CCSBT-CC/1910/05 (Rev2)

Annual Report on Members' implementation of ERS measures and performance with respect to ERS

Introduction

Paragraph 7 of the Resolution to Align CCSBT's Ecologically Related Species (ERS) measures with those of other tuna RFMOs requires that:

> "*The Secretariat shall annually present a report to the CCSBT Compliance Committee on the implementation of the ERS Measures, for the sole purpose of the provision of information for Members and Cooperating Non-Members*".

In addition, the Report of CCSBT 25 specifies:

> *"That ERS is to remain a standing item on the Annual Meeting agenda, and the Secretariat is to provide annual reports on Members' performance with respect to ERS";*

and clarifies that:

> *"the report provided by the Secretariat would be a simple report of numbers and species by Member for the past 3 years, derived from Members annual reports and submitted ERS data, and did not require additional submission from Members."*

The two required reports are interrelated, so the Secretariat has compiled the contents for both reports into this single paper. The paper is organised as follows:

(1) Implementation of ERS Measures
   a) Observer Coverage
   b) Usage of seabird mitigation measures
   c) Data submission
   d) Participation and reporting to ERSWG meetings
   e) Annual reports to the Compliance Committee and the Extended Commission

(2) Performance
   a) ERS mortality rate
   b) Total ERS mortality

Most of the information provided in this paper originates from data provided in the CCSBT's ERSWG Data Exchange (EDE). The EDE is defined to include all fishing effort by authorised vessels[1] for shots or sets where southern bluefin tuna (SBT) was either targeted or caught.

[1] Authorised vessels are vessels on the CCSBT authorised list of vessels during the relevant calendar year.

(1) Implementation of ERS Measures

a) Observer Coverage

The CCSBT Scientific Observer Program Standards specifies that the CCSBT Scientific Observer Program will cover the fishing activity of CCSBT Members and Cooperating Non-Members wherever southern bluefin tuna are targeted or are a significant bycatch. The Standards also specify that the Program will have a target observer coverage of 10% for catch and effort monitoring for each fishery and that the observer coverage should therefore be representative of different vessel-types in distinct areas and times

The scientific observer coverage (observed hooks / total hooks expressed as a percent) by Member, gear, fleet and CCSBT statistical area for each of the last three calendar years is shown at **Attachment 1**. Four Members (Korea, New Zealand, Taiwan and South Africa) achieved or exceeded the overall target scientific observer coverage of 10% for all their SBT fleets last year (2018). Australia also recorded a 10% or greater "observer" coverage for all of its SBT fleets in 2018, but the coverage for its longline fleet was based on e-monitoring, not scientific observers. Japan resubmitted its observer data for 2016 to 2018 to exclude data from 18 trips where there were concerns about the reliability of the data as explained in CCSBT Circular #2019/023. After the data exclusion, the observer coverage in Japan's resubmitted data exceeded the target in 2016 but was well below the target, at 5% and 6% in 2017 and 2018 respectively. Indonesia has never reached the target and had an observer coverage of less than 0.5% in 2018. Furthermore, Indonesia's data is for its entire longline fleet, not just shots that targeted or caught SBT. Therefore, Indonesia's data is not directly comparable with data from the other Members.

There are no figures for the European Union (EU) in **Attachment 1**. This is because the EU had no vessels targeting or capturing SBT during the three years in question.

The CCSBT's Effectiveness of Seabird Mitigation Measures Technical Group (SMMTG) recommended that spatial-temporal representativeness is an important metric of observer program data and agreed on the method for calculating a measure of "representativeness". A column showing the representativeness of the observer coverage for each Member, fleet and year is included in **Attachment 1**. A representativeness of 100% means that the target of 10% observer coverage was achieved for all statistical areas that were fished, while a representativeness of 50% means that the target observer coverage was only achieved for half of the areas that were fished.

Attachment 1 contains 27 representativeness figures (one figure for each of the 9 fleets for each of the 3 years). Of these, there were only 12 fleet/year combinations with full (100%) representativeness of observer coverage. In addition, there were 9 fleet/year combinations with a representativeness of 50% or less. The level of representativeness was highest in 2018, with 4 Members (Korea, New Zealand, Taiwan and South Africa) out of the 7 Members having 100% representativeness for all their fleets. In 2016 and 2017, only 1 and 2 Members respectively had 100% representativeness of observer coverage for all of their fleets.

b) Usage of seabird mitigation measures

This section contains no information for Indonesia because Indonesia has not provided information on its usage of mitigation measures with its EDE data.

Table 1 of **Attachment 2** shows, the proportion of observed effort in Members' long line fleets that used specific mitigation measures for fishing from 2016-2018 in statistical areas 3-10. These are the statistical areas that require 2 out of 3 mitigation measures to be used in the ICCAT, IOTC and WCPFC Convention Areas[2]. With the exception of Japan and New Zealand, all observed vessels that fished for or caught SBT in these areas used at least the 2 required mitigation measures. In fact, four of the six Members that fished in these areas used all 3 mitigation measures for between 18% and 100% of their effort in 2018. South Africa was the Member with the highest observed rate of mitigation measure usage, having 100% usage of 3 measures for each of the three years.

Considerable proportions of Japan's observed effort used a single mitigation measure or no mitigation measure, these being for 66.0%, 29.2% and 78.7% of the effort in 2016, 2017 and 2018 respectively. In most of these cases, Tori poles were used as the mitigation measure. It is plausible that partial night setting was also conducted, but not recorded as night setting by the observers due to setting continuing to or beyond dawn. This warrants further investigation.

New Zealand used a single mitigation measure or no[3] measures for 29.7%, 6.0% and 3.3% of its observed effort in 2016, 2017 and 2018 respectively. The single mitigation measure used was mainly night setting, which means that most of this effort did not comply with CCSBT's 1997 requirement to use Tori poles south of 30 degrees south. However, note that paper CCSBT-EC/1910/13 recommends a change to CCSBT's 1997 Tori line requirements.

Table 2 of **Attachment 2** shows the same information as Table 1, except this is restricted to fishing in statistical areas 2 and 14. These statistical areas are in the Indian Ocean with latitudes ranging from 20°-35°S. It is only below 25°S, that mitigation measures are required in the Indian Ocean, so even though most fishing for SBT would be below 25°S, it is not possible to make conclusions regarding compliance with mitigation measures in these two statistical areas. This problem should be resolved in the future as ERSWG 13 has recommended that data from 2019 and onwards should be provided at a 5x5 degree of resolution. Nevertheless, the vast majority of observed fishing effort in these areas during the last three years used two or more mitigation measures.

Table 3 of **Attachment 2** shows the same information as Tables 1 and 2, except this is restricted to fishing in statistical areas 15. This statistical area is in the Atlantic Ocean with latitudes ranging from 20°-35°S. In this area, tori lines are required from 20°-25°S and 2 out of 3 mitigation measures are required for the remainder of this area. South Africa was the only Member to have vessels observed in this area and all observed effort used 3 mitigation measures.

c) Data submission

The main ERS data that Members are required to provide to the CCSBT are the data specified in the annual ERSWG Data Exchange (EDE), which must be provided by 31 July each year. Table 1 shows Members' compliance with the EDE for the last three years.

[2] Note that the requirements of ICCAT, IOTC and WCPFC to use 2 out of 3 mitigation measures did not become mandatory on CCSBT authorised vessels from a CCSBT perspective until after CCSBT 25.
[3] The absence of mitigation measures occurred for only 0.4% of the effort and only in 2016.

Table 1: Members' compliance with the EDE for the last three years. "P" indicates partial compliance and "X" indicates non-compliance or no provision of the information. The last line of the table is not a mandatory requirement.

	AU	EU	ID	JP	KR	NZ	TW	ZA
Data provided as required by the EDE in 2017?	✓	n/a[4]	X	✓	✓	✓	✓	✓
Data provided as required by the EDE in 2018?	✓	n/a[4]	P[5]	✓	✓	✓	✓	✓
Data provided as required by the EDE in 2019?	✓	n/a[4]	P[6]	✓	✓	✓	✓	✓
Data provided at species level where this is not a minimum requirement of the EDE[7]?	*P[8]*	*n/a[4]*	✓	*X*	✓	✓	✓	✓

Most Members have complied with the EDE requirements and more than half have gone beyond the minimum requirements and have provided ERS data at a species level of resolution in cases where this was not a minimum requirement of the EDE.

Members are also required to submit data similar to the above in national reports to meetings of the ERSWG and to annual meetings of the Compliance Committee and the Extended Commission. However, these data are essentially the same as the EDE requirements or a subset of this information, so are not examined separately in this paper.

d) Participation and reporting to ERSWG meetings

The ERSWG met in 2017 and 2019. Members are encouraged to attend meetings and are required to provide annual reports to these meetings. Table 2 provides information on participation and reporting to these meetings by Members.

Table 2: Participation and reporting to recent ERSWG meetings by Members. "P" indicates partial compliance with the annual report template, and "X" indicates either no participation at the meeting or no annual report submitted.

	AU	EU	ID	JP	KR	NZ	TW	ZA
2017 ERSWG meeting								
Participated at meeting	✓	X	X	✓	✓	✓	✓	X
Submitted annual report to meeting	✓	X	✓	✓	✓	✓	✓	✓
Completeness of annual report	✓	n/a	P	P	P	P	P	P
2019 ERSWG meeting								
Participated at meeting	✓	X[9]	X[9]	✓	✓	✓	✓	X
Submitted annual report to meeting	✓	X	✓	✓	✓	✓	✓	✓
Completeness of annual report	✓	n/a	P	P	P	✓	P	P

The partial compliance of most Members with respect to the annual report is mostly due to the ERSWG annual report template not being fully completed, such as not providing any information on collection of data or incidental catches from non-observed sources (e.g. from log books), or not providing certain information on compliance monitoring or the level of compliance.

[4] The European Union has reported no targeting or catch of SBT in the last three years, so there is no relevant data for it to submit to the EDE.
[5] Indonesia is working on improving its ERS data. It did not provide its total fishing effort and commented that it needs more time to verify its figures for this. In addition, Indonesia was not able to provide the proportions of observed effort with specific mitigation measures.
[6] Indonesia was not able to provide the proportions of observed effort with specific mitigation measures. Furthermore, Indonesia's total and observed effort were calculated from its entire longline fishery operating in the Indian Ocean instead of just for shots that targeted or caught SBT.
[7] The EDE specifies the minimum taxonomic level at which information should be reported. The EDE also states that information should be provided to species level where this is practical.
[8] Australia's data contains a mixture of species and group level reporting.
[9] Both the EU and Indonesia advised that they would not be able to attend the ERSWG meeting on the proposed dates but agreed for the meeting to proceed in their absence so that an ERSWG meeting could be held during 2019.

e) Annual reports to the Compliance Committee and the Extended Commission

Members' annual reports to the Compliance Committee and the Extended Commission (Annual CC/EC Report) are required to include information on: Whether the IPOA-seabirds[10], IPOA-sharks[11] and the FAO Guidelines to reduce sea turtle mortality have been implemented; Whether all current binding and recommendatory measures of ICCAT, IOTC and WCPFC aimed at the protection of ERS from fishing are being complied with; Whether data is being collected and reported on ecologically related species in accordance with the requirements of ICCAT, IOTC and WCPFC; and a Description of the methods used to monitor compliance with bycatch mitigation measures, including the level of coverage and the type of information collected[12].

A summary of the above information reported by Members is provided in Table 3 and **Attachment 3**. The table and Attachment were compiled from the 2018 Annual CC/EC Report because the reports for the 2019 meeting were not available at the time of preparing this paper. The information provided by some Members in the 2018 Annual CC/EC Report was ambiguous and this has been reflected in the footnotes to items in Table 3.

Table 3: Summary of required information reported by Members in their 2018 Annual CC/EC Reports. "P" indicates partial compliance with the measure and/or report template and "X" indicates non-compliance with the measure and/or report template.

	AU	EU	ID	JP	KR	NZ	TW	ZA
Implemented IPOA-Seabirds	✓[13]	✓	✓[14]	✓	✓	✓	✓	✓
Implemented IPOA-Sharks	✓	✓	✓	✓	✓	✓	✓	✓
Implemented FAO-Sea Turtles	✓	✓	✓	✓	✓	✓	✓	✓
Complied with ICCAT ERS Measures	n/a	✓	n/a	✓	✓	n/a	✓	P[15]
Complied with IOTC ERS Measures	✓	✓	X[16]	✓	✓	n/a	✓	P[15]
Complied with WCPFC ERS Measures	✓	✓	X[16]	✓	n/a[17]	✓	✓	n/a
ERS Data collected and reported as required by ICCAT	n/a	✓	n/a	✓	✓	n/a	✓	P[15]
ERS Data collected and reported as required by IOTC	P[18]	✓	X[19]	✓	✓	n/a	✓	P[15]
ERS Data collected and reported as required by WCPFC	✓	✓	X[16]	✓	n/a	✓	✓	n/a

Attachment 3 shows the information provided by Members on methods used to monitor compliance with bycatch mitigation measures, including the level of coverage and the type of information collected. Most Members have reported the required information with the exception that the level of coverage by the different methods has generally not been well specified by Members.

[10] International Plan of Action for Reducing Incidental Catches of Seabirds in Longline Fisheries.
[11] International Plan of Action for the Conservation and Management of Sharks.
[12] Other ERS information is also required in the Annual CC/EC Report, but this information is also provided elsewhere and is not shown here as it is covered in other parts of this paper.
[13] Australia has implemented a Threat Abatement Plan which is consistent with the IPOA-Seabirds.
[14] It cannot be determined whether an IPOA-Seabirds has been implemented from the response given in the Annual CC/EC Report. However, from the response to the ERS Review questionnaire in 2018, an IPOA-Seabirds was implemented in 2016.
[15] It was difficult to determine whether all current binding and recommendatory ERS measures of the relevant RFMOs are being complied with from the response given in the Annual CC/EC Report.
[16] The response given in the Annual CC/EC Report was "None" and therefore there was no indication as whether the required measures were being complied with or whether the required data was provided.
[17] Korea noted that it did not fish for SBT in the WCPFC area of competence.
[18] Australia noted that for a variety of practical reasons, it is not able to provide size frequency data for sharks.
[19] Indonesia stated that it has not yet complied with Resolution IOTC 2011/04 and that progress being made is to enhance personal capacity of observer and increase coverage level of observer program, as well as strengthening collaboration with Indonesia Tuna Association.

(2) Performance

The mortality rates and raised total mortality estimates of ERS for each of the species groups defined in the EDE for each Member are provided in **Attachment 4**. It should be noted that some of the shark mortalities are retained as commercial catch and are not all unwanted mortalities.

ERSWG 13 confirmed its previously agreed advice for all shark species caught in SBT fisheries, that there were currently no specific concerns about shark bycatch that warranted additional mitigation requirements. In addition, ERSWG 13 did not seek to amend its previous advice that the level of interaction between seabirds and SBT fisheries is still a significant level of concern. Consequently, the remainder of this section focuses on seabirds, which is the main incidental catch of concern from SBT fisheries.

This section excludes seabird mortality figures for Indonesia because these figures are not meaningful due to Indonesia's low observer coverage (1% or less) and because Indonesia's observer data were not restricted to the SBT fishery. In addition, no information is provided for the EU because the EU did not target or catch SBT during the years presented.

a) ERS mortality rate

Table 4 provides the observed mortality rate of seabirds for each Member from 2016 to 2018.

Table 4: Observed mortality rate of seabirds (kills per 1,000 hooks) for each Member from 2016 to 2018.

	AU	JP	KR	NZ	TW	ZA
2016	0.000	0.509	0.218	0.387	0.006	0.000
2017	0.039	0.048	0.002	0.119	0.005	0.004
2018	0.015	0.291	0.051	0.315	0.007	0.000

There is a large magnitude of difference each year between Members with low rates of seabird kills and those with high rates of seabird kills.

Over the three years (2016-2018), South Africa had the lowest or close to the lowest seabird mortality rate of all Members.

Japan and New Zealand had the highest or second highest rate of seabird mortality each year from 2016 to 2018.

b) Total ERS mortality

Table 5 provides the raised number of seabirds killed for each Member from 2016 to 2018.

Table 5: Raised mortality of seabirds (in numbers of seabirds) for each Member from 2016 to 2018.

	AU	JP	KR	NZ	TW	ZA	***Total***
2016	0	10,132	694	437	91	0	***11,354***
2017	14	656	6	150	74	1	***901***
2018	9	5,216	139	425	108	0	***5,897***

The change in the raised number of seabird mortalities each year should be interpreted with caution. The May 2019 meeting of the ERSWG advised that the data for 2017 show a lower total number of reported seabird mortalities and the ERSWG noted that this was most likely to have resulted from inadequate and unrepresentative sampling and not from improved mitigation. Therefore, the ERSWG advised that the 2017 data should be treated with caution. The ERSWG further commented that the 2018 data may require the same caution to be applied.

Prepared by the Secretariat

Attachment 1

Observer coverage (observed hooks / total hooks expressed as a percent) by flag, gear, fleet, year and CCSBT statistical area. Representativeness is the proportion of statistical areas fished that reached the target of 10% observer coverage as per the SMMTG Recommendations.

				Statistical area												
Member code	Gear code	Fleet code	Year	1	2	3	4	5	6	7	8	9	14	15	Total	Representativeness
AU	LL	AUD	2016		0%		13%			9%					7%	33%
			2017			0%	11%			14%					8%	67%
			2018		0%		12%			35%					15%	67%
	PS	AUD	2016							19%					19%	100%
			2017							18%					18%	100%
			2018			0%				20%					10%	50%
ID	LL	IDD	2016													N/A
			2017	0%	2%										1%	0%
			2018	1%	0%										0%	0%
JP	LL	JPD	2016				19%	8%		24%	2%	29%			17%	60%
			2017				6%			11%	4%	0%			5%	25%
			2018				8%	0%		2%	14%	6%			6%	20%
KR	LL	KRD	2016								0%	21%			10%	50%
			2017									18%			18%	100%
			2018									21%			21%	100%
NZ	LL	NZD	2016					16%	24%						20%	100%
			2017					18%	23%						20%	100%
			2018					17%	17%						17%	100%
TW	LL	TWD	2016		25%						15%	10%	19%		17%	75%
			2017		13%						12%	0%	12%		9%	75%
			2018		14%						14%	13%	11%		13%	100%
ZA	LL	ZAC	2016									40%	63%		51%	100%
			2017									100%	100%		100%	100%
			2018									100%	100%		100%	100%
		ZAD	2016									2%	0%	0%	1%	0%
			2017									7%	0%	3%	3%	0%
			2018									11%	16%	16%	14%	100%

Table 1: Proportion of observed effort in Members' long line fleets that used specific mitigation measures in statistical areas 3-10.

Member	Fleet	Year	Tori pole + Night setting	Tori pole + weighted branchline	Night setting + weighted branchline	Tori pole + night setting + weighted branchline	None	Single Measure	Mix of 2 measures	Other
AU	AUD	2016	-	53.1%	-	46.9%	-	-	-	-
		2017	-	51.7%	-	48.3%	-	-	-	-
		2018	-	29.9%	-	70.1%	-	-	-	-
JP	JPD	2016	25.3%	6.2%	0.6%	1.9%	7.1%	58.9%	-	-
		2017	10.9%	36.3%	-	23.6%	0.8%	28.4%	-	-
		2018	21.3%	-	-	-	-	78.7%	-	-
KR	KRD	2016	-	100.0%	-	-	-	-	-	-
		2017	-	99.5%	-	0.5%	-	-	-	-
		2018	-	100.0%	-	-	-	-	-	-
NZ	NZD	2016	70.4%	-	-	-	0.4%	29.3%	-	-
		2017	94.0%	-	-	-	-	6.0%	-	-
		2018	68.9%	0.8%	-	27.0%	-	3.3%	-	-
TW	TWD	2016	49.8%	2.2%	-	48.0%	-	-	-	-
		2017	92.4%	4.6%	-	3.1%	-	-	-	-
		2018	81.6%	0.3%	-	18.1%	-	-	-	-
ZA	ZAC	2016	-	-	-	100.0%	-	-	-	-
		2017	-	-	-	100.0%	-	-	-	-
		2018	-	-	-	100.0%	-	-	-	-
	ZAD	2016	-	-	-	100.0%	-	-	-	-
		2017	-	-	-	100.0%	-	-	-	-
		2018	-	-	-	100.0%	-	-	-	-

Table 2: Proportion of observed effort in Members' long line fleets that used specific mitigation measures in statistical areas 2 and 14.

Member	Fleet	Year	Tori pole + Night setting	Tori pole + weighted branchline	Night setting + weighted branchline	Tori pole + night setting + weighted branchline	None	Single Measure	Mix of 2 measures	Other
TW	TWD	2016	61.0%	7.2%	-	31.8%	-	-	-	-
		2017	80.2%	1.6%	-	18.3%	-	-	-	-
		2018	86.3%	2.0%	0.3%	10.4%	1.0%	-	-	-
ZA	ZAC	2016	-	-	-	100.0%	-	-	-	-
		2017	-	-	-	100.0%	-	-	-	-
		2018	-	-	-	100.0%	-	-	-	-
	ZAD	2018	-	-	-	100.0%	-	-	-	-

Table 3: Proportion of observed effort in Members' long line fleets that used specific mitigation measures in Statistical area 15.

Member	Fleet	Year	Tori pole + Night setting	Tori pole + weighted branchline	Night setting + weighted branchline	Tori pole + night setting + weighted branchline	None	Single Measure	Mix of 2 measures	Other
ZA	ZAD	2017	-	-	-	100.0%	-	-	-	-
		2018	-	-	-	100.0%	-	-	-	-

Information provided by Members on methods used to monitor compliance with bycatch mitigation measures, including the level of coverage and the type of information collected.

	Methods being used to monitor compliance with bycatch mitigation measures, including coverage level	**Type of information collected**
Australia	Australia uses a number of methods to monitor compliance, including compliance with bycatch mitigation measures. These methods include electronic monitoring, observer reports, vessel monitoring system, aerial surveillance, at sea inspections and port inspections. As provided previously (Section 1d), in 2016/17 Australian fisheries officers conducted 17 inspections of SBT/ETBF boats, 16 inspections at sea and 1 inspection in port.	The information collected on mitigation measures includes; • whether bycatch mitigation, such as tori lines, is being carried on board the vessel, • whether bycatch mitigation has been deployed appropriately • whether the bycatch mitigation complies with specifications.
EU	*No information (not applicable).*	*No information (not applicable)*
Indonesia	*Inspection by surveillance officer*.	Catch composition including by-catch and ERS.
Japan	During the 2017/2018 fishing season, Japan has dispatched monitoring and control vessel, Umesato of FAJ. She inspected 3 Japanese fishing vessels registered with the CCSBT through vessel radio communication and visual confirmation relevant to bycatch mitigation measures. The coverage is 3.5% (3 vessels / 86 vessels).	Fishers have been mandated to write down seabird bycatch mitigation measures applied to their operations in the logbook since 2014.
Korea	Bycatch mitigation measures used are observed and monitored through the scientific observer program and the electronic reporting system.	The information includes sea bird mitigation measures used for reducing its bycatch and data on ERS interaction including mortality.
New Zealand	Compliance with these measures is monitored through at-sea and in-port inspections from Fisheries Officers, aerial surveillance from military aircraft, and the placement of observers on board vessels. Observer reports indicating problems with use of mitigation equipment are prioritised for follow-up with vessel operators. In the 2017 calendar year, the inspections undertaken found six incidents where breaches of seabird mitigation regulations may have occurred across the New Zealand surface longline fleet. Four cases resulted in warnings, while two cases are being assessed for possible prosecution.	Fisheries Officers collect information about tori line and line-weighting gear that is present on vessels. Observer reports provide information about mitigation gear usage, gear descriptions, and fisher attitudes toward seabird mitigation.
South Africa	All Large Pelagic Longline vessels are subjected to port inspection in line with Port State Measures and as per attached Annexure 5 of the Large Pelagic Longline permit conditions. This port inspection is carried out by the Fishery Compliance Officers in conjunction with the Observers. This includes the Tori line measurements, checking the availability of the de-hooking devices as well as line cutters. In addition, Patrol vessels are from time to time tasked to randomly board the large pelagic longline vessels for the inspection of the above.	Through section B and C of the attached Annexure 5 of the Large Pelagic Longline permit conditions, an Observer is required to confirm the deployment of Tori line every day as well as weighted lines.

	Methods being used to monitor compliance with bycatch mitigation measures, including coverage level	Type of information collected
Taiwan	We dispatch observer to monitor compliance with bycatch mitigation measures. The observer coverage rate is about 25% (15 vessels / 60 vessels) by vessel in 2016/2017 fishing season. Besides, all SBT authorized vessels operating at south of 25°S shall report the usage of bycatch mitigation measures by fishers by logbook and e-logbook since 2017/18 fishing season. For alternative way, fishers shall report their seabirds-mitigation measure (copies shown as Attachment C) every week through Taiwan Tuna Association (TTA). Any conditions for not compliance identified during review by FA officials shall trigger further investigations and enforcement of sanctions.	Fishers shall report the measures adopted by its vessels to FA every week. Besides, observers shall record the mitigation measures adopted by the vessel on the observer's logbook since 2014.

Attachment 4

Observer coverage, mortality rate and raised total mortality for each of the species groups defined in the EDE for each Member. The observer coverage has been calculated as the percentage of fishing effort that was observed for all strata (year * statistical area * Member) where the species was captured regardless of whether a mortality of that species occurred. Mortality rates are kills per 1,000 hooks.

		Observer Coverage			Mortality Rate			Raised Mortalities		
Member	**ERS Species Group**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
Australia	Blue shark	12%	11%	12%	0.192	0.117	0.103	83	50	60
	Shortfin mako	13%	11%	12%	0.067	0.331	0.194	23	154	111
	Porbeagle shark	12%	11%		0.019	0.156		11	60	-
	Other sharks	12%	11%	12%	0.077	0.175	0.044	37	72	26
	Turtles		11%			0.000		-	-	-
	Other albatrosses			12%			0.015	-	-	9
	Unidentified albatrosses		14%			0.143		-	14	-
	Whales		11%			0.000		-	-	-
Indonesia	Blue shark		0%	1%	0.809	1.643	1.119	-	26,760	84,091
	Shortfin mako		2%	1%	0.011	0.532	0.031	-	3,157	2,278
	Other sharks		0%	1%	1.954	0.717	0.980	-	29,006	79,393
	Turtles			1%	0.116		0.019	-	-	1,367
	Dark coloured albatrosses		2%			0.016		-	93	-
	Other albatrosses		2%			0.000		-	-	-
	Giant petrels		2%	1%		0.281	0.044	-	1,579	2,808
Japan	Blue shark	17%	8%	7%	0.725	1.874	2.619	16,944	23,646	36,727
	Shortfin mako	17%	8%	7%	0.036	0.048	0.019	1,254	466	241
	Porbeagle shark	17%	8%	7%	0.086	0.410	0.298	1,523	6,522	4,071
	Other sharks	17%	8%	7%	0.046	0.031	0.064	1,041	339	1,020
	Turtles	24%			0.000			-	-	-
	Dark coloured albatrosses	17%		6%	0.019		0.048	1,258	-	323
	Large albatrosses	17%	8%	7%	0.019	0.003	0.006	452	32	80
	Other albatrosses	17%	8%	7%	0.276	0.032	0.195	5,436	296	3,451
	Unidentified albatrosses	17%	8%	9%	0.102	0.007	0.007	1,529	102	76
	Giant petrels	17%	8%	7%	0.077	0.007	0.059	1,130	59	1,071
	Other seabirds	29%		6%	0.056		0.011	319	-	77
	Unidentified seabirds	27%		14%	0.001		0.002	8	-	7
Korea	Blue shark	21%	18%	21%	0.080	1.586	1.220	258	4,449	3,340
	Shortfin mako	21%	18%	21%	0.008	0.016	0.077	24	44	210
	Porbeagle shark	21%	18%	21%	0.012	0.269	0.412	39	754	1,128
	Other sharks	21%	18%	21%	0.005	0.210	0.181	15	589	497
	Dark coloured albatrosses	21%		21%	0.008		0.009	24	-	24
	Large albatrosses	21%		21%	0.003		0.002	10	-	5
	Other albatrosses	21%	18%	21%	0.179	0.002	0.040	575	6	110
	Giant petrels	21%			0.024			78	-	-
	Other seabirds	21%			0.005			15	-	-
New Zealand	Blue shark	19%	20%	17%	4.423	3.673	4.511	6,667	5,270	6,081
	Shortfin mako	19%	20%	17%	0.365	0.227	0.332	571	271	434
	Porbeagle shark	19%	20%	17%	1.310	1.375	0.763	1,931	1,983	1,032
	Other sharks	19%	20%	17%	0.056	0.108	0.134	87	113	59
	Turtles	16%	18%	17%	0.000	0.000	0.000	-	-	-
	Large albatrosses	19%	23%	17%	0.007	0.008	0.013	11	6	4
	Other albatrosses	19%	20%	17%	0.342	0.072	0.267	389	96	365
	Unidentified albatrosses		23%	17%		0.016	0.013	-	11	4
	Giant petrels	24%	20%	17%	0.077	0.036	0.118	43	51	53
Taiwan	Blue shark	17%	10%	13%	0.567	0.441	0.363	11,254	7,452	4,407
	Shortfin mako	17%	12%	13%	0.026	0.030	0.029	411	422	475
	Other sharks	17%	12%	14%	0.010	0.050	0.006	189	730	65
	Dark coloured albatrosses	17%	12%	14%	0.002	0.003	0.005	33	9	21
	Large albatrosses		12%			0.003		-	9	-
	Other albatrosses	21%	12%	14%	0.004	0.002	0.005	52	33	49
	Giant petrels	15%	12%	12%	0.003	0.002	0.003	7	9	38
	Other seabirds		13%			0.002		-	15	-
South Africa	Blue shark	41%	42%	30%	2.344	2.379	7.767	342	10,484	10,832
	Shortfin mako	41%	42%	30%	1.562	2.274	3.147	856	7,796	3,847
	Other sharks	63%	42%	31%	0.000	0.008	0.054	-	2	11
	Turtles	63%		16%	0.000		0.000	-	-	-
	Other albatrosses	63%	100%		0.000	0.005		-	1	-