

2.2 COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS

2.2.1 DATA SOURCES

This fishery is characterized by the Commonwealth of the Northern Mariana Islands (CNMI) Department of Lands and Natural Resources, Division of Fish and Wildlife (DFW), using data from its Commercial Receipt Invoice Database and the Boat-based Creel Survey. The commercial purchase data collection system is dependent upon first-level purchasers of local fresh fish to accurately record all fish purchases by species categories on specially designed invoices. DFW staff routinely distributes and collects invoice books from participating local fish purchasers on Saipan. This is a mandatory data collection program that includes purchasers at fish markets, stores, restaurants and hotels, as well as roadside vendors ("fish-mobiles").

Currently, DFW's Commercial Purchase Data Collection System and the boat-based Creel Survey are documenting landings only on the island of Saipan. Although the Saipan Commercial Purchase Data Collection System has been in operation since the mid-1970s, only data collected since 1983 are considered accurate enough to be used. It is believed that the 2015 Commercial Purchase Data includes about 50-60% of commercial landings for pelagic species on Saipan, based on the following estimates. In addition to unreported fish sales by official vendors (10-20%), there is also a subsistence fishery on Saipan, which profits by selling a small portion of the catch to cover fishing expenses. Some fishermen sell their catch by going door to door. This commercial catch comprises about 30% of unreported commercial landings, since it is not sold to fish purchasers participating in the invoice book program. Combined with the 10-20% of data from official commercial fish purchasers (fish vendors) that DFW is unable to capture for a variety of reasons (no forms returned, vendors missed, nonparticipation), an estimated 40-50% of total commercial sales are not included in the Commercial Purchase Data reported here for Saipan.

In addition to Commercial Purchase data, the boat-based creel survey has been continuously implemented since April 2000. Creel data only analyzes fishing activity on the island of Saipan, as there are no boat-based creel survey programs for Tinian and Rota.

One of DFW's goals is to expand the data collection program to the islands of Tinian and Rota; however, securing long term funding is challenging. Pilot boat-based creel surveys were conducted on Tinian and Rota although these data are incomplete and not included in this analysis. These creel efforts were mainly focused on shore-based fisheries. The Rota pilot study during over a year and a half of data collection did not collect enough pelagic data to warrant analysis in the project report.

The Saipan creel survey targets both charter and non-charter vessels. DFW staff conducted 37 survey days in 2019 (see Table A-21). Total trips in 2019 decreased by 37% and staff were only able to conduct 58 interviews, which was a 46% decrease in interview numbers from 2018. This decrease in surveys and interviews was due to the boat-based creel not being conducted for 3 months from July to September. The survey was not conducted during this time due to funding issues. Only 1 charter trip was intercepted in 2019, but 4 interviews were conducted. A 365-day annual expansion is run for each calendar year of DFW boat-based creel survey data to produce catch and effort estimates for the pelagic fishery, while avoiding over-estimating landings due to seasonal runs of pelagic species. This report does not include any data from longline vessels.

Effort (number of fishermen) is determined by tallying unique fishermen as recorded on the Commercial Receipt Invoice, while number of trips is assumed to equal the number of invoices submitted, assuming that all sales from a single trip are made on a single day. Percent species composition is calculated by weight for the sampled catch (raw interview data) for each method and applied to the pounds landed to produce catch estimates by species for the expansion period. CPUE data are calculated from the total annual landings of each fishery, divided by the total number of hours spent fishing (gear in use), or by trip assuming that a trip is one day in length. Bycatch data are not expanded to the level of estimated annual trips and are reported as a direct summary of raw interview data. Some tables include landings of non-PMUS 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 within a single table and between tables in this section.

2.2.2 SUMMARY OF CNMI PELAGIC FISHERIES

The number of interviews conducted for the creel surveys decreased in 2019 compared to the previous year due to a lack of surveys during three months. Landings and effort data are adjusted for the creel data, while no adjustment was made for the commercial receipt data. As such, the landings and effort creel data are more accurate estimates than the commercial receipt data.

Landings. Skipjack tuna is the principal species landed, comprising 74% of the entire pelagic landings in 2019 based on creel survey data. Skipjack landings decreased 8% (345,174 lbs.) and total landings remained roughly the same increasing 0.3% (466,269 lbs.) from landings in 2018.

Landings of mahimahi and yellowfin tuna ranked second and third by weight of landings during 2019. Creel data estimated 71,791 lbs. of mahimahi, a 10% increase from 2018. After three years (2014-2016) of high poundage of mahimahi landings and a moderate drop in 2017, landed pounds have increased the past two years. There were 36,473 lbs. of yellowfin landed in 2019, a large 209% increase from the 2018 landings. Skipjack tuna are easily caught in near shore waters throughout the year. mahimahi is seasonal with peak catch usually from February through April, whereas Yellowfin Tuna season usually runs from April to September. The lack of surveys for 3 months could have had an impact on tuna landings estimates because they are could more year round. The lack of survey likely had little effect on mahimahi estimates because the mahimahi season was captured in the surveys that were able to be conducted.

Effort. The number of boats involved in CNMI's pelagic fishery has been steadily decreasing from 2001, when there were 113 fishermen reporting commercial pelagic landings, to 2015 when there were 12. In 2016, there was a sharp increase in fishermen to 73 reporting landings, but for the last 3 years numbers have remained more consistent. In 2019 the number decreased by 13% to 49. The number of trips, based on both the commercial data receipts and the creel survey, have been variable since the late 1990s, but has been increasing in the last year. In 2019, 2457 trips were recorded in the database (11% increase from 2018), and 3,202 trips estimated from the creel survey (24% decrease from 2018). The creel trip estimate may have been affected by missing surveys because of the missed Summer/Fall season. Estimated charter trips increased 128% to 41 trips. Total hours trolling in 2019 showed a decrease of 22% from 2018 to 16,841 hours, but charter trolling hours increased 108% to 175 hours. Average trip length increased slightly to 5.3 hours per trip. As noted above, charter fishing is a very small overall component of the trolling fishery, and minimal charter trips were reported. This is likely a sampling issue as there are known charter operators, but they infrequently operate and can be difficult to catch in

normally scheduled surveys. The increases this year in charter numbers are more likely for an improved effort to sample charter trips.

Boat Ramps. There are several boat ramps in the CNMI most of which are found on Saipan. The main boat ramp used for the largest trailerable boats is north of Garapan at Smiling Cove Mariana. This is a convenience and transient dock as well as slips that can be rented for long term boat storage. There are small boat ramps further north in Saipan in Tanapag and Lower Base. The Tanapag boat ramp is frequently used for small fishing and recreational vessels. The Lower Base boat ramp is used by 20-30 ft. commercial tourism operators during the day, but at night is common launching point for subsistence fishermen with small (8-12 ft.) vessels. In Garapan, Fishing Base has a small boat ramp that is used by tourism operators, recreational boaters, subsistence fishermen, and commercial fishermen. In the south, the boat ramp at Sugar Dock is used by commercial fishermen, tourism operators, recreational boaters, and subsistence fishermen. This boat ramp is frequently covered in sand by beach erosion from further north in the lagoon and has to be dredged periodically. It is still frequently used when the ramp is covered in sand as it is an important launching site. Currently Sugar Dock hasn't been dredged in several years and is used less than in the past.

Weather. Weather and typhoon conditions followed traditional patterns. There were no major typhoons this year. January and February were affected by bad weather for 26 and 27 days respectively. March, August, September, October, November, and December were moderately affected by bad weather for 7, 12, 7, 10, 8, and 18 days respectively. April through July was unaffected by bad weather days.

Fish Aggregating Devices (FADs). FADs were deployed in 2018 were lost to Typhoon Yutu. Materials were obtained and prepared for deployment. A contract was completed, and 11 FADs will be deployed in early 2020.

CPUE. In 2019, trolling catch rates increased to 27.9 lbs. per trolling hour, a level higher than the 10 year average (23.2 lbs./hr). The skipjack catch rate, the primary target species in CNMI, increased to 20.5 lbs. per hour fished. This catch rate is a 12% increase and is higher than the 10 year average (16.0 lbs./hr). Yellowfin catch rate in 2019 increased 4.4 times more than 2018 to 2.2 lbs. per hour. The mahimahi catch rate increased to 4.2 lbs./hr in 2019, which is above the long-term average of 3.9 lbs./hr.

Revenues. Commercial estimated inflation-adjusted revenues per trip, at ~\$160.00, were down from 2018, and have been decreasing since 2016. The total value of the pelagic fishery was \$464,101.30. The average price for all pelagics was up to \$2.61 driven by the \$2.60 price for skipjack.

Bycatch. Bycatch is not a significant issue in the CNMI, as fishermen retain their catch regardless of species, size or condition. Based on creel survey interviews, no fish were caught as bycatch in the trolling fisheries in the years 2007-2019.

2.2.3 PLAN TEAM RECOMMENDATIONS

For the CNMI Module in the 2018 Annual SAFE Report, the 2019 Pelagic Fishery Ecosystem Plan Team recommended that the Council request WPacFIN to be engaged with the CNMI and the Council on data collection initiatives should proposed regulatory actions in CMNI to require mandatory fishery reporting be approved.

2.2.4 OVERVIEW OF PARTICIPATION AND EFFORT

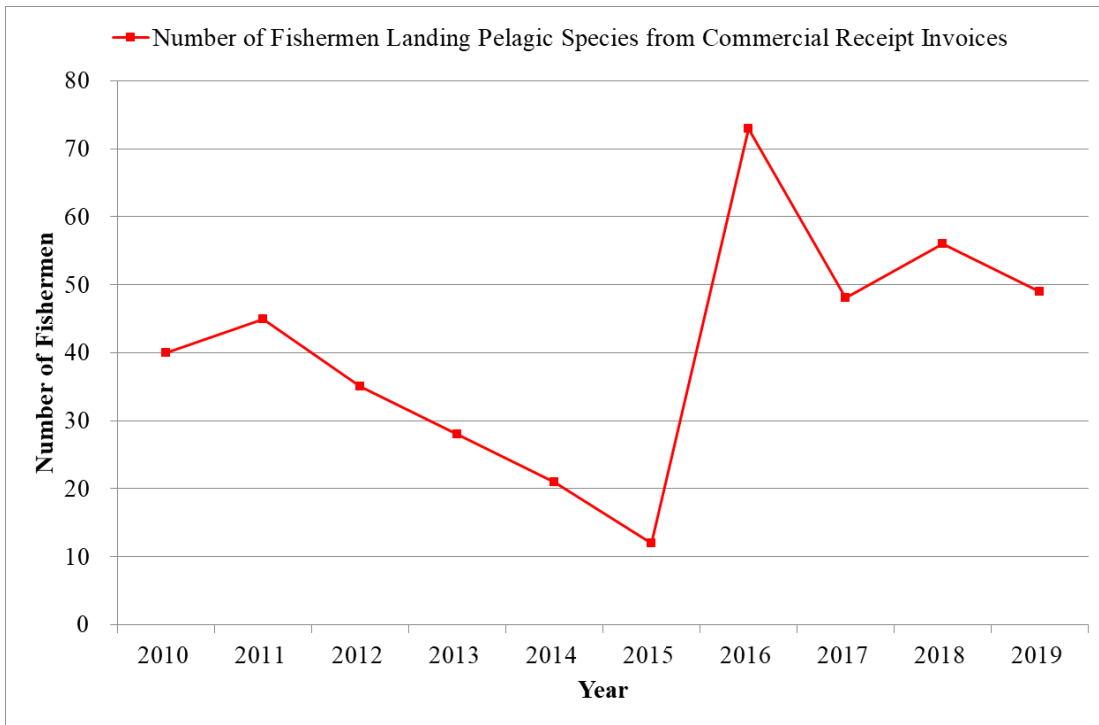


Figure 22. CNMI fishermen (boats) with commercial pelagic landings from 2010-2019. Due to reporting methods, number of fishermen includes duplicate counts. Supporting data shown in Table A-22.

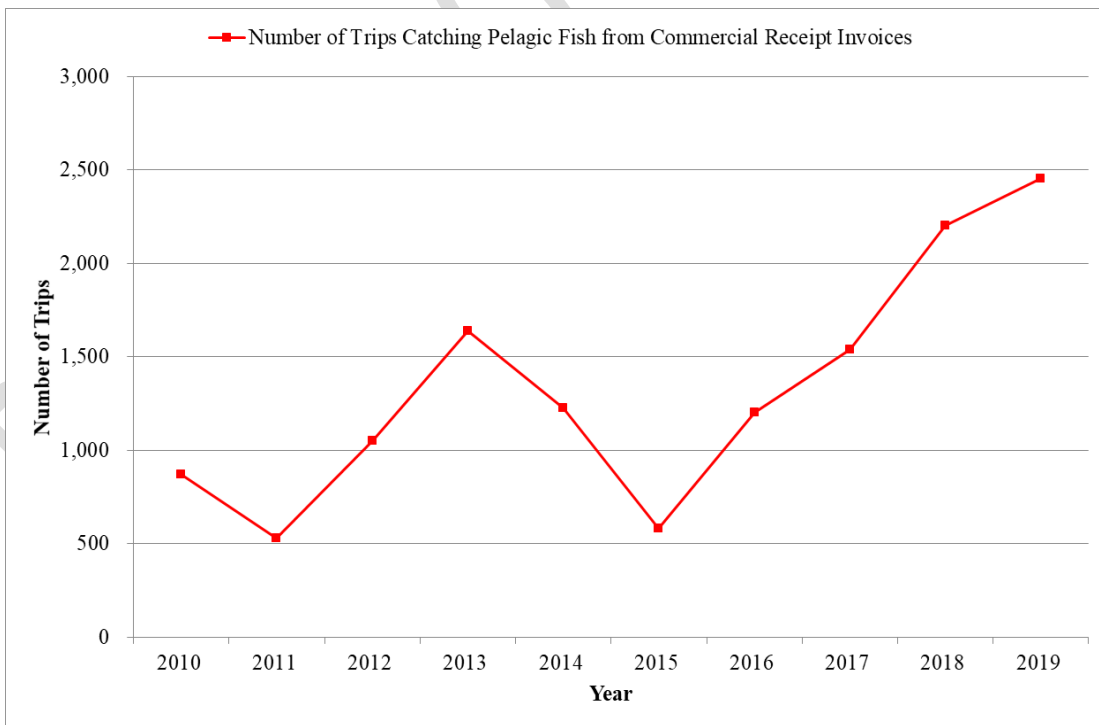


Figure 23. Number of trips catching pelagic fish from commercial receipt invoices from 2010-2019

Supporting data shown in Table A-23.

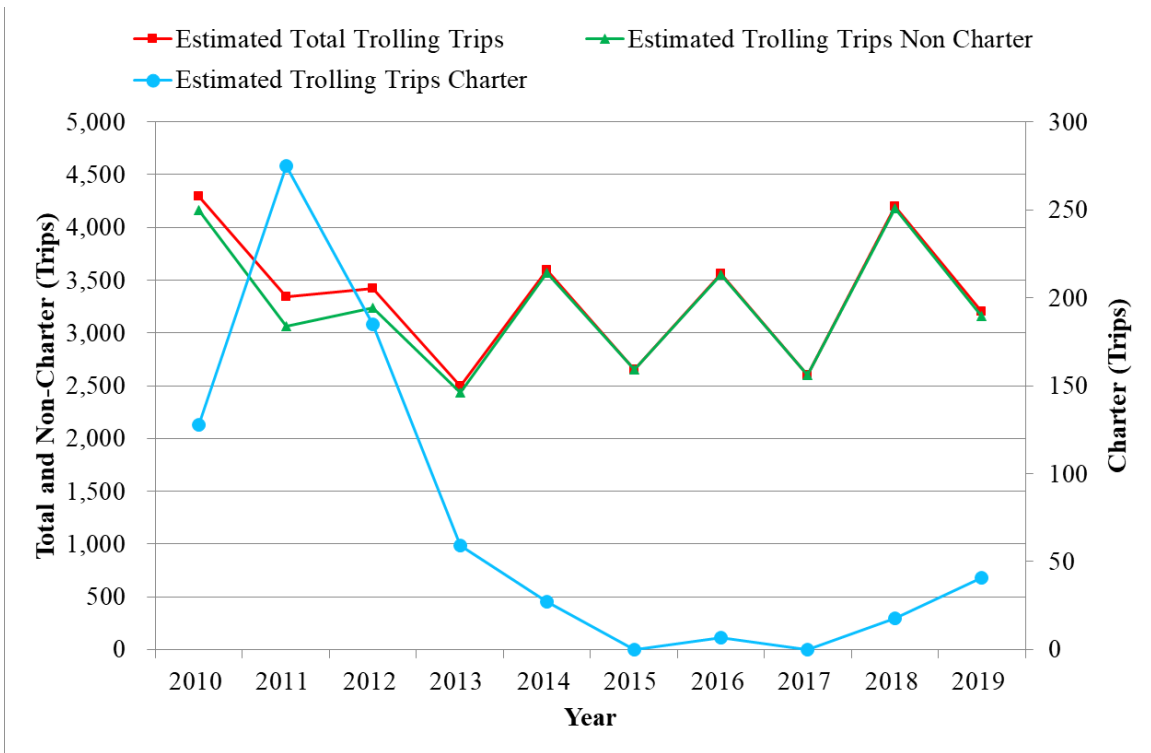


Figure 24. CNMI boat-based creel estimated number of trolling trips from 2010-2019
 Supporting data shown in Table A-24.

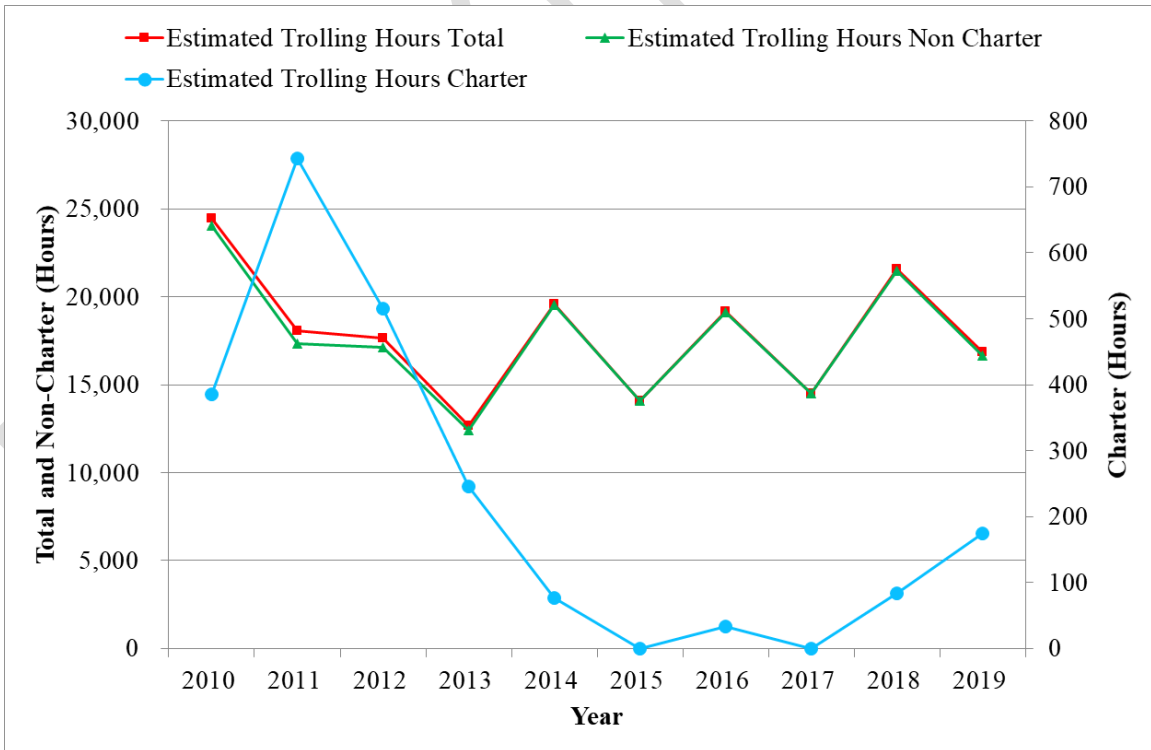


Figure 25. CNMI boat-based creel estimated number of trolling hours from 2010-2019
 Supporting data shown in Table A-25.

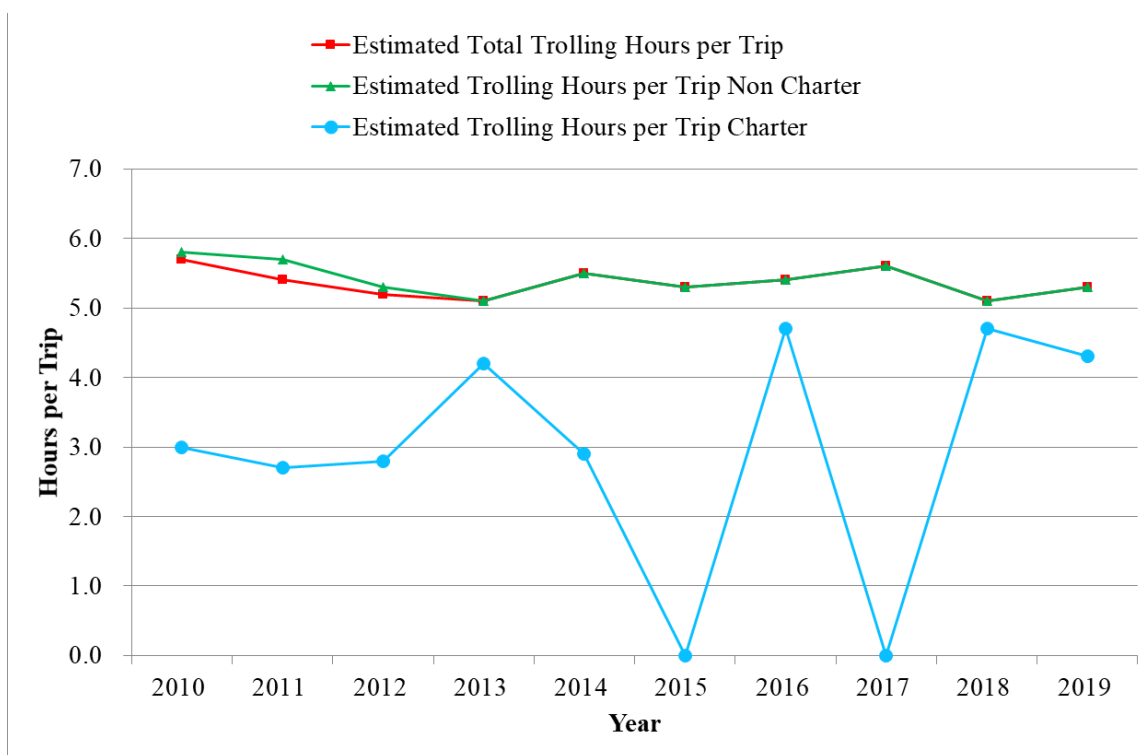


Figure 26. CNMI boat-based creel average trip length in hours per trip from 2010-2019 Supporting data shown in Table A-26.

2.2.5 OVERVIEW OF LANDINGS

Table 13. Pelagic species composition from creel surveys performed in the CNMI in 2019

Species	Total Landings	Non Charter	Charter
SKIPJACK TUNA	345,172	342,431	2,741
YELLOWFIN TUNA	36,473	36,473	0
SABA (KAWAKAWA)	0	0	0
TUNAS (MISC.)	0	0	0
TUNAS Total	381,645	378,904	2,741
MAHIMAHI	71,791	71,791	0
WAHOO	2,448	2,448	0
BLUE MARLIN	3,855	3,855	0
SAILFISH	0	0	0
SPEARFISH	0	0	0
SHARKS	0	0	0
SICKLE POMFRET (W/WOMAN)	124	124	0
NON-TUNA PMUS Total	78,218	78,218	0
DOGTOOTH TUNA	3,965	3,965	0
RAINBOW RUNNER	2,251	1,867	384

Species	Total Landings	Non Charter	Charter
BARRACUDA	190	190	0
TROLL FISH (MISC.)	0	0	0
OTHER PELAGICS Total	6,406	6,022	384
TOTAL PELAGICS	466,269	463,144	3,125

Note: Total pelagic landings is greater than the sum of the individual species due to an artifact in reporting process, where the difference accounts for non-PMUS reported as part of the creel survey.

Table 14. Commercial pelagic landings (lb.), revenues (\$), and average prices (\$) in the CNMI in 2019

Species	Pounds	Value	Average Price
SKIPJACK TUNA	127,688.9	331,435.4	2.60
YELLOWFIN TUNA	12,282.8	33,964.5	2.77
SABA (KAWAKAWA)	68.0	170.0	2.50
TUNAS (MISC.)	338.7	874.0	2.58
TUNAS TOTAL and AVERAGE PRICE	140,378.4	366,443.8	2.61
MAHIMAHI	20,724.3	56,058.9	2.70
WAHOO	336.0	1,045.3	3.11
BLUE MARLIN	604.0	1,488.0	2.46
SICKLE POMFRET (W/WOMAN)	379.3	1,262.0	3.33
NON-TUNA PMUS TOTAL and AVERAGE PRICE	22,043.7	59,854.2	2.72
DOGTOOTH TUNA	12,494.7	30,086.8	2.41
RAINBOW RUNNER	617.3	1,669.7	2.70
BARRACUDA	120.0	360.0	3.00
TROLL FISH (MISC.)	1,965.3	5,686.7	2.89
OTHER PELAGICS TOTAL and AVERAGE PRICE	15,197.3	37,803.2	2.49
PELAGICS TOTAL and AVERAGE PRICE	177,619.4	464,101.3	2.61

Note: Total pelagic landings is greater than the sum of the individual species due to an artifact in reporting process, where the difference accounts for non-PMUS reported as part of the creel survey.

Table 15. Bycatch summary of offshore daytime creel surveys in the CNMI from 2010-2019

Year	Total Trips	Total Bycatch	Bycatch Charter	Bycatch Non Charter
2010	115	0	0	0

2011	105	0	0	0
2012	126	0	0	0
2013	149	0	0	0
2014	144	0	0	0
2015	102	0	0	0
2016	100	0	0	0
2017	109	0	0	0
2018	108	0	0	0
2019	58	0	0	0

Notes: Bycatch information is calculated from raw interview data and represents the percent of fish caught or percent of interviews with bycatch.

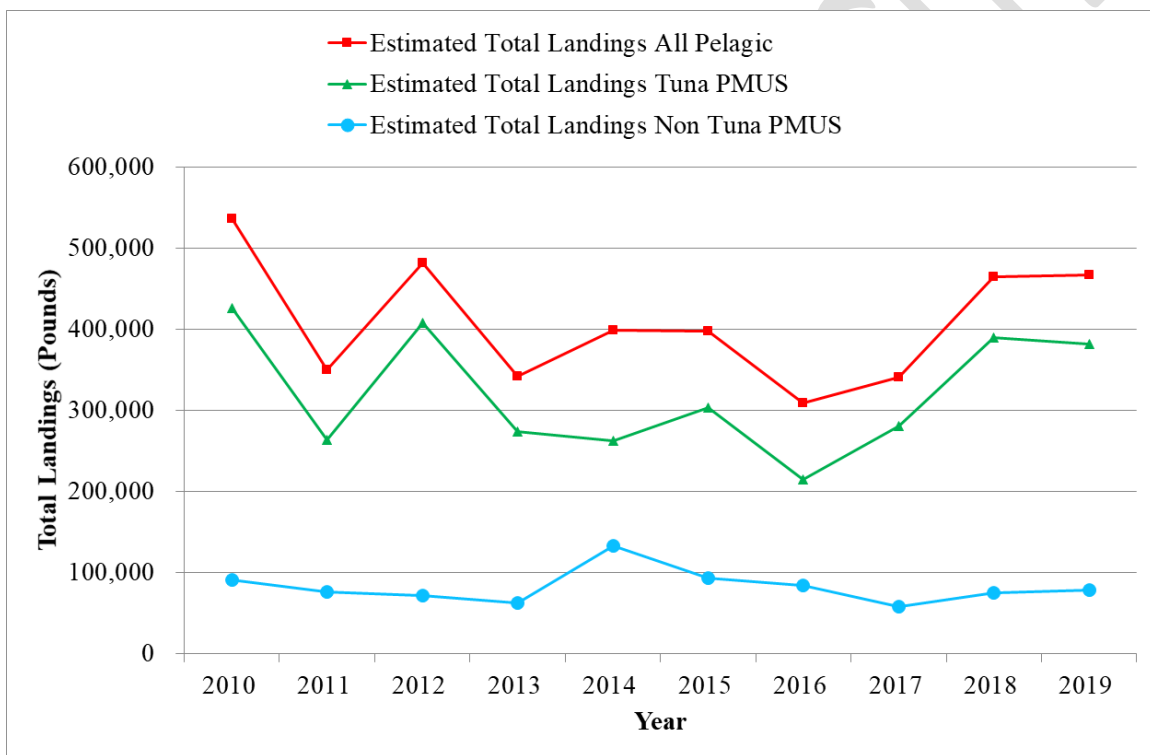


Figure 27. Total estimated annual catch for all pelagics, tuna PMUS, and non-tuna PMUS in the CNMI from 2010-2019

Supporting data shown in Table A-27.

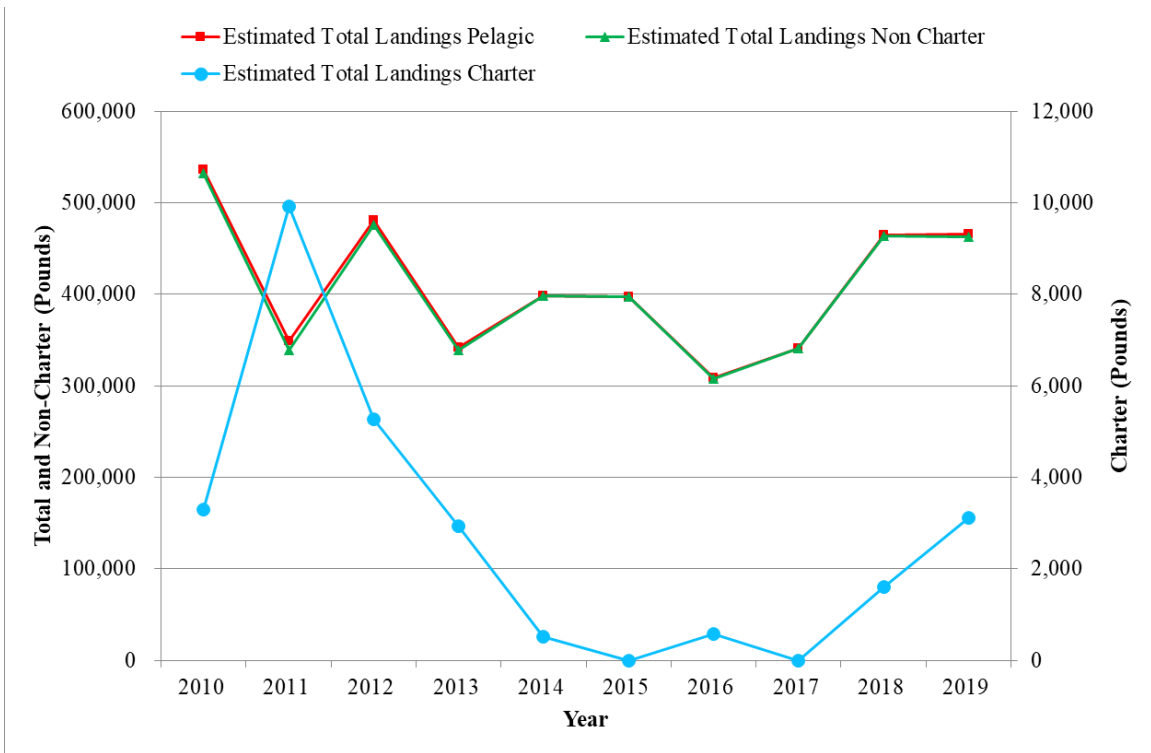


Figure 28. Total estimated annual catch for all pelagics in the CNMI from 2010-2019
 Supporting data shown in Table A-28.

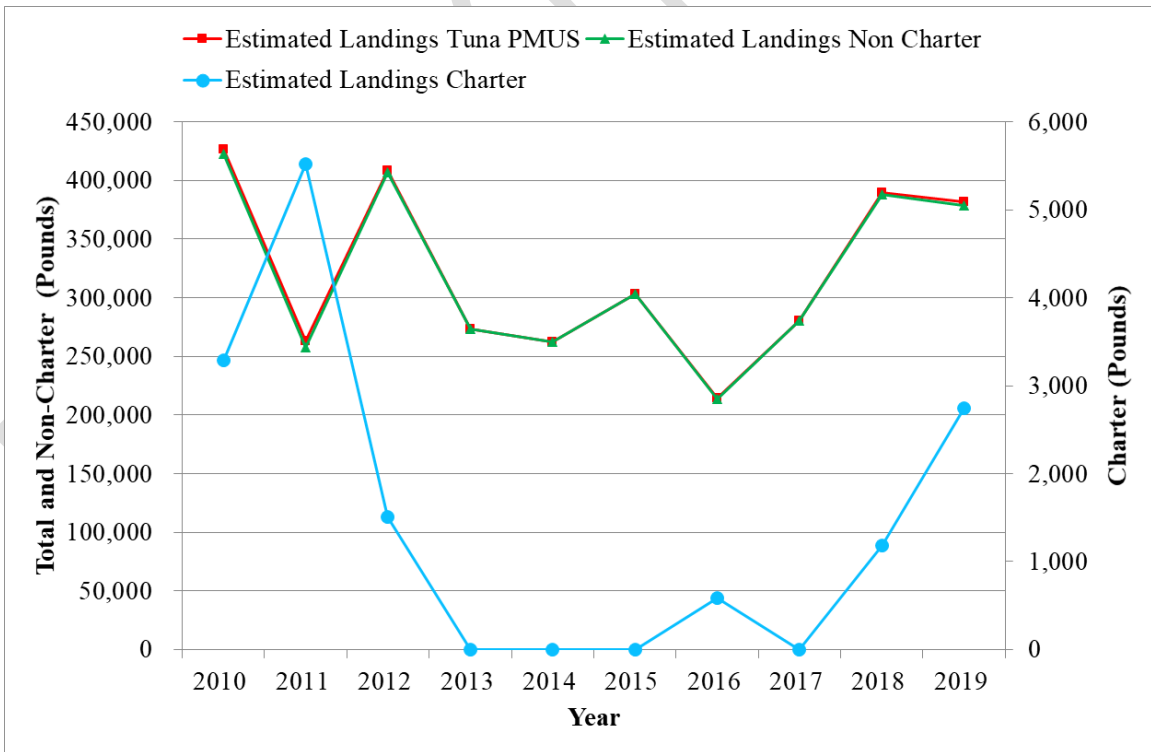


Figure 29. Total estimated annual catch for tuna PMUS in the CNMI from 2010-2019
 Supporting data shown in Table A-29.

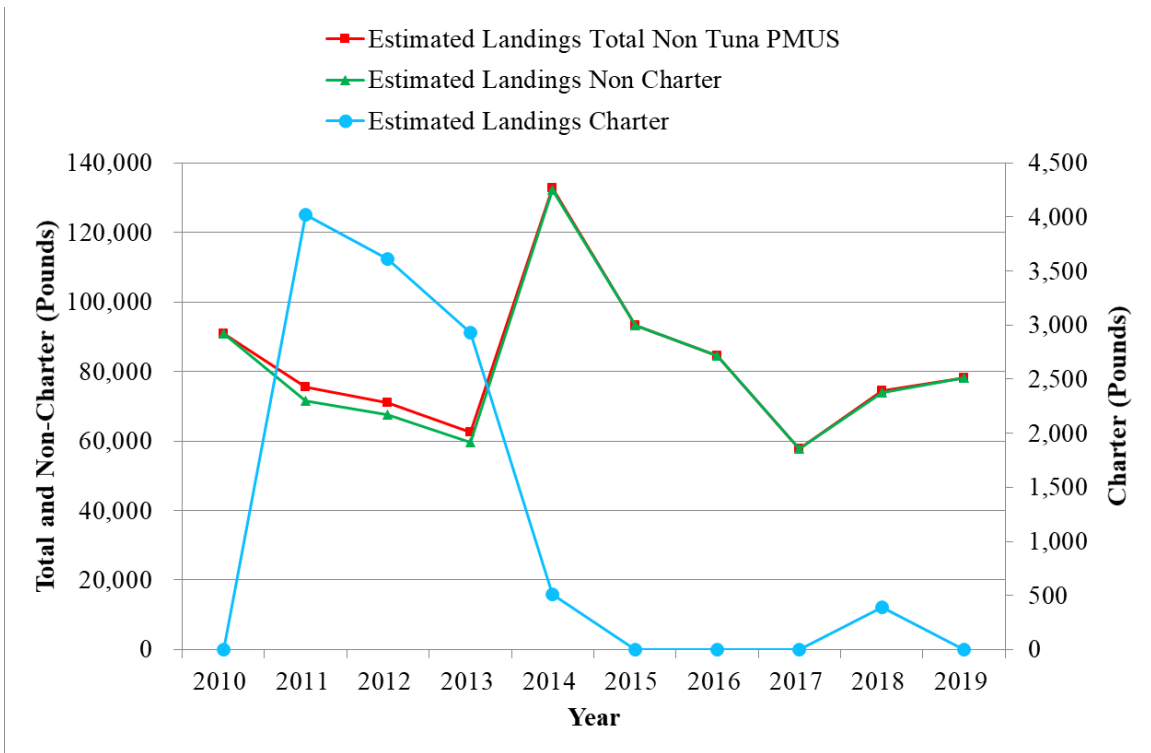


Figure 30. Total estimated annual catch for non-tuna PMUS in the CNMI from 2010-2019
 Supporting data shown in Table A-30.

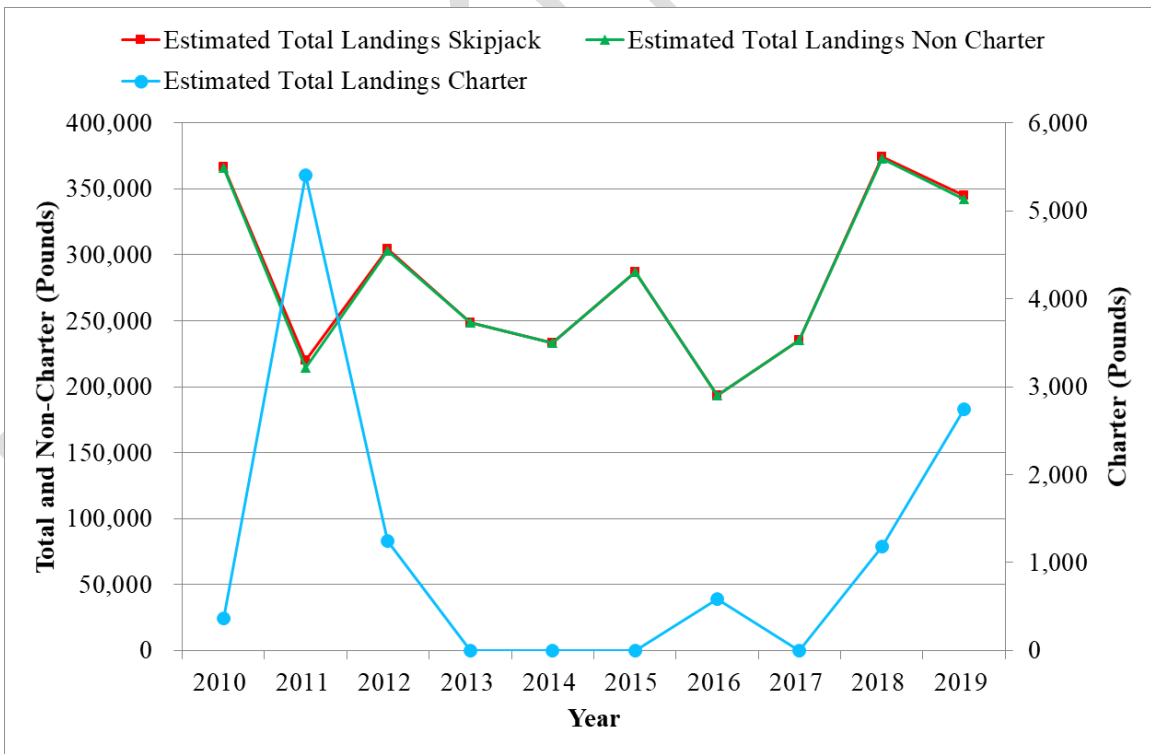


Figure 31. Total estimated annual catch for skipjack in the CNMI from 2010-2019
 Supporting data shown in Table A-31.

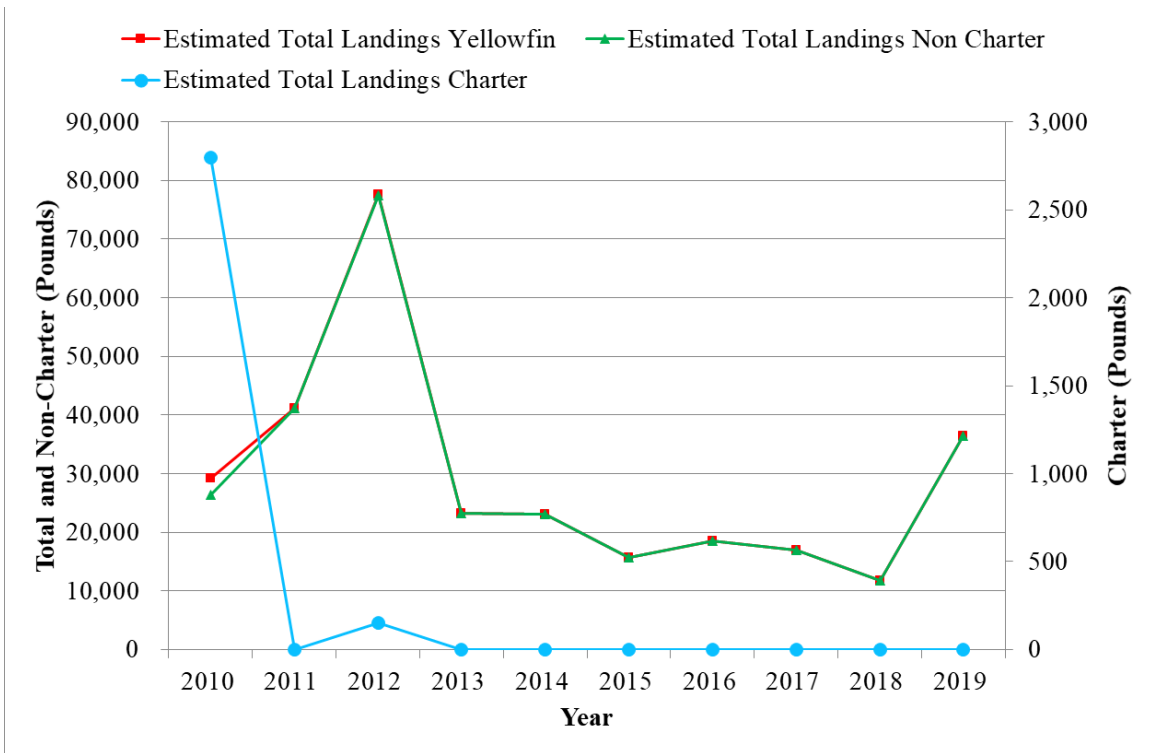


Figure 32. Total estimated annual catch for yellowfin in the CNMI from 2010-2019
 Supporting data shown in Table A-32.

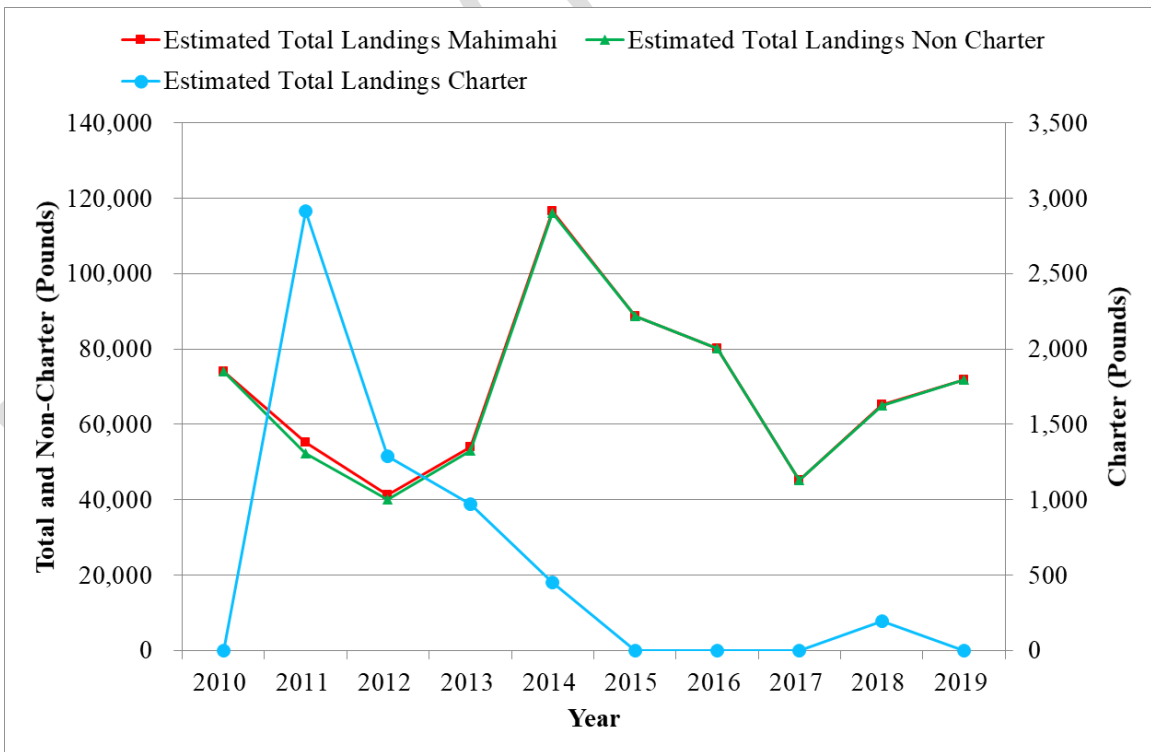


Figure 33. Total estimated annual catch for mahimahi in the CNMI from 2010-2019
 Supporting data shown in Table A-33.

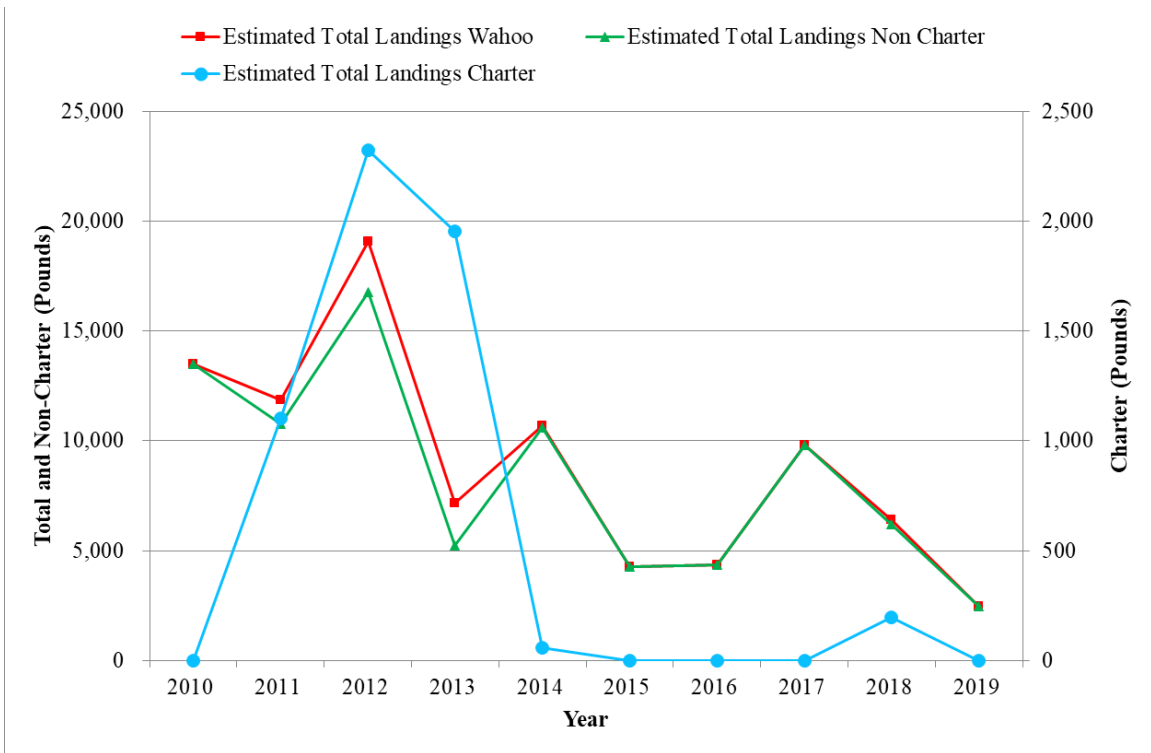


Figure 34. Total estimated annual catch for wahoo in the CNMI from 2010-2019
 Supporting data shown in Table A-34.

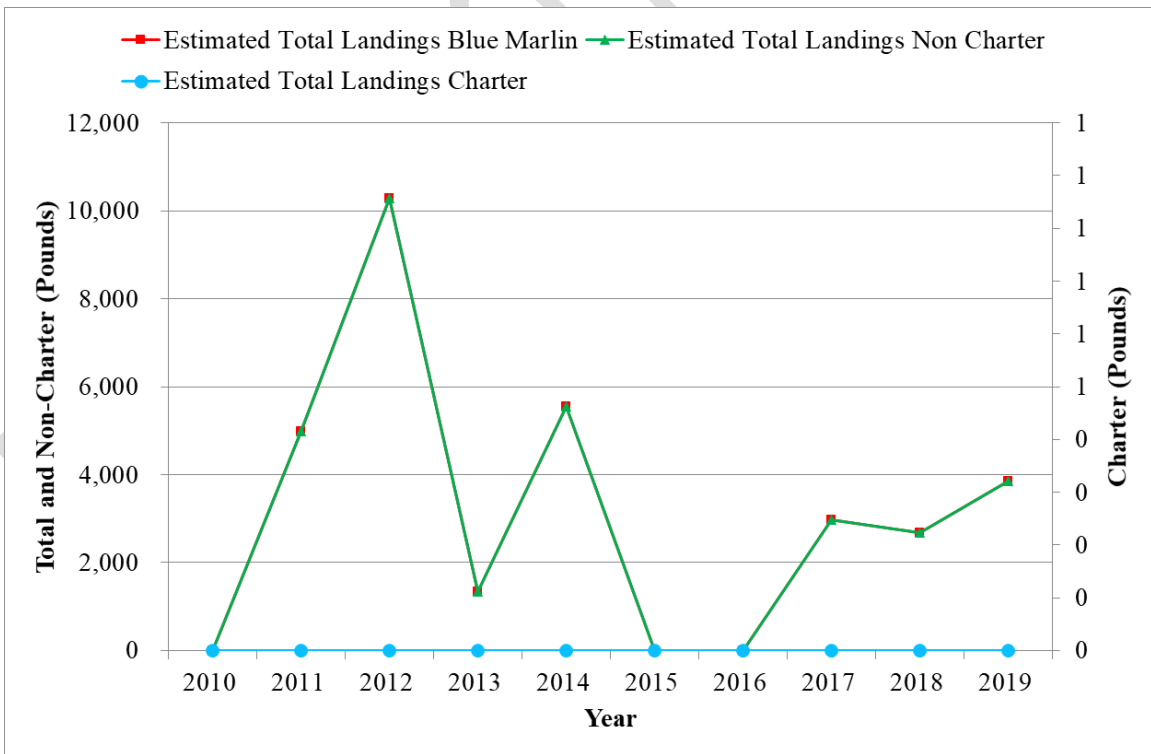


Figure 35. Total estimated annual catch for blue marlin in the CNMI from 2010-2019
 Supporting data shown in Table A-35.

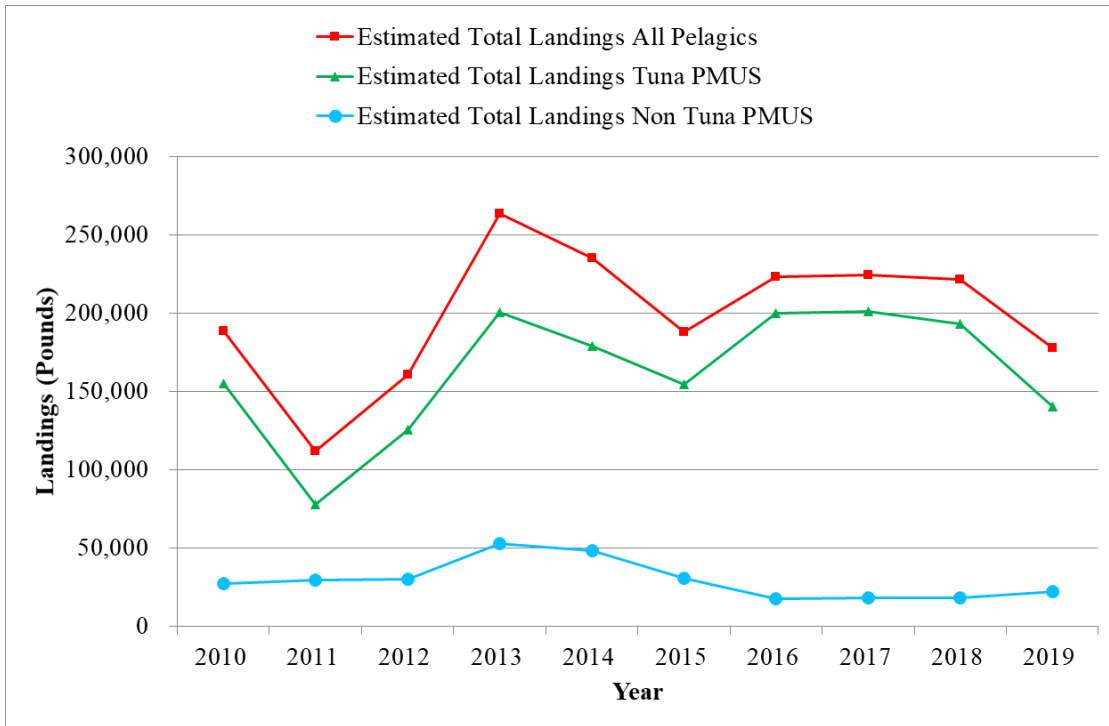


Figure 36. Annual commercial landings for all pelagics, tuna PMUS, and non-tuna PMUS in the CNMI from 2010-2019

Supporting data shown in Table A-36

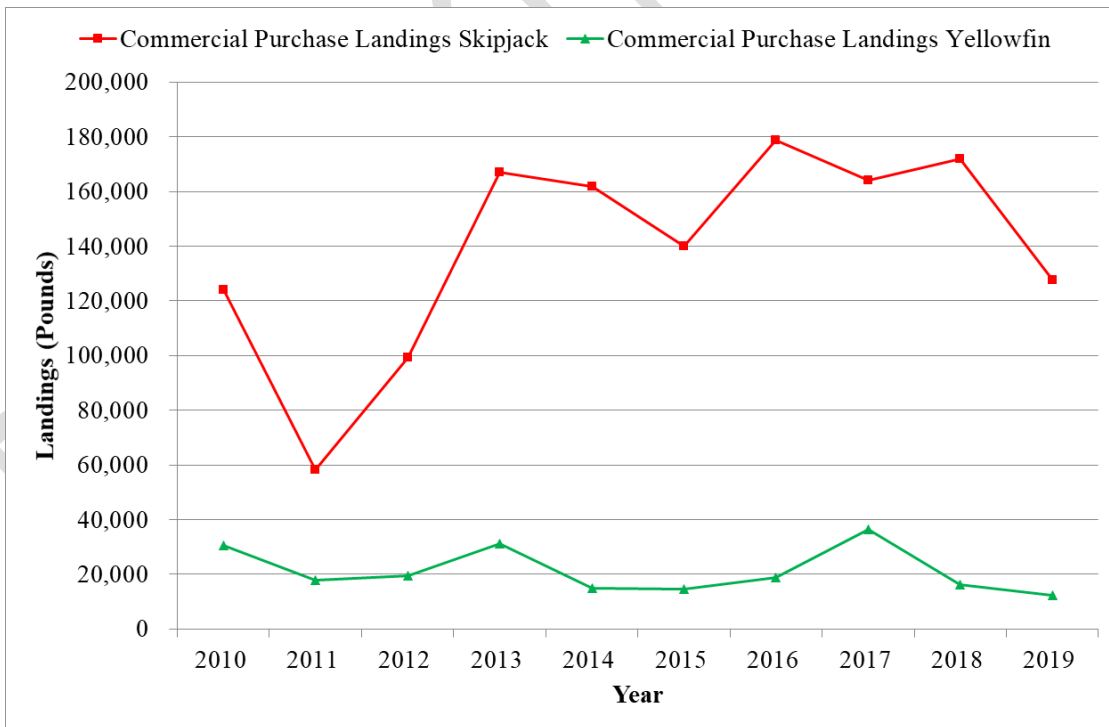


Figure 37. Annual commercial landings for skipjack and yellowfin in the CNMI from from 2010-2019

Supporting data shown in Table A-37.

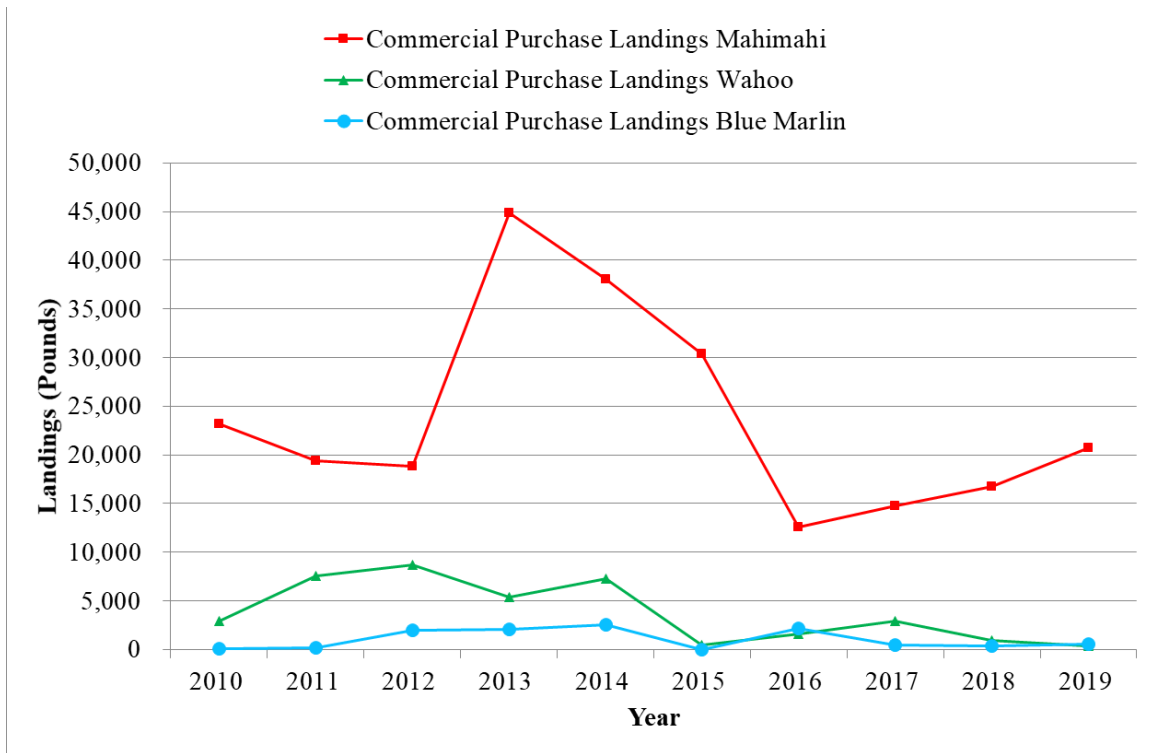


Figure 38. Annual commercial landings for mahimahi, wahoo, and blue marlin in the CNMI from 2010-2019

Supporting data shown in Table A-38.

2.2.6 OVERVIEW OF CATCH PER UNIT EFFORT – ALL FISHERIES

This section provides catch rates for the five main species landed by trolling. “Pounds per hour trolled” is determined from creel survey interviews and include charter and non-charter sectors, while “pounds per trip” is determined from commercial invoice receipts.

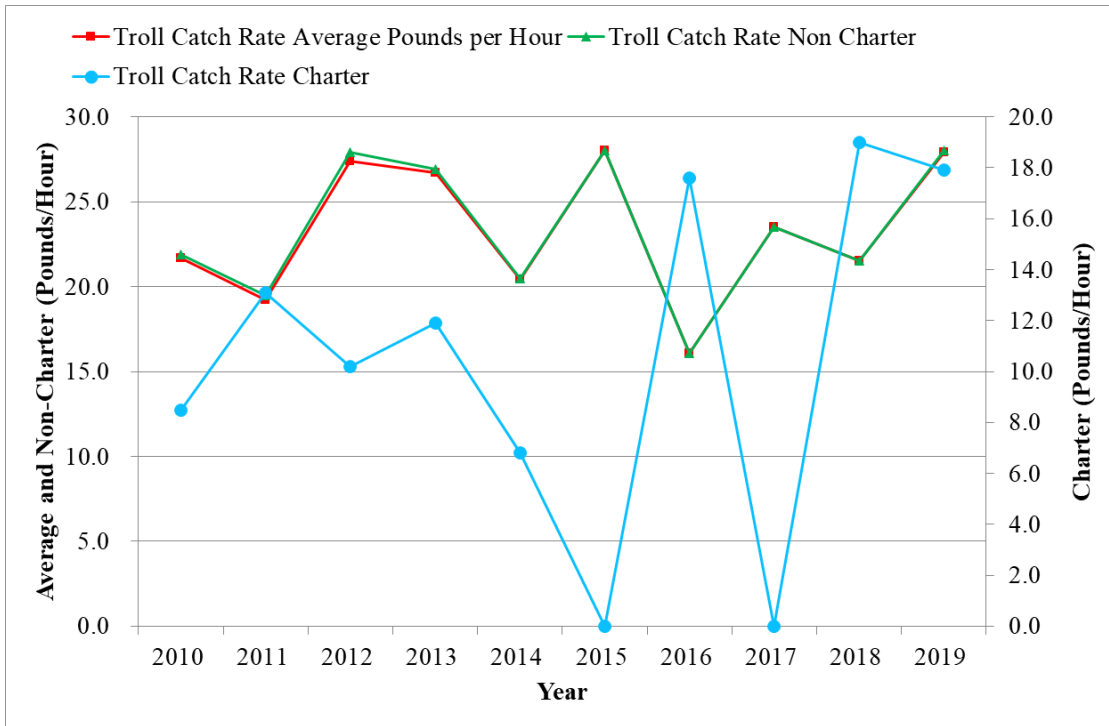


Figure 39. Estimated trolling catch rates (lbs./hr) from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-39.

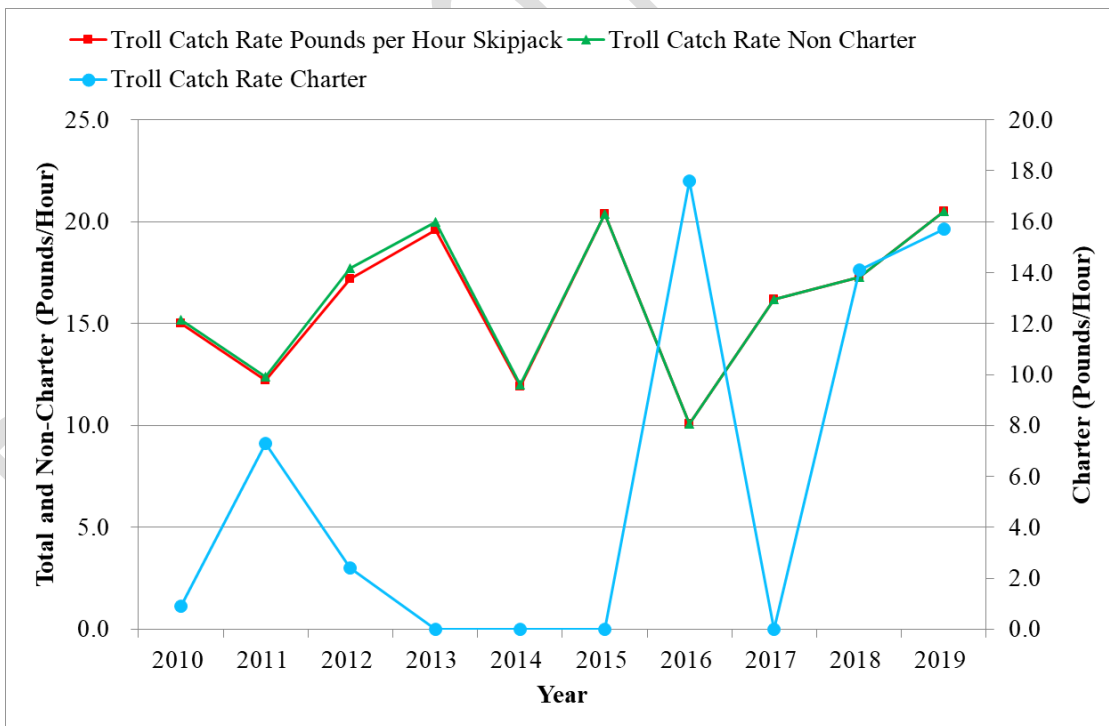


Figure 40. Estimated trolling catch rates (lbs./hr) for skipjack from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-40.

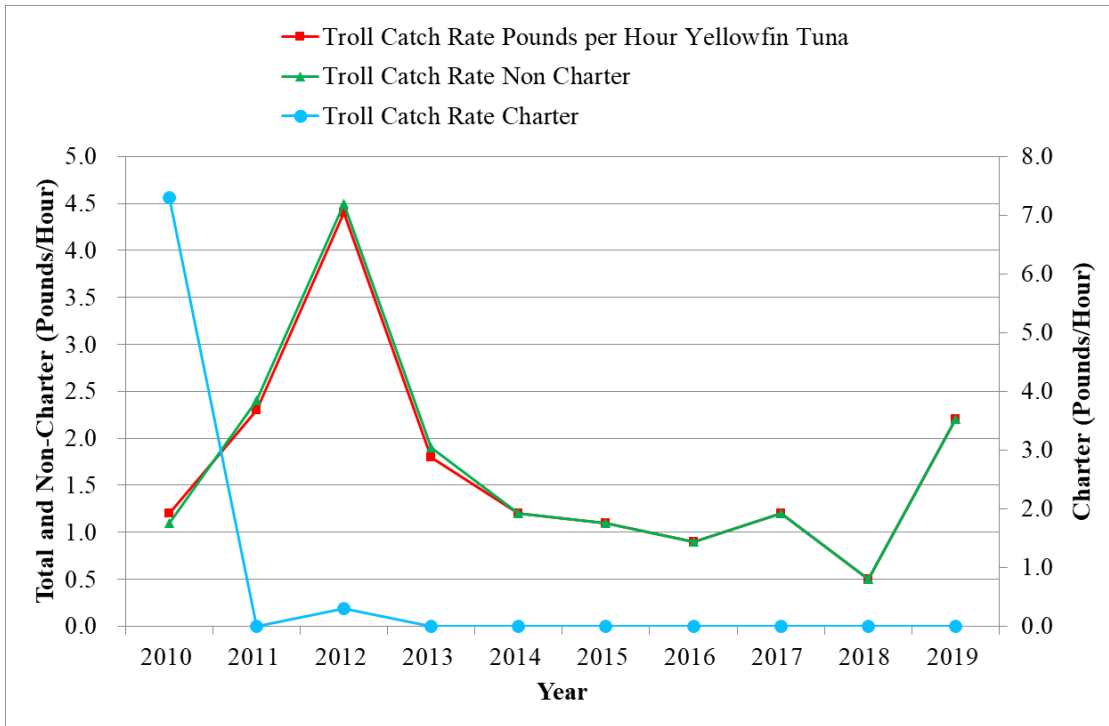


Figure 41. Estimated trolling catch rates (lbs./hr) for yellowfin from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-41.

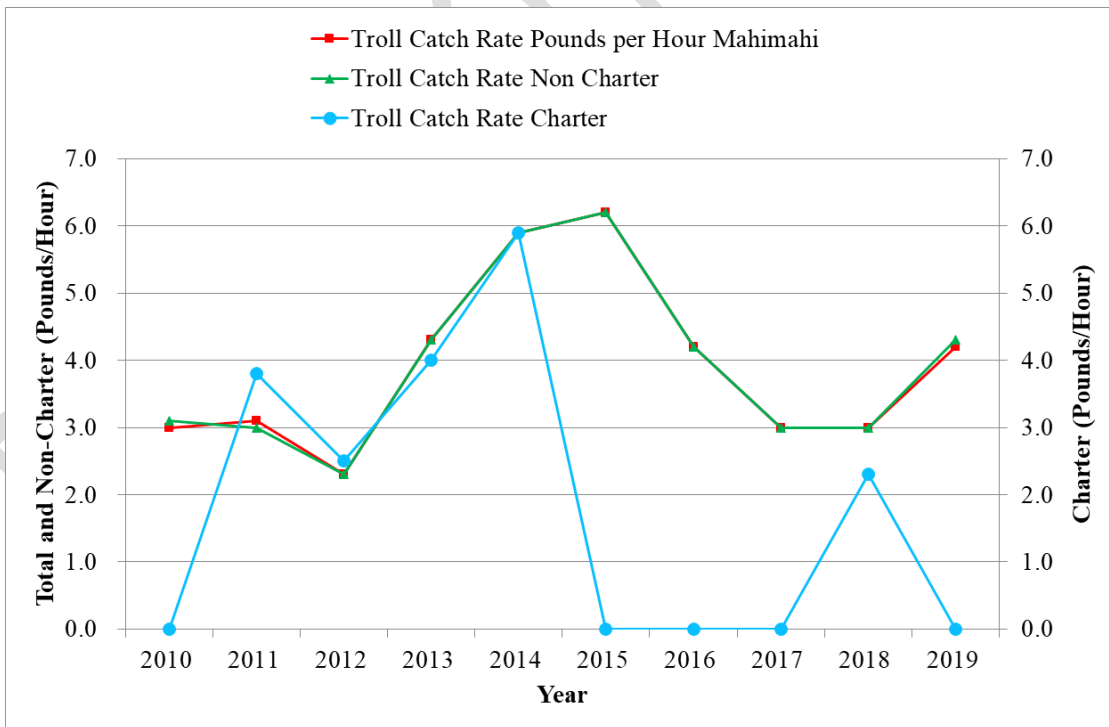


Figure 42. Estimated trolling catch rates (lbs./hr) for mahimahi from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-42.

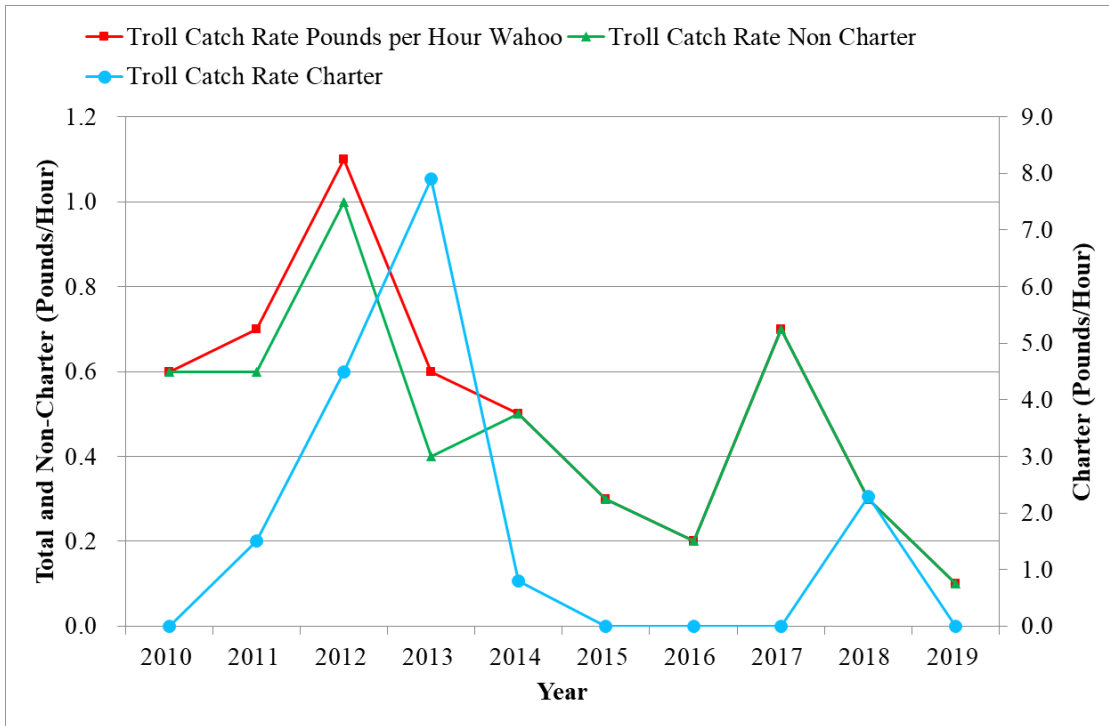


Figure 43. Estimated trolling catch rates (lbs./hr) for wahoo from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-43.

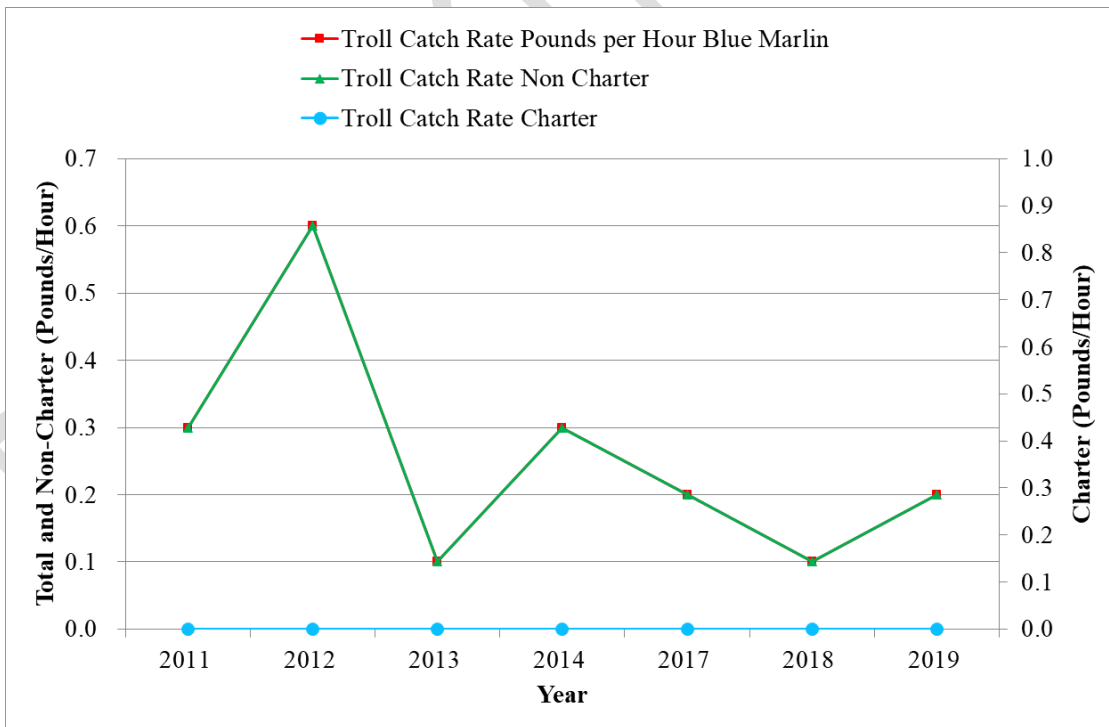


Figure 44. Estimated trolling catch rates (lbs./hr) for blue marlin from creel surveys in the CNMI from 2010-2019

Supporting data shown in Table A-44.

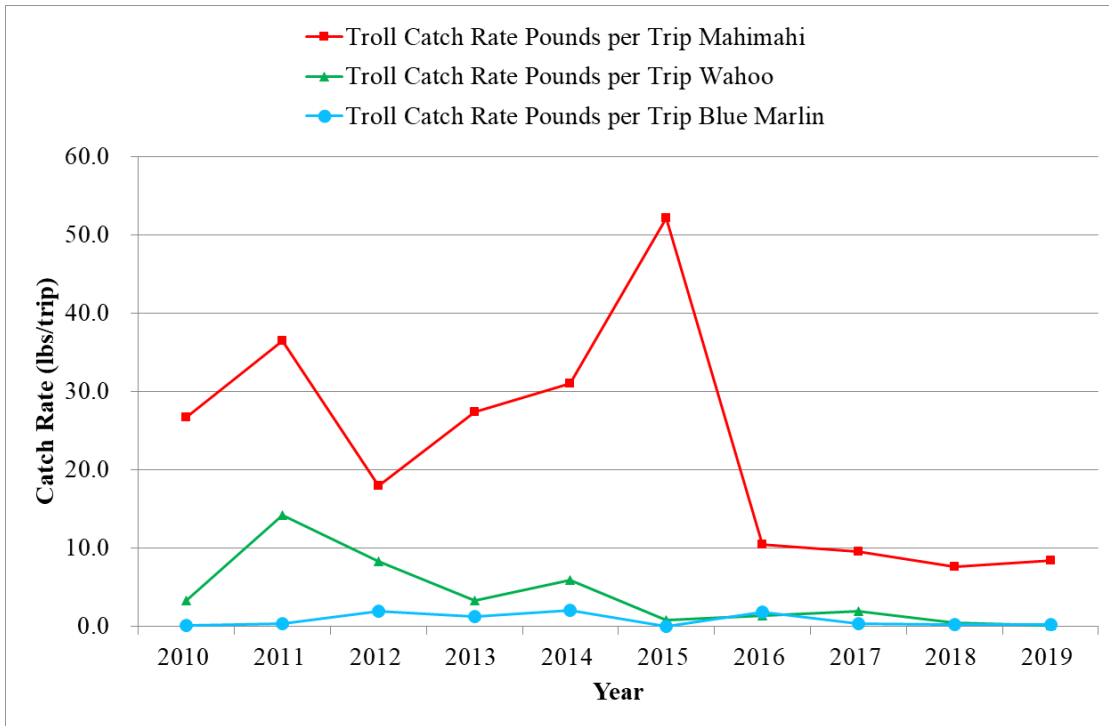


Figure 45. Estimated trolling catch rates (lbs./trip) for mahimahi, wahoo, and blue marlin in the CNMI from 2010-2019

Supporting data shown in Table A-45.

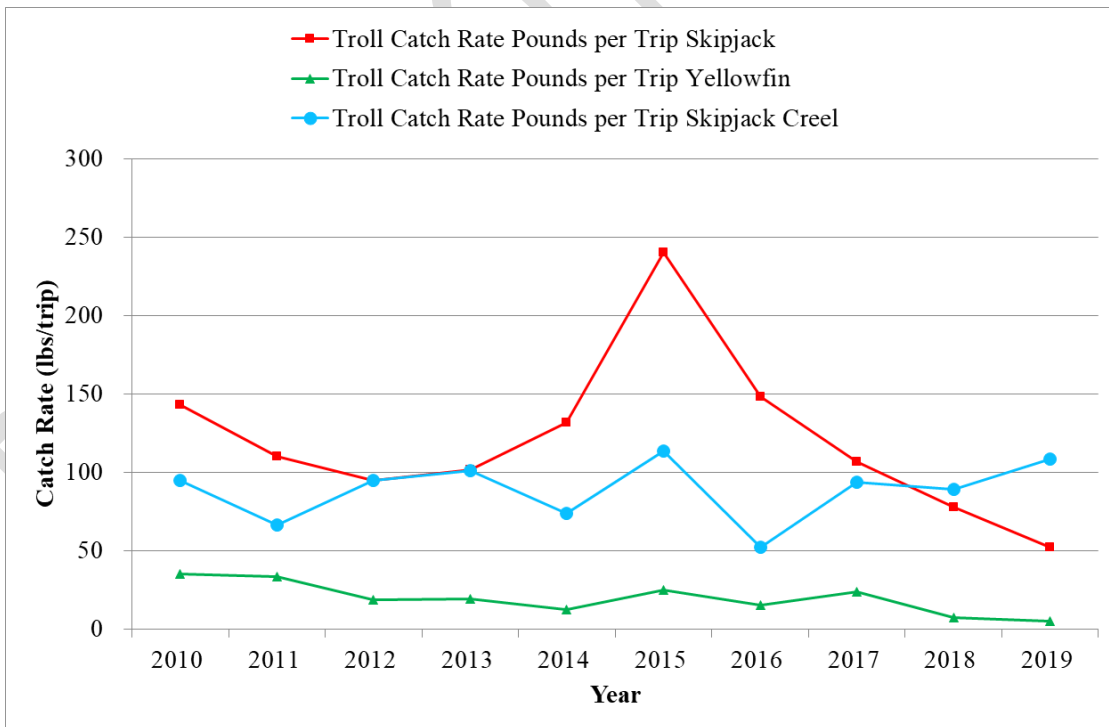


Figure 46. Estimated trolling catch rates (lbs./trip) for skipjack and yellowfin tuna in the CNMI from 2009-2018

Supporting data shown in Table A-46.