SCIENTIFIC COMMITTEE SIXTEENTH REGULAR SESSION

12-20 August 2020

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

WCPFC-SC16-AR/CCM-27

(Rev.01)

UNITED STATES OF AMERICA

2020 Annual Report to the Western and Central Pacific Fisheries Commission

United States of America

PART I. INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS [1]

(Through 2019)

National Oceanic and Atmospheric Administration National Marine Fisheries Service

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April 2016	**YES**
If no, please indicate the reason(s) and intended actions:	

Summary

Large-scale fisheries of the United States and its Participating Territories for highly migratory species (HMS) in the Pacific Ocean include purse seine fisheries for skipjack tuna (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*); longline fisheries for bigeye tuna (*Thunnus obesus*), swordfish (*Xiphias gladius*), albacore (*Thunnus alalunga*), and associated pelagic fish species; and a troll fishery for albacore. Small-scale fisheries include troll fisheries for a wide variety of tropical tunas and associated pelagic species, handline fisheries for yellowfin and bigeye tuna, a pole-and-line fishery for skipjack tuna, and miscellaneous-gear fisheries.

Associated pelagic species include other tunas and billfishes, mahimahi (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), moonfish (*Lampris* spp.), escolar (*Lepidocybium flavobrunneum*), and pomfrets (Bramidae). The large-scale fisheries operate on the high seas, within the U.S. exclusive economic zone (EEZ), and within the EEZs of other nations. The small-scale fisheries operate in nearshore waters off Hawaii and the U.S. Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI).

Overall trends in total retained catch by the United States and U.S.-associated Participating Territory fisheries in the Western and Central Pacific Fisheries Commission (WCPFC) Statistical Area in 2019 are dominated by the catch of the purse seine fishery. Preliminary 2019 purse seine catch estimates total 143,587 t of skipjack, 17,777 t of yellowfin, and 2,974 t of bigeye tuna. The estimate of total U.S. purse-seine catch in 2018 has been revised to 194,779 t from last year's preliminary estimate. Total longline catch in the North Pacific Ocean (NPO) in

[1] PIFSC Data Report DR-20-xx.
Issued xx July 2020.

2019 increased slightly from 12,609 t in 2018 to 12,972 t in 2019. Longline retained catch by American Samoa in the South Pacific Ocean (SPO) continued a decreasing trend and was 1,350 t in 2019 (the lowest level recorded during the 2015–2019 time period). Bigeye tuna longline catch by the United States and its Territories increased to 6,066 t in 2019. Albacore longline catch by the United States and its Territories decreased to 1,113 t in 2019. Excluding catch attributed to the U.S. Participating Territories (i.e., American Samoa, Commonwealth of the Northern Mariana Islands, and Guam), longline catch of bigeye tuna by U.S. longline vessels increased to 3,535 t in 2019. Total bigeye tuna catch estimates by the U.S. longline fishery were below the limit of 3,554 t for 2019. The annual bigeye catch limits were established in U.S. fishery regulations (50 *CFR* Part 300) pursuant to the provisions of WCPFC Conservation and Management Measure (CMM) 2008-01 for bigeye and yellowfin tuna during 2009 through 2011, CMM 2011-01 in 2012, CMM 2012-01 in 2013, CMM 2013-01 in 2014, CMM 2014-01 in 2015, CMM 2015-01 in 2016, CMM 2016-01 in 2017, CMM 2017-01 in 2018 and CMM 2018-01 in 2019.

The longline catch of swordfish by the United States and its Territories decreased to 559 t in 2019. Small-scale (tropical) troll and handline vessels operating in nearshore waters represented the largest number of U.S.-flagged vessels but contributed only a small fraction of the catch. The longline fleet was the next largest fleet, numbering 155 vessels in 2019, while there were 31 purse seine vessels in 2019.

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries Service) conducted a wide range of research on Pacific tuna and associated species at its Southwest and Pacific Islands Fisheries Science Centers and in collaboration with scientists from other organizations. NOAA Fisheries conducts fishery monitoring and research, including biological and oceanographic research, fish stock assessment research, and socio-cultural studies on fisheries for tunas and billfishes. The monitoring and research also address animals caught as bycatch in those fisheries. In 2019, socio-economic studies addressed impacts of bigeye tuna catch limits on longline fishery, economics of Hawaii's small boat fishery, and social vulnerability indicators of fishing communities in the Pacific region. Stock assessment research was conducted almost entirely in collaboration with members of the WCPFC, the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC), and the Inter-American Tropical Tuna Commission (IATTC).

NOAA Fisheries biological and oceanographic research on tunas, billfishes, and sharks addressed use of observer data and the collection of biological samples to support stock assessments, and the effects of biological, economic, and management factors on pelagic stocks. Oceanographic studies in the central North Pacific focused on climate change impacts and ocean acidification. Bycatch mitigation studies focused on the longline fishery and included research on sea turtles, pelagic sharks, and cetaceans.

Tabular Annual Fisheries Information

This report presents estimates of annual catches of tuna, billfish, and other highly migratory species (HMS), and vessel participation during 2015–2019 for fisheries of the United States and its Participating Territories operating in the western and central Pacific Ocean (WCPO). All statistics for 2019 are provisional. Statistics for 2018 have been updated from those reported provisionally in the submission of 2017–2018 U.S. fishery statistics for the WCPO (NOAA, NMFS 2018). Statistics for 2015–2017 have not been updated. For the purposes of this report, the WCPO is defined as the Western and Central Pacific Fisheries Commission (WCPFC) Statistical Area. For the most part, U.S. estimates of catch by weight are estimates of retained catches due to lack of data on weights of discarded fish.

The purse seine fishery remains the largest U.S. fishery in terms of total catch. It accounts for about 91% of the total catch of HMS by the United States and its Participating Territories in the WCPO. The longline, tropical troll, handline and albacore troll fisheries account for 7.21%, 0.3%, 0.9%, and 0.2% of the total catch, respectively.

Fisheries of the United States and its Participating Territories for tunas, billfishes and other HMS produced an estimated catch of 180,348 t in 2019 (Table 1a), decreasing from 210,216 t in 2018 (Table 1b). The catch consisted primarily of skipjack tuna (80%), yellowfin tuna (11%), bigeye tuna (5%), and albacore (1%). Catches of skipjack tuna decreased in 2019 due to lower purse seine catches, but bigeye and yellowfin tuna catch increased from the previous year due to higher purse seine catches.

Further discussion of the tabular fisheries information is provided in the following section on flag state reporting.

Table 1a. Estimated weight (in metric tons) of catch by vessels of the United States and its Participating Territories (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands) by species and fishing gear in the WCPFC Statistical Area, for 2019 (preliminary). Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Purse seine species composition estimates have not been adjusted for 2019.

Species and FAO code	Purse seine	Longline	Albacore troll	Tropical troll	Handline	Total
Albacore (ALB), North Pacific		101	1	1	7	110
Albacore (ALB), South Pacific		1,012	789			1,801
Bigeye tuna (BET)	2,974	6,066		35	223	9,297
Pacific bluefin tuna (PBF)		2				2
Skipjack tuna (SKJ)	143,587	294		485	9	144,375
Yellowfin tuna (YFT)	17,777	1,956		461	244	20,438
Other tuna (TUN KAW FRI)				3	1	5
TOTAL TUNAS	164,337	9,431	790	985	485	176,028
Black marlin (BLM)	3	0		2		6
Blue marlin (BUM)	3	860		178	5	1,046
Sailfish (SFA)		16		1		17
Spearfish (SSP)		173		7		179
Striped marlin (MLS), North Pacific	0	461		13		474
Striped marlin (MLS), South Pacific	0	2				2
Other marlins (BIL)		0				0
Swordfish (SWO), North Pacific		555			3	558
Swordfish (SWO), South Pacific		4				4
TOTAL BILLFISHES	7	2,070		202	8	2,286
Blue shark (BSH)		0				0
Mako shark (MAK)		35				35
Thresher sharks (THR)		5				5
Other sharks (SKH OCS FAL SPN TIG CCL)						
TOTAL SHARKS		40				40
Mahimahi (DOL)	3	144		355	8	511
Moonfish (LAP)		428				428
Oilfish (GEP)		103				103
Pomfrets (BRZ)		275		0	8	283
Wahoo (WAH)	5	478		162	7	652
Other fish (PEL PLS MOP TRX GBA ALX GES RRU DOT)	1	2		13		17
TOTAL OTHER	9	1,432		530	23	1,994
TOTAL	**164,354**	**12,972**	**790**	**1,716**	**516**	**180,348**

Table 1b. Estimated weight (in metric tons) of catch by vessels of the United States and its Participating Territories (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands) by species and fishing gear in the WCPFC Statistical Area, for 2018 (preliminary). Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Purse seine species composition estimates have not been adjusted for 2018.

Species and FAO code	Purse seine	Longline	Albacore troll	Tropical troll	Handline	Total
Albacore (ALB), North Pacific		70	12	1	20	103
Albacore (ALB), South Pacific		1,542	429			1,971
Bigeye tuna (BET)	6,958	5,236		27	124	12,345
Pacific bluefin tuna (PBF)		1				1
Skipjack tuna (SKJ)	167,235	196		534	5	167,971
Yellowfin tuna (YFT)	20,565	2,339		596	337	23,837
Other tuna (TUN KAW FRI)				5	1	6
TOTAL TUNAS	194,759	9,384	441	1,164	487	206,235
Black marlin (BLM)	3			2		5
Blue marlin (BUM)	5	598		165	3	771
Sailfish (SFA)		11		4		14
Spearfish (SSP)		187		10		197
Striped marlin (MLS), North Pacific	0	375		12		387
Striped marlin (MLS), South Pacific	0	1				2
Other marlins (BIL)		1				1
Swordfish (SWO), North Pacific		631		1	3	634
Swordfish (SWO), South Pacific		6				6
TOTAL BILLFISHES	8	1,811		193	6	2,018
Blue shark (BSH)		3				3
Mako shark (MAK)		42				42
Thresher sharks (THR)		2				2
Other sharks (SKH OCS FAL SPN TIG CCL)				1		1
TOTAL SHARKS		47		1		48
Mahimahi (DOL)	2	174		321	9	506
Moonfish (LAP)		449				449
Oilfish (GEP)		112		0		112
Pomfrets (BRZ)		298		0	9	307
Wahoo (WAH)	5	329		184	6	523
Other fish (PEL PLS MOP TRX GBA ALX GES RRU DOT)	5	5		7		17
TOTAL OTHER	12	1,367		512	24	1,915

TOTAL	194,779	12,609	441	1,869	517	210,216

Table 1c. Estimated weight (in metric tons) of catch by vessels of the United States and its Participating Territories (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands) by species and fishing gear in the WCPFC Statistical Area, for 2017 (preliminary). Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Purse seine species composition estimates have not been adjusted for 2017.

Species and FAO code	Purse seine	Longline	Albacore troll	Tropical troll	Handline	Total
Albacore (ALB), North Pacific		90	336		35	462
Albacore (ALB), South Pacific	0	1,495	468			1,963
Bigeye tuna (BET)	3,267	5,356		38	106	8,767
Pacific bluefin tuna (PBF)		2	0			2
Skipjack tuna (SKJ)	140,081	262		392	6	140,741
Yellowfin tuna (YFT)	23,197	2,621		473	400	26,690
Other tuna (TUN KAW FRI)				16	2	18
TOTAL TUNAS	166,545	9,827	805	918	549	178,644
Black marlin (BLM)	2	1		2		5
Blue marlin (BUM)	4	612		155	4	775
Sailfish (SFA)		12		2		14
Spearfish (SSP)		234		9		243
Striped marlin (MLS), North Pacific		330		6		336
Striped marlin (MLS), South Pacific	0	2				2
Other marlins (BIL)		1				1
Swordfish (SWO), North Pacific		967			6	973
Swordfish (SWO), South Pacific		6				6
TOTAL BILLFISHES	6	2,165		174	10	2,356
Blue shark (BSH)		1				1
Mako shark (MAK)		36				36
Thresher sharks (THR)		5				5
Other sharks (SKH OCS FAL SPN TIG CCL)		0		1		1
TOTAL SHARKS		42		1		43
Mahimahi (DOL)	1	180		228	9	418
Moonfish (LAP)		322				322
Oilfish (GEP)		116				116
Pomfrets (BRZ)		300		0	15	315
Wahoo (WAH)	5	304		110	4	423
Other fish (PEL PLS MOP TRX GBA ALX GES RRU DOT)	4	3		9		16

TOTAL OTHER	10	1,226		347	28	1,611
TOTAL	**166,561**	**13,259**	**805**	**1,441**	**587**	**182,652**

Table 1d. Estimated weight (in metric tons) of catch by vessels of the United States and its Participating Territories (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands) by species and fishing gear in the WCPFC Statistical Area, for 2016 (updated). Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Purse seine species composition estimates have not been adjusted for 2016.

Species and FAO code	Purse seine	Longline	Albacore troll	Tropical troll	Handline	Total
Albacore (ALB), North Pacific		243	0	1	24	268
Albacore (ALB), South Pacific		1,527	157			1,684
Bigeye tuna (BET)	4,711	6,216		34	183	11,144
Pacific bluefin tuna (PBF)		1				1
Skipjack tuna (SKJ)	178,284	307		406	5	179,002
Yellowfin tuna (YFT)	18,162	1,653		535	269	20,619
Other tuna (TUN KAW FRI)		0		6	2	8
TOTAL TUNAS	201,156	9,947	157	983	483	212,726
Black marlin (BLM)	2	1		2		5
Blue marlin (BUM)	3	514		161	2	680
Sailfish (SFA)		19		2		21
Spearfish (SSP)		281		16		297
Striped marlin (MLS), North Pacific		328		12		340
Striped marlin (MLS), South Pacific		2				2
Other marlins (BIL)		1				1
Swordfish (SWO), North Pacific		639			4	643
Swordfish (SWO), South Pacific		6				6
TOTAL BILLFISHES	5	1,791		193	6	1,995
Blue shark (BSH)		1				1
Mako shark (MAK)		46			1	47
Thresher sharks (THR)		4				4
Other sharks (SKH OCS FAL SPN TIG CCL)		0		1		1
TOTAL SHARKS		51		1	1	53
Mahimahi (DOL)	1	234		369	9	613
Moonfish (LAP)		380				380
Oilfish (GEP)		191		0		191
Pomfrets (BRZ)	0	386		1	16	402
Wahoo (WAH)	2	402		145	5	554
Other fish (PEL PLS MOP TRX GBA ALX GES RRU DOT)	5	9		2		15
TOTAL OTHER	7	1,601		516	30	2,155

TOTAL	**201,168**	**13,390**	**157**	**1,693**	**520**	**216,928**

Table 1e. Estimated weight (in metric tons) of catch by vessels of the United States and its Participating Territories (American Samoa, Guam, and Commonwealth of the Northern Mariana Islands) by species and fishing gear in the WCPFC Statistical Area, for 2015. Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Purse seine species composition estimates have not been adjusted for 2015.

Species and FAO code	Purse seine	Longline	Albacore troll	Tropical troll	Handline	Total
Albacore (ALB), North Pacific		216	0	2	62	280
Albacore (ALB), South Pacific		1,786	152			1,937
Bigeye tuna (BET)	1,595	5,788		59	202	7,644
Pacific bluefin tuna (PBF)		6				6
Skipjack tuna (SKJ)	219,550	304		401	5	220,260
Yellowfin tuna (YFT)	17,019	1,238		558	401	19,216
Other tuna (TUN KAW FRI)		0		15	1	16
TOTAL TUNAS	238,164	9,337	152	1,035	671	249,359
Black marlin (BLM)	3	0		4		7
Blue marlin (BUM)	6	523		197	3	729
Sailfish (SFA)		15		3		18
Spearfish (SSP)		204		11		215
Striped marlin (MLS), North Pacific		411		11		422
Striped marlin (MLS), South Pacific		3				3
Other marlins (BIL)	1	1				2
Swordfish (SWO), North Pacific		690		1	5	696
Swordfish (SWO), South Pacific		7				7
TOTAL BILLFISHES	10	1,855		227	8	2,100
Blue shark (BSH)		1				1
Mako shark (MAK)		39				39
Thresher sharks (THR)		6			1	7
Other sharks (SKH OCS FAL SPN TIG CCL)		0		1		1
TOTAL SHARKS		46		1	1	48
Mahimahi (DOL)	1	225		404	13	643
Moonfish (LAP)		336				336
Oilfish (GEP)		185				185
Pomfrets (BRZ)		419			13	432
Wahoo (WAH)	1	338		203	9	551
Other fish (PEL PLS MOP TRX GBA ALX GES RRU DOT)	4	9		1		14
TOTAL OTHER	6	1,512		608	35	2,161
TOTAL	**238,180**	**12,750**	**152**	**1,871**	**715**	**253,668**

Table 1f. Longline retained catch in metric tons (t) by species and species group, for U.S. and American Samoa vessels operating in the WCPFC Statistical Area in 2015–2019. Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). Catch in North Pacific Ocean = NPO and catch in South Pacific Ocean = SPO.

	U.S. NPO					CNMI NPO					Guam NPO		American Samoa NPO					American Samoa SPO					Total			
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016
Vessels	139	136	136	133	135	128	121	119	117	117	118	112	127	113	118	23	22	17	13	15	20	21	155	150	150	
Species																										
Albacore, NPO	89	59	74	208	197								12	11	17	34	19						101	70	90	
Albacore, SPO																		1,012	1,542	1,495	1,527	1,786	1,012	1,542	1,495	1
Bigeye tuna	3,531	3,393	2,948	3,747	3,427	1,000	993	999	879	999	932	856	1,505	798	1,346	586	441	30	53	63	71	83	6,066	5,236	5,356	6
Pacific bluefin tuna	1	0	1	0									0	0	0			0	1	2	0	6	2	1	2	
Skipjack tuna	199	105	156	186	176								27	15	36	26	11	68	76	71	95	114	294	196	262	
Yellowfin tuna	1,574	1,868	1,750	1,093	681								201	209	312	175	105	181	261	559	385	455	1,956	2,339	2,621	1
Other tuna				0	0											0							0	0	0	
TOTAL TUNA	5,395	5,424	4,928	5,234	4,482	1,000	993	999	879	1,000	932	856	1,744	1,034	1,710	821	577	1,292	1,933	2,190	2,079	2,444	9,431	9,384	9,827	9
Black marlin	0	0	0	1	0										0		0			0			0	0	1	
Blue marlin	754	529	485	419	445								77	38	87	57	55	29	32	40	30	25	860	598	612	
Sailfish	12	9	9	15	11								2	1	2	2	2	2	1	1	2	2	16	11	12	
Spearfish	156	171	205	251	188								15	15	27	28	15	2	1	2	2	1	173	187	234	
Striped marlin, NPO	405	332	280	280	378								56	44	50	48	36						461	375	330	
Striped marlin, SPO	0	0																2	1	2	2	3	2	1	2	
Other marlins	0	1	1	1	1								0		0		0						0	1	1	
Swordfish, NPO	511	590	918	596	665								44	41	49	43	24						555	631	967	
Swordfish, SPO	0	0																4	6	6	6	7	4	6	6	
TOTAL BILLFISH	1,840	1,631	1,899	1,562	1,688								193	138	215	179	133	37	41	51	41	39	2,069	1,811	2,165	1
Blue shark	0															0			3	1	1	1	0	3	1	
Mako shark	32	36	30	37	35								3	5	5	9	4	0	0	0	0	0	35	42	36	
Thresher	4	2	2	3	5								1		0	0	1	1	1	2	0	0	5	2	5	
Other sharks			0	0																0	0	0			0	
Oceanic whitetip shark																					0	0				
Silky shark			0																0						0	
Hammerhead shark				0																						
Tiger shark																										
Porbeagle																										
TOTAL SHARKS	36	38	32	40	40								3	5	6	10	5	1	4	3	1	1	40	47	42	
Mahimahi	124	155	143	202	199								18	14	23	28	21	1	5	14	4	5	144	174	180	
Moonfish	374	390	257	304	279								54	58	63	74	55	1	1	1	2	2	428	449	322	
Oilfish	90	98	94	160	165								13	14	22	29	20	0	0	0	2	0	103	112	116	
Pomfret	248	265	260	339	380								27	32	40	46	39	0	0	0	0	0	275	298	300	
Wahoo	405	264	217	309	256								56	34	37	47	27	17	31	50	46	55	478	329	304	
Other fish	1	4	2	7	7								1	0	0	1	1	0	0	1	1	1	2	5	3	
TOTAL OTHER	1,242	1,177	975	1,322	1,285								169	153	185	224	164	20	37	67	55	64	1,432	1,367	1,226	1
																									0	
GEAR TOTAL	**8,513**	**8,271**	**7,834**	**8,158**	**7,495**	**1,000**	**993**	**999**	**879**	**1,000**	**932**	**856**	**2,110**	**1,330**	**2,116**	**1,235**	**878**	**1,350**	**2,016**	**2,311**	**2,176**	**2,548**	**12,971**	**12,610**	**13,259**	**13**

* Pacific bluefin tuna catches are reported for American Samoa (NPO); however, the species may be misidentified. There were no catch attributions to Guam in 2014, 2017, and 2018.

Table 1g. Estimated catch of tropical troll fishery in metric tons (t) for Hawaii, Guam, CNMI, and American Samoa vessels by species and species group, for U.S. vessels operating in the WCPFC Statistical Area in 2015–2019. Totals may not match sums of values due to rounding to the nearest metric ton (< 0.5 t = 0). NPO = North Pacific Ocean and SPO = South Pacific Ocean.

	Hawaii					Guam					CNMI					American Samoa					Total Tropical Troll				
	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015	2019	2018	2017	2016	2015
Vessels	1,291	1,383	1,410	1,478	1,576	465	398	408	428	372	49	56	48	73	12	5	7	8	12	11	1,810	1,844	1,874	1,991	1,971
Species																									
Albacore, NPO	1	1		1	2																1	1		1	2
Albacore, SPO																	0								
Bigeye tuna	35	27	37	34	59													1			35	27	38	34	59
Pacific bluefin tuna																									
Skipjack tuna	104	84	97	117	96	218	277	185	198	273	157	170	107	87	29	6	4	3	4	3	485	534	392	406	401
Yellowfin tuna	404	562	431	464	492	38	24	27	58	51	17	5	8	9	13	1	5	6	4	2	461	596	473	535	558
Other tunas	3	3	3	4	15	0	0	0	0			1	13	1		0	0	0	1		3	5	16	6	15
TOTAL TUNAS	548	677	568	620	664	256	301	213	256	324	173	177	127	97	42	7	9	10	10	5	985	1,164	918	983	1,035
Black marlin	2	2	2	2	4												0				2	2	2	2	4
Blue marlin	151	152	139	141	179	25	11	14	20	17	2	1	1			0	1	0		1	178	165	155	161	197
Sailfish	1	2	2	2	2	1	2													1	1	4	2	2	3
Spearfish	7	10	9	16	11																7	10	9	16	11
Striped marlin, NPO	13	12	6	12	11																13	12	6	12	11
Striped marlin, SPO																									
Other billfish																									
Swordfish, NPO		1			1																	1			1
Swordfish, SPO																									
TOTAL BILLFISHES	173	178	158	173	208	26	13	14	20	17	2	1	1			0	1	0		2	202	193	174	193	227
Blue shark																									
Mako shark																									
Thresher sharks																									
Other sharks		1	1	1	1																	1	1	1	1
TOTAL SHARKS		1	1	1	1																	1	1	1	1
Mahimahi	249	251	189	253	329	74	40	18	79	72	33	30	20	36	3	0	0	1	1		355	321	228	369	404
Moonfish																									
Oilfish							0												0			0		0	
Pomfrets						0	0	0	1					0					0		0	0	0	1	
Wahoo	145	137	84	122	189	15	44	21	15	14	1	3	4	2		0	1	0	6	0	162	184	110	145	203
Other pelagics			1		1	10	6	6			3	1	1			0	0	1	2		13	7	9	2	1
TOTAL OTHER	394	387	274	375	519	99	90	46	95	86	37	33	26	38	3	1	1	2	8	0	530	512	347	516	608
GEAR TOTAL	**1,115**	**1,243**	**1,001**	**1,169**	**1,392**	**381**	**404**	**273**	**371**	**427**	**211**	**211**	**155**	**135**	**45**	**9**	**11**	**12**	**18**	**7**	**1,716**	**1,869**	**1,441**	**1,693**	**1,871**

Table 1h. Estimated catch of swordfish, and number of U.S. vessels fishing for swordfish, south of 20° S in the WCPFC Statistical Area in 2015–2019, to fulfill the reporting requirements of WCPFC CMM 2009-03.

	U.S.-flagged Vessels South of 20° S	
Year	**Catch (t) by all**	**Number of vessels fishing for swordfish**
2019	0	0
2018	0	0
2017	0	1
2016	0	0
2015	< 1	0

Note: The catch is only reported for years when 3 or more vessels fished in the area, although the number of vessels fishing for swordfish may be less than the number that fished. The United States does not have any longline vessels operating under charter or lease as part of its domestic fishery south of 20° S nor does it have any other vessels fishing within its waters south of 20° S.

Table 2a. Estimated number of United States and Participating Territories vessels operating in the WCPFC Statistical Area, by gear type, from 2015 to 2019. Data for 2019 are preliminary.

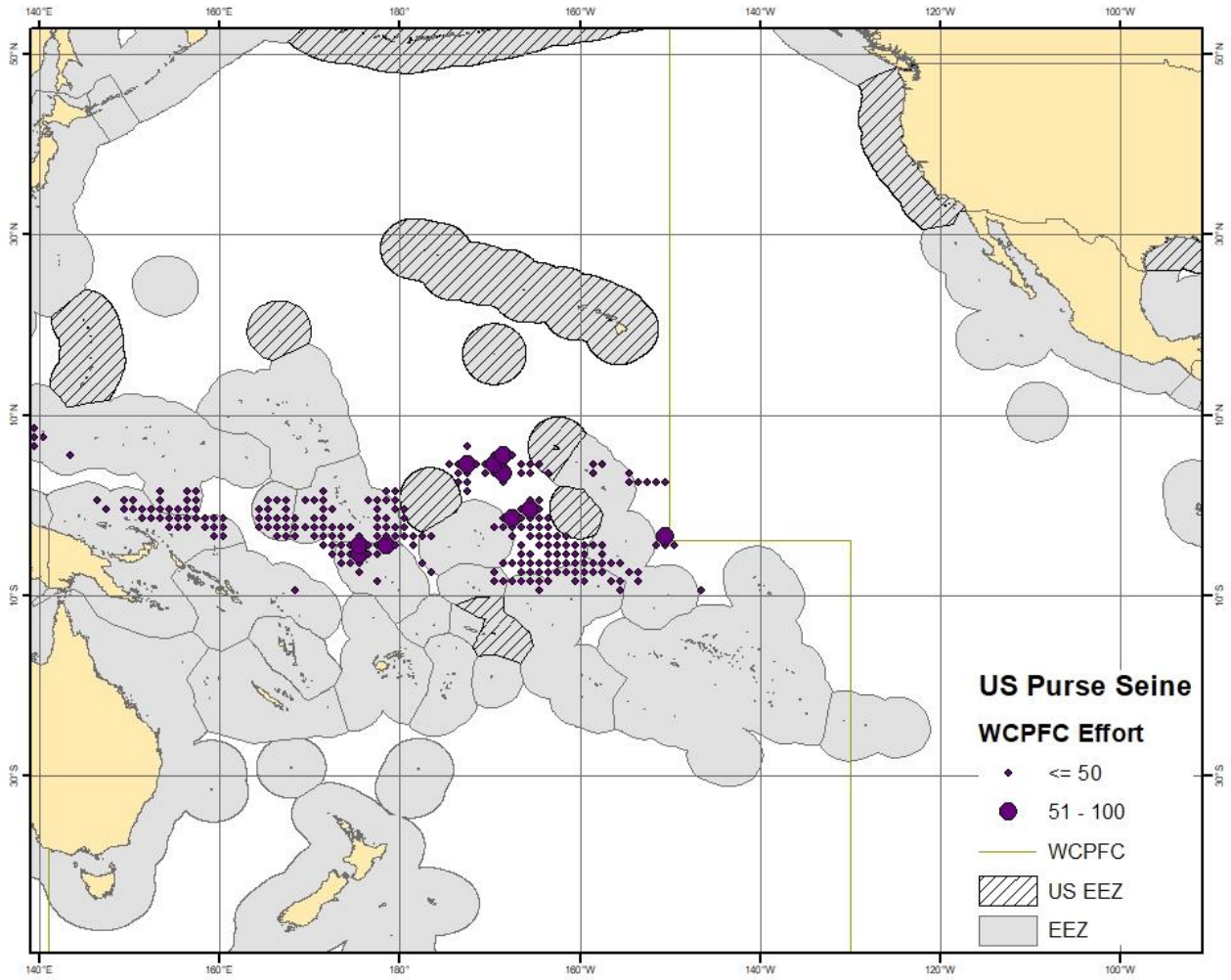
	2019	**2018**	**2017**	**2016**	**2015**
Purse seine	31	34	34	37	39
Longline (N Pac-based) [1]	139	136	136	133	135
Longline (American Samoa-based)	127	113	118	23	22
Total U.S. Longline [2]	155	150	150	151	156
Albacore troll (N Pac) [3]	3	4	14		4
Albacore troll (S Pac) [3]	9	13	15	10	7
Tropical troll	1,810	1,844	1,874	1,991	1,971
Handline	444	430	494	475	478
Tropical Troll and Handline (combined)[4]	2,016	1,997	2,081	2,178	2,119
TOTAL	**2,211**	**2,194**	**2,280**	**2,376**	**2,321**

[1] Includes Hawaii- and California-based vessels that fished west of 150 W.
[2] Some longline vessels fished in both Hawaii and American Samoa and are counted only once in the Total U.S. Longline.
[3] Some vessels fished on both sides of the equator, and are counted only once in the TOTAL.
[4] Some vessels used both tropical troll and handline gear, but are counted only once in the combined total.

Table 2b. Estimated number of United States and Participating Territories vessels operating in the WCPFC Statistical Area, by gear type, from 2015 to 2019. Data for 2019 are preliminary.

Gear and year	0-50	51-200	201-500	501-1000	1001-1500	1500+
2015 Purse Seine					17	22
2016 Purse Seine					15	22
2017 Purse Seine					14	20
2018 Purse Seine					15	19
2019 Purse Seine					14	17
2015 Longline	13	143				
2016 Longline	12	139				
2017 Longline	8	142				
2018 Longline	7	143				
2019 Longline	8	147				
	0-50	**51-150**	**150+**			
2015 Pole and Line	1	1				
2016 Pole and Line	1	1				
2017 Pole and Line	1	1				
2018 Pole and Line	1	1				
2019 Pole and Line	1	1				
2015 Albacore Troll		6	4			
2016 Albacore Troll		5	4			
2017 Albacore Troll		11	8			
2018 Albacore Troll		9	6			
2019 Albacore Troll	2	6	3			

Figure 1. Spatial distribution of fishing effort (fishing sets) reported in logbooks by U.S.-flagged purse seine vessels the Pacific Ocean in 2019 (preliminary data). Effort in some areas is not shown to preserve data confidentiality.



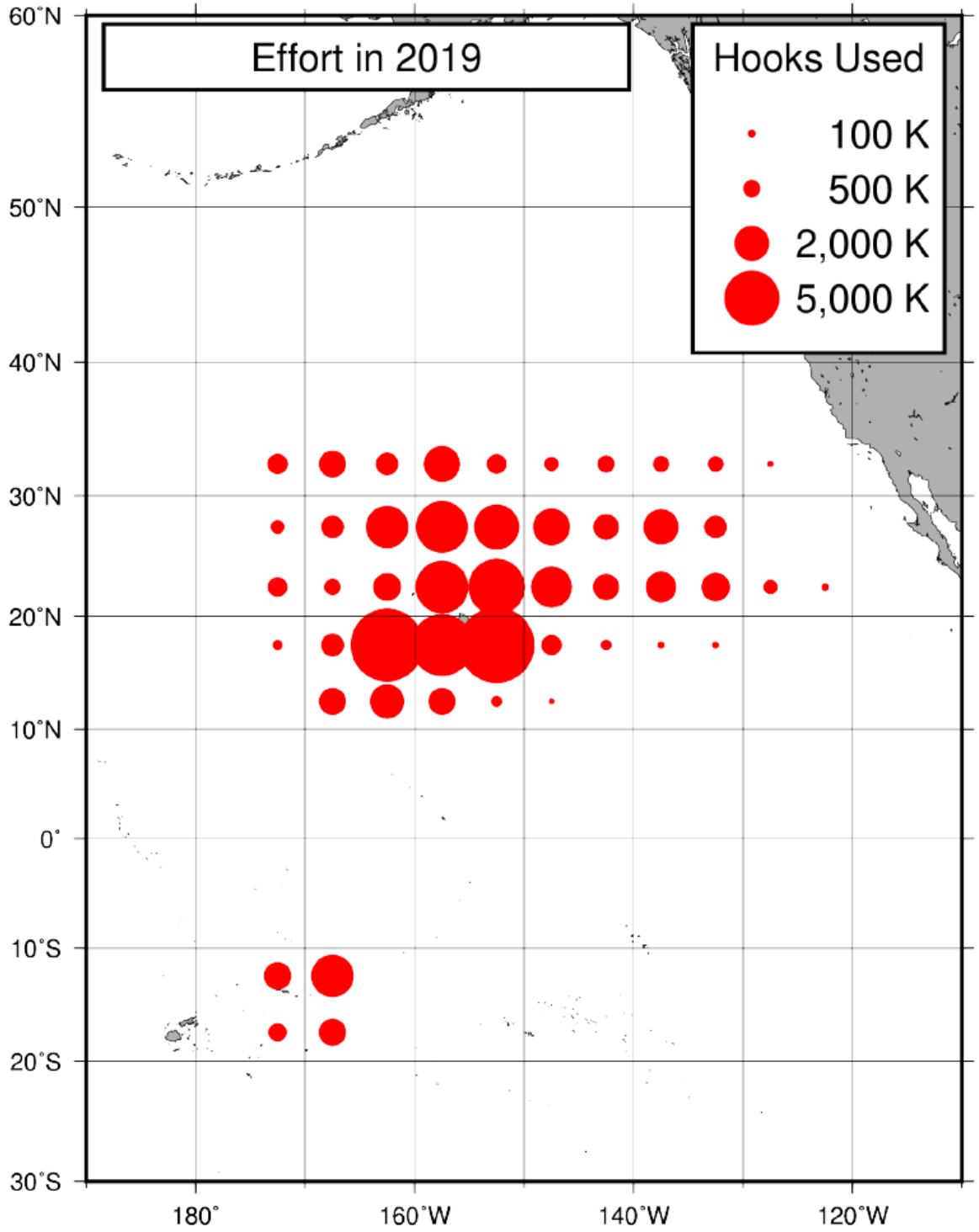


Figure 2a. Spatial distribution of fishing effort (K=1,000 hooks) reported by U.S.-flagged longline vessels in 2019 proportional to effort (preliminary data). Effort in some areas is not shown to preserve data confidentiality.

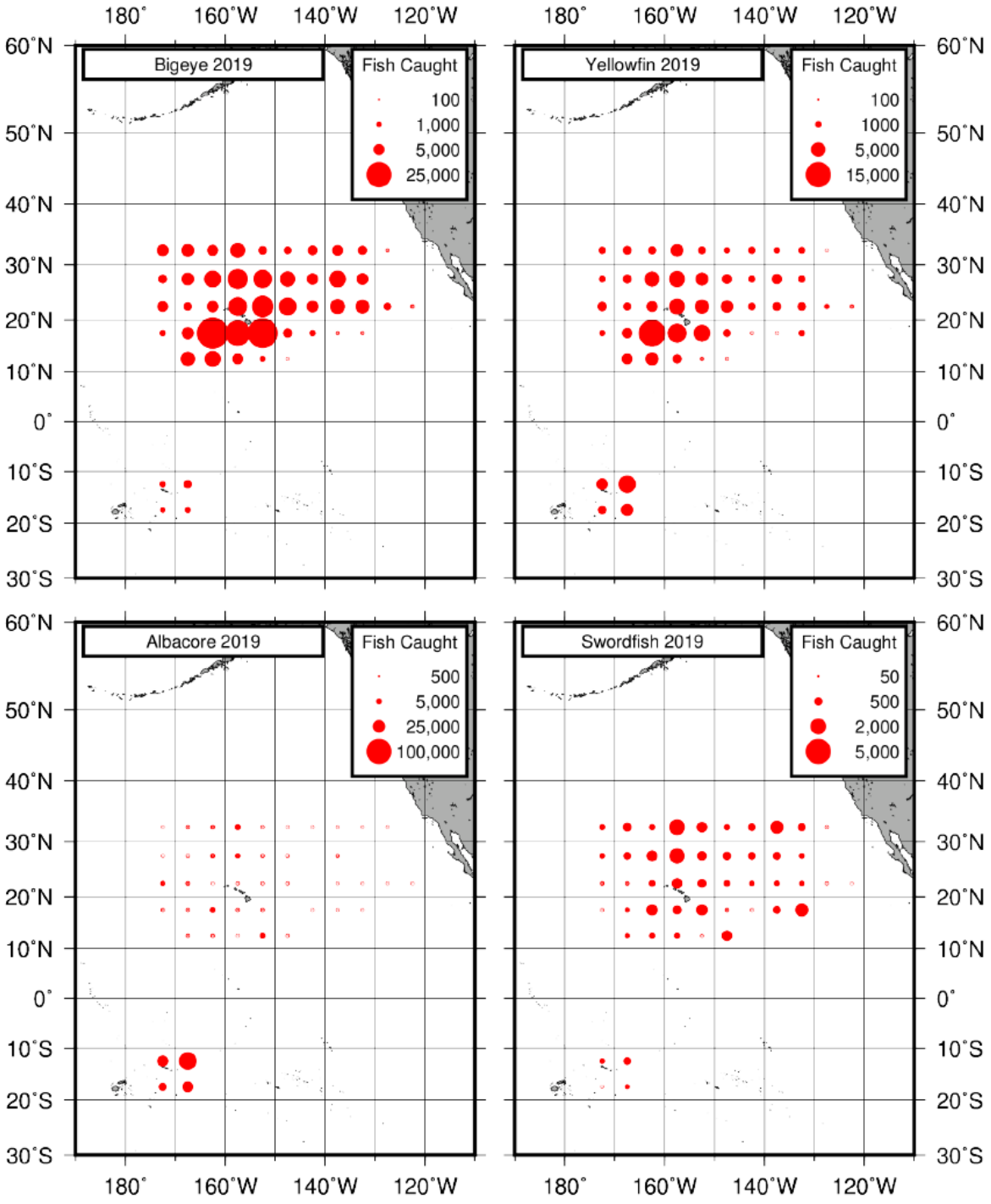


Figure 2b. Spatial distribution of catch by U.S.-flagged longline vessels, in numbers of fish (includes retained and released catch), in 2019 (preliminary data). Catches in some areas are not shown to preserve data confidentiality.

Background

[n/a]

Flag State Reporting of National Fisheries

U.S. Purse seine Fishery

The U.S. purse seine catch of tunas in the WCPO was 164,354 t in 2019 compared to 194,779 t in 2018, and was primarily composed of skipjack tuna, with smaller catches of yellowfin and bigeye tuna. The total catches of tunas have fluctuated over the past 5 years (Tables 1a-1e). The number of vessels in 2019 was 31 vessels, 3 less than in 2018 (Table 2a). The fishery continued to operate further eastward, and not as far northward as in the prior years, mainly in areas between 5° N and 15° S latitude and 155° E and 135°W longitude (Figure 1).

U.S. Longline Fisheries

The longline fisheries of the United States and the Territory of American Samoa in the WCPO include vessels based in Hawaii, California, and American Samoa. The total number of longline vessels active in the WCPO during 2015–2019 ranged from 155 vessels in 2019 to 150 vessels in 2018 (Table 2). The U.S. longline fishery in the NPO consistently had the highest number of vessels in operation with 139 in 2019. Participation in the American Samoa-permitted fleet operating in the South Pacific rose from 13 vessels in 2018 to 17 vessels in 2019. A few vessels occasionally operated in both the Hawaii-permitted and American Samoa-permitted longline fisheries during 2015–2019. Longline catches made outside of the U.S. EEZ in NPO by vessels operating with both American Samoa and Hawaii longline permits and landing their fish in Hawaii are attributed to the longline fishery of American Samoa and not to the U.S. longline fishery in the NPO in accordance with federal fisheries regulations (50 *CFR* 300.224).

These American Samoa longline landings in the NPO (labeled as American Samoa in the NPO in Table 1f) are shown separately from U.S. longline catches in the NPO. The table entries for American Samoa (Table 1f) include its catches in the South Pacific landed in American Samoa. The overall American Samoa fishery total is the sum of its catches in the South Pacific and in the NPO attributed to American Samoa. Pursuant to the Consolidated and Further Continuing Appropriations Act (CFCAA) of 2011 (Pub. L. 112-55, 125 Stat. 552 et seq.) and NMFS regulations under 50 *CFR* 300.224, if the U.S. vessel landing the fish was included in a valid arrangement under Sec. 113(a) of the CFCAA or Amendment 7 of the Pelagics Fishery Ecosystem Plan, its catch during those periods was attributed to the fishery of American Samoa in the NPO from 2011 to 2012 and 2017 to 2019, to CNMI during 2013 through 2019, and to Guam in 2015 and 2016. Under the Amendment 7 arrangements (2014 through 2019 only bigeye tuna were attributed to the participating territory and all other incidental catch was attributed to the Hawaii-based fishery).

The U.S. longline fishery in the NPO operated mainly from the equator to 40° N latitude and from 120° W to 175° W in 2019 (Figure 2a). The American Samoa-based longline fishery operated mostly from 10° S to 20° S latitude and 165° W to 175° W longitude in 2019 (Figure

2a). The U.S. longline fishery in the NPO fishery targeted bigeye tuna and swordfish, with significant landings of associated pelagic species, whereas the American Samoa longline fishery in the SPO targeted albacore, but also produced a noteworthy amount of yellowfin tuna. Pacific bluefin tuna catches are reported on longline log sheets for the American Samoa fishery, however the species may be misidentified (Tables 1a-1f). The dominant components of the longline catch by the United States and its Territories in 2018 were bigeye tuna, albacore, yellowfin tuna, and swordfish (Table 1a, Figure 2b). The total catch of all species during the past 5 years ranged from a high of 13,390 t in 2016 which decreased to 13,259 t in 2017, decreased further in 2018 to 12,610 t, and finally increased slightly to 12,971 t in 2019 (Tables 1a-1e).

Most of the U.S. longline fishery in the NPO involved deep-set longline effort directed towards tunas. High ex-vessel tuna prices along with relatively lower operating expenses in this sector of the U.S. longline fishery in the NPO motivated longline fishers to continue targeting bigeye tuna.

U.S. longline landings of swordfish in the NPO (including Territories) varied substantially and fell from a high of 967 t in 2017 to a low of 555 t in 2019. The shallow-set U.S. longline fishery for swordfish accounts for the majority of the swordfish catch and has operated under the allowable number of sea turtle interaction limits in 12 out of 16 years since its reopening in 2004. This fishery was closed in 2019 when it reached its turtle interaction limit.

U.S. Albacore Troll Fisheries

In recent years, participation in the U.S. troll fisheries for albacore in the WCPO has fluctuated greatly. Eleven vessels participated in the South Pacific albacore troll fishery in 2019 compared to 12 vessels in 2018 and 15 vessels in 2017 (Table 2). The South Pacific albacore troll fishery operates mostly between 30° S and 45° S latitude and 145° W and 175° W longitude. The catch in this fishery is composed almost exclusively of albacore. The albacore troll catches in the WCPO by both the U.S. North Pacific and South Pacific albacore troll fisheries increased from 441 t in 2018 to 790 t in 2019 (Tables 1a-1e).

Other Fisheries of the United States and Participating Territories

Other fisheries of the United States and Participating Territories include the small-scale tropical troll, handline, and pole-and-line fleets, as well as miscellaneous recreational and subsistence fisheries. In American Samoa, Guam, and CNMI these fisheries are monitored by creel surveys, and the data are included in the tropical troll statistics, as this fishing method is the one most commonly used in the recreational and subsistence fisheries in these areas. Most of the vessels comprising the United States and Participating Territories tropical troll fishery, and all of the U.S. handline and pole-and-line vessels are located in Hawaii. The total catch by these fisheries was 2,232 t in 2019. The catch was composed primarily of yellowfin tuna, skipjack tuna, bigeye tuna, and mahimahi.

Coastal State Reporting

[n/a]

Socioeconomic Factors and Trends in the Fisheries

Socio-economic Surveys and Analyses

NMFS staff and colleagues have conducted surveys and analyses to better understand the socioeconomic considerations of U.S. fisheries in the WCPO.

Relevant Publications

Ayers AL, Leong K. 2020. Examining the Seascape of Compliance in U.S. Pacific Island Fisheries. Marine Policy: 103820. https://doi.org/10.1016/j.marpol.2020.103820.

Chan HL. 2020. Economic impacts of Papahanaumokuakea Marine National Monument expansion on the Hawaii longline fishery. Marine Policy. 103869. https://doi.org/10.1016/j.marpol.2020.103869.

Leong KM, Torres A, Wise S, Hospital J. 2020. Beyond Recreation: When Fishing Motivations are more than Sport or Pleasure. PIFSC Administrative Report, H-20-05, 57 p. https://doi.org/10.25923/k5hk-x319.

Lovell S, Hilger J, Rollins E, Olsen NA, Steinbeck S. 2020. The Economic Contribution of Marine Angler Expenditures on Fishing Trips in the United States, 2017. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-201, 80 p.

Ma H, Ogawa T, Lowe K, Van Voorhees D, Sminkey T, Yau A, Quach M, O'Malley J, Dukes S, Opsomer J, Lesser V, Matthews T, Sabater M, Torres A, Tibbatts B. 2019. Developing certified surveys for the Hawaii Marine Recreational Fishing Survey. Pacific Islands Fisheries Science Center, PIFSC Administrative Report, H-19-06, 54 p. https://doi.org/10.25923/2pta-zs36.

Pan M. 2019. Cost-earnings Study and Economic Performance Analysis of American Samoa Longline Pelagic Fishery: 2016 Operation and Recent Trends. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-85, 35 p. https://doi.org/10.25923/jemx-6804.

Pan M. 2019. Tracking Changes on Fishery Economic Performance. Pacific Islands Fisheries Science Center, PIFSC Special Publication, SP-19-004, 6 p. https://doi.org/10.25923/zv14-9m26.

Rollins E, Hospital J. 2019. Economic Contributions of Pelagic Fishing Tournaments in Hawaii, 2018. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-91, 42 p. https://doi.org/10.25923/sdtk-yg68.

Disposition of Catch

The purse seine catch is stored onboard as a frozen whole product. Most of the catch has historically been off-loaded to canneries in Pago Pago, American Samoa; however, most

vessels now transship their catches in the ports of other Pacific Island countries to canneries in Southeast Asia and Latin America. Cannery products from American Samoa are typically destined for U.S. canned tuna markets. Catches of non-tuna species are consumed onboard the vessel or discarded at sea.

U.S. longline vessels in the NPO store their catch on ice and deliver their product to the market as a fresh product. Large tunas, marlins, and mahimahi are gilled and gutted before storage on the vessel, swordfish and large marlin are headed and gutted, and the rest of the catch is kept whole. These products are primarily sold fresh locally in Hawaii to restaurants and retail markets, or air freighted to U.S. mainland destinations with a very small proportion of high quality bigeye tuna exported to Japan. The American Samoa-based longline albacore catch is gilled and gutted and delivered as a frozen product to the cannery in Pago Pago, American Samoa. Other associated catch is either marketed fresh (for vessels making day trips) or frozen (for vessels making extended trips).

The catch in the albacore troll fishery in the South Pacific is frozen whole. Most vessels transport their catches to Vancouver, Canada, for sale. The other fisheries store their catch in ice. Large tunas are gilled and gutted while other species are kept whole. The small-scale tropical troll fisheries chill their products with ice and sell it fresh, mainly to local markets.

Onshore Developments

[n/a]

Future Prospects of the Fisheries

As a result of the global Covid-19 related pandemic in 2020 resulting in a lower demand for fresh tuna in Hawaii and the U.S. mainland, the future prospect for the U.S. longline fishery in the NPO is uncertain. This sector of the longline fishery is already constrained by catch limits for bigeye tuna in the WCPO & EPO. The U.S. longline fishery bigeye tuna limit in the WCPO was 3,554 t in 2015 and 2016 decreased to 3,138 t in 2017 and increased back to 3,554 t in 2018 and 2019. In 2018 and 2019, the bigeye tuna catch limit in the eastern Pacific Ocean (EPO) established pursuant to decisions of the Inter-American Tropical Tuna Commission (IATTC) was increased from 500 t to 750 t for vessels >24 m in length. About 30 Hawaii-permitted and California longline vessels >24 m were active in the EPO in 2019. Bigeye tuna catch in the EPO by longline vessels >24 m was 510 t in 2019, well below the 750 t limit.

The effort by the shallow-set sector targeting swordfish declined during 2013–2019 despite the removal of the effort restriction in 2006 and revised sea turtle interaction limits in 2012 (26 leatherback and 34 loggerhead sea turtles). The shallow-set longline fishery was closed on in both 2018 and 2019, as a result of a Court Order that reset the take limits to pre-2012 levels (16 leatherback and 17 loggerhead sea turtles). The bigeye tuna catch limits do not affect the shallow-set longline fishery as adversely as the deep- set sector since this species represents only a small proportion of its catch. The shallow-set longline fishery for swordfish is also highly seasonal.

Fuel costs increased slightly throughout 2019 while prices for supplies and goods remained constant or increased slightly. The future price of fuel is also highly uncertain for 2020 and this uncertainty may hinder the economic performance of both sectors of the longline fishery. Other issues facing both sectors of the U.S. longline fishery in the NPO are exceeding false killer whale (*Pseudorca crassidens*) interaction limits in the main Hawaiian Islands EEZ and the recent expansion of the NWHI Monument out to the 200-mile EEZ. The U.S. longline fishery in the NPO is expected to continue targeting bigeye tuna and swordfish as well as catch of other associated pelagic species and deliver them fresh to service both local and mainland markets.

Catches by the American Samoa longline fishery in the South Pacific decreased from years 2014 to 2019 and were at a 5-year low in 2019 (Table 1 f). Despite declining catches, the American Samoa longline fishery in the South Pacific is expected to continue targeting albacore and delivering their catch frozen to the cannery in Pago Pago, American Samoa.

The prospect of participation and catch from the U.S. small-scale troll and handline fisheries is expected to be fairly stable although these fisheries are challenged by an uncertain economy and the uncertainty of fish prices. The main Hawaiian Island troll and handline fisheries are expected to continue to make single-day trips targeting tunas, billfish, and other pelagic fish, and deliver their catch fresh to local markets.

Status of Fisheries Data Collection Systems

Logsheet Data Collection and Verification

Various sources of data are used to monitor U.S. pelagic fisheries. The statistical data systems that collect and process fisheries data consist of logbooks and fish catch reports submitted by fishers, at- sea observers, and port samplers; market sales reports from fish dealers; and creel surveys. The coverage rates of the various data systems vary considerably.

The primary monitoring system for the major U.S. fisheries (purse seine, longline, and albacore troll) in the WCPO consists of the collection of federally mandated logbooks that provide catches (in numbers of fish or weight), fishing effort, fishing location, and some details on fishing gear and operations. U.S. purse seine logbook and landings data are submitted as a requirement of the South Pacific Tuna Treaty (100% coverage) since 1988. The Hawaii, California, and American Samoa-based longline fisheries are monitored using the NOAA Fisheries Western Pacific Daily Longline Fishing Logs for effort and resulting catch. The coverage of logbook data is assumed to be complete (100%); for the American Samoa fishery, there may be under-reporting of a very small percentage of trips which can be estimated via a creel survey that monitors catch by small longline vessels. Beginning in 1995, all U.S. vessels fishing on the high seas have been required to submit logbooks to NOAA Fisheries.

In Hawaii, fish sales records from the Hawaii Division of Aquatic Resources (DAR) Commercial Marine Dealer Report database are an important supplementary source of information, covering virtually 100% of the Hawaii-based longline landings. The Western Pacific Fisheries Information Network (WPacFIN) has recently improved its procedures for

integrating Hawaii fisheries catch data (numbers of fish caught, from logbooks) and information on fishing trips from fishermen's reports with fish weight and sales data from the dealers' purchase reports. As a result, data on the weight and value of most catches on a trip level can be linked. This integration of data provides average fish weight data by gear type, time period, and species that are used to estimate total catch weights for the Hawaii fisheries in this report. Other enhancements to this integration are under development, such as linking the weight of longline-caught fish from the Hawaii Marine Dealer Report records with the Hawaii-based longline logbook data to approximate the weight of catch by geographic location. In addition, species misidentifications on a trip level have been corrected by cross-referencing the longline logbook data, the Hawaii Marine Dealer Report data, and data collected by NOAA Fisheries observers deployed on Hawaii-based longline vessels (see below). Information on these corrections has been published, but is not yet operationally applied to routine data reporting (i.e., the data reported here).

Small-scale fisheries in Hawaii, i.e., tropical troll, handline, and pole-and-line, are monitored using the Hawaii DAR Commercial Fishermen's Catch Report data and Commercial Marine Dealer Report data. The tropical troll fisheries in American Samoa, Guam, and CNMI are monitored with a combination of Territory and Commonwealth creel survey and market monitoring programs, as part of WPacFIN.

Observer Programs

U.S. purse seine vessels operating in the WCPO under the Treaty on Fisheries between the Governments of Certain Pacific Island States and the United States of America (The South Pacific Tuna Treaty) pay for, and are monitored by, observers deployed by the Pacific Islands Forum Fisheries Agency (FFA). Monitoring includes both the collection of scientific data as well as information on operator compliance with various Treaty- related and Pacific Island country (PIC)-mandated requirements. These data are not described here. NOAA Fisheries has a field station in Pago Pago, American Samoa, that facilitates the placement of FFA-deployed observers on U.S. purse seine vessels.

Starting on January 1, 2010, the observer coverage rate in the U.S. purse seine fishery in the Convention Area has been 100%. Data collected under this arrangement by FFA-deployed observers are currently provided directly to the WCPFC.

Under the Fishery Ecosystem Plan for Pacific Pelagic Fisheries of the Western Pacific Region established under the Magnuson-Stevens Fishery Conservation and Management Act, observers are required to be placed aboard Hawaii-based pelagic longline vessels targeting swordfish (shallow set, 100% coverage) and tunas (deep set, 20% coverage) and American Samoa-based longline vessels targeting tuna (deep set, 20% coverage).

The main focus of the longline observer program is to collect scientific data on interactions with protected species. The observer program also collects relevant information on fishing operations, fish catch, and on the biology of target and non-target species. Fish catch data collection now includes measurement of a systematic subsample of 33% of all fish brought on deck, including bycatch species. Prior to 2006, observers attempted to measure 100% of tunas, billfishes and sharks brought on deck, but not other species. Researchers use observer-collected protected species data to estimate the total number of interactions with those species.

For the U.S. longline fishery in the NPO, there were observers on 273 trips out of a total of 1,298 deep-set trips, as well as on all shallow-set trips, resulting in coverage rates of 21% and 100%, respectively in 2019. For the American Samoa-based longline fishery, 2019 was the thirteenth year monitored by observers. The coverage rate was 15.7% for a total of 8 trips out of 51 trips. These coverage statistics are from 2019 reports of the NOAA Pacific Islands Regional Observer Program (PIROP) and are based on longline trips that departed with observers in calendar year 2019.[2]

Per reporting requirements agreed to at WCPFC 11, Table 3 contains estimates on observer coverage in U.S. longline fisheries for 2019 in the WCPFC Area exclusive of the U.S. EEZ.

[2] Detailed information on the U.S. Pacific Islands Regional Observer Program can be found at http://www.fpir.noaa.gov/OBS/obs_qrtrly_annual_rprts.html.

Table 3. Observer coverage in 2019 of the U.S. longline fisheries in the WCPFC Area exclusive of the U.S. EEZ. American Samoa did not report any effort exclusive of the U.S. EEZ in 2019.

Fishery	Number of Hooks			Days Fished			Number of Trips		
	Total Estimated	Observed	%	Total Estimated	Observed	%	Total Estimated	Observed	%
Hawaii and California-based	36,939,436	7,374,618	20	13,349	2,831	21	1,298	273	21

Fishery Interactions with Protected Species

Information on estimated fishery interactions with non-fish species by the Hawaii-based longline fishery during 2015–2019 is provided in Tables 4a-4c. For the American Samoa-based component of the U.S. longline fishery, scientists have not yet provided rigorous estimates of the total interactions with protected species.

CMM 2011-01 requires CCMs to report instances in which cetaceans have been encircled by purse seine nets of their flagged vessels. In 2019, purse seine vessels reported 12 instances of interactions with 26 individual marine mammals. This included 10 short finned pilot whales (*Globocephala macroprhyncus* -6 released alive and 4 dead), 8 rough toothed dolphins (*Steno bredanensis* - 2 dead and 6 released alive), 4 unidentified dolphins (all released alive), 2 Minke whales (*Balaenoptera acutorostrata* - all released alive), and 2 long finned pilot whales (*Globocephala melas* both released alive).

CMM 2011-04 requires CCMs to estimate the number of releases of oceanic whitetip sharks (*Carcharhinus longimanus*) including their status upon release. For the U.S. purse seine fishery observer data indicates that there were 95 oceanic whitetip sharks released in 2019 (51 alive and 44 dead). In the longline fishery, data indicate that 329 oceanic whitetip sharks were released (321 alive and 8 dead) in the Hawaii-based deep set fishery and 525 oceanic whitetip sharks were released (512 alive and 13 dead) in the American Samoa-based fishery.

CMM 2012-04 requires CCMs to report instances in which whale sharks (*Rhincodon typus*) have been encircled by purse seine nets of their flagged vessels. In 2019, purse seine vessels reported interactions with 67 individual whale sharks, all released alive.

CMM 2013-08 requires CCMs to estimate the number of releases of silky sharks (*Carcharhinus falciformis*) including their status upon release. For the U.S. purse seine fishery, information available indicate that there were 7,316 silky sharks released in 2019 (2,926 alive and 4,389 dead). In the longline fishery, data indicate that 304 silky sharks were released (293 alive and 11 dead) in the Hawaii-based fishery and 714 silky sharks were released (696 alive and 18 dead) in the American Samoa-based fishery.

Table 4a. Estimated total numbers of fishery interactions (not necessarily resulting in mortalities or serious injury) with non-fish species by shallow-set and deep-set (combined) longline fishing in the Hawaii-based fishery during 2015–2019[2].

Species	2019	2018	2017	2016	2015
Marine Mammals					
Striped dolphin (*Stenella coeruleoalba*)			1	1	4
Common dolphin (*Delphinus delphis, D. capensis)*					
Bottlenose dolphin (*Tursiops truncatus*)		4	7	6	2
Risso's dolphin (*Grampus griseus*)	7	2	7	2	13
Blainville's beaked whale (*Mesoplodon blainvillei*)					
Bryde's whale (*Balaenoptera edeni*)					
False killer whale (*Pseudorca crassidens*)	75	49	45	39	21
Ginkgo-toothed beaked whale (*Mesoplodon*					1
Shortfinned pilot whale (*Globicephala*					4
Rough-toothed dolphin (*Steno bradenensis*)	4			5	
Northern elephant seal (*Mirounga angustirostris*)					
Humpback whale (*Megaptera novangliae*)					1
Pygmy sperm whale (*Kogia Breviceps*)					
Fin whale (*Balaenoptera physalus)*					1
Guadalupe fur seal (*Arctocephalus townsendi*)			3	1	
Unspecified false killer or shortfinned pilot whale	6	4			6
Unidentified Cetacean (*Cetacea*)	10	15	18	5	
Unidentified Pinniped *(Pinnipedia*)					3
Unspecified member of beaked whales (*Ziphiidae*)	7			6	
Unspecified eared seal (*Otariidae*)	1				
Total Marine Mammals	**110**	**74**	**81**	**65**	**58**
Sea Turtles					
Loggerhead turtle (*Caretta caretta*)	20	42	28	23	24
Leatherback turtle (*Dermochelys coriacea*)	14	28	4	20	24
Olive Ridley turtle (*Lepidochelys olivacea*)	140	97	123	162	70
Green turtle (*Chelonia mydas*)	12	18	20	5	4
Unidentified hardshell turtle (Cheloniidae)	0		5		
Total Sea Turtles	**186**	**185**	**175**	**215**	**122**

[2] The estimates are made by raising the number of observed interactions by a factor determined according to the design of the observer sampling program. The species listed are those that have been observed.
Sources: Pacific Islands Regional Office observer program reports (http://www.fpir.noaa.gov/OBS/obs_qrtrly_annual_rprts.html) and Pacific Islands Fisheries Science Center Internal Reports IR-08-007, IR-09-011, IR-10-009, IR-11-005, IR-12-012, IR-13-014, IR-13-029, and IR-14-022. Hawaii-based longline logbook reported data on fish discards are available at http://www.pifsc.noaa.gov./fmsd/reports.php

Table 4b. Effort and observed seabird captures 2015-2019 for Hawaii-based longline fishery for North of 23° N and 23° N – 30° S areas combined. Rate is observed captures per 1,000 hooks.

	Fishing Effort				Observed Seabird Captures	
Year	Number of Vessels	Number of Hooks	Observed Hooks	% Hooks Observed	Number	Rate
2015	143	48,925,850	12,121,568	24.78	228	0.02
2016	139	51,924,659	10,722,120	20.65	213	0.02
2017	142	54,630,336	11,199,621	20.50	192	0.02
2018	142	54,482,420	11,114,413	20.40	249	0.02
2019	146	63,349,796	13,322,564	21.03	226	0.02

Table 4c. Total number of observed seabird captures by species in Hawaii-based longline fishery 2015-2019 for North of 23° N and 23° N – 30° S areas combined. Observed capture numbers for 2019 by area are preliminary.

	2019	2019	2018	2018	2018	2017	2017	2017	2016	2015
Species	**>23° N**	**23° N – 30° S**	**>23° N**	**23° N – 30° S**	**Total**	**>23° N**	**23° N – 30° S**	**Total**	**Total**	**Total**
Blackfooted albatross (*Phoebastria nigripes*)	137	28	192	10	202	137	11	148	144	148
Laysan albatross (*Phoebastria diomedia*)	57	3	35	0	35	44	0	44	60	69
Unidentified albatross (*Diomedeidae*)	0	0							1	
Red-footed booby (*Sula sula*)	0	0	1		1				2	1
Brown booby (*Sula leucogaster*)	0	1		1	1					
Sooty shearwater (*Ardenna grisea*)	0	0							2	5
Unidentified shearwater (*Procellariidae*)	0	0	10		10				4	5
	194	**32**	**238**	**11**	**249**	**181**	**11**	**192**	**213**	**228**

Table 4d. Mitigation types mandated for use in Hawaii based longline fishery are regulated by type of set, location of set, and method employed to set (side setting or stern setting). NS = night setting, WB = weighted branch lines, SS = side setting, BC = bird curtain, BDB = blue dyed bait, DSLS = deep setting line shooter, MOD = management of offal discharge.

Fishery type/location	Combination of Mitigation Measures mandated	Proportion of observed effort using mitigation measures 2012-2019

When setting from stern:		
Shallow set (anywhere)	**BDB + WB + MOD + NS**	100%
Deep set (North of 23° N)	**BDB + WB + MOD + DSLS**	100%
When setting from side:		
Shallow set (anywhere)	**SS + DSLS + BC + WB + NS**	100%
Deep set (North of 23° N)	**SS + DSLS + BC + WB**	100%

Port Sampling

Less than 2% of the fish caught by U.S. purse seine, and longline fisheries in the WCPO are measured (fork length) by NOAA Fisheries personnel as vessels are unloading in American Samoa and by SPC port samplers in ports where transshipping takes place. Species composition samples are also taken for more accurately determining catches of yellowfin tuna and bigeye tuna from U.S. purse-seine vessel landings.

Unloading / Transshipment

Information on the quantities transshipped and the number of transshipments by the U.S. longline and purse-seine fisheries in 2019 is provided in Table 5.

For the U.S. purse-seine fishery in the WCPFC Statistical Area in 2016, approximately 60% of the total landings of yellowfin, skipjack, and bigeye were transshipped to foreign ports for processing in 2019. There were an estimated 152 transshipments of purse-seine-caught fish in port in 2019.

There was no available information on transshipments for the longline fishery, albacore troll fishery, or any other HMS gear type in 2019.

Table 5a. Information on quantities transshipped of HMS species by U.S. purse seine fisheries in 2019 to satisfy reporting requirements of CMM 2009-06. * = cannot be displayed due to confidentiality protocols.

a) offloaded and received;	b) transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	c) transhipped inside the Convention Area and transhipped outside the Convention Area;	d) caught inside the Convention Area and caught outside the Convention Area;	e) Species	f) Product Form	g) Fishing gear
offloaded	1,117	0	*	BET	Frozen	Purse seine
	87,377	0	*	SKJ	Frozen	Purse seine
	14,289	0	*	YFT	Frozen	Purse seine
received						

Table 5b. Information on number of transshipments of HMS species by U.S. purse seine fisheries in 2019 to satisfy reporting requirements of CMM 2009-06. * = cannot be displayed due to confidentiality protocols.

a) offloaded and received	b) transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	c) transhipped inside the Convention Area and transhipped outside the Convention Area	d) caught inside the Convention Area and caught outside the Convention Area	e) fishing gear
offloaded	152	0	*	Purse seine
received				

Scientific Survey Data

Relevant Publications

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Research Activities

Biological and Oceanographic Research

Evaluation of Electronic Monitoring Pre-implementation in the Hawai'i-based Longline Fisheries. NOAA scientists are evaluating how to effectively use electronic monitoring (EM) systems in Hawai‘i -based pelagic longline fisheries as a data collection tool. These EM systems include video cameras to capture footage for fish and protected species (sea turtles, seabirds, and marine mammals) identification, global positioning systems (GPS) for fishing location, and fishing gear sensors that help detect catch events (i.e., reel rotation, hydraulic pressure, and vessel speed generally decline when large fish are brought aboard) and trigger video cameras to record during gear retrieval. Comparison of data collected by at-sea observers with post-cruise review of EM data indicate EM systems provide an additional means to accurately enumerate fish. A total of 89% of all catch enumerated by at-sea observers (retained and bycatch) were detected in EM data during video review. For retained fish only, EM reviewers located 98% of the fish enumerated by at-sea observers in the shallow-set fishery and 100% in the deep-set fishery. EM data also provided accurate enumeration over broad taxonomic groupings (e.g., tunas, billfishes, sea turtles) and for many economically valuable fish species (Carnes et al. 2019).

Evaluation of the Status and Risk of Over Exploitation of the Pacific Billfish Stocks Considering Non-Stationary Population Processes. Fish population processes could exhibit non-stationary behavior as a stochastic biological process with temporal autocorrelation that may be influenced by environmental changes. This NOAA study developed a Bayesian autoregressive state-space surplus production modelling framework to explore potential non-stationarity in population processes and evaluated the consequence of non-stationary population processes on the future risk of overexploitation for three Pacific billfish stocks (striped marlin, blue marlin, and swordfish) that are formally assessed on a regular basis by a Regional Fisheries Management Organization in the Pacific Ocean. The results showed evidence of non-stationary population processes for Western and Central North Pacific Ocean (WCNPO) striped marlin, and to a lesser extent, Pacific blue marlin and WCNPO swordfish. Trends in the theoretical maximum sustainable yield and intrinsic growth rate were observed as oscillating regimes for swordfish, and as long-term directional changes for striped marlin. The non-stationary population processes did not strongly influence the forecasted biomass trend at the current catch level for any of the three stocks. However, the future risk of overexploitation (Prob[B < BMSY]) was sensitive to changes in the population processes for striped marlin (increased the risk by 20%). This work illustrates that the inclusion of non-stationary population processes could impose challenges for developing a stock rebuilding plan and provides a framework to account for non-stationary population processes for the billfish stocks in the Pacific Ocean (Chang et al. 2019).

Complex Dispersal of Adult Yellowfin Tuna From the Main Hawaiian Islands. Local availability of yellowfin tuna is a key economic, dietary and cultural concern for Main Hawaiian Islands (MHI) communities and insular fisheries. Consequently, interactions of inshore vs. offshore fisheries and connectivity to yellowfin elsewhere in the Pacific remain important scientific management questions. Local fisheries target adult tuna during the summer months, but subsequent tuna movements, presumably away from the islands after reproduction ceases, remain undocumented. From 2014 to 2016, NOAA scientists partnered with local fishermen to

catch and release nineteen yellowfin tuna (41–91 kg, estimated whole weight) off Kaua'i, with popup satellite archival tags programmed for 9–12-month missions. Although data collection periods did not exceed 59 days mainly because of tag hardware failures and predator interactions, short tracks revealed diverse patterns: local residency for some individuals, and rapid, long-distance (>800 km) dispersals in multiple directions for others. Adult yellowfin tuna frequenting the MHI have more complex movements than previously assumed. Despite being a nursery area, whether the assemblage is entirely produced and retained in the region is not resolved. However, attaining 1-year migration records requires tag performance that was not achieved by the deployed tags. It remains a prerequisite for greater understanding of yellowfin in the Main Hawaiian Islands and Central North Pacific, including assessment of their spatial connectivity, impacts of climate change, and shifting ecosystems (Lam et al. 2020).

Safe handling practices to increase post-capture survival of cetaceans, sea turtles, seabirds, sharks, and billfish in tuna fisheries. Incidental capture of marine animals in fishing gear may cause immediate or delayed mortality due to injury. Increasing post-capture survival of these species is very important to reducing the widespread impacts of bycatch, particularly on protected and threatened populations. This study reviews recent literature on safe handling of sea turtles, cetaceans, seabirds, sharks, and billfish and summarize the most effective measures for improving survivability of these species after interactions with gillnet, pelagic longline, and purse seine gear. They also review the current tuna Regional Fishery Management Organization (tRFMO) measures on safe handling and release to identify gaps in implementation of safe handling practices. Strategies that increase post-capture survival of marine species can be grouped into 3 primary categories: reducing immediate mortality, minimizing injury that results in delayed mortality, and reducing stress that can lead to death. Routine training of fishermen on safe handling practices greatly improves the effectiveness of these measures. When bycatch does occur, the strategies to increase post-release survival become key for protecting vulnerable marine populations. This inventory highlights the great conservation value that can be provided by the tRFMOs by providing guidance and training on safe handling practices to increase post-release survival across taxa (Zollett and Swimmer, 2019).

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