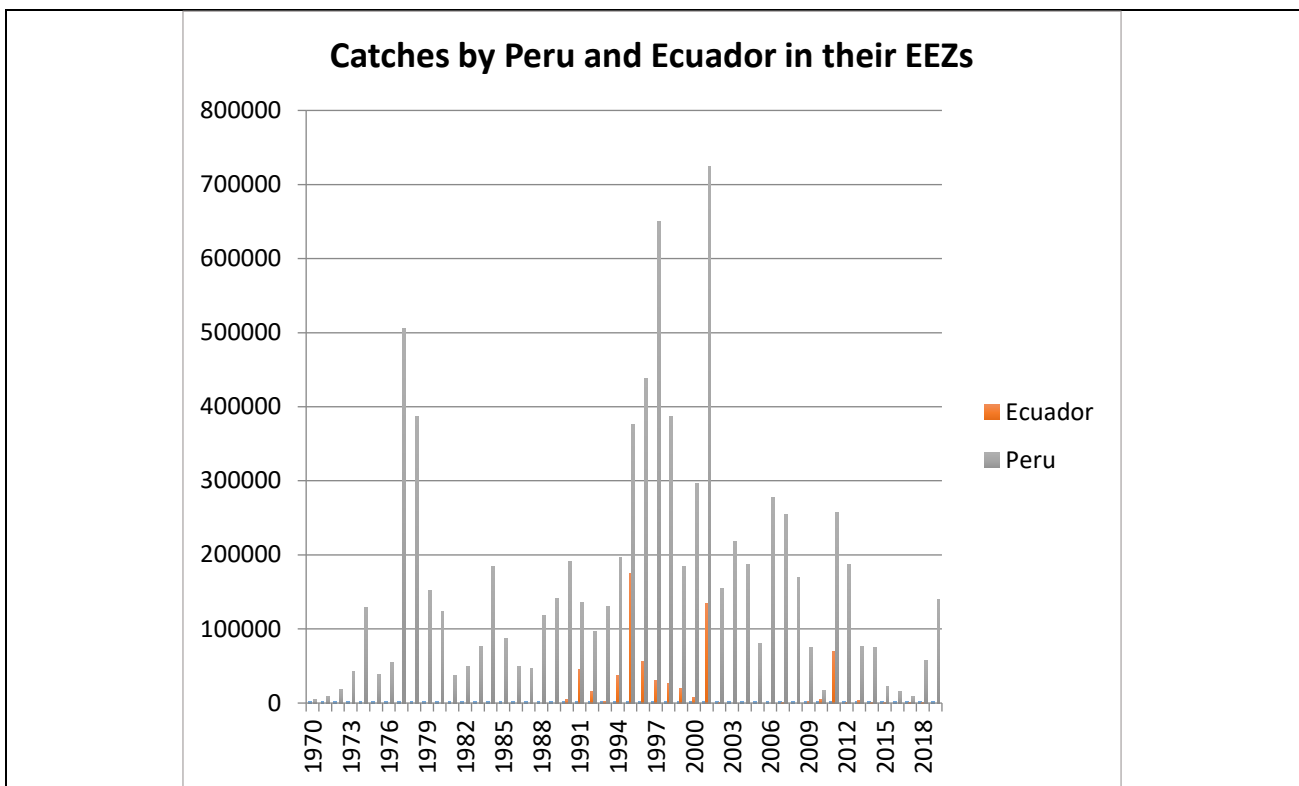
Figure 1

Figure 1 shows a familiar pattern of catches increasing in the 1990s, as occurred in the Convention Area, before declining since the early 2000s with large inter-annual fluctuations.

This pattern is also evident if simple arithmetic averages are calculated for each decade since 1990 as shown below in Table 2, although the Peruvian average catch for 2000-2009 is strongly influenced by a single very large catch in 2001. It can be seen that since the formation of the Commission the average combined catch of Peru and Ecuador of 56,955t per has been remarkably close to the amount of the unallocated TAC. The total combined catch of Peru and Ecuador over this period was 398,685t compared to the total of the

unallocated quotas over the same period of 396,357t.

Table 2: Average catches by Peru and Ecuador in their EEZs

Average Catch	Peru	Ecuador	Combined
1990-1999	278,830	41,018	319,848
2000-2009	243,652	14,456	258,108
2010-2019	85,684	7,800	93,484
2013-2019	56,392	563	56,955

The close correlation over the last 7 years between aggregate catches by Peru and Ecuador in their EEZs and the total of the unallocated quota ignores the fact that the most recent large catch by Peru resulted in the TAC being significantly exceeded, an event that called into question the ability of the Commission to effectively manage the jack mackerel stock.

However, these catch data also suggest a potential mechanism that could lessen the impact of the large fluctuations in annual catches by Peru and Ecuador.

A Potential Mechanism

The concept of quota carry-forward is widely known and applied in many countries that use individual quota systems to manage fisheries. It allows quota holders who under-catch their quota in a season to carry-forward some of that quota to be caught in the following season and, conversely, it may allow quota holders who catch a little more than their quota to deduct the over-catch from their quota in the following season. This gives fishers a degree of flexibility to cope with changes in fishing conditions, breakdowns, changes in market prices, etc.

In the SPRFMO context, quota under-catch could be applied to the use of the unallocated quota. In this circumstance, the rate of carry-forward of under-catch would be 100%. That is, all of the under-catch would be carried forward and added to the unallocated quota in the following year.

Because jack mackerel catches by Peru and Ecuador in their respective EEZs vary considerably from year to year, the effect of the quota carry-forward would be to allow quota to accumulate during years of poor catches to be subsequently drawn down at the time when fishing conditions improve and larger catches are taken. However, there should be a limit on the extent to which the unallocated quota is allowed to accumulate over time. It is proposed that the limit of unallocated quota accumulation should be 20% of the overall TAC. This would be consistent with many other fisheries that allow a carry-over of 20% of the TAC based on scientific advice that this level of carry-over would have negligible impact on the fish stock.

Accounting for over-catch of the unallocated quota as a deduction from the following year's quota does not seem practical. Rather, the goal of compatibility between management measures inside and outside EEZs would, arguably, be better advanced by Peru and Ecuador exercising catch restraint to attempt to avoid exceeding the "adjusted" unallocated quota.

In effect, this would allow the unallocated quota to be more fully utilised by Peru and Ecuador over time and would reduce the frequency of it being exceeded. In contrast, under the current approach any under-catch of unallocated quota is effectively treated as a "saving" in the stock assessment and redistributed to all participants in the fishery if the TAC increases. The result of the current approach is that when catches substantially in excess of the unallocated quota are taken these lead to the overall TAC being breached, as occurred in 2019.

An example of how the carry-forward mechanism this might work in practice is given in Table 3 below.

Table 3: Hypothetical example of the use of quota carry-forward based on its assumed implementation in 2013

(Data in red font are actuals. From 2020 onwards catches are hypothetical.)

Year	Initial unallocated quota (t)	Carry-forward from previous year (t)	Adjusted unallocated quota (t)	Catch (t)
2013	78,000	0	78,000	80,585
2014	50,000	0	50,000	74,537
2015	50,000	0	50,000	22,447
2016	50,000	27,553	77,553	15,087
2017	50,000	62,466	112,466	8,867
2018	58,418	103,599	162,017	57,163
2019	59,939	104,854	164,793	140,000
2020	68,930	24,793	93,723	120,000
2021	68,930	0	68,930	45,000
2022	68,930	23,930	92,860	12,000
2023	68,930	80,860	149,790	38,000
2024	68,930	111,790	180,720	130,000
2025	68,930	50,720	119,650	60,000

This example is based on the unallocated quota staying at its current level of 68,930 for the next 5 years, and a hypothetical series of catches by Peru and Ecuador from 2020 onwards that are variable and roughly 15% larger on average, than those of the last 7 years.

It can be seen that catches were in excess of the unallocated quota in 2013 and 2014. This was followed by a series of four years where catches are relatively low, allowing in this example the carry-forward of unused quota to occur, thereby increasing the unallocated quota to over 164,000t in 2019. When the 2019 catch of 140,000t occurs, the level of the unallocated quota is sufficient to cover it, so there is no breach of the overall TAC. This contrasts with the actual situation in which the TAC was exceeded by nearly 47,000t, causing substantial concern amongst members and leading to quota transfers being halted by at least one member.

In 2020 a hypothetical catch of 120,000t exceeds the adjusted unallocated quota by nearly 27,000t. Over the following three years, low catches allow the adjusted unallocated quota to grow to a level that more than covers a 130,000t catch in 2024.

Clearly, this example is illustrative only and there are alternative series of hypothetical catches that would generate different results. However, if future catches are on average similar to the level of the initial unallocated quota, as was the case over the past 7 years, then using this method of accounting for in-zone catches will result in fewer breaches of the overall TAC.

Put simply, the concept is that under-catches of the unallocated quota are effectively reserved for Peru and Ecuador to be available in years in which there are favourable fishing conditions. At these times

Peru and Ecuador would be encouraged to exercise restraint to keep catches broadly in line with the levels of the adjusted unallocated quota.

Implementation

The use of a carry-forward mechanism does not require much change to the current CMM. In effect, it means that under-catches of the unallocated quota would not be treated as "savings" to be redistributed to all members participating in the jack mackerel fishery. Rather, the under-catch would be reserved for future use by Peru and Ecuador when jack mackerel are abundant in their EEZs.

In practice, this has no implications for the stock assessment process nor for the distribution of quotas amongst members operating in the Convention Area. The only point of change would be that the Commission would take into account the adjusted level of the unallocated quota each year in determining how much of the TAC would be caught in the Convention Area.

Draft Revision to CMM 01-2019

4bis.   In establishing the total catch to be taken from the area to which this CMM applies the Commission will take into account the amount of the unallocated quota adjusted for under-catch in areas of national jurisdiction in the previous year. The formula for calculating the adjusted unallocated quota is set out in Annex 1 to this CMM.

4ter   The adjusted unallocated quota will be limited to a maximum of 20% of the Total Allowable Catch.

Annex 1

$$AUQ^T = UQ^T + (AUQ^{T-1} - C^{T-1})$$

If $AUQ^T > AUQ^{MAX}$ then $AUQ^T = AUQ^{MAX}$

Where
AUQ^T is the adjusted unallocated quota this year
UQ^T is the "base" unallocated quota this year, being the difference between the TAC and the catch limit for the Convention Area
AUQ^{T-1} is last year's adjusted unallocated quota
C^{T-1} is last year's catch in areas of national jurisdiction provided that it is less than or equal to UQ^{T-1}, otherwise zero.
AUQ^{MAX} is 20% of the TAC.