1.6 NON-COMMERCIAL FISHERY PERFORMANCE

The non-commercial data in this report is sourced from the Hawaii Division of Aquatic Resources (HDAR) Hawaii Marine Recreational Fishing Survey (HMRFS) and the NOAA Fisheries Marine Recreational Information Program's (MRIP) Fishing Effort Survey (FES). It is recommended that the non-commercial data presented here are not directly compared to the commercial data presented in Sections 1.1 through 1.5 due to inherent differences in data collection and summarization procedures. These data are presented only as a broad overview.

1.6.1 HAWAII MARINE RECREATIONAL FISHING SURVEY (HMRFS)

HMRFS was established in 2001 in collaboration with NOAA Fisheries Marine Recreational Fisheries Statistics Survey (MRFSS). MRFSS oversight consisted of two independent and complimentary surveys: the Coastal Household Telephone Survey (CHTS) for fishing effort and the Access Point Angler Intercept Survey (APAIS) for catch rate. In 2003, the survey was expanded to all major Hawaiian Islands (i.e., Kauai, Oahu, Maui, Molokai, and Hawaii Island) and included fishing from shoreline and private boats. MRIP was then established in 2007 and replaced MRFSS to develop improved data collection and information management for monitoring US marine recreational fisheries. HMRFS is currently funded by the State of Hawaii, MRIP, and the US Fish and Wildlife Service's Sport Fish Restoration Program.

The CHTS utilized a random digit dial method to sample Hawaii households with landline phone numbers. Due to steadily decreasing numbers of households with landline phones as well as other factors, the FES was pilot tested in 2017 and eventually replaced the CHTS in 2018. The FES follows the Dillman approach for mail surveys. For every wave, or two-month period, two to three thousand households in Hawaii are randomly selected for the survey. The FES includes the initial survey mailing, a follow-up reminder (via postcard), and final mailing. Fishing data are collected from all household members, including those who did not fish.

The APAIS focuses on in-person interviews of fishers at publicly accessible locations such as public boat ramps and popular shore fishing sites. Two fishing modes, private boat and shoreline, are randomly sampled statewide. Fishing sites are weighted according to estimated fishing pressure, with higher pressure sites drawn and sampled more frequently.

1.6.2 CATCH AND EFFORT ESTIMATES

Fishing catch and effort estimates are based upon data from HMRFS and the FES. HMRFS data include catch rate information or catch per angler trip. The catch rate is derived by multiplying the catch number of a given species with the average weight for the species for a given estimation domain (area fished and mode combination). The number of trips from the FES data is expanded to statewide estimates using current U.S. census data. Total catch is then estimated as the product of the catch rate and the number of estimated trips.

MRIP calculates estimates of catch and effort every wave for finfish only (i.e., estimates for invertebrates such as octopus, lobsters, crabs, etc., are not calculated). Unlike the commercial data where monthly catch reports are mandatory, the non-commercial data is collected through voluntary, in-person surveys that are then used to calculate estimates. The accuracy of the estimates is dependent upon the relative number of completed interviews as well as the amount

of catch verified by HMRFS staff and is thus subject to much greater variability. The calculated estimates are vulnerable to fluctuating sample sizes for a given fishery/species and are reflected in the proportional standard error (PSE) of an estimate. For example, a species that is encountered infrequently by field surveyors would yield estimates that are limited by sample size and thus may result in greater PSE values. Estimated numbers and/or weights for a given species may be absent due to less than two fish enumerated and/or weighed for a given period. Due to various sampling limitations, the accuracy of some species landing estimates can vary substantially from Wave to Wave. For more information about MRIP procedures, please visit NOAA's website.

1.6.2.1 MANAGEMENT UNIT SPECIES

Due to the changes in HMRFS implementation and the related catch estimation method in 2023, further investigations are needed in order to apply the previous smoother/filter to the 2023 survey data for Hawaii Deep 7 bottomfish. The smoother/filter was not used for non-commercial uku catch estimates in the most recent uku stock assessment (Nadon et. al 2020) or for the uku catch estimates presented in the 2022 Hawaii annual SAFE report (WPFMC 2023). Thus, it is simpler to estimate the non-commercial catch for uku in 2023, but the method used differs from that for estimates from 2018–2022.

Table 40. Estimated, smoothed non-commercial catch estimates for Hawaii Deep 7 bottomfish species from 2018-2022

Year	Opakapaka	Onaga	Ehu	Hapuupuu	Kalekale	Gindai	Lehi	Total
2018	142,581	122,554	32,265	20,494	32,940	3,467	1,767	**356,068**
2019	83,585	45,642	44,421	32,167	14,535	25,770	3,686	**249,806**
2020	48,257	22,640	15,430	8,168	20,144	18,637	42	**133,318**
2021	52,793	41,923	41,584	34	27,713	10,216	7,777	**182,042**
2022	53,046	52,227	109,843	-	48,017	16,291	8,037	**287,461**
Avg.	**76,053**	**56,997**	**48,708**	**12,173**	**28,670**	**14,876**	**4,262**	***241,739***
SD	**12,200**	**34,226**	**32,201**	**35,569**	**11,541**	**3,193**	**7,573**	***78,161***

Note: Estimated catch values with a PSE > 0.5 (according to Table 41) are presented with red text.

Table 41. Percent standard error (PSE) for the estimated, smoothed non-commercial catch estimates for Hawaii Deep 7 bottomfish species from 2018-2022

Year	Opakapaka	Onaga	Ehu	Hapuupuu	Kalekale	Gindai	Lehi	Total
2018	0.395	0.432	0.553	0.520	0.413	0.725	0.000	0.235
2019	0.498	0.992	0.423	0.395	0.619	0.558	1.001	0.230
2020	0.531	0.659	0.504	0.727	0.544	0.432	0.000	0.273
2021	0.449	0.422	0.427	0.000	0.440	0.434	1.002	0.214
2022	0.450	0.544	0.414	-	0.442	0.531	1.001	0.216
Avg.	**0.464**	**0.610**	**0.464**	**0.411**	**0.492**	**0.536**	**0.601**	***0.234***
SD	**0.137**	**0.210**	**0.055**	**0.046**	**0.078**	**0.000**	**0.107**	***0.021***

Note: PSE vales > 0.5 (according to Table 2) are presented with red text.

Table 42. Estimated, unsmoothed non-commercial catch estimates and PSE for Hawaii uku for shore- and boat-based sources from 2018–2023

Year	Uku			
	Estimated Shore-Based Catch (lb)	PSE	Estimated Boat-Based Catch (lb)	PSE
2018	26,489	0.763	162,273	0.288
2019	-	-	69,089	0.290
2020	-	-	206,827	0.284
2021	18,994	1.000	141,353	0.203
2022	44,165	1.000	198,737	0.221
2023	22,779	0.856	157,766	0.343
Avg.	**18,738**	**0.905**	**156,007**	**0.272**
SD	**15,412**	**0.101**	**45,130**	**0.047**

Notes: Estimated catch values with a PSE > 0.5 (according to Table 2) are presented with red text. "-" indicates no available data. There were changes in HMRFS implementation and the related catch estimation method in 2023.

1.6.2.2 ECOSYSTEM COMPONENT SPECIES

Table 43. Non-commercial catches of the top 10 most harvested ECS from 2018–2023

Species	Year	Estimated Number	PSE	Estimated Weight (lb)	PSE	% Landings Without Weights
akule (*Selar crumenophthalmus*)	2018	3,637,857	13.3	483,472	23.5	67
	2019	4,438,580	14.6	-	-	100
	2020	3,256,580	13.3	170,208	-	73
	2021	3,910,075	30.3	-	-	100
	2022	7,370,109	12.3	-	-	100
	2023	1,698,257	30.2	-	-	100
	Std. Dev.	1,795,988	7.9	156,632	-	
ʻōpelu (*Decapterus macarellus*)	2018	404,650	39.5	-	-	100
	2019	793,390	34.2	11,485	-	99
	2020	462,733	17.4	74,210	40.0	72
	2021	642,642	29.6	26,161	-	90
	2022	326,572	17.9	10,618	-	91
	2023	210,417	29.4	445,480	29.4	0
	Std. Dev.	194,321	8.1	167,556	5.3	
menpachi (*Myripristis* spp.)	2018	761,304	28.3	7,099	-	-
	2019	193,130	47.3	-	-	-
	2020	207,632	32.3	2,794	-	-
	2021	325,989	35.7	28,885	-	-
	2022	386,725	32.5		-	-
	2023	102,425	47.6	-	-	-
	Std. Dev.	214,391	7.5	11,421	-	
taʻape (*Lutjanus kasmira*)	2018	94,702	26.1	16,550	49.2	71

Species	Year	Estimated Number	PSE	Estimated Weight (lb)	PSE	% Landings Without Weights
	2019	79,804	32.3	26,795	6.7	74
	2020	153,281	27.1	19,290	7.2	83
	2021	79,312	26.0	27,032	32.2	35
	2022	106,525	36.9	3,466	-	26
	2023	116,864	36.2	66,271	35.9	0
	Std. Dev.	25,563	4.9	19,423	16.7	
palani (*Acanthurus dussumieri*)	2018	106,582	24.8	70,292	28.8	40
	2019	188,731	29.0	2,594	-	99
	2020	77,160	25.7	8,795	-	92
	2021	103,881	28.2	-	-	100
	2022	58,798	48.9	-	-	100
	2023	12,168	56.9	39,322	59.6	0
	Std. Dev.	53,856	12.5	26,976	15.4	
uhu (*Scarus rubroviolaceus*)	2018	7,576	46.3	7,081	76.9	69
	2019	27,215	40.3	-	-	100
	2020	10,947	43.0	20,207	27.0	52
	2021	30,046	32.2	773	-	99
	2022	6,549	55.1	-	-	100
	2023	8,284	40.3	45,658	40.3	0
	Std. Dev.	9,692	6.9	17,213	18.3	
uhu (*Chlorurus perspicillatus*)	2018	1,563	70.8	10,854	-	0
	2019	5,406	63.2	-	-	100
	2020	761	59.4	2,520	-	52
	2021	270	100.0	-	-	100
	2021	270	100.0	-	-	100
	2022	4,964	70.1	-	-	100
	2023	-	-	-	-	-
	Std. Dev.	2,229	14.4	4,167	-	
weke ula (*Mulloidichthys vanicolensis*)	2018	277,804	43.6	27,821	53.8	96
	2019	106,019	52.0	-	-	100
	2020	19,865	53.2	-	-	100
	2021	28,222	58.6	-	-	100
	2022	20,835	38.6	3,113	-	81
	2023	27,422	83.8	-	-	100
	Std. Dev.	93,422	14.5	12,354	-	
kala (*Naso* spp.)	2018	15,897	39.6	4,264	-	51
	2019	121,734	29.5	-	-	100
	2020	28,356	43.0	-	-	100
	2021	17,041	47.1	-	-	100
	2022	1,884	79.2	-	-	100
	2023	7,847	56.7	4,625	101.4	78

Species	Year	Estimated Number	PSE	Estimated Weight (lb)	PSE	% Landings Without Weights
	Std. Dev.	40,904	15.7	181	-	
white crab (*Portunus sanguinolentus*)	-	-	-	-	-	-

Table 44. Non-commercial catch of HDAR's priority ECS from 2018–2023

Species	Year	Estimated Number	PSE	Estimated Weight (lb)	PSE	% Landings without Weights
kūmū (*Parupeneus porphyreus*)	2018	12,147	48.7	22,027	58.1	26
	2019	1,071	58.3	-	-	100
	2020	1,522	88.1	1,931	77.2	0
	2021	1,492	57.9	1,405	-	64
	2022	12,711	45.1	5,792	56.9	74
	2023	-	-	-	-	-
	Std. Dev.	5,622	15.1	8,397	9.2	
ʻōmilu (*Caranx melampygus*)	2018	117,747	20.8	512,264	37.5	26
	2019	203,031	14.7	592,656	13.2	29
	2020	165,574	18.4	145,669	14.1	75
	2021	90,388	20.8	101,706	36.9	74
	2022	196,794	21.7	682,341	33.0	34
	2023	138,219	30.4	650,284	33.0	0
	Std. Dev.	40,694	4.8	225,169	10.2	
uhu (*Scarus rubroviolaceus*)	2018	7,576	46.3	7,081	76.9	69
	2019	27,215	40.3	-	-	100
	2020	10,947	43.0	20,207	27.0	52
	2021	30,046	32.2	773	-	99
	2022	6,549	55.1	-	-	100
	2023	8,284	40.3	45,658	40.3	0
	Std. Dev.	9,692	6.9	17,213	18.3	
uhu (*Chlorurus perspicillatus*)	2018	1,563	70.8	10,854	-	0
	2019	5,406	63.2	-	-	100
	2020	761	59.4	2,520	-	52
	2021	270	100.0	-	-	100
	2022	4,964	70.1	-	-	100
	2023	-	-	-	-	-
	Std. Dev.	2,229	14.4	4,167	-	
kala (*Naso* spp.)	2018	15,897	39.6	4,264	-	51
	2019	121,734	29.5	-	-	100
	2020	28,356	43.0	-	-	100
	2021	17,041	47.1	-	-	100
	2022	1,884	79.2	-	-	100
	2023	7,847	56.7	4,625	101.4	78

Species	Year	Estimated Number	PSE	Estimated Weight (lb)	PSE	% Landings without Weights
	Std. Dev.	40,904	15.7	181	-	
nenue (*Kyphosus* spp.)	2018	102,246	31.0	111,491	69.8	-
	2019	82,030	28.1	-	-	-
	2020	71,289	31.9	-	-	-
	2021	102,932	31.5	-	-	-
	2022	6,186	72.3	-	-	-
	2023	116,119	66.9	199,472	68.0	0
	Std. Dev.	36,180	18.5	50,807	0.9	
manini (*Acanthurus triostegus*)	2018	273,397	27.0	-	-	100
	2019	399,834	24.1	-	-	100
	2020	292,216	26.6	43,059	75.1	84
	2021	577,527	37.1	166,383	-	59
	2022	373,594	32.3	-	-	92
	2023	220,427	40.5	81,921	41.1	0
	Std. Dev.	115,809	5.9	51,481	17.0	
ta‘ape (*Lutjanus kasmira*)	2018	94,702	26.1	16,550	49.2	71
	2019	79,804	32.3	26,795	6.7	74
	2020	153,281	27.1	19,290	7.2	83
	2021	79,312	26.0	27,032	32.2	35
	2022	106,525	36.9	3,466	-	26
	2023	116,864	36.2	66,271	35.9	0
	Std. Dev.	25,563	4.9	19,423	16.7	