

SCIENTIFIC COMMITTEE FIFTEENTH REGULAR SESSION

Pohnpei, Federated States of Micronesia 12-20 August 2019

ANNUAL REPORT TO THE COMMISSION PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

WCPFC-SC15-AR/CCM-11 (Rev.01)

KIRIBATI

SCIENTIFIC COMMITTEE FOURTEENTH REGULAR SESSION

Pohnpei, FSM 12-20 August 2019

ANNUAL REPORT TO THE COMMISSION PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS



Ministry of Fisheries and Marine Resources Development KIRIBATI

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 13 July 2019	[YES]
If no, please indicate the reason(s) and intended ac	etions.

1 Abstract/ Summary

Kiribati tuna fishery comprises mainly of small-scale artisanal fishermen operating small wooden skiff boats (<7m) within 12nm, commercial purse seines and domestic longline vessels licensed to fish inside Kiribati's 200nm Exclusive Economic Zone under access agreements. There are also purse seiners licensed to fish under the FSM arrangement and the US Treaty.

Target species for artisanal tuna fishery is skipjack (*Katsuowonus pelamis*) which is mainly caught by trolling for domestic consumption and local sale. This is also a target species for licensed purse seiners and these catches destined for overseas canneries. Domestic longlines target sashimi grade tunas such as yellowfin (*Thunnus albacores*) and bigeye (*Thunnus obesus*) for processing and foreign export. No Kiribati vessel targeting albacore (*Thunnus alalunga*).

Commercial purse seiners operated mostly by distant water fishing nations such as Korea, Taiwan, Japan, the United States including Pacific Islands vessels licensed under the regional arrangement. Purse seine is an important fishery to Kiribati for it accounts for the majority of Government revenue annually. In 2017, Kiribati closed its waters for longline fishery therefore no longline fishery in 2017 and 2018. Current longlines allowed to fish are owned by the Kiribati Fish Limited company (KFL) – a local processing establishment co-owned by the Government.

Kiribati national fleet is comprised of 10 purse seiners operating under a joint venture arrangement, 10 chartered purse seiners by KFL and 1 flag vessel under a bilateral agreement. The chartered purse seiners are originally registered under Chinese flag. In addition, there were 9 chartered longlines; (7 Chinese flag and 2 Fiji flag) by KFL. The total number of flag vessels including charter vessels in 2018 was 30. Although the majority of licensed vessels offload in foreign ports some vessels obliged to offload a certain percentage of their catch in Kiribati under special access arrangements.

Tuna remains the mainstay for Kiribati livelihood and contribute largely to Government budget annually therefore sustainable management of the resource is vital for the nation.

2 Tabular Annual Fisheries Information

This report presents estimates of annual effort and catch of tuna, non-target species and bycatch caught by Kiribati vessels for the period 2014-18. Refer to appended Tables and Figures.

3 Background

Kiribati has no major fishery apart from domestic small-scale artisanal and troll fishery. The only commercial fishery in the country was the pole and line fishery developed in the 1980s but the industry short lived due to economic factors. The Government, however, continue to receive foreign income through vessels licensed to fish in its waters. Closure of longline fishery in 2017 impacted licensed vessel overall but less economic impact on Government revenue. Japanese pole and line fishery also shrinked in recent years. The total number of licensed vessels by Kiribati in 2018 was 305. This is a drop of 4% from 2017.

Kiribati is yet to have the capacity to harvest and export tuna fishery. Coupled with tuna fisheries reforms at the regional and international level in particular adoption of the PNA VDS scheme the Government, through the Ministry of Fisheries and Marine Resource Development (MFMRD), established joint venture and charter arrangements with fishing partners to develop

the national tuna industry. Therefore the domestic purse seine and longline fishery consist of purse seiners and foreign licensed under these arrangements.

Vessels under joint venture were mostly Kiribati flag purse seiners while those operate under a charter arrangement consist of purse seiners (10 China flag) and longline vessels (4 China and 2 Fiji). These vessels provide tuna raw materials to KFL for processing and exporting fresh tuna loin products overseas.

Artisanal fishery forms part of tuna fishery and comprises mostly of local fishermen catching tuna mainly for locally sale and domestic consumption. Common fishing methods used in this fishery are trolling and vertical hand lining. Boats are normally small skiff (usually less than 7 meters) powered by 15-40 HP outboard engines. The estimated number of artisanal boats based on the 2015 artisanal fisheries survey is 1,911.

4 Flag State Reporting

This section reports national fleets in the Convention Area by gear type, development trends in each fishery such as change in fishing patterns, fleet operations, targeted species and trends in size composition.

4.1 Kiribati vessels

Table 1. Kiribati LONGLINE vessels

Size class	2014	2015	2016	2017	2018
0–50	0	0	0	0	1
51-200	0	1	5	1	8
201-500	1	8	9	6	0
500+	5	5	3	0	0
Total	6	14	17	7	9

Table 2. Kiribati POLE & LINE vessels

Size class	2014	2015	2016	2017	2018
0–10	0	0	0	0	0
10-50	0	0	0	0	0
50-200	0	0	0	0	0
200-500	1	1	0	0	0
500+	0	0	0	0	0
Total	1	1	0	0	0

Table 3. Kiribati PURSE SEINE vessels

Size class	2014	2015	2016	2017	2018
0–500	0	0	0	0	0
500-1,000	1	3	2	0	0
1,000-1,500	8	10	15	7	9
1,500+	5	8	10	12	12
Total	14	21	27	19	21

The total number of Kiribati flag fishing vessel active in the WCPO has increased since 2014. Fleet size increased from 20 (2014) to 35 (2015) and 44 in 2016. In 2017 vessels number dropped to 24 but slightly increased to 30 last year. There is no pole and line vessel registered under Kiribati after 2015.

4.2 Annual Catches in WCPFC Convention Area

This section discusses annual catch estimates for registered vessels by gear and target species.

4.2.1 Longline Fishery

Table 4. Longline Catch

Species	2014	2015	2016	2017	2018
Albacore	7.29	358.00	470.00	691.40	210.08
Bigeye	267.50	556.00	434.00	267.40	323.78
Skipjack	0.00	8.00	0.00	48.70	8.61
Yellowfin	108.10	405.00	395.00	358.60	21.51
Black Marlin	0.00	405.00	54.00	0.00	0.00
Blue Marlin	0.00	27.00	27.00	0.00	0.00
Striped Marlin	7.00	0.00	1.00	95.20	1.36
Swordfish	20.00	9.00	18.00	54.41	1.41
Blue shark	1.00	0.00	0.00	0.00	0.00
Mako Shark	6.00	0.00	0.00	0.00	0.13
Oceanic whitetip shark	0.00	0.00	0.00	0.00	0.00
Silky shark	0.00	0.00	0.00	0.00	0.01
Thresher shark	0.00	0.00	0.00	0.00	0.00
Total	416.89	1768.00	1399.00	1515.71	566.88

Annual catch for longline fishery ranges between 416mt (lowest in 2014) to more than 1,700mt in 2015 which is the highest in the record between 2014 to 2018. The average for 5 year period is 1,133mt.

Dominant species caught by this fishery is mainly bigeye and albacore tuna contributing 57% and 37% respectively to total catch in 2018. Note a significant volume of albacore species caught although this is not a major fishery in Kiribati.

By contrary, yellowfin, which is the main target species for KFL, accounts for only 4% last year. Bycatch species also reported by this fishery in 2018 comprising of skipjack (2%), stripped marlin (0.24%), swordfish (0.25%) and mako shark (0.02%). Catch in 2018 represents a 63% drop from total catch in 2017, however this is provisional.

4.2.2 Pole and Line Fishery

Table 5. Annual catch (mt) in the WCPO Area by species for Kiribati POLE & LINE fishery.

Species	2014	2015	2016	2017	2018
Yellowfin	13.00	13.00	0.00	0.00	0.00
Bigeye	0.00	0.00	0.00	0.00	0.00
Skipjack	240.00	240.00	0.00	0.00	0.00
others	0.00	0.00	0.00	0.00	0.00
Total	253.00	253.00	0.00	0.00	0.00

Catch for pole and line fishery is mainly Skipjack and Yellowfin however catch for this fishery is lowest compared to other gears. As stated earlier there was no pole and line vessel since 2015 therefore there is no catch recorded for this fishery for the past five years.

4.2.3 Purse Seine Fishery

Species	2014	2015	2016	2017	2018
Albacore	0.00	0.00	0.00	0.00	0.00
Bigeye	4,237.00	2,937.00	8,045.00	7,152.00	5,072.00
Skipjack	86,354.00	118,210.00	132,451.00	118,119.00	167,353.00
Yellowfin	18,583.00	15,550.00	22,994.00	26,867.00	15,751.00
Black Marlin	18.00	21.00	7.00	12.00	9.00
Blue Marlin	37.00	51.00	28.00	18.00	14.00
Stripped Marlin	0.00	0.00	10.00	19.00	0.00
Swordfish	0.00	0.00	2.00	1.00	1.00
Blue shark	0.00	0.00	0.00	0.00	0.00
Silky shark	0.00	0.00	0.00	0.00	107.00
Great hammerhead	0.00	0.00	0.00	0.00	0.00
Oceanic whitetip shark	0.00	0.00	0.00	0.00	2.00
Thresher shark	0.00	0.00	0.00	0.00	5.00
Total	109,229.00	136,769.00	163,537.00	152,188.00	188,314.00

Total catch for Kiribati purse seiners shows an increase from a lowest of 109,000 metric ton in 2014 to more than 180,000 metric ton in 2018 - the highest between 2014 to 2018. Catch slightly dropped by 7% in 2017 (163,537mt) compared to the preceding year while 2018 saw a 24% recovery. The general pattern suggests an increase in overall catch in this fishery over the last five years. The average catch for five years approximately 150,000 metric ton.

4.2.4 Artisanal & Troll

Table 7. Annual catch (mt) by species for Kiribati Artisanal and Troll fishery

Species	2014	2015	2016	2017	2018	Average
Skipjack	2,190.00	2,190.00	2,190.00	2,190.00	2,190.00	2,190.00
Yellowfin	2,169.00	2,169.00	2,169.00	2,169.00	2,169.00	2,169.00
Bigeye	0.00	0.00	0.00	0.00	0.00	0.00
Wahoo	574.00	574.00	574.00	574.00	574.00	574.00
others	65.00	65.00	65.00	65.00	65.00	65.00
Total	4,998.00	4,998.00	4,998.00	4,998.00	4,998.00	4,998.00

Data for artisanal fishery is yet updated therefore standardized catch of around 5,000mt is used. Catch from this fishery is mainly for domestic consumption and small-scale export.

4.2.5 Catch and Effort Distribution for Kiribati Registered Vessels

Figure 2 and 3 summarize effort distribution by Kiribati purse seines and longlines in the WCPO. Purse seine effort spanned over the equatorial region covering the three zones of Kiribati as well as neighboring EEZs of neighboring countries. In contrast, longline effort extended southward covering areas between 0-20°S. These fisheries also fished on high seas.



Figure 1. Spatial distribution of fishing effort within the Convention Area by the National PURSE SEINE fleet

Figure 2. Spatial distribution of fishing effort within the Convention Area by the National LONGLINE fleet



5 Coastal State Reporting

Closure of Kiribati longline fishery to distant water fishing nations commenced in 2017 the result of which greatly impacted longline catch and effort in Kiribati's EEZ for 2017 and 2018. KFL chartered longline vessels were exempted from this arrangement to continue fish for this fishery to supply the processing plant.

Fishing activities of licensed vessels is regulated through access agreements and licence conditions specific to each particular gear. This applies to all licensed foreign and domestic vessels however domestic vessels and charter vessels have exceptional arrangements with the Government of Kiribati such as access to the domestic fishing zone (DFZ) closed to vessels licensed under bilateral agreements, FAD exemptions and other concessions. Apart from these all vessels prohibited for conducting transhipment in High Seas, fish in closed areas such as the Phoenix Islands Protected Area (PIPA) and ban on fishing certain species, in particular shark under the Shark Regulation.

Like other licensed vessels effort distribution by flag vessels is heavily influenced by variations in climatic conditions and spatial distribution of stock in waters of national jurisdiction and areas where they hold a licence. Main target species for purse seiners are skipjack while chartered longliners target yellowfin tuna – the raw material required by the KFL. Other fish also caught as bycatch species.

6 Socio-economic factors

Recent domestication of a tuna industry has changed the way Kiribati negotiate access and licensed fishing vessels in its waters. This is exemplified by exit of DWFN longline after closure of the longline fishery for foreign vessels and exemptions granted to charter and joint venture vessels to fish inside Kiribati domestic fishing zones.

7 Disposal of Catch

Transshipment in port is compulsory for all licensed purse seiners. This allows monitoring of catch transshipped, provides for deterring IUU fishing in areas where the transshipping vessel fished and provide direct and indirect benefits from transshipment activity. While it is mandatory for purse seine vessel to transship in port, longlines were exempted to conduct transship outside port. This is aimed to minimize operational cost to KFL and to constantly supply the processing plant with tuna raw materials.

Under special access arrangements some companies required to land a certain portion of their catch to the KFL. These catches come in fresh (usually from longlines) and frozen from purse seiners. Landing volumes were processed and exported as fresh and frozen products (loins and fillets) to overseas markets. KFL holds commercial landing data and its major export markets include Japan, United States, EU, New Zealand, Australia, Vietnam, Hong Kong and Philippines. Under grade tunas and other bycatch species sold locally for domestic consumption.

8 Onshore Development

8.1 Processing Plant

KFL is the only processing establishment in the country. The company has its own purse seine and longline fleets licensed under chartered arrangements. Under the Commission rule catch

by charter vessels counted as Kiribati catch although these vessels were foreign flag. KFL currently operates chartered vessels flag to foreign countries including reefer carrier vessels in transshipping of catch.

The company owns a processing plant for fresh tuna loins and machineries such as side-lifters, crane trucks and chiller vehicles to transport products from factory to the airport. The company also offered fisheries services such as sale of fishing gears, fuel, baits, spare parts and ice to local fishermen.

Expansion of KFL operation and support facilities would increase country export volume in future. New plans are underway to establish another processing plant in Kiritimati Islands in the Line group.

8.2 Longline Vessel Project

The Government has purchased three small-scale longline fleets in 2019. These vessels will contribute to tuna production at the domestic level and increase external market accessibility through KFL. These longline vessels are currently managed by Central Pacific Producers Limited (CPPL) to assess its viability with a long term aim of expanding the project to the wider community in future if project proved economically successful.

9 Future Prospect of the Fishery

The Government is also keen to explore wider benefits from participation in the value added products for tuna through expansion of opportunities for direct and indirect employment in the fishing industry as well as conditioning licensed vessels to tie access with crewing.

However, key to maximization of economic return from tuna fishing and greater protection of high value tuna species including commercially valuable pelagic and coastal fisheries through effective enforcement remains integral for long-term sustainability of the fisheries industry for the nation future prospect.

10 Status of Tuna Fishery Data Collection Systems

10.1 Logsheet Data Collection and Verification

Logsheet data collection and verification is an ongoing activity by fisheries. New recruited compliance officers have improved monitoring activities in line with the Commission requirements and conservation management measures (CMMs). Logsheets can be received from companies or operators of fishing vessels or through observers. Fishing report and data submission requirements are covered and enforced through licence conditions. Upgrading of the national tuna information system to Tufman 2 in 2018 have greatly improved the work of the division in the management of offshore tuna fisheries.

10.2 Observer Programme

Observers remain an important tool to monitor and deter IUU fishing. The current arrangement requires 100% placement on purse seiners and 5% for longline vessels. Variation in coverage between these gears reflects the difference between the two gears operate and working condition on these vessels. Longliners commonly referred to as the most challenging when compared to purse seine for it operates away for too long from port and working condition is demanding than in purse seiners. Note that observers from the Kiribati National Observer Program are not allowed to be placed on Kiribati flag vessel and this can be compensated by placement from other observer providers in the region.

10.3 Port Sampling Programme

Kiribati supports SPC port sampling program however due to financial constraints the program ceased in 2014. Another reason was the absence of full time port samplers to take on the job and observers normally tasked to undertake this job when they are not onboard. This proved ineffective when observers are not available. All data retrieved from port sampling activities were sent to SPC.

10.4 Unloading / Transshipment

The majority of transshipment activities conducted in port were carried out between licensed fishing vessels and carrier boats. Transshipment is high when fishing favors Kiribati waters, particularly during El Niño periods. Since Kiribati does not have a canning factory fish from purse seiners normally transshipped to overseas destinations. In recent years the Government imposed on licensed vessels a requirement to offload a certain portion of yellowfin catch to KFL. This is an additional catch besides catch landed by KFL vessels to ensure sufficient raw materials needed for processing. Landing and export data currently held at KFL.

11 Research Activities Covering Target and Non-target Species

As a member to important regional fisheries bodies Kiribati is supportive to oceanic research activities and stock assessment conducted in the WCPO through issuance of licences to research vessels, tagging program and other support concerning oceanic research activities. The position of a national tag officer at the Ministry does not exist anymore due to funding reasons. Boarding officers currently undertake this role.



ADDENDUM TO ANNUAL REPORT PART 1

Specific information to be provided in Part 1 as required by CMMs¹

26 February 2019

CMM 2005-03 [North	8 KI vessels fished 140 days north of the Equator and caught 140 Albacore with estimated weight 3.01mt from									
Pacific Albacore],Para 4	•	January to June 2018. The same number of vessel fished 444 days from July to December and caught 1,627 albacore								
		d weight of 40.0								
CMM 2006-04 [South	There were 6	KI vessels fishe	d south of 15°S in 2018	and caught 2 St	riped Marlin	n weighted 0	0.06 mt.			
West striped Marlin],Para										
4										
CMM 2009-03	There are 2 K	I flag vessel fisl	ned and caught 5 Swordf	ish weighted 0.6	533 mt in th	e area south	20°S as bycatch.			
[Swordfish],Para 8	Kiribati EEZ	located above 2	0°S.	-			-			
CMM 2009-06	(1) the total q	luantities, by w	eight, of highly migrator	ry fish stocks co	vered by th	is measure tl	hat were transhipped			
[Transshipment],Para 11	by fishing ves	ssels the CCM is	s responsible for reportin	g against, with t	hose quanti	ties broken o	down by:			
(ANNEX II)	a) offloaded	b) transhipped	c) transhipped inside the	d) caught	e) Species	f) Product	g) Fishing gear			
	and	in port,	Convention Area and	inside the		Form				
	received;	transhipped at	transhipped outside the	Convention						
		sea in areas of	Convention Area;	Area and						
		national		caught outside						
		jurisdiction, the Convention								
		and		Area;						
		transhipped								
		beyond areas								

¹Reporting requirements requested by CMMs and decisions by the Commission, as of WCPFC14 (Dec 2017)

	of national jurisdiction							
Offloaded	All in port	Transhipped	l in CA	Catch in CA	SKJ	Frozen	1,716 (LL)	
LL =	All in port	Transhipped	l in CA	Catch in CA	YFT	Frozen	186,126.92 (LL)	
565,105.52	All in port	Transhipped	l in CA	Catch in CA	BET	Frozen	356,281.20 (LL)	
	All in port	Transhipped	l in CA	Catch in CA	ALB	Frozen	20,980.50 (LL)	
PS =	All in port	Transhipped	l in CA	Catch in CA	SKJ	Frozen	0.00 (PS)	
1,064,890.00	All in port	Transhipped	l in CA	Catch in CA	YFT	Frozen	1,064,890 ² (LL)	
	All in port	Transhipped	l in CA	Catch in CA	BET	Frozen	0.00 (PS)	
Received	RC	Transhipped	l in CA	Catch in CA	SKJ	Frozen	144,908.03 (RC)	
RC =	RC	Transhipped	l in CA	Catch in CA	YFT	Frozen	13,441.00 (RC)	
189,637.03 Tarawa	RC	Transhipped	l in CA	Catch in CA	BET	Frozen	2,340.00 (RC)	
Tarawa	RC	RC Transhipped in C		Catch in CA	OTH	Frozen	503.00 (RC)	
	RC	Transhipped	l in CA	Catch in CA	MIX	Frozen	28,445.00 (RC)	
RC =	RC	Transhipped	l in CA	Catch in CA	SKJ	Frozen	5,441.00 (RC)	
9,183.00	RC	Transhipped	l in CA	Catch in CA	YFT	Frozen	668.00 (RC)	
Kiritimati	RC	Transhipped	l in CA	Catch in CA	BET	Frozen	209.00 (RC)	
	RC	Transhipped	l in CA	Catch in CA	OTH	Frozen	0.00 (RC)	
	RC	Transhipped	l in CA	Catch in CA	MIX	Frozen	2,865.00 (RC)	
 (2) the number of transshipments involving highly migratory fish stocks covered by this measure by fishing vessels that is responsible for reporting against, broken down by: a) offloaded b) transhipped in port, c) transhipped inside the d) caught inside the e) fishing gear 								
	areas of nation jurisdiction, a transhipped b of national jur	nd eyond areas	transhipped outside the Convention Area		outside the Co	nvention Area		

² Catch from PS offloaded from RC Sanwa Fontaine of 157.19mt

	No. of PS offloaded PS = 83	Transhipped inside port	Tranship	nent in CA	Catch in	CA	PS
	No. of LL offloaded LL = 58	Transhipped inside port	Tranship	nent in CA	Catch in	CA	LL
	Transhipmen RC = 10	Transhipped inside port	Tranship	ment in CA	Catch in	CA	RC
CMM 2010-07 [Sharks],Para 4	accordance w	ch estimates for shark spe ith WCPFC Convention a	and agreed	reporting pro	ocedures.	v based on es	timated values in
		Species Great Hammerhead	Number	Retained	Discarded		
			24	0	24		
		Oceanic Whitetip shark	1,092	09	1,083		
		Silky shark Whale shark	1,092	0	1,085		
		Blue shark	0	0	0		
		Mako shark	0	0	0		
		Thresher shark	0	0	0		
		Porbeagle shark	0	0	0		
		Blue shark	0	0	0		
		Silky shark	16	0	16		
		Oceanic whitetip shark	0	0	0		
		Mako shark	0	0	0		
		Thresher shark	1	0	1		
]						
	Source of data:	ΓUBS					
CMM 2011-03 [Impact of PS fishing on cetaceans],	1	ncidents from the Master ourse seine nets for 2018.	but based o	n observer d	lata report, the	ere is no Ceta	ceans have been
Para 4(fishing master)							

CMM 2011-04 [Oceanic	Based on the observer data report, the total estimated number for Oceanic Whitetip shark is twenty four (24).												
whitetip sharks], Para 3	Eleven (11) released alive and eleven (11) released dead.												
	Gear	Gear Species		Estimated number		ber D	ead	Alive	Unknown				
	PS Whitetip shark		nark	24		24	11 11		2				
CMM 2012-04 [Whale						otal estim	nated 1	number of	whale shark encircled by some KI fle				
sharks], Para 06 (Fishing	in 2018 i	in 2018 is three (3). (Source of data: Tubs).											
master)	Date	EEZ	Specie			Catch(n	/	FATE					
	28/01/20	018 TV	Whale shark			1]	Released-D	PA				
	19/11/18	B PX	Whale	e shark		1	1 Released-D		PD				
	22/05/18	B PG	Whale	shark		1]	Released-D	PU				
CMM 2013-08 [Silky	c) Based	on the observe	er data re	port (TU	JBS), th	ne total es	timat	ed number	of Silky shark for 2018 is 1108 as				
sharks], Para 3		tabulated in the table below.											
-													
	Note: 999	Note: 999 released Alive, 10 released Dead and 99 released Unknown.											
			Life status										
	Gear	Species		A1	D U	J		Estimated	l Total				
	PS	Silky shark		984	9 99	9			1092				
	LL	Silky shark		15	1 ()			16				

Observer coverage (WCPFC 11 decision –	According to national record, Kiribati attained the required 5% observer coverage on long line vessels.										
para 484(b)	CCM Fleet	Fishery			No. of Ti						
				Fotal estimat	ted	Observer	%	See NOTES	5		
	KIRIBATI	Longline		96		5	5.2%	8,9			
CMM 2015-02 [South Pacific Albacore] Para 4	Any catch of ALB south of 20°S have been submitted to SPC.										
CMM 2017-06 [Seabirds] Para 9	Effort, observed and estimated seabird by fishing gear summarized below.										
			Fishin	hing effort			erved se	abird			
	Year	Number of vessels	Number of hooks	Observed hooks	% hool observe	Num	ber	Rate			
	2014	6	3,456,382	0		0	0	0			
	2015	14	2,981,654	213,422	7.	16	0	0			
	2016	17	8,706,968	0		0	0	0			
	2017	7	9,923,355	0		0	0	0			
	2018	9	2,856,450	29,550	1.	03	0	0			
	Source: TUBS										
	Proportion of r	nitigation ty			of obser	rved effort	using 1	nitigation me	easures		

		Combination of Mitigation Measures	South of 30°S	25°S- 30°S	25°S to 23°N	North of 23°N		
		No mitigation measures		62.5				
	Options required south of 25°S	TL + NS						
		TL + WB						
		NS + WB						
		TL + WB + NS						
		HS						
	Other options 25°S-30°S Other options north of 23 ⁰ N	WB						
		TL						
		SS/BC/WB/DS LS						
		SS/BC/WB/(M OD or BDB)						
	Provide any other combination of	NS		37.5				

mitigation measures here					
	Totals (must equal 100%)	100			