

2.3 GUAM

2.3.1 DATA SOURCES

This report contains the most recently available information on Guam's pelagic fisheries, as compiled from data generated by the Division of Aquatic and Wildlife Resources (DAWR) through a program established in conjunction with WPacFIN and the WPRFMC. Data are gathered through the offshore creel survey data program. In the past 10 years, DAWR staff have logged between 90 and 97 survey days annually (see Table A-47). The number of trips logged in boat logs has varied from 498 to 1,147 during that period, with the number of interviews slightly greater than half of that year's total trips. In 2019, DAWR completed 96 survey days, logging 930 trips during that time, and conducted 620 interviews. Participation, total landings, effort, CPUE, and bycatch are generated from the creel survey. Using the DAWR computerized data expansion system files (with the assistance of NMFS to avoid over-estimating seasonal pelagic species), a 365-day quarterly expansion of survey data is run for each calendar year to produce catch and effort estimates for the pelagic fishery. Commercial landings, revenue, and price per pound data are obtained from the WPacFIN-sponsored commercial landings system through the commercial receipt book. Transshipment landings data are obtained from the Bureau of Statistics and Plans. Some tables include landings of several species of barracuda and the double-lined mackerel that may not be included in other tables in this report. This artifact of the reporting method results in a slight difference in the total landings and other values between tables.

The shortage of staff biologists has been significant in the past several years. DAWR staff biologists continue to oversee several projects simultaneously, while providing on-going training to ensure the high quality of data being collected by all staff. All fisheries staff are trained to identify the most commonly caught fish to the species level. New staff are mentored by biologists and senior technicians in the field before conducting creel surveys on their own.

Total commercial landings are estimated by summing the weight fields in the commercial landings database from the principal fish wholesalers on Guam, and then multiplying by an estimated percent coverage expansion factor. The annual expansion factor (described above) is subjectively created based on the available information in a given year including: an analysis of the "disposition of catch" data available from the DAWR offshore creel survey; an evaluation of the fishermen in the fishery and their entry/exit patterns; general "dock side" knowledge of the fishery and the status of the marketing conditions and structure; the overall number of records in the database; and a certain measure of best guesses.

2.3.2 SUMMARY OF GUAM PELAGIC FISHERIES

Landings. The estimated annual pelagic landings varied widely in the 39-year time series, ranging between 383,000 and 958,000 lbs. The average total catch has shown a slowly increasing trend over the reporting period. The 2019 total expanded pelagic landings were 840,322 lbs., a decrease of 5.77 % when compared with 2018's total. Tuna PMUS decreased 14.9%, while non-tuna PMUS increased 18%. Landings consisted primarily of five major species: mahimahi, wahoo, bonita or skipjack tuna, yellowfin tuna, and Pacific blue marlin, with skipjack comprising over 57% of total landings. Other minor species caught include rainbow runner,

barracudas, and pomfrets. Sharks were also caught during 2019, with sharks noted in specific fishermen interviews conducted in 2019 regarding shark encounters (see bycatch below). However, these species were not encountered during offshore creel surveys and were not available for expansion for this year's report. Sharks are often discarded as bycatch. In addition to the above pelagic species, approximately half a dozen other species were landed incidentally this year.

There are wide year-to-year fluctuations in the estimated landings of the five major pelagic species. Landings for three of the five common species increased in 2019 from the previous year's levels. Skipjack decreased 21.4%, and wahoo decreased by 66.05%. Yellowfin tuna catch increased 61.4%, mahimahi catch increased 83%, and blue marlin, which accounts for the largest percentage of non-tuna PMUS landed on Guam, increased 128.5%. Both mahimahi and wahoo catches fluctuate erratically from year to year, although both appear to be experiencing a long-term downward trend.

Transshipment Landings. Transshipment, the offloading or otherwise transferring MUS or products thereof to a receiving vessel, has had a mandatory data submission program since 1999. These vessels fish on the high sea outside Guam's EEZ, but transship their catch through Guam. In 2019, transshipments totaled 968 mt. This total is 55.5% of the time series average.

Effort. The number of boats involved in Guam's pelagic fishery gradually increased from 193 in 1983 to a high of 496 in 2013. There were 472 boats involved in Guam's pelagic fishery in 2019, an increase of 16% from 2018 numbers. The majority of the fishing boats are less than 10 m (33 ft) in length and are usually owner-operated by fishermen who earn a living outside of fishing. Most fishermen sell a portion of their catch and it is difficult to make a distinction between recreational, subsistence, and commercial fishers. A small (~5%), but economically significant, segment of the pelagic group is made up of marina-berthed charter boats that are operated primarily by full-time captains and crews. Data and graphs for non-charters, charters, and bycatch are represented in this report.

In early 2010, the U.S. military began exercises in an area south and southeast of Guam designated W-517. W-517 is a special use airspace (approximately 14,000 nm²) that overlays deep open ocean approximately 50 miles south-southwest of Guam. Exercises in W-517 generally involve live fire and/or pyrotechnics. When W-517 is in use, a notice to mariners is issued, and vessels attempting to use the area are advised to be cautious of objects in the water and other small vessels. This discourages access to virtually all banks south of Guam, including Galvez, Santa Rosa, White Tuna, and other popular fishing areas. From 1982-2015, DAWR surveys recorded more than 2,930 trolling and bottom fishing trips to these southern banks, an average of more than 83 trips per year. The number of notices to mariners in 2019 was 27, equaling 65 closure days, down from 87 closure days in 2018. This certainly impacted the number of fishing days south of Guam.

Weather can also affect the number of available fishing days. In 2019, 114 days were either high surf or small craft advisory in the waters around Guam. There were 0 days in April through July. As yellowfin tuna and blue marlin are traditionally caught in higher numbers during summer months, good weather conditions may have facilitated higher catches.

The small-boat bottomfish and trolling fishery in Guam relies on boat ramp access and FADs. Recent activities to support the Guam fishery follow.

On Guam, the makeshift ramp at Ylig Bay was eliminated in 2010. Widening of the main road on the southeast coast of Guam will cause removal of the ramp. In December 2006, a new launch ramp and facility was opened in Acfayan Bay, located in the village on Inarajan on the southeast coast of Guam. Monitoring of this ramp for pelagic fishing activity began at the start of 2007. In early 2007, this facility was damaged by heavy surf and has yet to be repaired. Monitoring of this ramp is currently on hold until the ramp is repaired. The current financial situation in Guam makes it unlikely this ramp will be repaired in the near future. DAWR staff are meeting with land owners and Department of Public Works officials to develop a new boat launching facility in Talofofo Bay on the east side of Guam, and land ownership may determine final placement.

CPUE. Trolling catch rates (lbs. per hour fished) showed a decrease from 2018. Total CPUE decreased 14.7%. Yellowfin tuna, blue marlin, and mahimahi CPUE increased, while skipjack tuna and wahoo CPUEs decreased slightly. The fluctuations in CPUE are possibly due to variability in the year-to-year abundance and availability of the stocks.

Revenues. Commercial revenues increased in 2019, with total adjusted revenues increasing 43.5%. Tuna PMUS decreased 4.6%, non-tuna PMUS increased 106.9%. Commercial landings have shown a decreasing trend over the past twenty years, but 2019 was the highest level in 6 years, and 3.3% over the time series average. A majority of troll fishermen do not rely on the catch or selling of fish as their primary source of income. Previously, Guam law required the government of Guam to provide locally caught fish to food services in government agencies, such as Department of Education and Department of Corrections. In 2002, the government of Guam began implementing cost-saving measures, including privatization of food services. The requirement that locally-caught fish be used for food services, while still a part of private contracts, is not being enforced. This has allowed private contractors to import cheaper foreign fish, and reduced the sales of vendors selling locally caught fish. This represented a substantial portion of sales of locally caught pelagic fish. The decrease in commercial sales seen following 2002 may be, in part, due to this change.

Bycatch. There is very low bycatch in the charter fishery. In 2019, there were 150 reported bycatch in 7,799 fish caught, for a 2% rate. Bycatch occasionally occurs in the troll fishery including sharks, shark-bitten and undersized fish.

In 2019, fishers were asked if they experienced a shark interaction. There were a total of 789 interviews for boat based fishing in 2019, with 335 of these inappropriate for determining shark interaction. Of the remaining 454 interviews, 218 reported interactions with sharks, 236 reported no interactions with sharks, a 48% positive rate for interviews where fishers were asked about shark interactions.

2.3.3 PLAN TEAM RECOMMENDATIONS

For the Guam module in the 2019 Annual SAFE Report, the 2019 Pelagic Fishery Ecosystem Plan Team recommended that the Council request Guam DAWR to clarify and provide the notification scheme of the military regarding spatial closures with mariners.

2.3.4 OVERVIEW OF PARTICIPATION

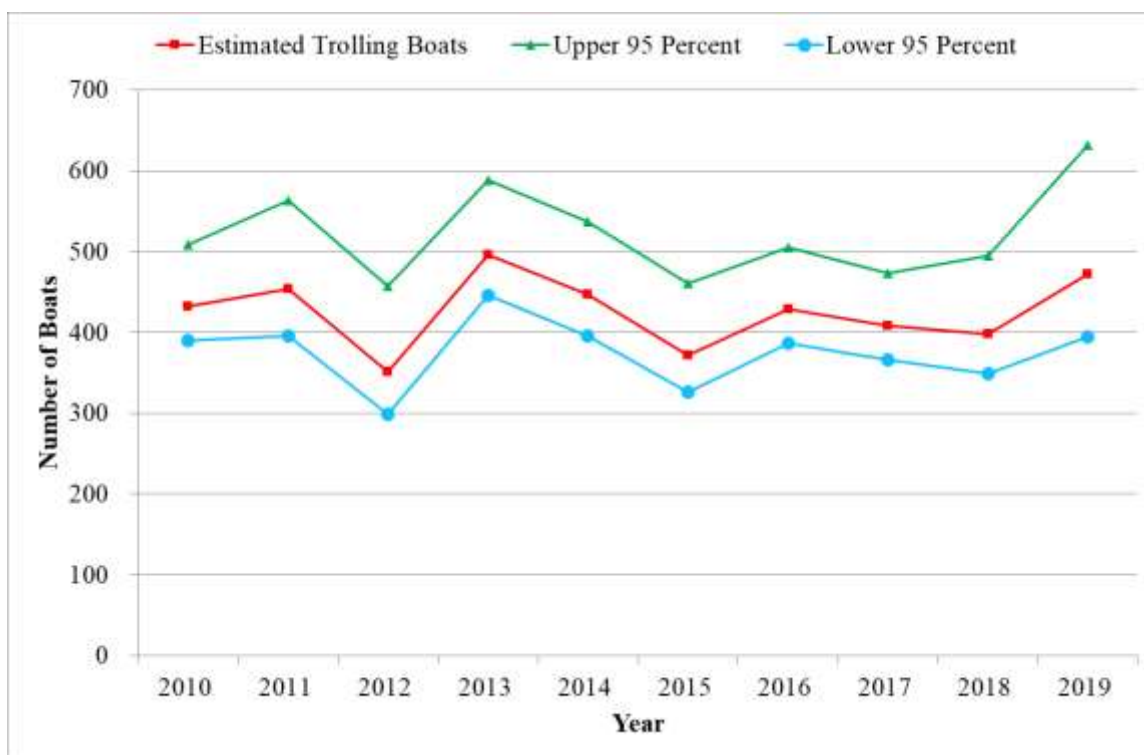


Figure 47. Total estimated vessels in Guam pelagic fisheries from 2010-2019 Supporting data shown in Table A-48.

2.3.5 OVERVIEW OF TOTAL AND REPORTED COMMERCIAL LANDINGS

Table 16. Total estimated, non-charter, and charter landings (lbs.) for Guam in 2019

Species	Total Landings	Non Charter	Charter
Skipjack Tuna	479,966	466,653	13,313
Yellowfin Tuna	84,825	82,705	2,120
Kawakawa	95	95	0
Albacore	0	0	0
Bigeye Tuna	0	0	0
Other Tuna PMUS	0	0	0
TUNAS Total	564,886	549,453	15,433
Mahimahi	162,541	136,431	26,109
Wahoo	32,600	29,094	3,506
Blue Marlin	56,020	47,995	8,025
Black Marlin	0	0	0
Striped Marlin	0	0	0
Sailfish	1,459	1,459	0

Shortbill Spearfish	0	0	0
Swordfish	0	0	0
Oceanic Sharks	0	0	0
Pomfrets	82	19	64
Oilfish	0	0	0
NON-TUNA PMUS Total	252,702	214,998	37,704
Dogtooth Tuna	6,922	6,922	0
Rainbow Runner	11,383	11,084	300
Barracudas	4,428	4,428	0
Double-lined Mackerel	11	11	0
Misc. Troll Fish	0	0	0
OTHER PELAGICS Total	22,744	22,445	300
TOTAL PELAGICS	840,332	786,896	53,437

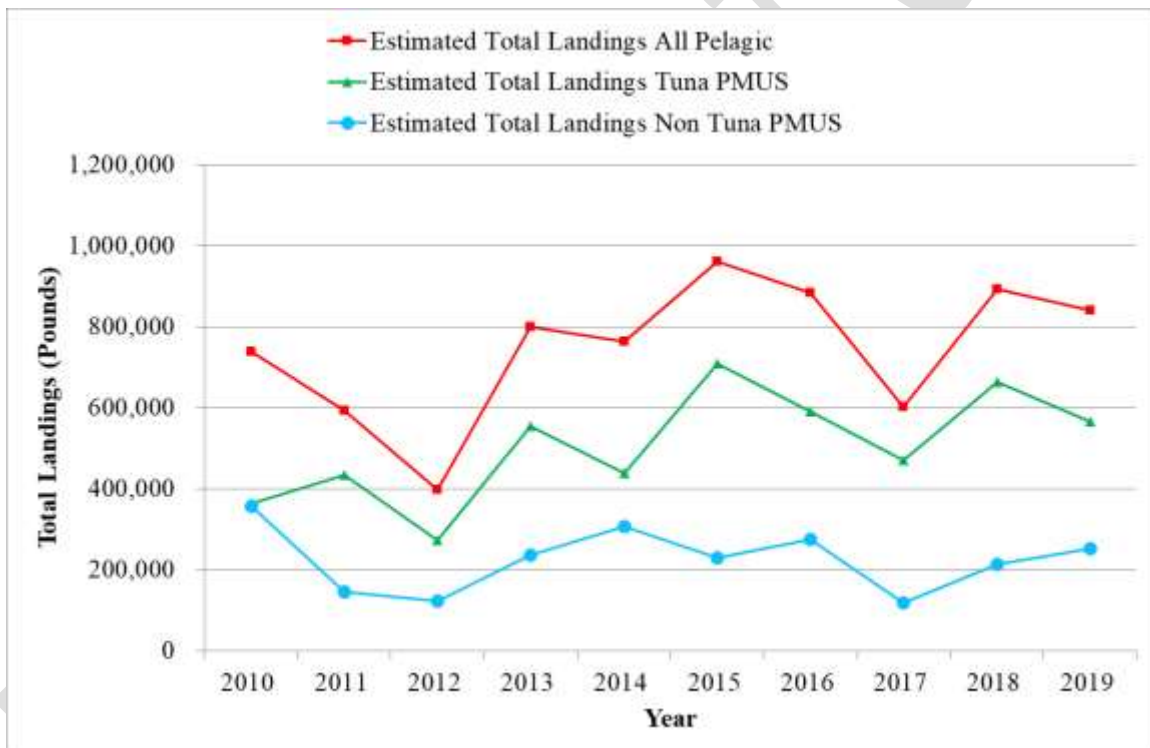


Figure 48. Total estimated annual landings in Guam for all pelagics, tuna PMUS, and non-tuna PMUS from 2010-2019

Supporting data shown in Table A-49.

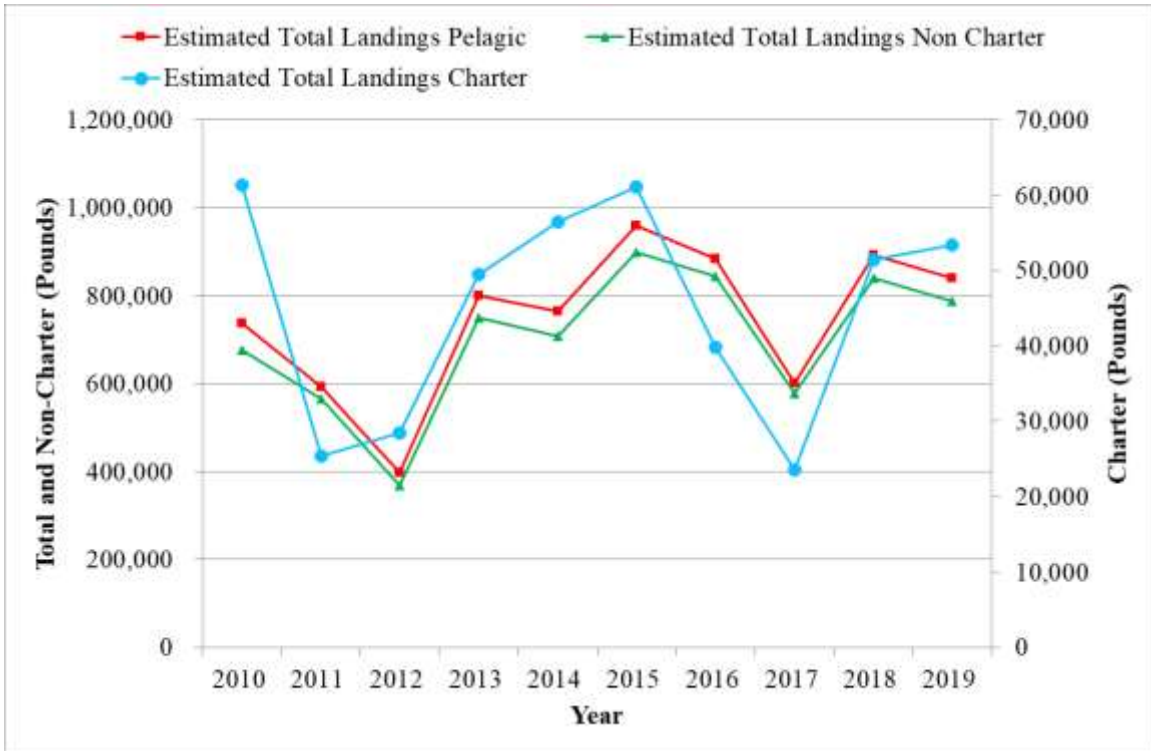


Figure 49. Total estimated annual pelagic landings in Guam from 2010-2019
 Supporting data shown in Table A-50.

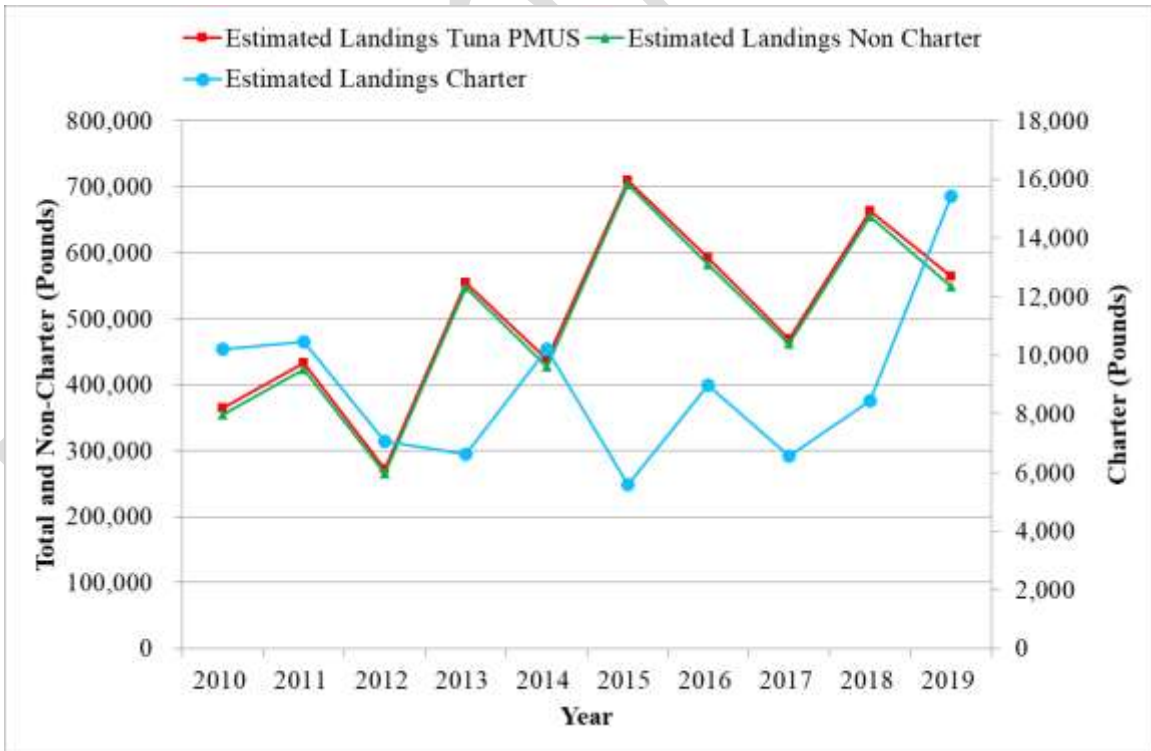


Figure 50. Total estimated annual tuna PMUS landings in Guam from 2010-2019
 Supporting data shown in Table A-51.

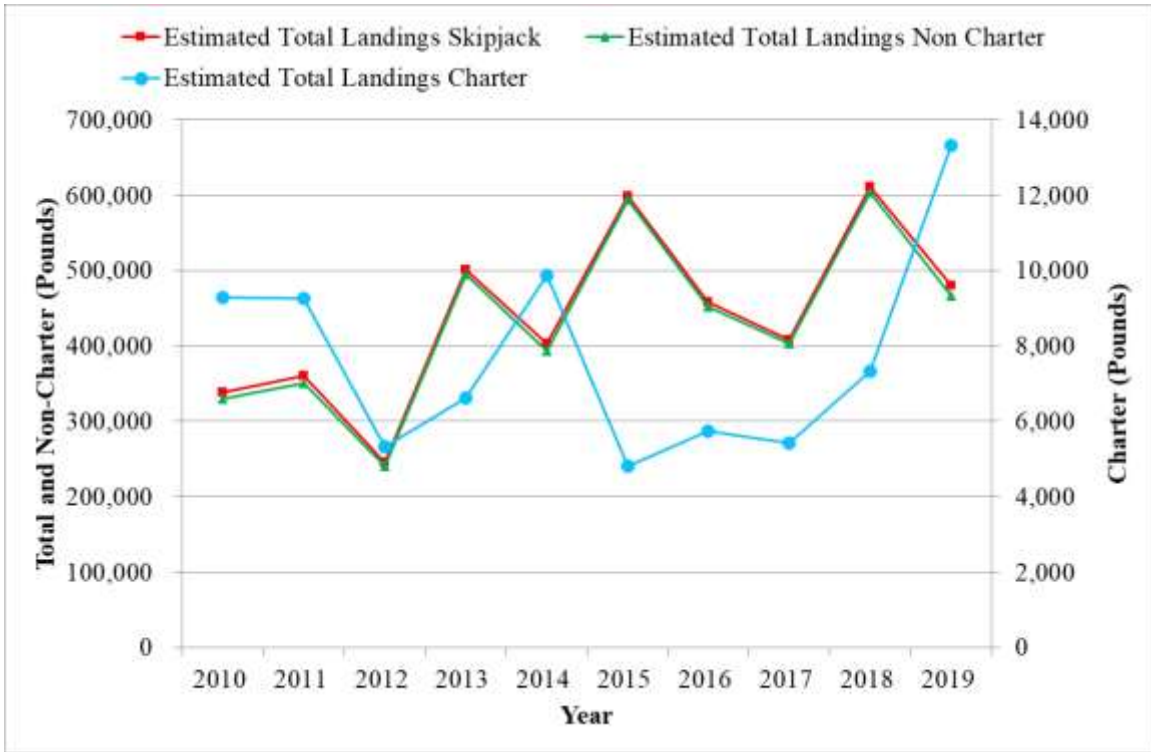


Figure 51. Total estimated annual skipjack tuna landings in Guam from 2010-2019 Supporting data shown in Table A-52.

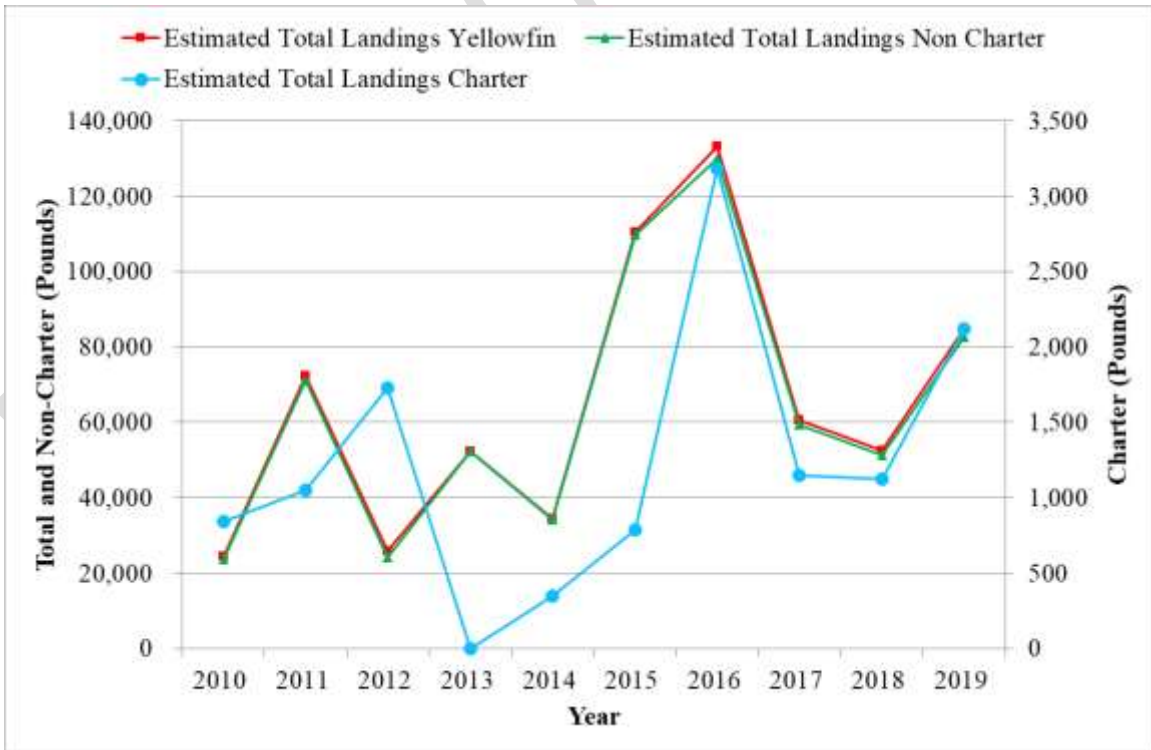


Figure 52. Total estimated annual yellowfin landings in Guam from 2010-2019 Supporting data shown in Table A-53.

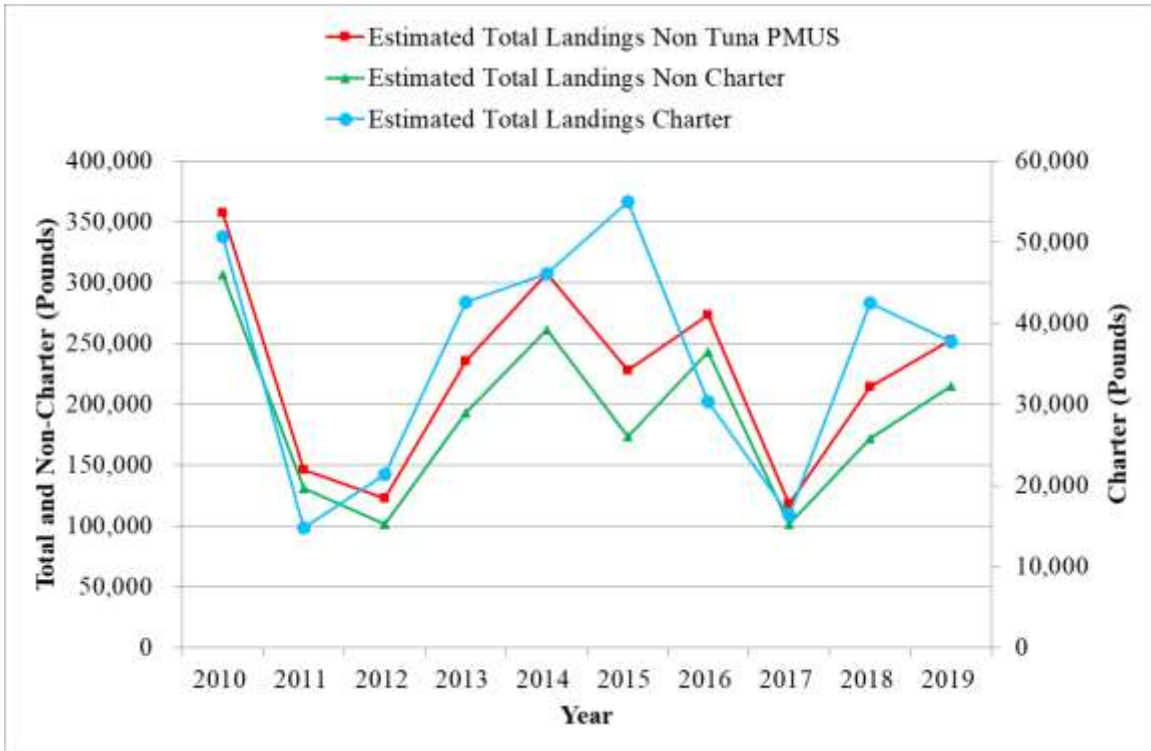


Figure 53. Total estimated annual non-tuna PMUS landings in Guam from 2010-2019 Supporting data shown in Table A-54.

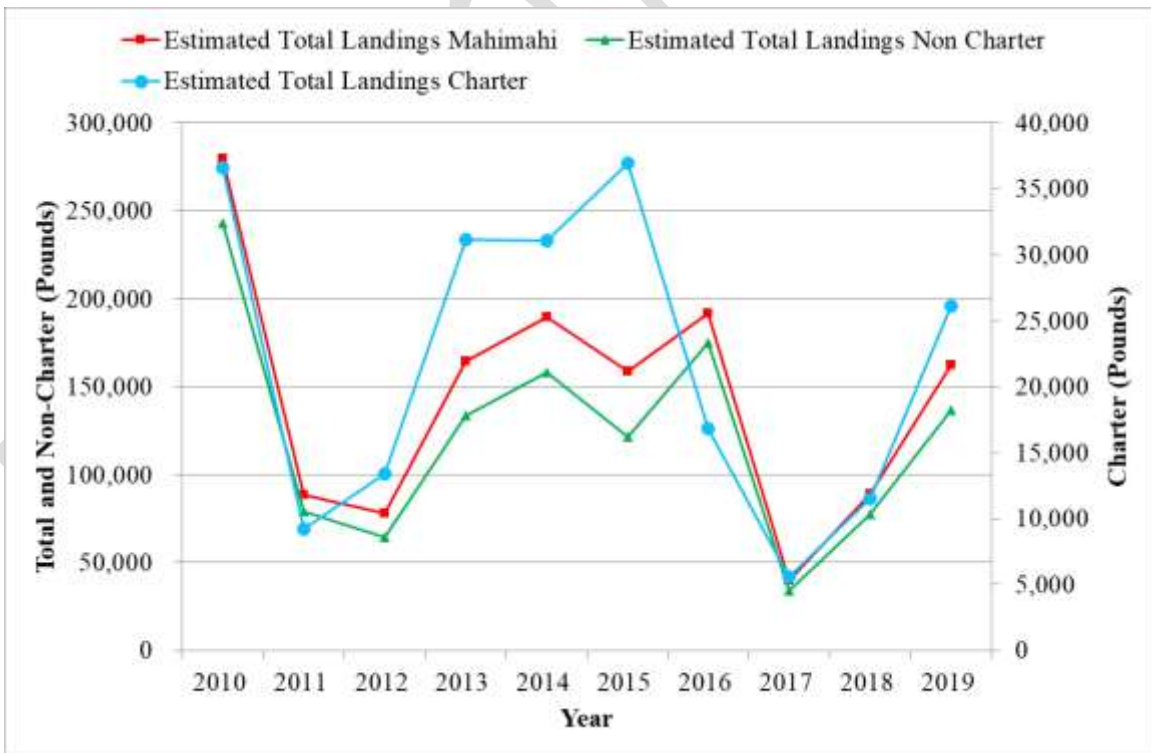


Figure 54. Total estimated annual mahimahi landings in Guam from 2010-2019 Supporting data shown in Table A-55.



Figure 55. Total estimated annual wahoo landings in Guam from 2010-2019
 Supporting data shown in Table A-56.

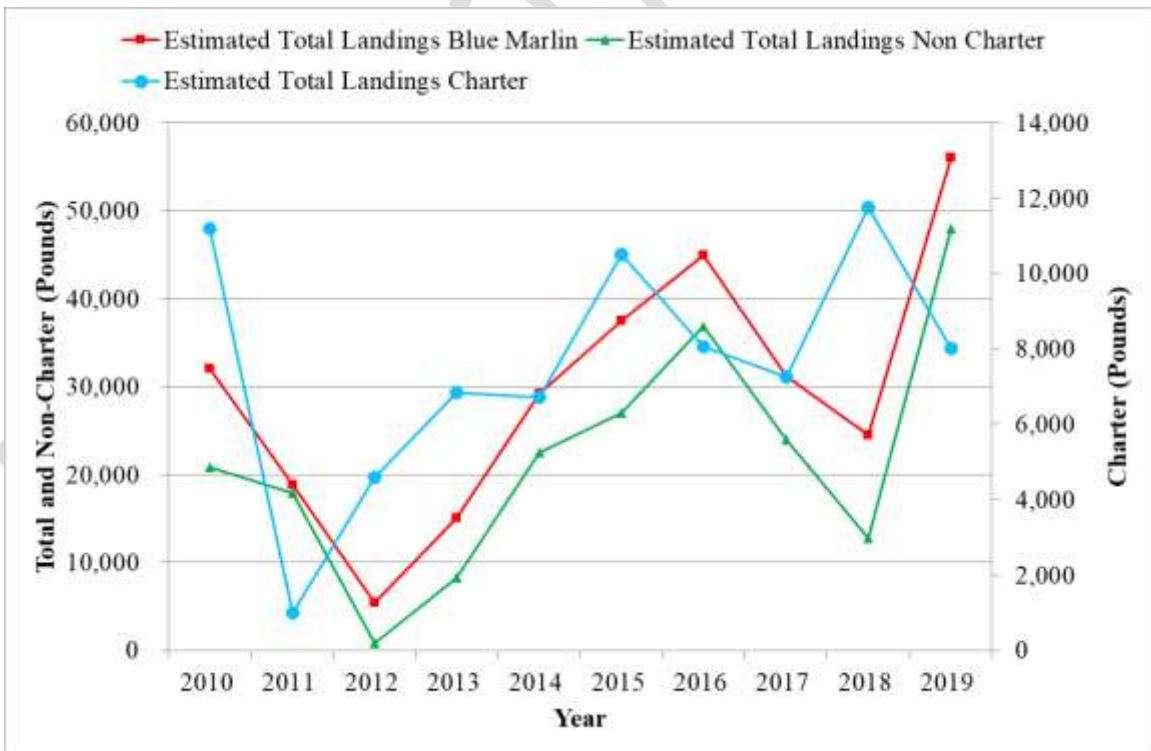


Figure 56. Total estimated annual blue marlin landings in Guam from 2010-2019
 Supporting data shown in Table A-57.

Table 17. Bycatch summary for Guam trolling fisheries from 2010-2019

Year	Number Release	Percent Release	Number Kept	Number Caught	Charter
2010	0	0.0	6,269	6,269	F
2011	1	0.0	9,049	9,050	F
2012	0	0.0	4,102	4,102	F
2013	28	0.4	6,731	6,759	F
2014	21	0.4	5,320	5,341	F
2015	0	0.0	6,807	6,807	F
2016	0	0.0	8,867	8,867	F
2017	0	0.0	6,369	6,369	F
2018	2	0.0	7,987	7,989	F
2019	150	2.0	7,334	7,484	F
2010	0	0.0	567	567	T
2011	0	0.0	379	379	T
2012	0	0.0	176	176	T
2013	0	0.0	258	258	T
2014	0	0.0	496	496	T
2015	0	0.0	444	444	T
2016	6	1.6	369	375	T
2017	0	0.0	231	231	T
2018	0	0.0	284	284	T
2019	0	0.0	315	315	T

Table 3. Bycatch species summary for Guam trolling fisheries from 2010-2019

Year	Species	Number Release	Percent Release	Number Kept	Number Caught	Charter
2011	Skipjack Tuna	1	0.0	7,272	7,273	F
2013	Yellowfin Tuna	6	1.6	373	379	F
2013	Skipjack Tuna	21	0.4	5,474	5,495	F
2013	Rainbow Runner	1	3.0	32	33	F
2014	Skipjack Tuna	19	0.5	3,914	3,933	F
2014	Barracudas	1	2.6	38	39	F
2014	Yellowfin Tuna	1	0.4	271	272	F
2018	Yellowfin Tuna	1	0.3	343	344	F
2018	Wahoo	1	0.2	568	569	F
2019	Yellowfin Tuna	2	0.4	531	533	F
2019	Skipjack Tuna	148	2.5	5,862	6,010	F
2016	Skipjack Tuna	3	2.4	124	127	T
2016	Mahimahi	3	2.2	133	136	T

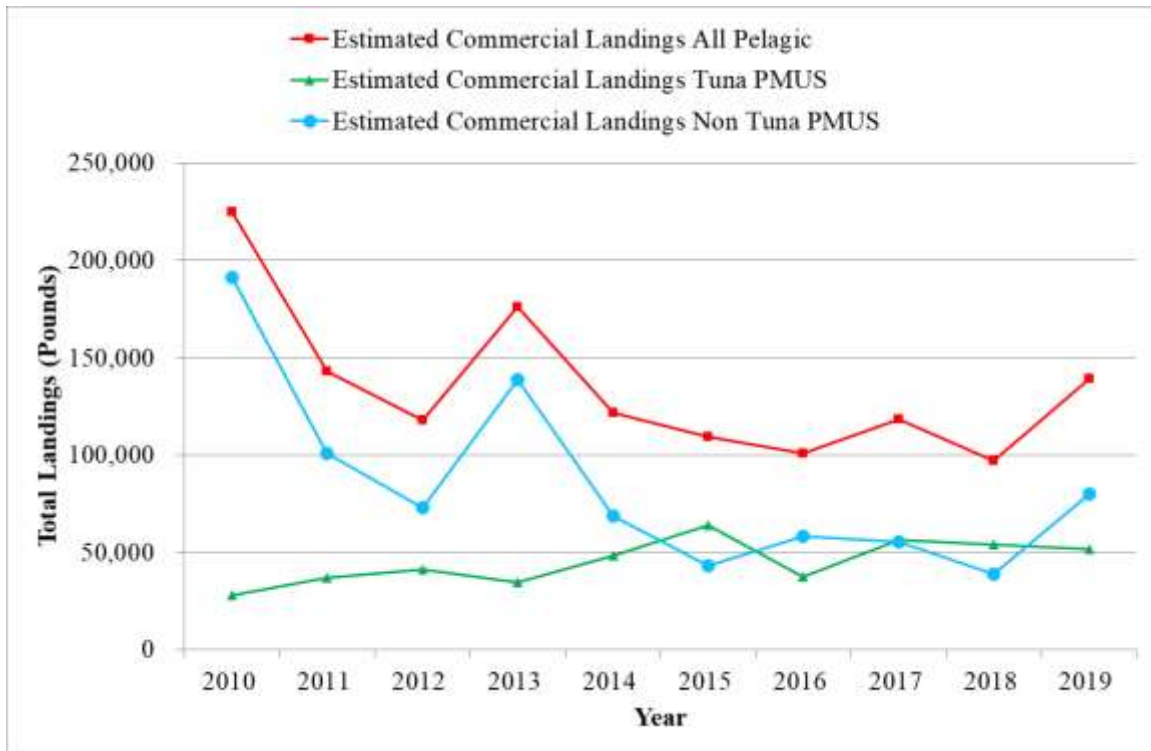


Figure 57. Annual estimated commercial landings for all pelagics, tuna PMUS, and non-tuna PMUS in Guam from 2010-2019

Supporting data shown in Table A-58.

2.3.6 OVERVIEW OF EFFORT AND CPUE

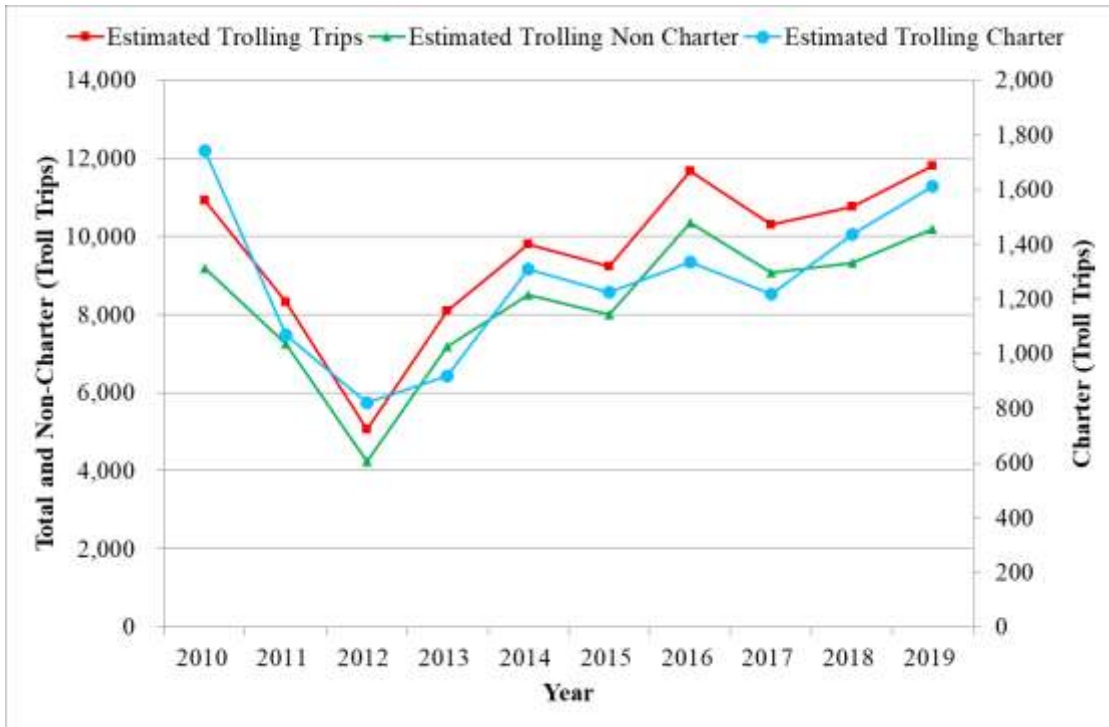


Figure 58. Total estimated number of trolling trips in Guam from 2010-2019
 Supporting data shown in Table A-59.

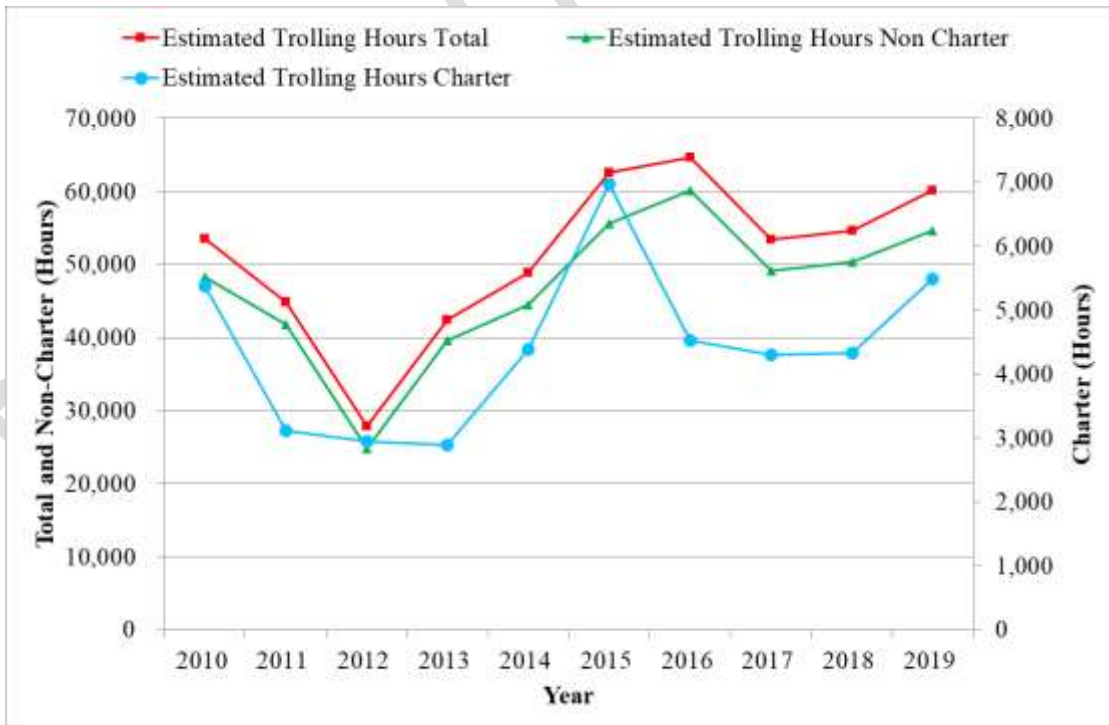


Figure 59. Total estimated number of trolling hours in Guam from 2010-2019
 Supporting data shown in Table A-60.

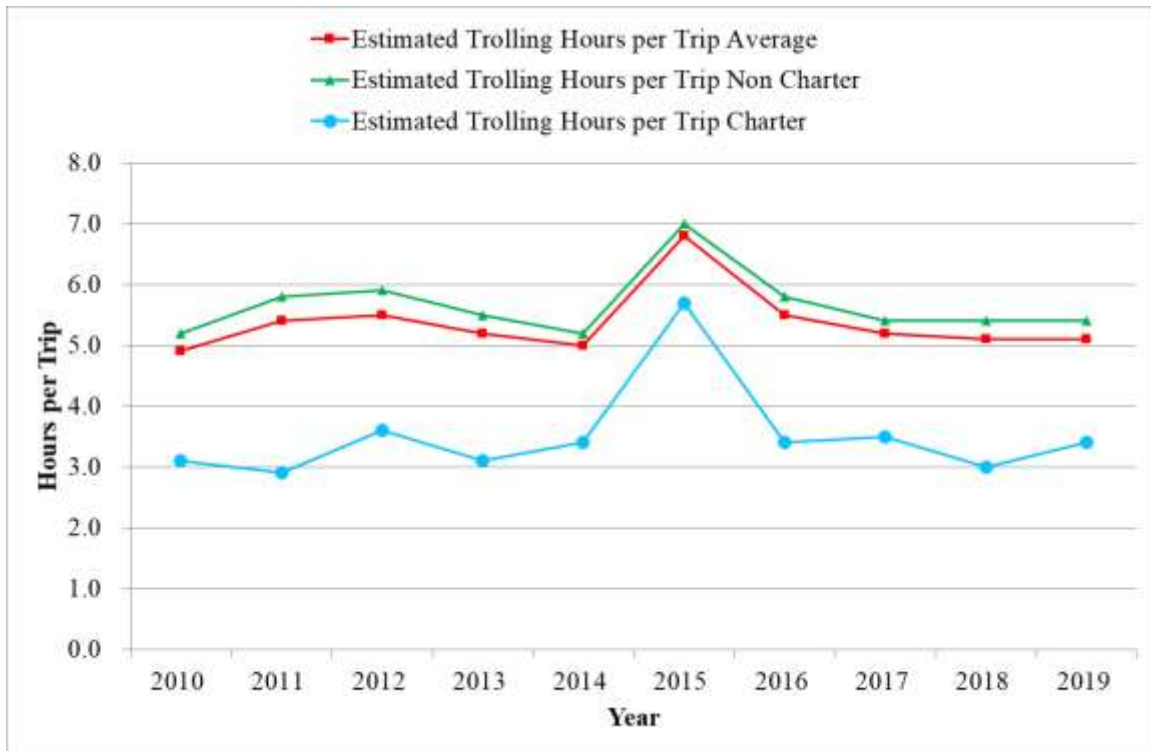


Figure 60. Estimated fishing trip length (hr./trip) in Guam from 2010-2019

Supporting data shown in Table A-61.

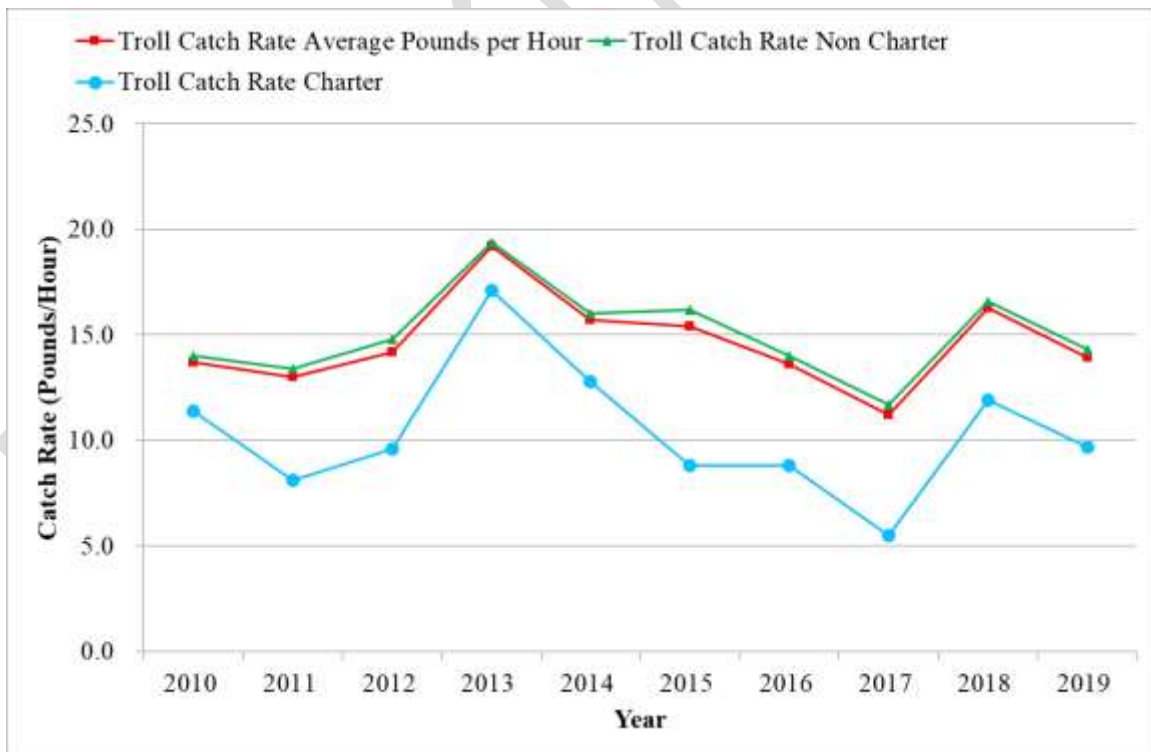


Figure 61. Trolling catch rates (lbs./hr.) in Guam from 2010-2019

Supporting data shown in Table A-62.

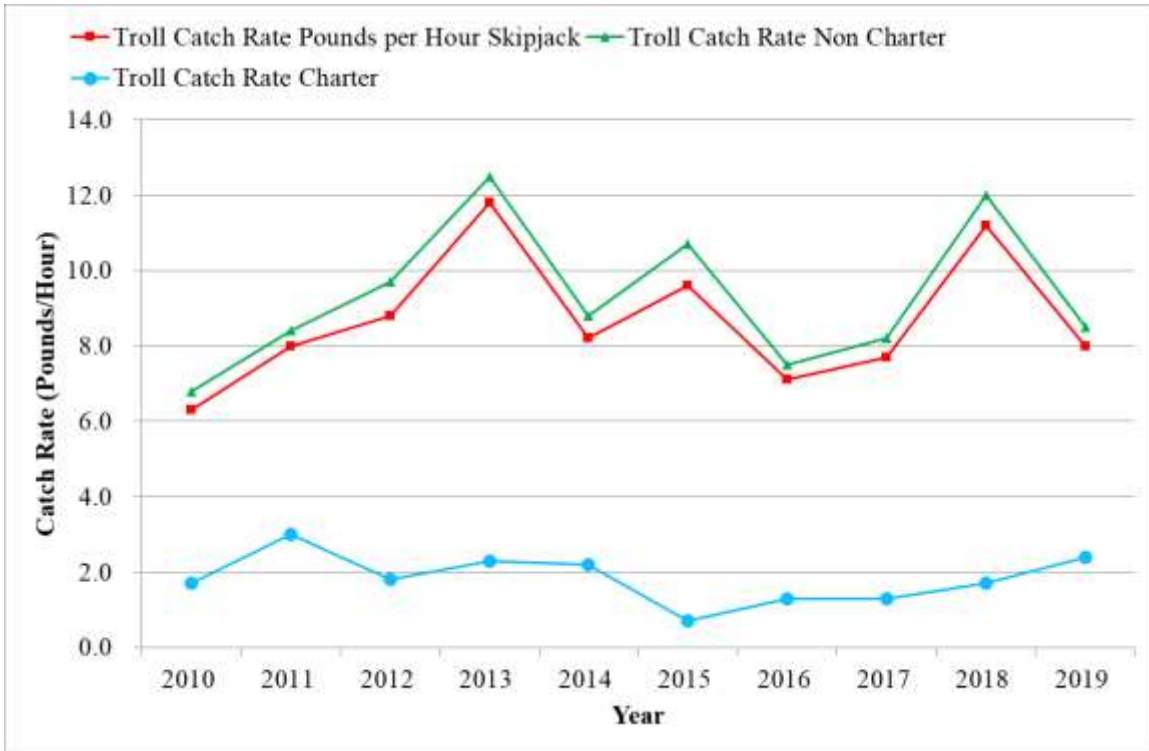


Figure 62. Trolling catch rates (lbs./hr.) for skipjack tuna in Guam from 2010-2019
 Supporting data shown in Table A-63.

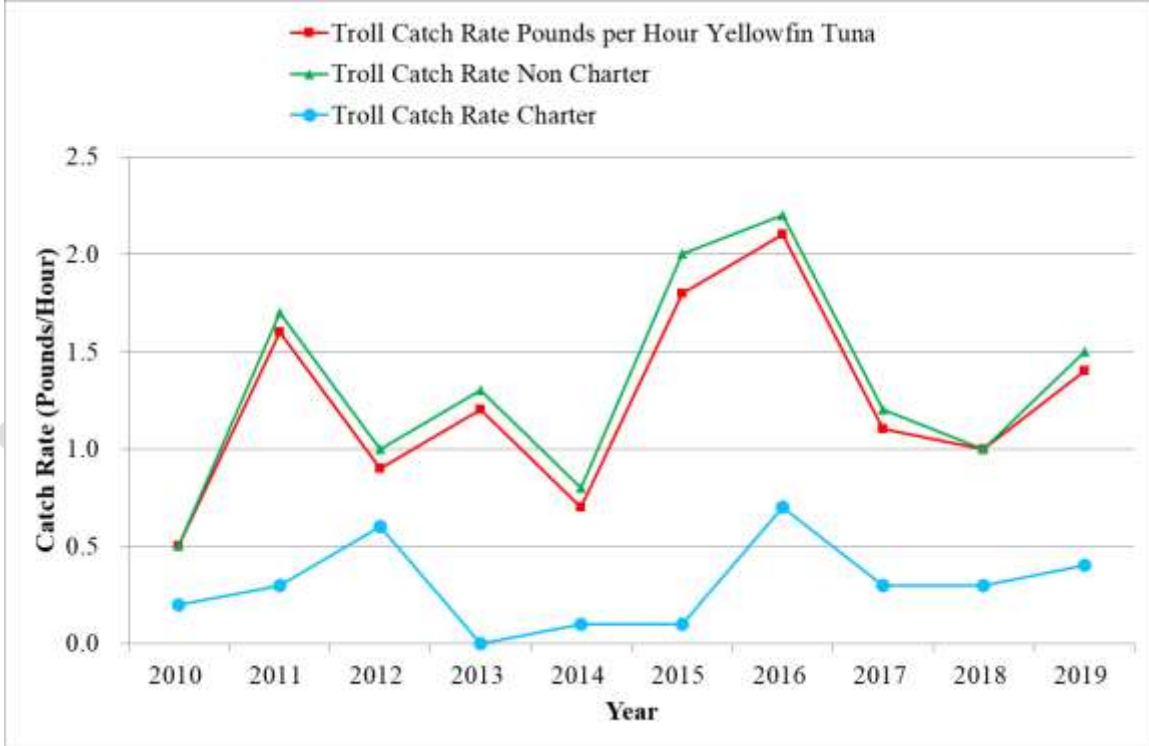


Figure 63. Trolling catch rates (lbs./hr.) for yellowfin tuna in Guam from 2010-2019
 Supporting data shown in Table A-64.

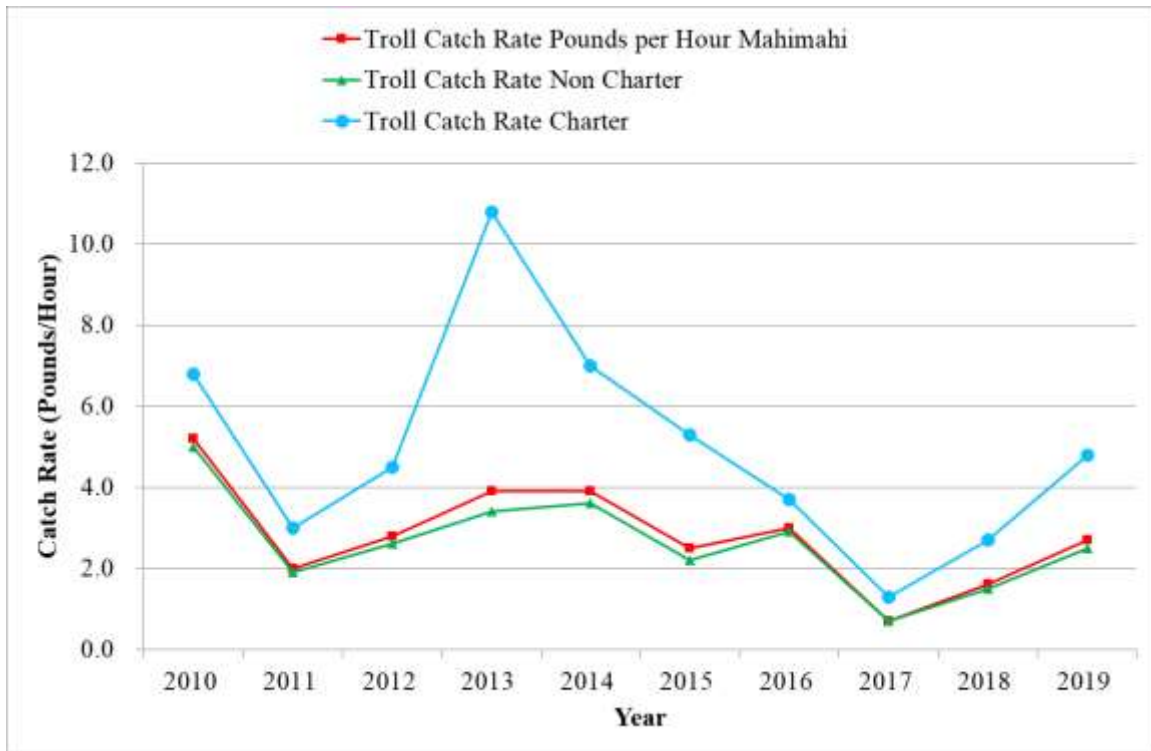


Figure 64. Trolling catch rates (lbs./hr.) for mahimahi in Guam from 2010-2019
 Supporting data shown in Table A-65.

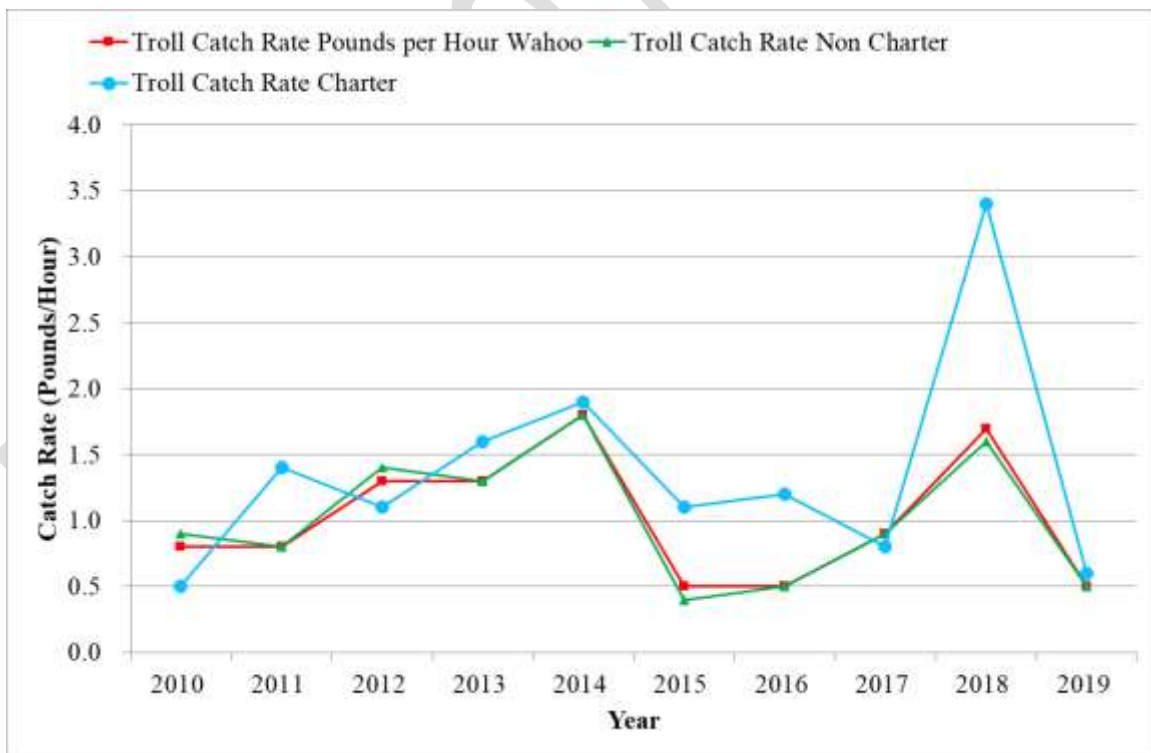


Figure 65. Trolling catch rates (lbs./hr.) for wahoo in Guam from 2010-2019
 Supporting data shown in Table A-66.

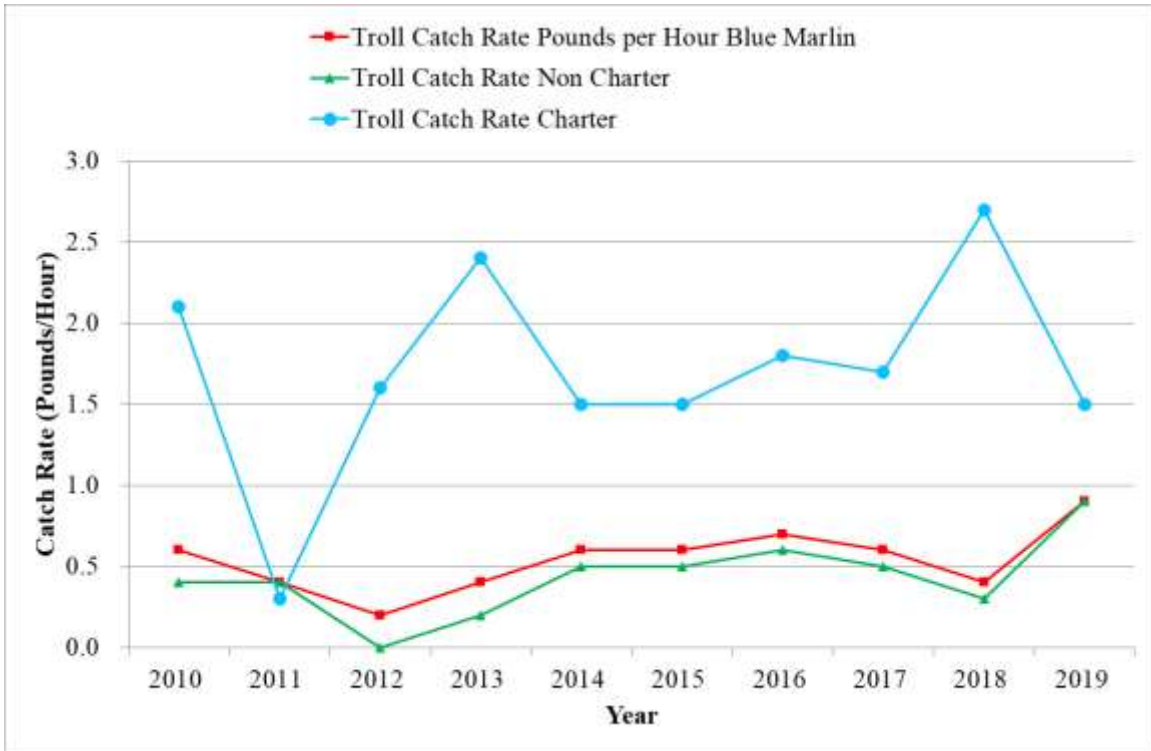


Figure 66. Trolling catch rates (lbs./hr.) for blue marlin in Guam from 2010-2019
 Supporting data shown in Table A-67.

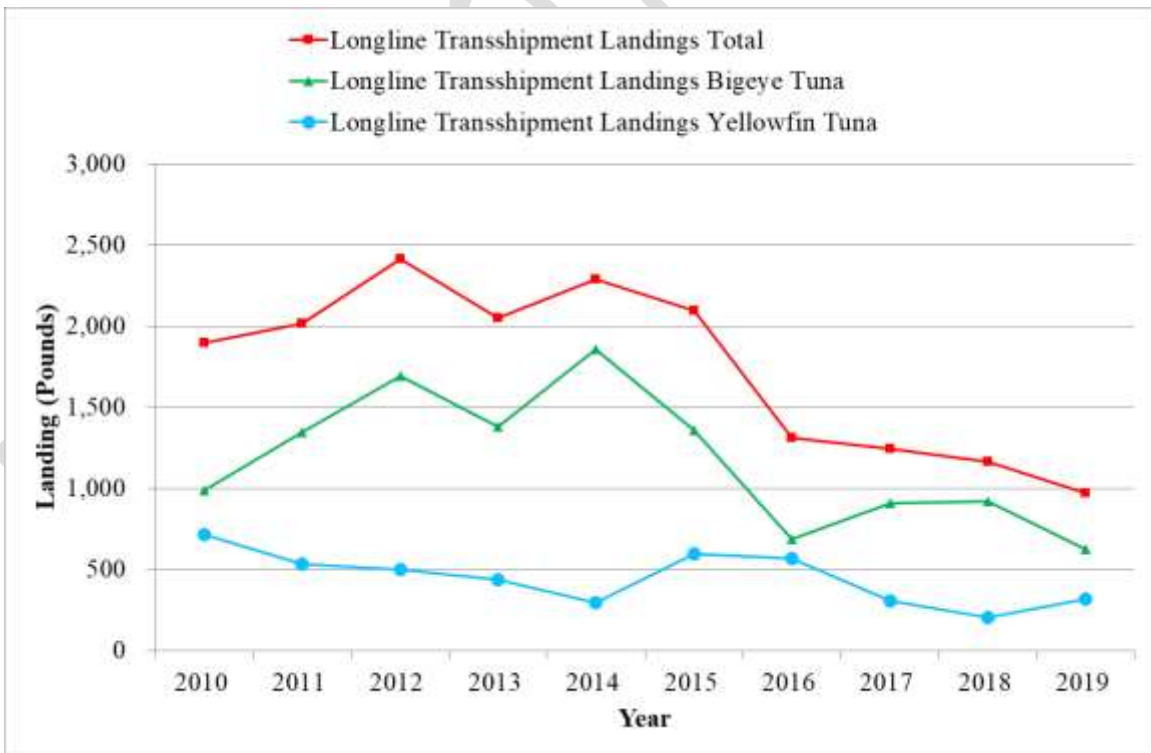


Figure 67. Guam foreign longline transshipment landings for longliners fishing outside the Guam EEZ from 2010-2019

Supporting data shown in Table A-68.

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