

# 1 FISHERY PERFORMANCE

## 1.1 DEEP 7 BMUS

### 1.1.1 Fishery Descriptions

The State of Hawaii Department of Land and Natural Resources, Division of Aquatic Resources (HDAR) manages the deep-sea bottomfish fishery in the Main Hawaiian Islands (MHI) under a joint management arrangement with the National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO), and the Western Pacific Regional Fishery Management Council (WPRFMC; the Council). The Deep 7 bottomfish management unit species (MUS) group is comprised of seven deep water bottomfish: opakapaka (*Pristipomoides filamentosus*; pink snapper), onaga (*Etelis coruscans*; longtail snapper), ehu (*Etelis carbunculus*; ruby snapper), hapuupuu (*Epinephelus quernus*; Hawaiian grouper), kalekale (*Pristipomoides sieboldii*; Von Siebold's snapper), gindai (*Pristipomoides zonatus*; oblique-banded snapper), and lehi (*Aphareus rutilans*; silverjaw snapper).

HDAR collects the fishery information, the NMFS analyzes this information, and the Council, working with HDAR, proposes the management scheme. Lastly, the NMFS implements the scheme into federal regulations before HDAR adopts state regulations. These three agencies coordinate management to simplify regulations for the fishing public, prevent overfishing, and manage the fishery for long-term sustainability. This shared management responsibility is necessary, as the bottomfish complex of species occurs in both State and Federal waters. The information in this report is largely based on HDAR-collected data.

### 1.1.2 Dashboard Statistics

The collection of commercial main Hawaiian Islands Deep 7 bottomfish fishing reports comes from two sources: paper reports received by mail, fax, or PDF copy via e-mail, and reports filed online through the Online Fishing Report system (OFR) at <http://www.dlnr.hawaii.gov/cmls-fr>. Since the federal management of the Deep 7 bottomfish fishery began in 2007, bottomfish landings have been collected on three types of fishing reports. Initially, bottomfishers were required to use the Monthly Fishing Report and Deep-sea Handline Fishing Trip Report to report their Deep 7 landings within 10 days of the end of the month. These reports were replaced by the MHI Deep 7 Bottomfish Fishing Trip Report in September 2011, and bottomfish fishers were required to submit the trip report within five days of the trip end date. HDAR implemented the OFR online website in February 2010.

Paper fishing reports received through mail by HDAR are initially processed by an office assistant that date stamps the report, scans the report image, and enters the report header as index information into an archival database application to store them as database files. The report header index information is downloaded in a batch text file via FTP at 12:00 AM for transmission to the web portal vendor that maintains the Commercial Marine Licensing System (CMLS). This information updates the fisher's license report log in the CMLS to credit submission of the fishing report. The web portal vendor also exports a batch text file extract of the updated license profile and report log data file via file transfer protocol (FTP) daily at 2:00 AM for transmission to HDAR. The office assistant checks reports for missing information, sorts by fishery form type (e.g. Deep 7 or Monthly Fishing Report) and distributes it to the appropriate

database assistant by the next business day. Database assistants and the data monitoring associate enter the Deep-sea Handline Fishing Trip Report into the HDAR Fishing Report System (FRS) database and enter the other report types through the OFR within two business days.

The data records from fishing reports submitted online by fishers are automatically extracted and exported as daily batch text files from the OFR and uploaded by HDAR and imported into the FRS database on the following business day.

The FRS processes the data, and a general error report is run daily by the data supervisor. A database assistant will contact the fisher when clarification of the data is needed. Duplicate data checks are run weekly before being researched by a database assistant. Discrepancies between dealer and catch data are checked monthly by a fisheries database assistant, who will call the fisher or dealer to clarify any discrepancies. The data supervisor then transfers both the fisheries and the dealer data to the Western Pacific Fisheries Information Network (WPacFIN) daily where data trends are created and reported weekly to Deep 7 bottomfish management unit species (BMUS) Deep fishery managers and stake holders. A bottomfish newsletter is published for bottomfishers and fish dealers on a quarterly basis.

### 1.1.2.1 Historical Summary

**Table 1. Annual fishing parameters for the 2019 fishing year in the MHI Deep 7 bottomfish fishery compared with short-term (10-year) and long-term (20-year) averages**

Fishery	Parameters	2019 Values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Deep 7 BMUS	No. License	318	↓ 22.1%	↓ 20.5%
	Trips	2,018	↓ 25.9%	↓ 28.4%
	No. Caught	47,778	↓ 31.4%	↓ 26.8%
	Lbs. Caught	180,708	↓ 27.1%	↓ 25.2%

### 1.1.2.2 Species Summary

**Table 2. Annual fishing parameters by gear and species for the 2019 fishing year in the MHI Deep 7 bottomfish fishery compared with short-term (10-year) and long-term (20-year) averages**

Methods	Fishery Indicators	2019 values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Deep-Sea Handline	Opakapaka	67,218 lbs.	↓ 44.9%	↓ 42.0%
	Onaga	60,168 lbs.	↓ 5.36%	↓ 9.95%
	Ehu	24,891 lbs.	↓ 8.21%	↑ 2.15%
	Hapuupuu	6,328 lbs.	↓ 30.2%	↓ 32.5%
	Kalekale	10,184 lbs.	↓ 17.9%	↓ 8.24%
	Gindai	3,452 lbs.	↑ 16.9%	↑ 23.0%
	Lehi	5,761 lbs.	↓ 30.2%	↓ 33.0%
	No. Lic.	299	↓ 22.9%	↓ 21.3%

	No. Trips	1,894	↓ 27.5%	↓ 30.3%
	Lbs. Caught	178,001 lbs.	↓ 27.4%	↓ 25.5%
	CPUE	93.98 lbs./trip	↓ 1.07%	↑ 5.60%
Non-Deep-Sea Handline Methods	Opakapaka	1,259 lbs.	↑ 14.93%	↑ 95.2%
	Onaga	NULL	-	-
	Ehu	n.d.	-	-
	Hapuupuu	139 lbs.	↑ 47.9%	↑ 5.30%
	Kalekale	54 lbs.	↓ 33.3%	↓ 39.3%
	Gindai	n.d.	-	-
	Lehi	1,175 lbs.	↑ 22.7%	↑ 41.1%
	No. Lic.	39	↓ 5.41%	↓ 2.63%
	No. Trips	126	↑ 13.5%	↑ 23.5%
	Lbs. Caught	2,707 lbs.	↓ 3.11%	↑ 1.39%
	CPUE	21.48 lbs./trip	↓ 14.1%	↓ 14.1%

### 1.1.3 Time Series Statistics

#### 1.1.3.1 Commercial Fishing Parameters

The time series format for the Deep 7 bottomfish fishery begins with an arrangement by the state fiscal year period (July – June) until June 1993. Prior to July 1993, the state issued and renewed the Commercial Marine License (CML) on a fiscal year basis and all licenses expired on June 30, regardless of when it was issued. During that period, each fisher received a different CML number, reducing duplicate licensee counts through June 1993. The State issued and renewed permanent CML numbers effective July 1993. The federal Deep 7 bottomfish fishing year, defined as September through August of the following year, was established in 2007. In order to evaluate Deep 7 bottomfish fishing trends, the time series format was re-arranged to extend from September to August beginning in September 1993 and ending in August 2015. This arrangement provides a 22-year time series trend for the Deep 7 bottomfish fishery. There is a two-month segment spanning from July 1993 through August 1993 that is defined as a separate period.

Early in the time series, this artisan fishery is dominated by highliners with large landings. Beginning in Fiscal Year 1966, less than 100 fishers made just over 1,000 trips but attained the highest CPUE at 178 pounds per trip. With the expansion of the small vessel fleet during the 1970s and 1980s, effort and landings increased until peaking in the late-80s at 559,293 lbs. in 6,253 trips. In June 1993, the State established bottomfish regulations including: bottomfish restricted fishing areas (BRFAs), vessel registration identification, and non-commercial bag limits. Fishing effort and landings further declined as a result. Since the implementation of federal Deep 7 bottomfish management, landings have been under the jurisdiction of the former total annual catch (TAC) and now annual catch limit (ACL) fishing quotas. In July 2019, four BRFAs including BRFA C (Makahū‘ena, Kaua‘i), BRFA F (Penguin Banks), BRFA J (Mokumana-Umalei Pt, Maui), and BRFA L (Leleiwī Pt, Hawai‘i Island) were re-opened to bottomfishing.

**Table 3. Time series of commercial fishing reports for Deep 7 BMUS reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	84	1,149	428	14,611	211,326
1966	92	1,059	414	11,040	181,868
1967	110	1,469	550	16,005	231,315
1968	121	1,194	524	12,943	195,032
1969	132	1,216	532	11,415	177,495
1970	139	1,150	528	8,482	158,195
1971	167	1,254	606	10,203	135,156
1972	218	1,929	831	19,833	228,375
1973	210	1,574	732	16,747	169,273
1974	264	2,161	938	23,976	225,561
1975	247	2,094	903	24,052	221,385
1976	303	2,265	995	23,896	250,270
1977	338	2,728	1,175	26,891	274,843
1978	435	2,660	1,542	41,387	307,740
1979	447	2,255	1,517	32,312	273,846
1980	461	2,853	1,435	35,096	244,219
1981	486	3,770	1,637	45,086	308,306
1982	451	3,917	1,634	46,873	329,436
1983	539	4,880	1,892	61,889	409,453
1984	554	4,477	1,803	55,952	344,441
1985	556	5,811	2,065	93,799	507,639
1986	610	5,812	2,284	101,299	523,194
1987	584	5,586	2,190	132,847	593,050
1988	551	6,050	2,131	137,352	568,661
1989	567	6,308	2,244	120,113	563,967
1990	531	5,257	1,947	90,500	456,932
1991	500	4,242	1,783	69,970	339,147
1992	488	4,510	1,845	84,427	362,517
1993.1	451	3,540	1,494	62,754	262,702
1993.2	120	374	168	7,523	29,574
1994	522	3,909	1,713	85,881	321,701
1995	527	3,925	1,715	77,827	320,220
1996	516	3,977	1,742	81,383	287,141
1997	497	4,178	1,756	81,963	298,830
1998	520	4,117	1,733	83,502	289,019
1999	431	3,012	1,432	57,161	216,129
2000	497	3,926	1,698	84,500	311,606
2001	456	3,579	1,550	71,825	265,988

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2002	386	2,865	1,332	55,804	212,731
2003	363	2,944	1,253	63,582	249,641
2004	333	2,666	1,145	57,715	209,665
2005	351	2,699	1,195	61,325	240,833
2006	352	2,291	1,057	47,918	201,097
2007	356	2,553	1,149	50,203	205,882
2008	351	2,342	1,020	49,397	196,347
2009	477	3,277	1,476	67,065	259,356
2010	459	2,781	1,221	56,542	207,630
2011	474	3,430	1,412	74,449	273,107
2012	480	3,081	1,520	68,024	227,971
2013	459	2,979	1,498	68,441	239,010
2014	423	3,174	1,493	90,296	311,209
2015	410	2,887	1,413	90,816	307,152
2016	372	2,348	1,194	74,492	260,660
2017	340	2,350	1,162	66,396	237,490
2018	340	2,167	1,101	59,215	235,341
2019	318	2,018	1,042	47,778	180,708
<b>10-year avg.</b>	<b>408</b>	<b>2,722</b>	<b>1,306</b>	<b>69,645</b>	<b>248,028</b>
<b>20-year avg.</b>	<b>400</b>	<b>2,818</b>	<b>1,297</b>	<b>65,289</b>	<b>241,671</b>

NULL = no available data or non-disclosure due to data confidentiality  
1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

### 1.1.4 Preferred Targets by Gear Type

#### 1.1.4.1 Deep-Sea Handline

The heavy tackle, deep-sea handline gear is the dominant method for this fishery. The opakapaka and onaga are the primary target species, with the latter requiring much more fishing skill. In recent years, bottomfishers have remarked that opakapaka is the preferred target due to less fishing area and because it is easier to land for what is now a one-day fishery. On an annual basis, approximately 99% of all deep-7 landings by weight are caught using the deep-sea handline gear type.

**Table 4a. HDAR MHI annual Deep 7 catch summary by species and top gear, deep-sea handline, reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	Opakapaka		Onaga		Ehu		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1965	66	102,901	31	59,521	48	20,093	48	10,965
1966	76	70,651	34	63,965	47	17,607	49	11,863
1967	96	120,888	43	68,442	62	18,350	60	10,624
1968	97	84,164	62	69,504	68	19,864	58	11,304

Year	Opakapaka		Onaga		Ehu		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1969	115	85,663	48	53,839	68	16,088	60	10,881
1970	114	69,538	44	43,540	62	15,870	64	19,842
1971	130	59,002	53	39,213	78	15,255	81	14,471
1972	184	117,426	71	58,673	105	21,282	112	16,659
1973	175	93,197	68	35,584	94	14,524	117	14,828
1974	220	134,838	86	43,607	113	21,113	117	14,444
1975	199	114,571	94	45,016	113	21,136	108	23,078
1976	224	101,618	118	78,684	105	21,621	140	21,236
1977	255	98,407	100	82,049	144	32,630	130	26,954
1978	345	149,538	135	66,124	191	34,385	198	27,417
1979	306	140,303	133	51,601	190	20,859	184	28,053
1980	344	147,342	161	29,889	183	15,836	182	16,984
1981	386	193,944	153	42,659	207	20,754	188	16,056
1982	370	173,764	177	65,235	233	24,088	189	20,854
1983	422	226,614	240	71,687	277	27,482	209	31,849
1984	395	153,618	240	84,545	282	35,415	207	28,996
1985	442	202,822	297	172,774	310	43,928	253	33,098
1986	481	179,612	346	195,662	371	60,957	245	26,216
1987	457	263,357	289	175,005	321	45,528	177	30,715
1988	446	300,096	273	156,566	297	41,900	195	10,218
1989	438	307,201	303	144,878	320	38,342	185	13,417
1990	419	210,093	307	141,442	312	37,618	176	13,719
1991	385	137,907	277	105,998	301	34,343	169	17,713
1992	374	173,118	253	91,813	310	31,907	167	15,136
1993.1	347	139,801	195	52,760	257	24,027	168	13,880
1993.2	85	14,719	51	5,780	60	3,235	34	2,292
1994	393	176,431	244	72,363	290	23,619	191	12,003
1995	426	178,302	236	66,199	290	26,136	229	15,064
1996	415	147,093	244	67,984	276	28,948	220	10,162
1997	377	157,722	216	59,887	263	27,313	213	13,982
1998	386	145,776	250	68,926	299	25,422	215	12,606
1999	326	101,725	198	60,619	234	20,484	180	10,787
2000	387	165,922	251	71,191	282	28,878	209	13,457
2001	339	126,863	253	63,473	272	27,383	202	15,780
2002	287	101,107	194	59,586	217	18,962	163	9,283
2003	255	127,706	189	70,001	212	16,509	141	10,108
2004	233	87,897	186	76,902	193	20,547	130	8,255
2005	249	102,303	202	87,588	208	21,890	131	10,121

Year	Opakapaka		Onaga		Ehu		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
2006	245	77,953	203	75,222	206	21,434	123	9,793
2007	271	82,784	202	80,993	223	18,023	118	6,066
2008	268	94,099	197	55,825	207	17,850	130	6,209
2009	362	133,475	245	59,827	295	24,674	168	7,808
2010	323	101,716	251	56,155	296	23,731	164	7,950
2011	368	146,686	258	67,408	304	24,137	175	7,988
2012	342	109,344	261	56,084	321	27,261	157	10,384
2013	326	98,600	246	68,314	306	31,332	156	10,342
2014	324	162,369	233	75,213	275	30,408	161	10,667
2015	309	151,333	228	78,006	271	33,080	138	9,946
2016	285	133,682	202	62,411	234	30,844	121	9,718
2017	266	133,786	173	45,999	223	24,086	126	7,703
2018	257	113,984	182	66,009	220	21,403	129	9,593
2019	209	67,218	155	60,168	218	24,891	107	6,328
<b>10-yr avg.</b>	<b>301</b>	<b>121,872</b>	<b>219</b>	<b>63,577</b>	<b>267</b>	<b>27,117</b>	<b>143</b>	<b>9,062</b>
<b>20-yr avg.</b>	<b>295</b>	<b>115,941</b>	<b>216</b>	<b>66,819</b>	<b>249</b>	<b>24,366</b>	<b>147</b>	<b>9,375</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 4b. HDAR MHI annual Deep 7 catch summary by species and top gear, deep-sea handline, reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1965	25	14,538	19	923	21	1,256
1966	32	13,536	20	829	20	1,953
1967	34	9,584	22	769	32	2,357
1968	31	6,870	28	754	34	2,215
1969	32	4,131	23	462	41	5,924
1970	33	5,079	34	1,437	29	2,547
1971	38	4,316	36	870	34	1,789
1972	65	8,059	50	1,237	58	4,408
1973	66	5,093	47	1,260	57	4,490
1974	64	4,860	49	1,467	67	4,852
1975	79	5,885	59	1,365	78	8,043
1976	100	7,562	59	1,072	84	9,846
1977	96	7,590	67	1,173	81	6,644
1978	150	8,823	103	2,308	116	8,623

Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1979	126	6,602	89	2,505	114	10,076
1980	142	6,295	87	2,083	123	16,824
1981	152	7,377	108	1,654	143	19,282
1982	159	7,735	102	1,473	140	29,500
1983	192	14,080	138	2,321	193	27,766
1984	191	12,427	159	2,798	158	15,892
1985	237	22,171	181	4,598	201	25,484
1986	282	25,053	195	3,752	185	26,548
1987	260	27,936	141	3,231	214	37,503
1988	226	18,040	119	2,057	186	37,970
1989	217	10,910	131	1,680	230	45,170
1990	248	15,477	178	2,785	207	34,944
1991	246	20,305	190	3,762	166	18,992
1992	252	28,002	190	5,120	158	17,254
1993.1	246	17,170	154	3,786	154	11,177
1993.2	48	2,154	28	683	19	658
1994	236	20,624	176	4,328	130	12,029
1995	241	17,313	189	3,813	171	13,087
1996	266	19,629	156	3,169	134	9,523
1997	224	23,661	141	2,931	143	11,897
1998	240	23,122	176	3,273	150	8,701
1999	174	11,518	130	2,388	108	7,643
2000	218	16,736	171	3,819	149	11,024
2001	187	15,947	155	3,899	143	12,325
2002	151	10,909	129	2,535	112	9,838
2003	150	12,708	109	2,241	97	8,272
2004	127	7,614	96	2,081	73	3,779
2005	133	7,846	98	2,028	85	6,800
2006	140	5,719	97	2,016	74	5,643
2007	147	5,709	107	2,017	80	6,851
2008	125	5,320	118	2,424	106	9,748
2009	208	9,382	168	3,557	153	15,159
2010	209	7,886	154	2,666	104	5,141
2011	211	9,821	177	2,956	114	11,147
2012	220	12,185	174	3,853	104	7,109
2013	223	12,026	183	3,423	113	11,503
2014	226	18,861	159	3,715	105	7,239
2015	222	17,623	135	2,885	130	11,350



Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
2016	177	12,832	125	1,843	97	7,591
2017	169	10,762	121	2,124	111	8,332
2018	174	11,882	118	2,611	102	7,303
2019	169	10,184	129	3,452	79	5,761
<b>10-yr avg.</b>	<b>200</b>	<b>12,406</b>	<b>148</b>	<b>2,953</b>	<b>106</b>	<b>8,248</b>
<b>20-yr avg.</b>	<b>179</b>	<b>11,098</b>	<b>136</b>	<b>2,807</b>	<b>107</b>	<b>8,596</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

#### 1.1.4.2 Non-Deep-Sea Handline Gear Types

The following section denotes Deep 7 species that are harvested using gear types other than the deep-sea handline, including both inshore handline and palu ahi. These gear types do harvest Deep 7 BMUS species though they are typically not their primary targets. The inshore handline gear is supposed to be a lighter tackle than the deep-sea handline. The ehū and onaga landings were probably made with the heavier tackle gear but were reported by fishers as inshore handline. For these cases in recent years, fishers were contacted to verify the gear reported. The fishing report was not amended if the fisher did not respond. The opakapaka and lehi landings were likely fished in shallow-water habitat.

The primary use of palu ahi gear as defined by the HDAR database is as a form of tuna handline. It is a handline gear primarily used during the day with a drop stone or weight and chum. The target species is usually pelagic, including yellowfin and bigeye tuna. The Deep 7 bottomfish landings from palu ahi are common bycatch for Big Island fishers. Some of the landings may have been taken by bottomfishers who used deep-sea handline tackle but reported it as palu ahi because of the gear definition, which involves weights and chum on a handline. For these cases in recent years, fishers were contacted to verify their reported gear. The fishing report was not amended if the fisher did not respond.

Opakapaka is the primary Deep-7 species caught using non-deep-sea handline gear types. On an annual basis, non-deep-sea handline gear catches approximately 1% of all deep-7 species.

**Table 5a. HDAR MHI annual Deep 7 catch summary by species for non-deep sea handline methods reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	Opakapaka		Onaga		Ehū		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1965	18	662	n.d.	n.d.	11	222	n.d.	n.d.
1966	7	756	n.d.	n.d.	7	537	NULL	NULL
1967	n.d.	n.d.	NULL	NULL	NULL	NULL	n.d.	n.d.
1968	n.d.	n.d.	NULL	NULL	n.d.	n.d.	n.d.	n.d.
1969	4	281	n.d.	n.d.	4	80	n.d.	n.d.

Year	Opakapaka		Onaga		Ehu		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1970	n.d.	n.d.	NULL	NULL	NULL	NULL	n.d.	n.d.
1971	7	108	6	57	5	26	n.d.	n.d.
1972	5	428	n.d.	n.d.	n.d.	n.d.	5	72
1973	7	159	n.d.	n.d.	n.d.	n.d.	4	17
1974	7	185	NULL	NULL	n.d.	n.d.	6	181
1975	23	1,613	n.d.	n.d.	n.d.	n.d.	10	123
1976	41	3,771	18	1,550	20	1,180	38	1,163
1977	77	7,927	21	2,704	41	3,267	37	3,507
1978	68	5,104	14	381	42	1,319	30	1,302
1979	106	5,708	21	1,426	63	1,632	61	1,503
1980	54	3,715	32	1,455	36	1,160	28	726
1981	47	3,423	14	210	28	397	27	907
1982	29	3,964	13	710	26	348	18	826
1983	61	3,233	22	1,105	36	506	30	845
1984	64	4,903	44	1,984	36	730	36	721
1985	10	850	7	1,097	8	102	12	121
1986	38	1,770	15	851	25	930	20	325
1987	34	3,947	8	304	11	3,238	15	673
1988	14	818	6	241	6	158	11	193
1989	28	1,044	16	675	11	167	9	170
1990	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	6	454
1991	NULL	NULL	NULL	NULL	NULL	NULL	11	127
1992	n.d.	n.d.	NULL	NULL	NULL	NULL	6	118
1993.1	n.d.	n.d.	NULL	NULL	NULL	NULL	6	88
1993.2	n.d.	n.d.	NULL	NULL	NULL	NULL	n.d.	n.d.
1994	n.d.	n.d.	NULL	NULL	NULL	NULL	8	126
1995	n.d.	n.d.	NULL	NULL	NULL	NULL	8	144
1996	7	262	NULL	NULL	NULL	NULL	9	120
1997	11	336	n.d.	n.d.	n.d.	n.d.	6	722
1998	11	788	n.d.	n.d.	n.d.	n.d.	5	39
1999	8	132	NULL	NULL	n.d.	n.d.	n.d.	n.d.
2000	10	148	NULL	NULL	n.d.	n.d.	n.d.	n.d.
2001	10	110	n.d.	n.d.	4	76	4	53
2002	7	200	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2003	26	1,025	4	136	8	220	7	100
2004	30	1,283	7	108	11	129	8	188
2005	20	916	n.d.	n.d.	8	255	5	132
2006	21	1,787	4	344	6	121	4	93

Year	Opakapaka		Onaga		Ehu		Hapuupuu	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
2007	23	1,459	5	169	6	447	n.d.	n.d.
2008	20	2,118	n.d.	n.d.	4	412	4	370
2009	29	2,581	8	260	12	270	7	209
2010	33	757	5	201	20	271	10	203
2011	26	1,588	4	125	12	316	7	185
2012	22	540	NULL	NULL	n.d.	n.d.	n.d.	n.d.
2013	26	1,417	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2014	25	1,262	n.d.	n.d.	5	30	n.d.	n.d.
2015	21	1,647	n.d.	n.d.	5	183	n.d.	n.d.
2016	15	968	n.d.	n.d.	5	19	n.d.	n.d.
2017	23	3,288	NULL	NULL	4	126	7	182
2018	14	1,471	n.d.	n.d.	7	111	n.d.	n.d.
2019	24	1,259	NULL	NULL	n.d.	n.d.	4	139
<b>10-yr avg.</b>	<b>23</b>	<b>1,420</b>	<b>n.d.</b>	<b>n.d.</b>	<b>7</b>	<b>131</b>	<b>4</b>	<b>94</b>
<b>20-yr avg.</b>	<b>21</b>	<b>1,291</b>	<b>n.d.</b>	<b>n.d.</b>	<b>6</b>	<b>165</b>	<b>4</b>	<b>132</b>

NULL = no available data; n.d. = non-disclosure due to data confidentiality  
1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 5b. HDAR MHI annual Deep 7 catch summary by species and non-deep-sea handline methods, reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1965	8	115	n.d.	n.d.	n.d.	n.d.
1966	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
1967	n.d.	n.d.	NULL	NULL	n.d.	n.d.
1968	n.d.	n.d.	NULL	NULL	NULL	NULL
1969	n.d.	n.d.	4	8	NULL	NULL
1970	n.d.	n.d.	NULL	NULL	4	129
1971	4	21	n.d.	n.d.	n.d.	n.d.
1972	5	13	4	8	n.d.	n.d.
1973	7	13	n.d.	n.d.	n.d.	n.d.
1974	n.d.	n.d.	NULL	NULL	n.d.	n.d.
1975	7	76	4	38	10	349
1976	14	345	21	133	13	489
1977	21	1,008	16	382	18	601
1978	36	1,003	34	245	43	1,168

Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
1979	71	1,152	33	378	58	2,048
1980	25	752	27	306	33	852
1981	22	801	22	200	27	642
1982	21	315	21	142	25	482
1983	35	922	34	332	29	711
1984	25	994	35	767	36	651
1985	12	522	n.d.	n.d.	4	68
1986	27	356	n.d.	n.d.	18	1,158
1987	13	402	n.d.	n.d.	16	1,193
1988	8	129	n.d.	n.d.	15	269
1989	8	181	n.d.	n.d.	9	129
1990	n.d.	n.d.	NULL	NULL	NULL	NULL
1991	NULL	NULL	NULL	NULL	NULL	NULL
1992	n.d.	n.d.	NULL	NULL	NULL	NULL
1993.1	n.d.	n.d.	NULL	NULL	NULL	NULL
1993.2	NULL	NULL	NULL	NULL	NULL	NULL
1994	n.d.	n.d.	NULL	NULL	n.d.	n.d.
1995	n.d.	n.d.	NULL	NULL	6	92
1996	n.d.	n.d.	n.d.	n.d.	12	228
1997	4	45	n.d.	n.d.	20	303
1998	n.d.	n.d.	NULL	NULL	14	332
1999	n.d.	n.d.	NULL	NULL	25	747
2000	5	53	NULL	NULL	16	357
2001	4	11	n.d.	n.d.	4	34
2002	n.d.	n.d.	NULL	NULL	6	159
2003	5	47	n.d.	n.d.	17	539
2004	7	51	n.d.	n.d.	20	765
2005	7	40	6	71	23	644
2006	9	86	n.d.	n.d.	23	874
2007	6	121	5	120	18	657
2008	10	212	n.d.	n.d.	20	1,295
2009	12	316	5	90	32	1,748
2010	15	160	12	64	24	731
2011	10	158	9	132	15	459
2012	7	67	n.d.	n.d.	19	1,050
2013	n.d.	n.d.	n.d.	n.d.	22	1,532
2014	5	53	n.d.	n.d.	27	1,328
2015	7	35	n.d.	n.d.	20	948

Year	Kalekale		Gindai		Lehi	
	No. License	Lbs. Caught	No. License	Lbs. Caught	No. License	Lbs. Caught
2016	n.d.	n.d.	n.d.	n.d.	13	600
2017	9	221	n.d.	n.d.	20	842
2018	5	22	n.d.	n.d.	16	919
2019	6	54	n.d.	n.d.	26	1,175
<b>10-year avg.</b>	<b>7</b>	<b>81</b>	<b>n.d.</b>	<b>n.d.</b>	<b>20</b>	<b>958</b>
<b>20- year avg.</b>	<b>7</b>	<b>89</b>	<b>n.d.</b>	<b>n.d.</b>	<b>19</b>	<b>833</b>

NULL = no available data; n.d. = non-disclosure due to data confidentiality  
1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

### 1.1.5 Catch Parameters by Gear Type

The CPUE (lbs. per trip) for deep-sea handline peaked at the beginning of the time series and has leveled off starting in the early 1990s and through 2012. The relatively stable CPUE ranging between 71 and 92 lbs. per trip is attributed to state and federal regulations that removed fishing areas, created an interim closed season, and enforced quotas on landings. A recent increase in CPUE (2014-2018) is thought to be the result of fishers making fewer trips, with catches of larger/heavier fishes. The 2019 drop in CPUE was largely the result of poor opakapaka catch, which fishers have attributed to unfavorable environmental conditions.

Non deep-sea handline CPUE did not peak initially and has instead remained relatively stable throughout the time series. CPUE for the non-deep-sea handline gear type is characteristically lower than that of the deep-sea handline gear type. This can be attributed to the fact that a significant portion of this catch is caught incidentally, rather than a targeted effort for deep-7 species.

**Table 6. HDAR MHI annual Deep 7 CPUE by dominant fishing methods reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	Deep-sea handline				Non-Deep-Sea Handline Gears			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
1965	73	1,067	210,197	197	27	89	1,129	12.69
1966	86	1,016	180,404	177.56	15	46	1,464	31.83
1967	107	1,449	231,014	159.43	7	21	301	14.33
1968	118	1,165	194,675	167.1	5	29	357	12.31
1969	128	1,175	176,988	150.63	12	46	507	11.02
1970	135	1,118	157,853	141.19	9	35	342	9.77
1971	163	1,219	134,916	110.68	18	36	240	6.67
1972	214	1,896	227,744	120.12	18	39	631	16.18
1973	201	1,537	168,976	109.94	22	38	297	7.82

Year	Deep-sea handline				Non-Deep-Sea Handline Gears			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
1974	258	2,126	225,181	105.92	13	35	380	10.86
1975	238	2,038	219,094	107.5	39	62	2,291	36.95
1976	270	2,028	241,639	119.15	86	247	8,631	34.94
1977	290	2,266	255,447	112.73	106	464	19,396	41.8
1978	393	2,366	297,218	125.62	146	353	10,522	29.81
1979	379	1,901	259,999	136.77	187	379	13,847	36.54
1980	412	2,591	235,253	90.8	123	298	8,966	30.09
1981	456	3,459	301,726	87.23	105	342	6,580	19.24
1982	429	3,688	322,649	87.49	97	276	6,787	24.59
1983	501	4,574	401,799	87.84	142	363	7,654	21.09
1984	504	4,172	333,691	79.98	161	381	10,750	28.22
1985	538	5,681	504,875	88.87	44	138	2,764	20.03
1986	587	5,627	517,800	92.02	99	203	5,394	26.57
1987	565	5,426	583,275	107.5	65	164	9,775	59.6
1988	535	5,972	566,847	94.92	50	85	1,814	21.34
1989	539	6,210	561,598	90.43	68	107	2,369	22.14
1990	526	5,238	456,078	87.07	8	19	854	44.95
1991	493	4,224	339,020	80.26	11	21	127	6.05
1992	483	4,487	362,350	80.76	7	23	167	7.26
1993.1	446	3,527	262,601	74.45	8	13	101	7.77
1993.2	119	372	29,521	79.36	n.d.	n.d.	n.d.	n.d.
1994	515	3,887	321,397	82.69	13	25	304	12.16
1995	518	3,901	319,914	82.01	17	24	306	12.75
1996	504	3,930	286,508	72.9	29	49	633	12.92
1997	481	4,118	297,392	72.22	38	65	1,438	22.12
1998	506	4,054	287,826	71	30	67	1,193	17.81
1999	416	2,925	215,164	73.56	32	91	965	10.6
2000	492	3,882	311,027	80.12	26	45	579	12.87
2001	446	3,543	265,670	74.98	22	38	318	8.37
2002	379	2,835	212,220	74.86	18	33	511	15.48
2003	344	2,852	247,545	86.8	42	94	2,096	22.3
2004	303	2,546	207,075	81.33	49	123	2,590	21.06
2005	319	2,593	238,576	92.01	48	107	2,257	21.09
2006	323	2,180	197,779	90.72	43	111	3,318	29.89
2007	334	2,438	202,442	83.04	40	118	3,440	29.15
2008	329	2,238	191,475	85.56	34	104	4,872	46.84
2009	449	3,128	253,883	81.16	60	152	5,474	36.01
2010	420	2,658	205,244	77.22	66	126	2,386	18.94

Year	Deep-sea handline				Non-Deep-Sea Handline Gears			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
2011	450	3,336	270,144	80.98	44	95	2,963	31.19
2012	465	2,981	226,219	75.89	31	101	1,752	17.34
2013	439	2,847	235,538	82.73	38	133	3,472	26.11
2014	404	3,061	308,472	100.77	36	114	2,737	24.01
2015	392	2,780	304,223	109.43	32	108	2,929	27.12
2016	360	2,265	258,921	114.31	23	83	1,740	20.96
2017	325	2,225	232,792	104.63	34	126	4,698	37.28
2018	327	2,073	232,784	112.29	25	94	2,557	27.21
2019	299	1,894	178,001	93.98	39	126	2,707	21.48
<b>10-year avg.</b>	<b>388</b>	<b>2,612</b>	<b>245,234</b>	<b>95</b>	<b>37</b>	<b>111</b>	<b>2,794</b>	<b>25</b>
<b>20- year avg.</b>	<b>380</b>	<b>2,718</b>	<b>239,002</b>	<b>89</b>	<b>38</b>	<b>102</b>	<b>2,670</b>	<b>25</b>

n.d. = non-disclosure due to data confidentiality

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

## 1.2 APRION VIRESCENS (UKU; FORMERLY NON-DEEP 7 BMUS)

### 1.2.1 Fishery Descriptions

This species group is characterized by a single snapper: the uku (*Aprion virescens*; green jobfish). Other members of the former non-Deep 7 BMUS complex, the white/giant ulua (*Caranx ignobilis*), gunkan/black ulua (*Caranx lugubris*), butaguchi/pig-lip ulua (*Pseudocaranx dentex*), and yellowtail kalekale (*Pristipomoides auricilla*) were removed from the management unit species (MUS) grouping by the recent ecosystem component species (ECS) amendment to the Hawaii FEP in 2019 (84 FR 2767).

### 1.2.2 Dashboard Statistics

The collection of commercial uku fishing reports comes from two sources: paper reports received by mail, fax, or PDF copy via e-mail; and reports filed online through the OFR. Uku are reported by commercial fishers on the Monthly Fishing Report, the Net, Trap, Dive Activity Report, or the MHI Deep 7 Bottomfish Fishing Trip Report.

Similar to the Deep 7 Bottomfish, the time series format for the uku fishery begins with an arrangement by the state fiscal year period (July – June) until June 1993 before being reported by fishing year. Refer to data processing procedures documented in the Deep 7 BMUS section for paper fishing reports and fishing reports filed online. Database assistants and data monitoring associate will enter the paper Monthly Fishing Report information within four weeks, and the Net, Trap, Dive Activity Report and the MHI Deep 7 Bottomfish Fishing Trip Report within two business days.

#### 1.2.2.1 Historical Summary

**Table 7. Annual fishing parameters for the 2019 fishing year in the MHI uku fishery compared with short-term (10-year) and long-term (20-year) averages**

Fishery	Parameters	2019 Values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Uku	No. License	284	↓ 23.0%	↓ 16.2%
	Trips	1,286	↓ 23.8%	↓ 13.0%
	No. Caught	11,078	↓ 16.5%	↑ 1.16%
	Lbs. Caught	89,836	↓ 17.0%	↓ 1.49%

#### 1.2.2.2 Species Summary

**Table 8. Annual fishing parameters for the 2019 fishing year in the MHI uku fishery compared with short-term (10-year) and long-term (20-year) averages**

Methods	Fishery Indicators	2019 values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Deep-Sea Handline	No. Lic.	142	↓ 22.0%	↓ 20.2%
	No. Trips	521	↓ 32.3%	↓ 30.3%



	Lbs. Caught CPUE	48,103 lbs. 92.33 lbs./trip	↓ 28.7% ↑ 6.13%	↓ 21.0% ↑ 14.0%
Inshore Handline	No. Lic.	38	↓ 43.3%	↓ 50.7%
	No. Trips	259	↓ 21.0%	↓ 17.0%
	Lbs. Caught CPUE	16,640 lbs. 63.55 lbs./trip	↑ 1.98% ↑ 27.1%	↑ 24.8% ↑ 51.3%
Troll with Bait	No. Lic.	41	↑ 10.8%	↑ 51.9%
	No. Trips	142	↓ 11.3%	↑ 14.5%
	Lbs. Caught CPUE	5,397 lbs. 38.00 lbs./trip	↓ 30.2% ↓ 20.8%	↓ 21.5% ↓ 32.1%
All Other Gears	No. Lic.	130	↓ 16.1%	↑ 9.24%
	No. Trips	369	↓ 14.8%	↑ 19.0%
	Lbs. Caught CPUE	19,876 lbs. 53.86 lbs./trip	↑ 17.6% ↑ 38.1%	↑ 81.9% ↑ 63.2%

### 1.2.3 Time Series Statistics

#### 1.2.3.1 Commercial Fishing Parameters

Uku is an important species in MHI fisheries. Because of the wide habitat range where this species is found, it is commonly taken by heavy (deep-sea handline) and light (inshore handline) tackles and troll gear. Since the implementation of the federal bottomfish fishing year, uku landings have trended upwards. During the first four federal fishing years, the Deep 7 bottomfish fishery was closed because the TAC or ACL was reached before the end of the fishing year. Bottomfishers shifted target to uku during these closures and doing so recently has been rewarding due good market price.

**Table 9. Time series of commercial fishing reports for uku by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	83	627	312	1,732	68,231
1966	84	571	278	1,297	46,816
1967	108	733	366	1,911	64,215
1968	110	571	318	1,224	52,362
1969	116	716	377	1,554	54,139
1970	125	731	394	1,576	49,794
1971	137	608	356	1,712	48,418
1972	161	761	441	1,369	54,139
1973	169	767	472	1,897	46,578
1974	235	1,040	632	3,769	72,955
1975	213	1,041	580	2,709	75,490
1976	213	934	518	2,388	69,009
1977	247	1,097	615	2,652	47,239
1978	377	1,573	1,042	4,475	95,074
1979	381	1,346	1,037	4,832	82,747

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1980	361	1,484	902	5,140	64,016
1981	392	2,117	1,107	7,950	95,027
1982	385	1,994	1,108	7,664	92,871
1983	411	2,649	1,319	10,326	113,772
1984	424	2,388	1,201	12,471	141,586
1985	387	1,878	1,017	8,867	96,014
1986	306	1,345	740	4,766	67,680
1987	325	1,351	775	7,255	87,432
1988	422	2,452	1,155	14,090	185,524
1989	476	3,027	1,519	27,017	313,552
1990	454	2,203	1,266	11,342	134,539
1991	404	1,830	1,086	9,723	118,632
1992	384	1,702	1,003	8,640	93,561
1993.1	337	1,329	800	6,085	65,981
1993.2	230	696	420	2,816	34,463
1994	355	1,488	878	7,089	87,587
1995	339	1,304	789	6,131	60,128
1996	361	1,321	887	6,253	53,581
1997	421	1,713	1,012	8,115	68,217
1998	364	1,459	892	7,355	65,559
1999	378	1,491	908	11,140	91,384
2000	383	1,557	926	11,128	86,540
2001	302	1,208	775	6,987	62,215
2002	270	1,021	656	7,887	71,846
2003	281	1,034	675	6,305	55,692
2004	318	1,286	768	8,756	77,044
2005	302	1,170	744	8,061	67,848
2006	259	1,187	674	7,362	68,642
2007	280	1,262	716	8,390	69,105
2008	318	1,484	810	11,298	92,576
2009	369	1,478	905	10,193	89,830
2010	405	1,923	1,073	13,679	121,181
2011	382	1,691	979	13,011	109,278
2012	405	1,750	1,073	13,651	116,854
2013	393	1,792	1,043	14,027	121,220
2014	378	1,673	1,000	11,668	96,828
2015	418	1,847	1,086	12,892	101,954
2016	380	1,923	1,056	15,188	118,958
2017	362	1,760	1,011	17,372	131,479
2018	285	1,229	741	10,092	74,995

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
2019	284	1,286	787	11,078	89,836
<b>10-year avg.</b>	<b>369</b>	<b>1,687</b>	<b>985</b>	<b>13,266</b>	<b>108,258</b>
<b>20-year avg.</b>	<b>339</b>	<b>1,478</b>	<b>875</b>	<b>10,951</b>	<b>91,196</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

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### 1.2.4 Catch Parameters by Gear

Uku is the only species in the non-Deep 7 bottomfish group, and it is commonly caught by the following dominant gears: deep-sea handline, inshore handline, trolling with bait, and miscellaneous trolling. Landings of uku along with the Deep 7 bottomfish species peaked in 1989 for the deep-sea handline gear. A second peak for this gear type occurred in 2013 due to deep-7 bottomfishers shifting their fishing target to uku during the summer months.

Since 1975, the proportional catch of Uku using deep-sea handline has steadily decreased as alternative gear types are reported more frequently. Whereas nearly all Uku at the beginning of the timeseries were caught using deep-sea handline, in 2017 approximately 50% of the total annual catch could be attributed to other gear types.

**Table 10. Time series of uku CPUE (lbs./trip) reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	Deep-sea handline				Inshore handline				Troll with bait				All Other Gear Types			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
1965	74	560	66,926	119.51	10	17	822	48.35	NULL	NULL	NULL	NULL	7	51	483	9.47
1966	78	514	46,358	90.19	4	4	50	12.50	NULL	NULL	NULL	NULL	6	53	408	7.70
1967	101	683	63,303	92.68	4	5	554	110.80	NULL	NULL	NULL	NULL	9	46	358	7.78
1968	104	510	51,715	101.40	8	13	345	26.54	NULL	NULL	NULL	NULL	8	48	302	6.29
1969	107	615	52,824	85.89	3	3	24	8.00	NULL	NULL	NULL	NULL	11	98	1,291	13.17
1970	115	633	48,645	76.85	3	4	20	5.00	NULL	NULL	NULL	NULL	10	94	1,129	12.01
1971	133	548	48,038	87.66	3	4	25	6.25	NULL	NULL	NULL	NULL	5	56	355	6.34
1972	154	663	53,336	80.45	3	3	12	4.00	NULL	NULL	NULL	NULL	12	95	791	8.33
1973	161	675	45,817	67.88	8	9	47	5.22	NULL	NULL	NULL	NULL	12	83	714	8.60
1974	216	969	72,132	74.44	7	10	158	15.80	NULL	NULL	NULL	NULL	21	61	665	10.90
1975	191	947	74,325	78.48	16	23	331	14.39	NULL	NULL	NULL	NULL	24	71	834	11.75
1976	166	732	63,048	86.13	42	97	2,453	25.29	NULL	NULL	NULL	NULL	33	106	3,508	33.09
1977	188	717	36,187	50.47	61	212	7,837	36.97	NULL	NULL	NULL	NULL	50	168	3,215	19.14
1978	304	1,099	75,738	68.92	134	298	14,348	48.15	NULL	NULL	NULL	NULL	50	183	4,988	27.26

Year	Deep-sea handline				Inshore handline				Troll with bait				All Other Gear Types			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
1979	248	857	67,218	78.43	211	431	12,673	29.40	NULL	NULL	NULL	NULL	26	70	2,856	40.80
1980	290	1,197	57,761	48.25	71	110	1,825	16.59	NULL	NULL	NULL	NULL	77	179	4,430	24.75
1981	338	1,763	90,177	51.15	67	110	1,198	10.89	NULL	NULL	NULL	NULL	59	247	3,652	14.79
1982	355	1,752	88,334	50.42	43	64	582	9.09	NULL	NULL	NULL	NULL	40	180	3,955	21.97
1983	369	2,448	109,650	44.79	46	67	581	8.67	NULL	NULL	NULL	NULL	56	138	3,541	25.66
1984	381	2,152	134,986	62.73	53	76	1,169	15.38	NULL	NULL	NULL	NULL	69	165	5,431	32.92
1985	361	1,785	94,464	52.92	4	4	207	51.75	NULL	NULL	NULL	NULL	33	89	1,343	15.09
1986	269	1,219	63,773	52.32	22	52	2,323	44.67	NULL	NULL	NULL	NULL	47	75	1,584	21.12
1987	246	986	61,087	61.95	91	245	11,695	47.73	NULL	NULL	NULL	NULL	53	120	14,650	122.08
1988	349	2,089	167,794	80.32	91	186	10,401	55.92	NULL	NULL	NULL	NULL	59	177	7,329	41.41
1989	423	2,662	297,702	111.83	75	162	4,532	27.98	NULL	NULL	NULL	NULL	77	209	11,318	54.15
1990	375	1,799	122,703	68.21	78	218	2,653	12.17	NULL	NULL	NULL	NULL	91	187	9,183	49.11
1991	323	1,433	104,859	73.17	106	236	4,719	20.00	NULL	NULL	NULL	NULL	75	165	9,054	54.87
1992	281	1,119	68,813	61.50	127	441	18,850	42.74	NULL	NULL	NULL	NULL	73	144	5,898	40.96
1993.1	223	810	54,563	67.36	114	354	8,286	23.41	NULL	NULL	NULL	NULL	60	166	3,132	18.87
1993.2	172	508	30,667	60.37	45	90	1,740	19.33	NULL	NULL	NULL	NULL	40	99	2,056	20.77
1994	259	1,057	73,717	69.74	93	275	11,415	41.51	NULL	NULL	NULL	NULL	74	158	2,455	15.54
1995	249	931	52,322	56.20	76	222	4,836	21.78	NULL	NULL	NULL	NULL	78	152	2,970	19.54
1996	224	746	41,295	55.36	140	400	8,612	21.53	NULL	NULL	NULL	NULL	85	177	3,674	20.76
1997	232	921	47,915	52.02	189	634	17,575	27.72	NULL	NULL	NULL	NULL	86	160	2,727	17.04
1998	224	778	48,583	62.45	146	550	14,049	25.54	NULL	NULL	NULL	NULL	66	131	2,927	22.34
1999	235	834	76,431	91.64	153	508	11,700	23.03	NULL	NULL	NULL	NULL	61	150	3,253	21.69
2000	246	926	70,493	76.13	143	485	12,948	26.70	NULL	NULL	NULL	NULL	70	147	3,099	21.08
2001	185	712	42,311	59.43	115	356	15,369	43.17	NULL	NULL	NULL	NULL	61	142	4,535	31.94
2002	175	617	57,863	93.78	78	273	9,614	35.22	9	17	404	23.74	66	115	3,966	34.48
2003	141	585	41,480	70.91	77	208	6,454	31.03	17	66	4,376	66.30	86	176	3,382	19.22

Year	Deep-sea handline				Inshore handline				Troll with bait				All Other Gear Types			
	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE	No. Lic.	No. trips	Lbs. Caught	CPUE
2004	155	719	57,647	80.18	93	305	7,871	25.81	23	93	7,395	79.52	85	169	4,130	24.44
2005	164	656	48,976	74.66	71	217	5,378	24.78	18	90	6,768	75.20	89	208	6,726	32.33
2006	147	669	47,487	70.98	50	229	9,554	41.72	12	76	6,171	81.20	80	214	5,430	25.37
2007	153	683	45,566	66.71	66	276	11,488	41.62	12	111	7,500	67.56	78	192	4,552	23.71
2008	177	824	63,152	76.64	84	319	12,983	40.70	17	123	10,962	89.12	95	220	5,480	24.91
2009	205	846	68,252	80.68	90	291	10,677	36.69	16	61	2,789	45.72	116	282	8,112	28.77
2010	221	1,067	83,633	78.38	98	369	17,287	46.85	31	118	5,890	49.92	134	371	14,370	38.73
2011	206	864	76,622	88.68	95	397	18,282	46.05	28	114	4,076	35.75	139	318	10,298	32.38
2012	205	769	75,758	98.52	89	406	19,789	48.74	32	145	5,778	39.85	144	433	15,529	35.86
2013	184	799	76,271	95.46	79	331	18,964	57.29	44	205	7,762	37.86	166	462	18,224	39.45
2014	163	715	56,801	79.44	67	276	12,156	44.04	45	196	8,259	42.14	165	486	19,612	40.35
2015	178	779	65,083	83.55	64	346	12,591	36.39	49	172	6,344	36.88	200	551	17,936	32.55
2016	181	820	73,383	89.49	60	309	11,523	37.29	34	223	12,728	57.08	176	574	21,324	37.15
2017	200	891	85,060	95.47	44	316	16,989	53.76	35	152	13,724	90.29	151	403	15,705	38.97
2018	138	468	34,014	72.68	34	273	17,363	63.60	27	132	7,404	56.09	140	359	16,213	45.16
2019	142	521	48,103	92.33	38	259	16,460	63.55	41	142	5,397	38.00	130	369	19,876	53.86
<b>10-yr avg.</b>	<b>182</b>	<b>769</b>	<b>67,473</b>	<b>87.00</b>	<b>67</b>	<b>328</b>	<b>16,140</b>	<b>50.00</b>	<b>37</b>	<b>160</b>	<b>7,736</b>	<b>48.00</b>	<b>155</b>	<b>433</b>	<b>16,909</b>	<b>39.00</b>
<b>20-yr avg.</b>	<b>178</b>	<b>747</b>	<b>60,898</b>	<b>81.00</b>	<b>77</b>	<b>312</b>	<b>13,187</b>	<b>42.00</b>	<b>27</b>	<b>124</b>	<b>6,874</b>	<b>56.00</b>	<b>119</b>	<b>310</b>	<b>10,925</b>	<b>33.00</b>

NULL = no available data

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

## 1.3 CORAL REEF ECOSYSTEM COMPONENTS

### 1.3.1 Fishery Descriptions

In 2018, the Council drafted an Amendment 5 to the Hawaii Archipelago FEP that reclassified a large number MUS as Ecosystem Component Species (ECS; WPRFMC, 2018). The final rule was posted in the Federal Register in early 2019 (84 FR 2767). This amendment reduces the number of MUS from 173 species/families to 20 in the Hawaii FEP. All former coral reef ecosystem management unit species (CREMUS) were reclassified as ECS that do not require ACL specifications or accountability measures but are still to be monitored regularly to prioritize conservation and management efforts and to improve efficiency of fishery management in the region. All existing management measures, including reporting and record keeping, prohibitions, and experimental fishing regulations apply to the associated ECS. If an ECS stock becomes a target of a Federal fishery in the future, NMFS and the Council may consider including that stock as a MUS to actively manage that stock.

Representing continued effort to monitor ECS, a one-year reflection of the top ten harvested ECS (by weight) is included. Additionally, HDAR selected ten species reclassified as ECS that are still of priority to the State for regular monitoring. These prioritized ECS species are opihi (*Cellana* spp.; limpet), lobster (*Panulirus* spp.), kumu (*Parupeneus porphyreus*; whitesaddle goatfish), omilu (*Caranx melampygus*; bluefin trevally), uhu (family Scaridae; parrotfish), he'e (*Octopus cyanea*; day tako), kala (*Naso* spp.), nenu (*Kyphosus* spp.; brown chub), manini (*Acanthurus triostegus*; convict tang), and taape (*Lutjanus kasmira*; bluestripe snapper) Time series for these species are included in the report as well. These ten species are important not only commercially but recreationally and culturally as well. There is no current data gathering system for recreational or subsistence catch of these ten species other than the Hawaii Marine Recreational Fishers Survey (HMRFS). HMRFS conducts creel surveys around the state to collect catch data from recreational and subsistence fishers. This data, along with the commercial data, can be used to determine the overall catch for these ten species. HDAR can also use fisheries independent data (in-water surveys) to obtain abundance numbers for these ten species. With this data, HDAR can propose regulations in order for these ten species to be harvested in the future.

### 1.3.2 Dashboard Statistics

The collection of commercial ECS finfish and invertebrate fishing reports comes from two sources: paper reports received by mail, fax, or PDF copy via e-mail, and reports filed online through the OFR. The ECS are reported by commercial fishers in the Monthly Fishing Report, the Net, Trap, Dive Activity Report, or the MHI Deep 7 Bottomfish Fishing Trip Report.

Similar to the Deep 7 Bottomfish, the time series format for the ECS fishery begins with an arrangement by the state fiscal year period (July – June) until June 1993 before being reported by fishing year. Refer to data processing procedures documented in the Deep 7 BMUS section for paper fishing reports and fishing reports filed online (see Section 1.1.2). Database assistants and the data monitoring associate will enter the paper Monthly Fishing Report information within four weeks, and the Net, Trap, Dive Activity Report and the MHI Deep 7 Bottomfish Fishing Trip Report within two business days.

1.3.2.1 2019 Most Harvested ECS

Table 11. Top ten landed species (lbs.) in Hawaii ECS fisheries in 2019

Species	No. Licenses	No. Trips	Catch (lbs.)
<i>Selar crumenophthalmus</i> (akule)	205	1,605	241,161
<i>Decapterus macarellus</i> (opelu)	120	1,337	120,917
Parrotfish species (uhu)	62	611	47,361
<i>Myripristis</i> spp. (menpachi)	172	843	45,425
<i>Lutjanus kasmira</i> (taape)	177	823	29,663
<i>Acanthurus dussumieri</i> (palani)	47	460	25,037
<i>Mulloidichthys vanicolensis</i> (red weke)	55	179	18,258
<i>Portunus sanguinolentus</i> (kuahonu crab)	n.d.	n.d.	n.d.
<i>Seriola dumerili</i> (kahala)	127	365	14,158
<i>Octopus cyanea</i> (he'e; day tako)	49	366	11,045

1.3.2.2 Prioritized Species Summary

Table 12. Annual fishing parameters for the 2019 fishing year for prioritized MHI ECS designated by HDAR compared with short-term (10-year) and long-term (20-year) averages

Species	Fishery Indicators	2019 values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Opihi	No. Lic.	19	↓ 13.6%	↓ 13.6%
	No. Trips	180	↓ 30.2%	↓ 32.3%
	No. Caught	50,631	↑ 53.3%	↑ 160%
	Lbs. Caught	10,976 lbs.	↓ 34.7%	↓ 22.2%
Lobster	No. Lic.	9	↓ 47.1%	↓ 55.0%
	No. Trips	127	↓ 38.1%	↓ 42.5%
	No. Caught	2,118	↓ 44.7%	↓ 47.8%
	Lbs. Caught	4,206 lbs.	↓ 46.7%	↓ 49.6%
Kumu	No. Lic.	44	↓ 42.9%	↓ 45.7%
	No. Trips	103	↓ 75.4%	↓ 74.8%
	No. Caught	378	↓ 87.7%	↓ 82.4%
	Lbs. Caught	581 lbs.	↓ 87.6%	↓ 85.2%
Omilu	No. Lic.	93	↓ 21.9%	↓ 17.0%
	No. Trips	280	↓ 26.1%	↓ 17.4%
	No. Caught	726	↓ 39.9%	↓ 32.7%
	Lbs. Caught	4,782 lbs.	↓ 30.7%	↓ 25.7%
Uhu	No. Lic.	62	↓ 25.3%	↓ 31.1%
	No. Trips	611	↓ 34.4%	↓ 31.2%
	No. Caught	10,194	↓ 20.6%	↓ 0.80%
	Lbs. Caught	47,361 lbs.	↓ 15.3%	↑ 4.11%
He'e (Day tako)	No. Lic.	49	↓ 36.4%	↓ 33.8%



	No. Trips	366	↓ 54.4%	↓ 53.1%
	No. Caught	4,061	↓ 56.0%	↓ 49.7%
	Lbs. Caught	11,045 lbs.	↓ 59.2%	↓ 53.2%
Kala	No. Lic.	32	↓ 38.5%	↓ 44.8%
	No. Trips	154	↓ 61.6%	↓ 61.6%
	No. Caught	2,331	↓ 59.6%	↓ 52.5%
	Lbs. Caught	8,863 lbs.	↓ 64.1%	↓ 61.1%
Nenuē	No. Lic.	37	↓ 43.9%	↓ 46.4%
	No. Trips	217	↓ 39.9%	↓ 37.1%
	No. Caught	4,285	↓ 29.5%	↓ 30.7%
	Lbs. Caught	10,240 lbs.	↓ 45.7%	↓ 47.4%
Manini	No. Lic.	40	↓ 33.3%	↓ 39.4%
	No. Trips	362	↓ 38.8%	↓ 38.9%
	No. Caught	18,734	↓ 22.0%	↓ 18.8%
	Lbs. Caught	8,821 lbs.	↓ 30.5%	↓ 30.6%
Taape	No. Lic.	177	↓ 26.3%	↓ 23.4%
	No. Trips	823	↓ 31.0%	↓ 32.9%
	No. Caught	44,925	↓ 1.80%	↑ 11.1%
	Lbs. Caught	29,663 lbs.	↓ 12.0%	↓ 20.2%

### 1.3.3 Prioritized Species Statistics

**Table 13. Time series of commercial fishing reports for all opihi (limpet) species reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	14	239	66	0	16,651
1966	13	171	61	0	13,989
1967	40	779	176	0	36,000
1968	26	450	112	0	23,185
1969	36	413	127	0	23,818
1970	41	392	133	1,810	20,446
1971	46	368	148	1,929	17,229
1972	44	268	117	5	16,739
1973	46	257	121	600	17,169
1974	51	351	147	66,163	19,558
1975	46	333	140	115	14,396
1976	52	327	151	13,560	19,052
1977	60	306	157	750	13,969
1978	54	231	155	15,622	15,119
1979	51	182	158	0	14,146
1980	49	230	119	28	10,617
1981	36	218	87	30	7,889
1982	36	190	82	1	7,725

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1983	38	191	81	0	6,675
1984	40	181	95	61	8,547
1985	36	285	95	151	13,512
1986	64	289	141	1,066	12,426
1987	91	563	222	200	17,949
1988	71	334	145	618	12,277
1989	68	319	143	40	12,675
1990	56	179	110	0	7,848
1991	58	212	114	0	7,680
1992	55	315	130	0	9,271
1993.1	39	194	87	0	5,672
1993.2	26	138	55	0	4,628
1994	42	435	137	0	11,444
1995	56	461	151	0	13,098
1996	41	371	115	0	12,079
1997	51	299	125	1,106	10,979
1998	50	289	128	110	13,936
1999	43	406	112	0	10,774
2000	31	415	103	0	9,950
2001	24	356	96	710	12,938
2002	32	426	104	11,300	13,430
2003	23	341	106	9,975	11,714
2004	15	196	57	2,234	8,255
2005	12	181	42	372	7,380
2006	19	143	51	7,919	10,264
2007	20	182	63	5,508	6,911
2008	27	202	67	3,692	10,530
2009	25	294	81	16,716	22,773
2010	34	340	97	16,570	26,747
2011	25	261	78	41,370	16,053
2012	28	287	95	8,750	18,268
2013	17	361	85	6,893	25,761
2014	27	333	91	10,419	22,417
2015	17	248	82	14,126	14,211
2016	16	156	77	39,166	9,125
2017	16	189	79	65,806	11,057
2018	17	229	93	76,541	13,336
2019	19	180	89	50,631	10,976
<b>10-year avg.</b>	<b>22</b>	<b>258</b>	<b>87</b>	<b>33,027</b>	<b>16,795</b>
<b>20-year avg.</b>	<b>22</b>	<b>266</b>	<b>82</b>	<b>19,435</b>	<b>14,105</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 14. Time series of commercial fishing reports for all lobster species from reported by Calendar Year from 2002-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2002	15	57	24	968	1,982
2003	38	205	90	3,645	7,404
2004	24	278	75	4,382	8,451
2005	27	321	73	5,844	11,633
2006	18	246	62	3,770	7,669
2007	18	215	63	4,028	8,246
2008	19	261	60	5,242	11,510
2009	28	353	80	6,832	14,512
2010	28	300	77	5,727	12,094
2011	25	256	72	5,190	10,646
2012	25	257	72	4,841	9,808
2013	14	237	56	4,690	10,153
2014	19	228	54	4,887	10,526
2015	13	140	40	2,939	5,916
2016	14	161	44	2,480	5,003
2017	15	184	49	2,811	5,565
2018	8	157	36	2,585	5,015
2019	9	127	31	2,118	4,206
<b>10-year avg.</b>	<b>17</b>	<b>205</b>	<b>53</b>	<b>3,827</b>	<b>7,893</b>
<b>20-year avg.</b>	<b>20</b>	<b>221</b>	<b>59</b>	<b>4,054</b>	<b>8,352</b>

**Table 15. Time series of commercial fishing reports for kumu (*Parupeneus porphyus*; white saddle goatfish) reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	62	700	234	1,874	12,060
1966	51	546	201	2,900	8,515
1967	62	575	216	3,826	9,599
1968	51	482	179	3,570	8,599
1969	72	649	240	3,215	8,616
1970	78	635	248	2,883	8,408
1971	96	598	270	1,649	7,205
1972	98	583	274	2,674	6,394
1973	99	617	296	2,731	8,813
1974	109	629	290	3,521	7,894
1975	88	630	255	2,585	7,033
1976	104	639	285	3,037	7,367

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1977	117	887	380	2,629	10,373
1978	168	879	519	3,731	15,427
1979	163	613	488	3,133	15,430
1980	146	750	436	2,536	13,697
1981	143	1,192	465	4,891	15,235
1982	119	979	411	3,024	10,164
1983	119	771	361	2,145	8,728
1984	141	806	382	2,074	7,118
1985	134	941	396	2,015	10,937
1986	117	719	331	1,194	6,760
1987	129	782	368	2,290	7,919
1988	121	739	316	2,164	8,288
1989	137	763	373	1,788	7,959
1990	122	616	327	1,564	5,903
1991	149	650	374	1,193	5,335
1992	118	799	343	1,746	6,943
1993.1	117	760	334	935	6,841
1993.2	79	335	159	595	2,811
1994	132	575	336	1,151	4,037
1995	151	784	391	1,174	6,246
1996	139	665	386	839	5,284
1997	132	638	368	1,128	5,120
1998	127	642	347	2,103	5,357
1999	108	560	319	1,436	4,117
2000	110	535	305	1,646	5,133
2001	104	532	276	1,648	4,539
2002	97	535	277	1,143	3,675
2003	90	344	213	1,218	2,585
2004	82	365	226	1,255	2,233
2005	71	293	180	959	2,590
2006	56	225	147	673	1,471
2007	60	312	172	971	1,759
2008	71	297	192	918	2,335
2009	110	553	304	2,612	5,483
2010	100	838	356	5,535	9,874
2011	95	663	303	6,144	9,564
2012	106	678	333	6,220	8,461
2013	102	564	284	4,453	7,090
2014	90	434	232	2,939	4,412
2015	69	273	174	1,669	2,710

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2016	60	290	166	1,106	2,051
2017	60	202	132	940	1,370
2018	44	138	102	522	728
2019	44	103	76	378	581
<b>10-year avg.</b>	<b>77</b>	<b>418</b>	<b>216</b>	<b>2,991</b>	<b>4,684</b>
<b>20-year avg.</b>	<b>81</b>	<b>409</b>	<b>223</b>	<b>2,147</b>	<b>3,932</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 16. Time series of commercial fishing reports for omilu (*Caranx melampygus*; bluefin trevally) reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	26	155	75	383	3,633
1966	25	138	61	125	2,114
1967	25	109	60	463	1,851
1968	23	129	55	763	4,397
1969	32	259	81	202	6,876
1970	26	236	71	273	4,545
1971	20	161	60	410	2,912
1972	19	83	50	159	815
1973	19	76	46	35	907
1974	19	122	55	110	1,841
1975	22	118	55	62	1,263
1976	21	61	43	103	1,607
1977	28	87	59	143	1,251
1978	45	130	88	132	2,169
1979	31	57	54	65	1,243
1980	33	87	67	111	1,417
1981	57	179	123	269	2,949
1982	66	173	126	464	2,820
1983	83	245	156	712	5,067
1984	108	316	195	1,879	16,577
1985	117	333	212	850	7,341
1986	115	368	205	1,317	8,671
1987	150	560	337	1,808	12,190
1988	169	567	357	2,084	14,638
1989	160	591	369	2,235	13,604
1990	151	507	341	2,093	14,772
1991	160	408	292	1,417	9,817
1992	59	135	108	343	4,530
1993.1	58	120	94	224	1,960

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1993.2	39	64	54	114	1,319
1994	65	127	95	421	3,508
1995	70	122	104	159	1,836
1996	58	145	111	301	3,141
1997	65	131	111	288	2,590
1998	56	104	89	170	1,579
1999	47	94	72	197	1,290
2000	61	138	109	287	2,447
2001	70	156	117	366	2,620
2002	88	189	145	547	4,605
2003	102	337	229	1,333	7,733
2004	123	346	242	1,214	7,216
2005	112	320	227	1,506	9,271
2006	105	294	224	679	3,650
2007	109	363	248	953	7,402
2008	145	400	302	1,126	7,383
2009	148	449	321	1,483	7,847
2010	140	494	333	1,660	9,082
2011	138	430	291	1,065	6,800
2012	127	495	318	1,272	8,265
2013	117	387	264	951	6,439
2014	129	364	259	1,259	7,618
2015	112	337	246	1,564	6,242
2016	106	341	243	990	5,947
2017	125	376	265	1,424	8,124
2018	98	283	193	1,156	5,173
2019	93	280	197	726	4,782
<b>10-year avg.</b>	<b>119</b>	<b>379</b>	<b>261</b>	<b>1,207</b>	<b>6,847</b>
<b>20-year avg.</b>	<b>112</b>	<b>339</b>	<b>239</b>	<b>1,078</b>	<b>6,432</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 17. Time series of commercial fishing reports for uhu (family Scaridae; parrotfish) reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	33	273	105	301	6,653
1966	20	235	94	336	6,460
1967	29	248	112	678	8,428
1968	31	199	104	531	4,572
1969	44	372	153	733	7,710
1970	43	347	163	1,320	9,012

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1971	57	348	184	640	7,044
1972	45	255	126	400	3,284
1973	45	253	141	500	4,405
1974	60	263	151	541	5,215
1975	39	243	123	295	3,624
1976	59	272	159	406	9,633
1977	77	394	229	427	6,468
1978	124	577	369	955	19,795
1979	125	430	364	1,004	19,718
1980	119	534	332	1,418	21,553
1981	116	740	344	1,519	21,487
1982	96	633	316	1,099	16,782
1983	109	568	293	3,103	25,782
1984	117	612	313	3,423	27,586
1985	110	763	337	1,428	27,697
1986	124	823	359	1,991	35,631
1987	134	853	388	3,289	41,016
1988	122	865	356	3,104	44,689
1989	114	755	313	2,044	49,037
1990	75	586	250	2,284	25,999
1991	117	734	358	2,676	26,708
1992	103	964	364	5,388	36,697
1993.1	103	908	336	3,034	27,975
1993.2	79	518	206	2,290	19,382
1994	124	967	413	4,767	39,803
1995	139	1,165	479	2,817	42,036
1996	143	1,047	494	2,579	36,189
1997	131	995	451	2,731	35,968
1998	132	995	446	3,635	35,805
1999	120	952	442	4,511	35,060
2000	116	785	375	3,141	28,510
2001	113	800	386	3,819	21,786
2002	111	868	384	4,265	31,091
2003	92	819	314	8,377	35,483
2004	84	853	340	7,762	33,279
2005	88	735	295	7,967	32,583
2006	79	633	270	7,684	31,698
2007	84	862	353	11,090	40,398
2008	90	954	371	11,445	44,937
2009	118	1,155	458	11,556	50,884

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2010	108	1,431	450	17,483	71,239
2011	96	1,182	406	17,675	72,343
2012	117	1,397	462	20,301	84,442
2013	95	1,161	391	17,343	75,291
2014	89	925	347	14,169	69,846
2015	74	635	273	7,455	33,613
2016	67	596	265	6,431	26,450
2017	70	638	267	7,562	30,939
2018	56	729	242	9,806	47,638
2019	62	611	209	10,194	47,361
<b>10-year avg.</b>	<b>83</b>	<b>931</b>	<b>331</b>	<b>12,842</b>	<b>55,916</b>
<b>20-year avg.</b>	<b>90</b>	<b>888</b>	<b>343</b>	<b>10,276</b>	<b>45,491</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 18. Time series of commercial fishing reports for he'e (*Octopus cyanea*; day tako) reported by Calendar Year from 2002-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2002	9	28	12	147	341
2003	76	653	216	6,088	17,170
2004	62	749	228	5,966	19,228
2005	80	822	262	6,250	19,614
2006	75	954	277	7,134	19,284
2007	77	812	292	6,286	17,318
2008	92	958	333	10,425	29,998
2009	96	1,053	358	10,581	30,908
2010	115	1,173	393	11,195	34,008
2011	95	994	350	10,735	30,142
2012	92	1,189	404	12,022	34,820
2013	88	1,149	410	13,410	39,079
2014	86	863	311	10,392	33,525
2015	67	733	241	10,607	32,728
2016	57	606	191	8,221	23,128
2017	59	521	204	7,233	19,823
2018	57	428	196	4,503	12,620
2019	49	366	167	4,061	11,045
<b>10-year avg.</b>	<b>77</b>	<b>802</b>	<b>287</b>	<b>9,238</b>	<b>27,092</b>
<b>20-year avg.</b>	<b>74</b>	<b>781</b>	<b>269</b>	<b>8,070</b>	<b>23,599</b>



**Table 19. Time series of commercial fishing reports for kala (*Naso spp.*) reported by Fiscal Year from 1965-1993 and by Fishing Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	27	251	93	823	30,278
1966	20	220	60	174	26,115
1967	27	168	68	398	35,453
1968	24	160	57	423	23,886
1969	31	182	83	560	32,020
1970	40	226	108	1,114	23,954
1971	45	223	118	1,036	19,925
1972	52	189	106	703	16,421
1973	43	151	99	1,084	17,508
1974	57	166	122	1,034	20,793
1975	72	248	159	905	17,997
1976	73	233	167	1,236	13,697
1977	94	369	244	1,374	18,960
1978	103	279	226	1,143	21,775
1979	95	240	222	805	14,430
1980	89	221	173	799	10,342
1981	80	334	166	1,697	11,990
1982	86	345	179	1,515	13,525
1983	89	335	195	822	14,791
1984	92	256	171	492	11,508
1985	98	348	215	1,004	8,890
1986	98	226	159	926	14,647
1987	86	260	177	1,217	14,644
1988	95	298	184	2,348	13,050
1989	102	345	216	864	8,912
1990	49	218	118	527	3,191
1991	91	359	194	809	8,736
1992	74	295	172	477	6,892
1993.1	73	347	183	724	7,850
1993.2	50	173	89	325	4,445
1994	84	419	229	1,332	12,945
1995	87	478	250	780	17,679
1996	102	496	270	859	15,105
1997	91	500	268	940	12,929
1998	97	497	276	1,413	15,244
1999	90	477	266	1,384	16,439
2000	74	455	223	1,912	18,115

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2001	84	426	238	1,832	24,427
2002	77	497	248	2,927	20,036
2003	67	449	187	4,170	21,219
2004	59	417	177	5,074	21,855
2005	50	329	139	5,447	22,502
2006	48	327	140	5,392	21,693
2007	52	309	163	3,712	13,629
2008	53	370	167	5,022	20,227
2009	84	434	243	4,941	24,919
2010	65	571	251	8,183	33,959
2011	66	505	209	7,303	29,724
2012	67	638	231	8,559	42,464
2013	63	505	228	6,839	32,302
2014	61	475	195	6,674	30,516
2015	47	355	169	4,716	21,911
2016	41	312	142	5,132	17,716
2017	41	292	147	5,330	19,374
2018	32	202	112	2,649	9,904
2019	32	154	100	2,331	8,863
<b>10-year avg.</b>	<b>52</b>	<b>401</b>	<b>178</b>	<b>5,772</b>	<b>24,673</b>
<b>20-year avg.</b>	<b>58</b>	<b>401</b>	<b>185</b>	<b>4,907</b>	<b>22,768</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 20. Time series of commercial fishing reports for nenue (*Kyphosus* spp.) from reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	20	113	70	382	6,209
1966	18	97	61	299	6,908
1967	33	132	83	472	11,908
1968	24	70	49	266	2,428
1969	41	111	82	777	8,611
1970	48	120	89	558	3,088
1971	57	163	118	84	4,187
1972	53	146	105	322	4,621
1973	61	131	106	332	4,746
1974	58	175	122	658	10,553
1975	83	208	146	1,110	16,750
1976	78	227	151	971	10,433
1977	104	288	215	1,692	9,426
1978	119	292	239	1,499	10,535

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1979	107	247	223	1,294	8,781
1980	83	245	176	799	13,089
1981	92	342	199	963	10,788
1982	80	428	238	2,980	19,782
1983	96	301	207	1,504	8,181
1984	116	359	240	2,223	11,282
1985	116	423	274	1,619	8,957
1986	124	412	270	2,188	10,980
1987	122	583	307	2,689	17,672
1988	109	542	278	2,483	18,445
1989	94	433	231	2,024	8,826
1990	70	310	173	1,409	6,046
1991	100	413	224	2,349	11,122
1992	80	408	221	812	15,459
1993.1	94	402	222	1,186	7,423
1993.2	57	202	107	734	3,531
1994	98	445	241	1,505	10,753
1995	100	423	259	1,293	10,872
1996	106	525	270	2,206	11,952
1997	102	484	262	2,310	7,515
1998	97	451	243	2,824	15,503
1999	92	474	260	3,492	16,042
2000	83	400	208	1,844	9,704
2001	73	358	209	1,740	11,750
2002	83	373	220	2,007	22,594
2003	64	262	159	5,084	19,476
2004	68	311	194	5,809	19,310
2005	54	250	150	8,867	19,623
2006	59	245	150	12,651	35,621
2007	64	286	173	10,902	26,758
2008	77	334	201	8,287	21,621
2009	104	467	277	5,735	14,583
2010	79	448	239	14,384	31,811
2011	82	506	220	9,900	27,771
2012	90	570	238	7,442	31,238
2013	78	416	221	5,643	27,409
2014	82	415	218	4,663	16,635
2015	56	276	157	3,692	17,429
2016	55	252	153	3,228	10,047
2017	56	243	142	2,395	6,163

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
2018	44	264	127	5,104	9,655
2019	37	217	104	4,285	10,240
<b>10-year avg.</b>	<b>66</b>	<b>361</b>	<b>182</b>	<b>6,074</b>	<b>18,840</b>
<b>20-year avg.</b>	<b>69</b>	<b>345</b>	<b>188</b>	<b>6,183</b>	<b>19,472</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 21. Time series of commercial fishing reports for manini (*Acanthurus triostegus*; convict tang) reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	40	440	179	9,811	9,244
1966	34	316	158	11,170	7,391
1967	50	293	172	11,480	8,767
1968	41	279	171	11,559	7,046
1969	53	391	188	19,598	12,401
1970	52	372	178	15,977	9,990
1971	79	387	209	11,860	8,527
1972	63	326	182	8,337	7,360
1973	76	424	224	11,859	9,234
1974	89	511	266	11,836	8,682
1975	86	512	246	9,382	9,463
1976	82	483	255	8,714	8,337
1977	103	575	326	6,586	10,236
1978	112	463	352	6,014	9,653
1979	103	437	338	9,687	14,440
1980	86	381	239	4,832	7,121
1981	90	404	251	6,369	15,907
1982	77	463	222	6,405	9,152
1983	87	452	253	2,294	11,091
1984	97	460	263	2,320	9,444
1985	97	532	275	1,737	9,472
1986	98	549	274	4,226	6,971
1987	94	654	299	5,374	11,042
1988	94	670	319	7,739	9,037
1989	101	705	330	8,126	12,686
1990	68	542	224	6,364	6,977
1991	93	641	294	7,595	7,667
1992	85	649	255	5,788	9,575
1993.1	89	733	265	7,803	9,286
1993.2	66	305	139	5,258	8,193

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1994	98	778	303	15,968	12,923
1995	106	777	309	11,216	14,961
1996	113	1,007	367	18,570	18,331
1997	98	896	341	16,397	15,032
1998	105	754	325	19,039	13,317
1999	107	704	310	16,454	14,612
2000	86	563	247	12,943	12,152
2001	78	543	233	10,555	11,919
2002	78	588	253	18,095	15,907
2003	61	559	213	38,552	20,001
2004	61	612	229	20,416	10,045
2005	63	478	220	27,947	12,312
2006	69	538	207	20,059	9,109
2007	66	716	259	26,628	11,426
2008	70	622	272	20,573	11,574
2009	79	718	300	25,386	12,793
2010	85	894	332	30,925	17,511
2011	76	884	297	33,758	17,895
2012	79	766	297	23,949	14,039
2013	65	722	276	27,125	15,276
2014	59	592	247	25,475	11,609
2015	64	404	203	14,260	10,651
2016	48	443	191	18,636	8,934
2017	46	387	172	20,182	9,276
2018	41	456	170	27,016	12,989
2019	40	362	150	18,734	8,821
<b>10-year avg.</b>	<b>60</b>	<b>591</b>	<b>234</b>	<b>24,006</b>	<b>12,700</b>
<b>20-year avg.</b>	<b>66</b>	<b>592</b>	<b>238</b>	<b>23,061</b>	<b>12,712</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

**Table 22. Time series of commercial fishing reports for taape (*Lutjanus kasmira*; bluespotted snapper) reported by Fiscal Year from 1970-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1970	5	26	11	0	534
1971	30	109	57	29	1,723
1972	48	198	100	332	2,591
1973	60	249	135	862	3,749
1974	77	321	177	1,304	7,829
1975	88	353	211	1,085	9,353
1976	142	527	320	8,326	28,405

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
1977	201	801	436	6,853	28,541
1978	289	1,086	741	14,524	51,042
1979	320	970	845	25,672	58,175
1980	331	1,132	762	17,912	56,043
1981	299	1,448	756	20,295	80,498
1982	298	1,451	782	20,871	71,101
1983	309	1,508	800	11,078	69,225
1984	333	1,476	793	13,861	43,661
1985	364	1,748	872	12,844	50,787
1986	410	1,944	1,012	16,189	52,328
1987	372	1,629	948	13,519	55,084
1988	416	1,907	1,036	16,966	50,889
1989	389	1,629	957	15,746	36,211
1990	400	1,635	954	17,099	43,888
1991	427	1,770	1,050	17,053	62,504
1992	343	1,865	949	19,302	74,105
1993.1	330	1,739	875	19,735	62,315
1993.2	249	991	507	11,260	30,092
1994	338	1,697	885	16,634	60,130
1995	365	1,783	951	14,943	71,781
1996	352	1,538	904	14,415	44,195
1997	366	1,984	980	23,291	85,506
1998	365	1,754	933	20,894	74,851
1999	297	1,822	842	31,735	70,074
2000	280	1,928	818	27,270	55,047
2001	240	1,593	666	17,328	47,550
2002	229	1,157	618	12,579	38,597
2003	207	1,060	534	28,194	42,130
2004	208	1,137	548	62,413	45,667
2005	176	1,034	487	45,591	39,491
2006	170	983	455	28,317	29,438
2007	186	1,123	525	35,662	30,281
2008	246	1,213	615	43,786	40,000
2009	269	1,382	710	49,927	38,390
2010	268	1,503	760	56,888	43,879
2011	260	1,355	681	56,221	41,261
2012	294	1,369	788	37,857	33,008
2013	266	1,374	721	38,861	33,434
2014	259	1,206	644	35,159	30,271
2015	227	1,042	568	31,081	25,824

<b>Year</b>	<b>No. License</b>	<b>Trips</b>	<b>No. Reports</b>	<b>No. Caught</b>	<b>Lbs. Caught</b>
2016	220	1,155	602	54,757	35,270
2017	238	1,235	660	58,440	35,875
2018	194	856	487	43,303	28,768
2019	177	823	458	44,925	29,663
<b>10-year avg.</b>	<b>240</b>	<b>1,192</b>	<b>637</b>	<b>45,749</b>	<b>33,725</b>
<b>20-year avg.</b>	<b>231</b>	<b>1,226</b>	<b>617</b>	<b>40,428</b>	<b>37,192</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

DRAFT

## 1.4 CRUSTACEAN

### 1.4.1 Fishery Descriptions

This species group is comprised of the *Heterocarpus* deep water shrimps (*H. laevigatus* and *H. ensifer*) and Kona crab. The main gear types used are shrimp traps and loop nets.

### 1.4.2 Dashboard Statistics

The collection of commercial crustacean fishing reports comes from two sources: paper reports received by mail, fax, or PDF copy via e-mail; and reports filed online through the OFR. The crustacean landings are reported by commercial fishers on the Monthly Fishing Report, the Net, Trap, Dive Activity Report, or the MHI Deep 7 Bottomfish Fishing Trip Report.

Similar to the Deep 7 Bottomfish, the time series format for the crustacean fishery begins with an arrangement by the state fiscal year period (July – June) until June 1993 before being reported by fishing year. Refer to data processing procedures documented in the Deep 7 BMUS section (Section 1.1.2) for more information on paper fishing reports and fishing reports filed online. Database assistants and data monitoring associates will enter the paper Monthly Fishing Report information within four weeks, and the Net, Trap, Dive Activity Report and the MHI Deep 7 Bottomfish Fishing Trip Report within two business days.

#### 1.4.2.1 Historical Summary

**Table 23. Annual fishing parameters for the 2019 fishing year in the MHI crustacean fishery compared with short-term (10-year) and long-term (20-year) averages**

Fishery	Parameters	2019 Values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Long-Term Avg. (20-year)
Crustacean	No. License	25	↓ 26.5%	↓ 40.5%
	Trips	280	↑ 9.80%	↑ 11.6%
	No. Caught	23,048	↓ 74.5%	↓ 55.9%
	Lbs. Caught	18,296 lbs.	↓ 17.0%	↓ 30.0%

#### 1.4.2.2 Species Summary

**Table 24. Annual fishing parameters for the 2019 fishing year in the MHI crustacean fishery compared with short-term (10-year) and long-term (20-year) averages**

Methods	Fishery Indicators	2019 values	2019 Comparative Trends	
			Short-Term Avg. (10-year)	Short-Term Avg. (20-year)
Shrimp trap	<i>H. laevigatus</i>	n.d.	-	-
	<i>H. ensifer</i>	n.d.	-	-
	No. Lic.	n.d.	-	-
	No. Trips	n.d.	-	-
	Lbs. Caught	n.d.	-	-



	CPUE	n.d.	-	-
Loop Net	Kona crab	5,650 lbs.	↑ 7.03%	↓ 29.3%
	No. Lic.	23	↓ 17.9%	↓ 39.5%
	No. Trips	70	↓ 19.5%	↓ 45.3%
	Lbs. Caught	5,650 lbs.	↑ 7.03%	↓ 29.3%
	CPUE	80.71 lbs./trip	↑ 39.2%	↑ 32.3%
All Other Gears	No. Lic.	n.d.	-	-
	No. Trips	n.d.	-	-
	Lbs. Caught	n.d.	-	-
	CPUE	n.d.	-	-

### 1.4.3 Time Series Statistics

#### 1.4.3.1 Commercial Fishing Parameters

**Table 25. Time series of commercial fishermen reports for the CMUS fishery reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1965	26	171	71	4,238	11,421
1966	22	179	67	3,604	10,033
1967	30	185	82	3,071	17,444
1968	25	167	71	1,764	26,419
1969	29	233	84	3,109	35,955
1970	30	197	78	2,544	35,042
1971	40	254	111	4,162	43,576
1972	41	260	102	3,042	69,331
1973	32	231	97	2,111	62,515
1974	49	211	112	7,562	40,552
1975	59	241	127	5,076	24,616
1976	59	234	136	8,568	26,577
1977	54	233	114	4,144	23,153
1978	61	243	159	5,224	31,675
1979	52	202	128	5,817	28,711
1980	42	108	67	1,920	10,390
1981	49	155	101	4,217	12,858
1982	52	178	108	2,386	8,701
1983	55	180	107	4,204	13,130
1984	76	385	157	6,303	214,792
1985	80	460	190	6,052	82,741
1986	82	312	176	4,196	27,575
1987	76	239	133	3,831	23,876
1988	53	242	101	2,906	30,684
1989	37	147	62	916	58,126

Year	No. License	Trips	No. Reports	No. Caught	Lbs. Caught
1990	44	242	84	2,624	361,914
1991	47	187	87	1,620	89,383
1992	73	342	133	7,550	38,552
1993.1	70	398	149	4,580	61,525
1993.2	52	187	80	3,047	31,995
1994	74	342	167	3,193	105,282
1995	88	467	200	4,992	98,478
1996	92	401	180	5,291	62,662
1997	90	347	170	8,229	51,025
1998	102	438	207	7,966	213,067
1999	86	298	170	5,810	53,302
2000	65	199	113	4,075	14,970
2001	64	243	130	3,771	20,209
2002	64	243	131	5,427	15,868
2003	53	217	102	10,082	17,632
2004	51	204	90	7,441	13,469
2005	51	381	106	8,240	124,900
2006	38	203	77	5,941	49,666
2007	34	237	75	26,487	13,469
2008	38	302	88	56,257	21,571
2009	41	236	97	15,960	10,645
2010	48	243	96	15,377	13,481
2011	51	272	114	55,397	19,146
2012	40	271	95	115,257	20,106
2013	43	301	99	95,709	25,757
2014	34	398	94	372,676	50,808
2015	31	271	85	150,614	31,840
2016	23	184	58	30,499	18,499
2017	20	134	44	9,693	8,139
2018	23	191	53	33,648	14,310
2019	25	280	66	23,048	18,296
<b>10-year avg.</b>	<b>34</b>	<b>255</b>	<b>80</b>	<b>90,192</b>	<b>22,038</b>
<b>20-year avg.</b>	<b>42</b>	<b>251</b>	<b>91</b>	<b>52,280</b>	<b>26,139</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

#### 1.4.4 Preferred Targets by Gear Type

##### 1.4.4.1 Shrimp Trap

The shrimp trap gear code was established in 1985. Prior to 1985, all trap activities were reported under miscellaneous traps. The principal species taken by shrimp traps/pots are the deep water *Heterocarpus* shrimp. There are only a handful of resident fishers in Hawaii who actively fish for

this species. The deep water *Heterocarpus* shrimp fishery pulses every five to seven years; large vessels from the mainland return to the islands to harvest the shrimp and land it in the State for export to external markets. One of the major vessels ported on the mainland but participating in this fishery sunk in the last decade, notably reducing the capacity of this fishery.

**Table 26. HDAR MHI annual crustacean catch summary by species for shrimp traps reported by Fiscal Year from 1987-1993 and by Calendar Year from 1994-2019**

Year	<i>Heterocarpus laevigatus</i>		<i>Heterocarpus ensifer</i>	
	No. License	Lbs. Caught	No. License	Lbs. Caught
1987	n.d.	n.d.	n.d.	n.d.
1988	n.d.	n.d.	n.d.	n.d.
1989	n.d.	n.d.	n.d.	n.d.
1990	5	341,780	n.d.	n.d.
1991	n.d.	n.d.	NULL	NULL
1992	n.d.	n.d.	NULL	NULL
1993.1	n.d.	n.d.	NULL	NULL
1993.2	n.d.	n.d.	n.d.	n.d.
1994	5	82,243	n.d.	n.d.
1995	4	66,493	n.d.	n.d.
1996	8	34,588	n.d.	n.d.
1997	6	21,697	n.d.	n.d.
1998	7	180,391	n.d.	n.d.
1999	5	34,381	n.d.	n.d.
2000	n.d.	n.d.	n.d.	n.d.
2001	4	9,225	n.d.	n.d.
2002	n.d.	n.d.	n.d.	n.d.
2003	n.d.	n.d.	n.d.	n.d.
2004	n.d.	n.d.	NULL	NULL
2005	5	109,660	n.d.	n.d.
2006	n.d.	n.d.	n.d.	n.d.
2007	n.d.	n.d.	n.d.	n.d.
2008	n.d.	n.d.	n.d.	n.d.
2009	n.d.	n.d.	n.d.	n.d.
2010	n.d.	n.d.	n.d.	n.d.
2011	4	6,103	n.d.	n.d.
2012	5	11,750	n.d.	n.d.
2013	10	17,972	4	361
2014	9	48,050	4	657
2015	6	28,766	n.d.	n.d.
2016	5	17,158	n.d.	n.d.

Year	<i>Heterocarpus laevigatus</i>		<i>Heterocarpus ensifer</i>	
	No. License	Lbs. Caught	No. License	Lbs. Caught
2017	n.d.	n.d.	n.d.	n.d.
2018	n.d.	n.d.	n.d.	n.d.
2019	n.d.	n.d.	n.d.	n.d.
<b>10-year avg.</b>	<b>5</b>	<b>16,235</b>	<b>n.d.</b>	<b>n.d.</b>
<b>20-year avg.</b>	<b>4</b>	<b>17,188</b>	<b>n.d.</b>	<b>n.d.</b>

NULL = no available data; n.d. = non-disclosure due to data confidentiality  
 1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

#### 1.4.4.2 Loop Net

The driver species for the loop net gear is the Kona crab. The levels of fishing effort and landings have gradually declined since 2000. The State has established and amended several regulations on the taking and sale of Kona crab. In addition to long-standing restrictions for minimum size, berried females, and season closure, additional prohibitions on the harvesting of females hurt fishing effort and may have discouraged further participation. Another factor that impacted the decline in Kona crab landings was the retirement of a long-time highline fisher several years ago. HDAR is proposing to amend our rules allowing the take of female kona crab. A 2018 stock assessment showed that the kona crab fishery is not overfished or experiencing overfishing.

**Table 27. HDAR MHI annual crustacean catch summary for loop net catching kona crab reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	No. License	Lbs. Caught
1965	25	11,378
1966	21	10,029
1967	30	17,444
1968	25	26,419
1969	28	35,939
1970	29	35,033
1971	38	42,977
1972	40	69,328
1973	32	62,455
1974	49	39,121
1975	58	23,996
1976	50	23,195
1977	33	15,966
1978	60	28,582
1979	51	24,674

<b>Year</b>	<b>No. License</b>	<b>Lbs. Caught</b>
1980	39	8,162
1981	47	12,102
1982	48	8,291
1983	48	9,009
1984	58	12,944
1985	71	20,846
1986	80	27,200
1987	62	16,310
1988	47	12,475
1989	32	11,790
1990	32	16,118
1991	44	22,789
1992	71	34,291
1993.1	66	25,305
1993.2	50	15,464
1994	69	19,575
1995	84	27,741
1996	83	27,603
1997	82	28,043
1998	91	30,639
1999	81	18,698
2000	62	14,143
2001	59	10,763
2002	61	11,666
2003	49	11,841
2004	48	12,164
2005	46	9,937
2006	35	6,749
2007	31	9,773
2008	36	10,940
2009	41	9,097
2010	46	9,913
2011	46	10,945
2012	35	7,980
2013	33	7,330
2014	24	2,029
2015	25	3,049
2016	17	1,230
2017	17	2,131
2018	18	2,528

Year	No. License	Lbs. Caught
2019	23	5,650
<b>10-year avg.</b>	<b>28</b>	<b>5,279</b>
<b>20-year avg.</b>	<b>38</b>	<b>7,993</b>

1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

### 1.4.5 Catch Parameters by Gear

**Table 28. Time series of crustacean CPUE (lbs./trip) in the MHI reported by Fiscal Year from 1965-1993 and by Calendar Year from 1994-2019**

Year	Shrimp Trap				Kona Crab Net (Loop)				All Other Gear Types			
	No. Lic.	No. Trips	Lbs. Caught	CPUE	No. Lic.	No. Trips	Lbs. Caught	CPUE	No. Lic.	No. Trips	Lbs. Caught	CPUE
1965	NULL	NULL	NULL	NULL	25	169	11,378	67.33	n.d.	n.d.	n.d.	n.d.
1966	NULL	NULL	NULL	NULL	21	178	10,029	56.34	n.d.	n.d.	n.d.	n.d.
1967	NULL	NULL	NULL	NULL	30	185	17,444	94.29	NULL	NULL	NULL	NULL
1968	NULL	NULL	NULL	NULL	25	167	26,419	158.20	NULL	NULL	NULL	NULL
1969	NULL	NULL	NULL	NULL	28	232	35,939	154.91	n.d.	n.d.	n.d.	n.d.
1970	NULL	NULL	NULL	NULL	29	195	35,033	179.66	n.d.	n.d.	n.d.	n.d.
1971	NULL	NULL	NULL	NULL	38	241	42,977	178.33	n.d.	n.d.	n.d.	n.d.
1972	NULL	NULL	NULL	NULL	40	259	69,328	267.68	n.d.	n.d.	n.d.	n.d.
1973	NULL	NULL	NULL	NULL	32	230	62,455	271.54	n.d.	n.d.	n.d.	n.d.
1974	NULL	NULL	NULL	NULL	49	199	39,121	196.59	n.d.	n.d.	n.d.	n.d.
1975	NULL	NULL	NULL	NULL	58	233	23,996	102.99	n.d.	n.d.	n.d.	n.d.
1976	NULL	NULL	NULL	NULL	50	203	23,195	114.26	20	31	3,382	109.10
1977	NULL	NULL	NULL	NULL	33	133	15,966	120.05	34	100	7,187	71.87
1978	NULL	NULL	NULL	NULL	60	227	28,582	125.91	n.d.	n.d.	n.d.	n.d.
1979	NULL	NULL	NULL	NULL	51	188	24,674	131.24	n.d.	n.d.	n.d.	n.d.
1980	NULL	NULL	NULL	NULL	39	100	8,162	81.62	6	8	2,228	278.50
1981	NULL	NULL	NULL	NULL	47	143	12,102	84.63	7	12	756	63.00
1982	NULL	NULL	NULL	NULL	48	163	8,291	50.87	8	15	410	27.33
1983	NULL	NULL	NULL	NULL	48	146	9,009	61.71	9	34	4,121	121.21
1984	NULL	NULL	NULL	NULL	58	179	12,944	72.31	29	206	201,848	979.84
1985	NULL	NULL	NULL	NULL	71	309	20,846	67.46	18	151	61,895	409.90
1986	NULL	NULL	NULL	NULL	80	302	27,200	90.07	9	10	375	37.50
1987	4	22	1,831	83.23	62	158	16,310	103.23	17	59	5,735	97.20
1988	n.d.	n.d.	n.d.	n.d.	47	179	12,475	69.69	6	19	5,275	277.63
1989	n.d.	n.d.	n.d.	n.d.	32	134	11,790	87.99	4	8	1,326	165.75
1990	5	87	343,102	3,943.7	32	130	16,118	123.98	14	30	2,694	89.80
1991	n.d.	n.d.	n.d.	n.d.	44	161	22,789	141.55	6	11	852	77.45
1992	n.d.	n.d.	n.d.	n.d.	71	316	34,291	108.52	4	21	2,363	112.52

Year	Shrimp Trap				Kona Crab Net (Loop)				All Other Gear Types			
	No. Lic.	No. Trips	Lbs. Caught	CPUE	No. Lic.	No. Trips	Lbs. Caught	CPUE	No. Lic.	No. Trips	Lbs. Caught	CPUE
1993.1	n.d.	n.d.	n.d.	n.d.	66	309	25,305	81.89	n.d.	n.d.	n.d.	n.d.
1993.2	n.d.	n.d.	n.d.	n.d.	50	151	15,464	102.41	NULL	NULL	NULL	NULL
1994	5	86	85,657	996.01	69	255	19,575	76.76	n.d.	n.d.	n.d.	n.d.
1995	4	140	70,737	505.26	84	327	27,741	84.83	NULL	NULL	NULL	NULL
1996	8	114	34,973	306.78	83	283	27,603	97.54	n.d.	n.d.	n.d.	n.d.
1997	6	51	22,792	446.90	82	289	28,043	97.03	n.d.	n.d.	n.d.	n.d.
1998	7	129	181,912	1,410.17	91	299	30,639	102.47	4	10	516	51.60
1999	5	75	34,440	459.20	81	221	18,698	84.61	n.d.	n.d.	n.d.	n.d.
2000	n.d.	n.d.	n.d.	n.d.	62	152	14,143	93.05	n.d.	n.d.	n.d.	n.d.
2001	4	81	9,313	114.98	59	158	10,763	68.12	n.d.	n.d.	n.d.	n.d.
2002	n.d.	n.d.	n.d.	n.d.	61	191	11,666	61.08	n.d.	n.d.	n.d.	n.d.
2003	n.d.	n.d.	n.d.	n.d.	49	158	11,841	74.94	n.d.	n.d.	n.d.	n.d.
2004	n.d.	n.d.	n.d.	n.d.	48	167	12,164	72.84	n.d.	n.d.	n.d.	n.d.
2005	5	178	114,789	644.88	46	161	9,937	61.72	n.d.	n.d.	n.d.	n.d.
2006	n.d.	n.d.	n.d.	n.d.	35	128	6,749	52.73	n.d.	n.d.	n.d.	n.d.
2007	n.d.	n.d.	n.d.	n.d.	31	187	9,773	52.26	4	13	142	10.90
2008	n.d.	n.d.	n.d.	n.d.	36	201	10,940	54.43	4	42	456	10.86
2009	n.d.	n.d.	n.d.	n.d.	41	191	9,097	47.63	n.d.	n.d.	n.d.	n.d.
2010	n.d.	n.d.	n.d.	n.d.	46	178	9,913	55.69	4	44	282	6.40
2011	4	69	8,098	117.36	46	171	10,945	64.00	6	40	104	2.61
2012	5	143	11,894	83.18	35	120	7,980	66.50	n.d.	n.d.	n.d.	n.d.
2013	10	196	18,333	93.54	33	83	7,330	88.32	n.d.	n.d.	n.d.	n.d.
2014	9	323	48,707	150.80	24	59	2,029	34.38	n.d.	n.d.	n.d.	n.d.
2015	6	201	28,775	143.16	25	61	3,049	49.99	n.d.	n.d.	n.d.	n.d.
2016	5	133	17,203	129.35	17	30	1,230	41.00	n.d.	n.d.	n.d.	n.d.
2017	n.d.	n.d.	n.d.	n.d.	17	45	2,131	47.36	n.d.	n.d.	n.d.	n.d.
2018	n.d.	n.d.	n.d.	n.d.	18	49	2,528	51.60	n.d.	n.d.	n.d.	n.d.
2019	n.d.	n.d.	n.d.	n.d.	23	70	5,650	80.71	n.d.	n.d.	n.d.	n.d.
<b>10-yr avg.</b>	<b>5</b>	<b>149</b>	<b>16,648</b>	<b>109</b>	<b>28</b>	<b>87</b>	<b>5,279</b>	<b>58</b>	<b>n.d.</b>	<b>n.d.</b>	<b>n.d.</b>	<b>n.d.</b>
<b>20-yr avg.</b>	<b>4</b>	<b>104</b>	<b>17,984</b>	<b>170</b>	<b>38</b>	<b>128</b>	<b>7,993</b>	<b>61</b>	<b>n.d.</b>	<b>n.d.</b>	<b>n.d.</b>	<b>n.d.</b>

NULL = no available data; n.d. = non-disclosure due to data confidentiality  
1993.1 = Fiscal Year 1993; 1993.2 = July-December of calendar year 1993.

## **1.5 PRECIOUS CORALS FISHERY**

### **1.5.1 Fishery Descriptions**

This species group is comprised of any coral of the genus *Corallium* in addition to pink coral (also known as red coral, *Corallium secundum*, *C. regale*, *C. laauense*), gold coral (*Gerardia* spp., *Callogorgia gilberti*, *Narella* spp., *Calyptraphora* spp.), bamboo coral (*Lepidisis olapa*, *Acanella* spp.), and black coral (*Antipathes griggi*, *A. grandis*, *A. ulex*).

Only selective gear may be used to harvest corals in federal waters. The top gear for this species group is submersible.

### **1.5.2 Dashboard Statistics**

Future reports will include data as resources allow.

### **1.5.3 Other Statistics**

Commercial fishery statistics for the last ten years are unavailable due to confidentiality, as the number of federal permit holders since 2007 has been fewer than three. Future reports will include data as resources and reporting confidentiality thresholds allow.