



**TECHNICAL AND COMPLIANCE COMMITTEE
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**PURSE SEINE EFFORT
A RECENT ISSUE IN LOGBOOK REPORTING**

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This paper provides information that might be considered relevant for two agenda items:

- AGENDA ITEM 6 draft of CMM 2013-01
- AGENDA ITEM 13.1 Development of metrics for measuring fishing effort and capacity (TCC Workplan 2013)

PURSE SEINE EFFORT

A RECENT ISSUE IN LOGBOOK REPORTING

Background

1. Purse seine effort is compiled, reviewed, monitored and analysed for a variety of work for the Commission. Units (or measures) of purse seine effort that are available in the data compiled by the Commission include:

- I. Vessel number
- II. Vessel trip
- III. Vessel at-sea day
- IV. Vessel fishing and searching day
- V. Vessel set

2. Purse seine effort information is collected in different ways. At the finer scale level (i.e. set or daily information), purse seine effort is collected through automated location systems in the Vessel Monitoring Scheme (VMS), through logbooks completed by the vessel and through observer data collection. At a coarser level, which lack spatial and temporal detail (i.e. the vessel trip), purse seine effort information can be collected at unloading sites and through port sampling. The use of each of these measures of effort is usually dependent on respective coverage, quality and the application.

3. The scientific work conducted by the SPC on behalf of the Commission, and in the 15-20 years prior to the establishment of the Commission, has always used the logbook definition of purse seine effort, which is ***“A day when a set was made, or a day when a set was not made, but any part of that day was spent searching for fish”***.

4. The logbook definition of the purse seine effort is essentially matched to the requirements outlined in the **Scientific Data to be Provided to the Commission**. The definition of the management unit ('day') in the **Vessel Days Scheme** managed by the PNA (Parties to the Nauru Agreement) is also consistent with the logbook definition which is used in the scientific work conducted by SPC.

[PNA] Definition of a Fishing Day

12. For the purpose of the Scheme, a fishing day is defined as any calendar day, or part of a calendar day, during which a purse seine vessel is in the waters of a Party outside a port, but does not include days for which advance notice has been given that a vessel will be in the waters of a Party but will not be undertaking fishing activities – such as when a vessel is in transit. Vessel days involving fishing in more than one zone in a day shall be apportioned according to the distribution of reported positions in a day between zones – this principle shall also apply to days involving reporting from the waters of non-Parties and the high seas.

Recent issue

5. In recent years, there has been evidence of a change in how purse seine effort is being reported on logbooks by some vessels. Figures 1-2 and Table 1 highlight the extent of the problem. It is evident that the main change in behaviour is for some vessels to now report what was previously considered to be ***‘a day when a set was not made, but any part of that day was spent searching for fish’*** as ***‘a day in transit’***, with the latter not included in the purse seine measure of

effort used in the scientific work conducted by the SPC. Figure 1 shows that, for at least one purse seine fleet, the long-term average of around 5% of days-at-sea reported as 'transit days' has more recently increased to 20-30%. Figure 2 shows that this is not necessary all vessels in a fleet, although this means that the proportion of reporting transit days instead of searching days is even higher than the average for some vessels than the average fleet-level increase implied in Figure 1. Table 1 shows the comparison of days reported on the logbook and the days reported by observers for trips undertaken by one particular vessel in 2012, highlighting the preference by the vessel for reporting days in transit, or other non-effort days, in lieu of days of fishing effort (i.e. searching); in this example, for all trips combined, the proportion of total days at sea that were "effort" days, according to the observer were 86%, compared to only 61% reported by the vessel. Appendix 1 shows the time series of the proportion of transit days reported on logbooks (the same format as Figure 1) for each of the major fleets. The review of this information is preliminary (due to time constraints) but nonetheless provides an indication of the issue and some basis for further investigation.

6. The ramifications of the change in purse seine effort reporting are obvious and include the following:
 - I. Inconsistency in historical purse seine effort time series (recent effort levels will appear to be lower than reality)
 - II. Inconsistency in tuna catch per unit CPUE time series trends that used the purse seine day as the unit of effort (recent CPUE levels will appear to be higher than reality)
 - III. Divergence in the estimated non-transit effort determined from VMS data and the effort reported on logbooks
 - IV. Monitoring of purse seine effort for management purposes (effort levels will be lower than reality)

7. Without pre-empting the reasons for this apparent change in behaviour in reporting effort on logbooks, it is evident that immediate action is required to ensure there is consistency in how logbook reporting of effort occurs amongst fleets, over time and with observer data collection, and so the following annotations to the current definition for a purse seine day in transit ("**a day in transit**") should only cover the following cases:
 - I. Transiting from port to the tropical WCPFC area (10°N-10°S)
 - II. Transiting back to port, vessel fully-loaded
 - III. Transiting with the gear stowed, that is the boom lowered and tied down, and the net is covered

Recommendation

8. TCC is requested to consider the current issue with reporting transit days and advise CCM flag states to resolve this change of behaviour with their purse seine fleets where this occurs. (It is expected that this issue will continue to be monitored over the coming year).

9. As a further means of resolving this issue, TCC is invited to approve the RECOMMENDATION for the inclusion of annotations (listed above in Paragraph 7) to the definition of purse seine effort to be reported on logbooks and the requirements in the "*Scientific Data to be Provided to the Commission*" which are consistent with the PNA VDS System and observer reporting. This should result in the removal of any potential misunderstandings, ambiguities or loop-holes in the way purse seine effort is reported and the data used for the scientific work of the Commission.

TABLES and FIGURES

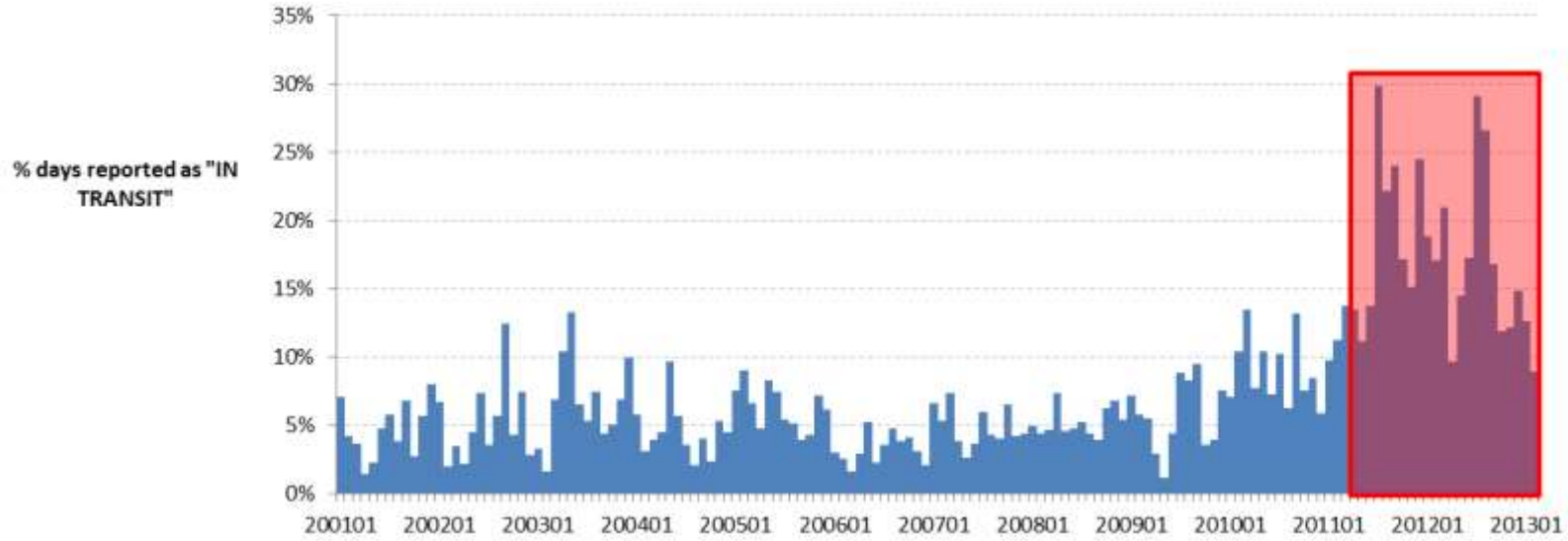


Figure 1. Monthly trends in the proportion of transit days reported on logbooks for a purse seine fleet fishing the tropical WCPO, 2001-2013

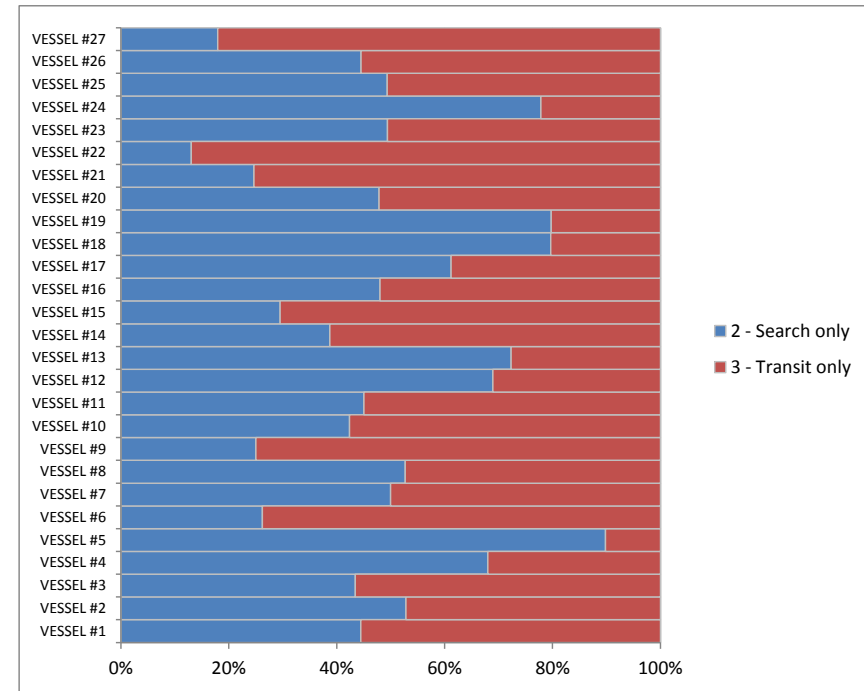
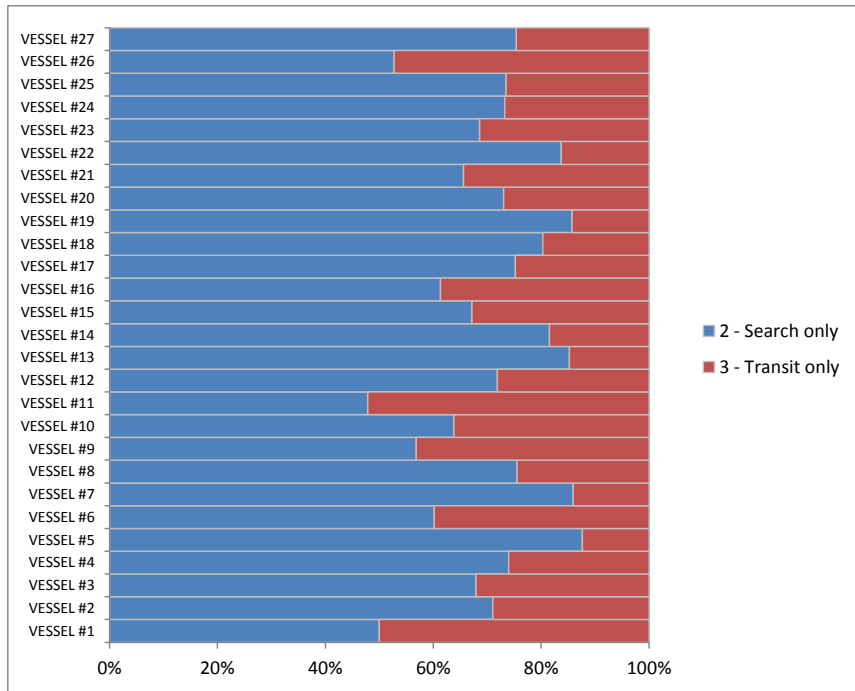


Figure 2. The proportion of days (i) Searching only and (ii) Transit only, reported on logbooks for selected purse seine vessels fishing the tropical WCPO, 2010 (left) and 2012 (right)

Table 1. A comparison of observer and logbook reporting of trips conducted in 2012 by one purse seine vessel identified with a high frequency of logbook-reported transit days

	OBSERVER		LOGBOOK			TOTAL	OBSV	LOG
	TRANSIT	EFFORT	OTHER	TRANSIT	EFFORT	DAYS	% EFFORT	% EFFORT
TRIP #1	2	12		5	9	14	86%	64%
TRIP #2	1	11		5	7	12	92%	58%
TRIP #3	2	18	1	5	14	20	90%	70%
TRIP #4	2	11	1	2	10	13	85%	77%
TRIP #5	3	20	4	7	12	23	87%	52%
TRIP #6	4	17	1	9	11	21	81%	52%
TOTAL	14	89	7	33	63	103	86%	61%

Notes

1. "TRANSIT" means the number of days in that trip that were reported as TRANSITING, without any effort (i.e. no sets or no searching reported)
2. "EFFORT" means the number of days in that trip that were reported with A SET or SOME SEARCHING.
3. "OTHER" means the number of days when there was neither TRANSIT, nor a SET, nor any SEARCHING
4. "% EFFORT" is the EFFORT days divided by the TOTAL DAYS.

APPENDIX 1 - Monthly trends in the proportion of TRANSIT DAYS reported on logbooks, by FLEET, 2001-2013

