Coastal Fisheries Creel Report Card

2023

NUKULAELAE

Introduction

This Coastal Fisheries Creel Report Card summarises the results of monitoring key indicators during creel surveys being carried out by Tuvalu Fisheries Department.

The Key indicators we use to show the health of the resources and state of overfishing are:

Indicator 1: Percentage of fishes that are landed which are smaller than the size at which at least 50% of the fish can breed (called length at maturity, Lm). This value should decline and approach zero as management actions improve, followed by improvements in the fisheries resources.

This is an indicator of **overfishing**.

Indicator 2: Catch of fishes per unit of effort (CPUE). We use the weight (kg) of fishes being landed: (a) per fisher per hour spent fishing and (b) per fishing trip. The values for Indicator 2 should increase as things improve. That is, fishers should be able to catch more fish in less time.

This is an indicator of the **abundance** of the fishery as well as the **efficiency** of the fishing method.

Results

The overall status of Nukulaelae's coastal resources is poor, with an average of 66% of the fishes caught being undersized from 2016-2023. This is well above the national average of 41%.

The ideal % of fishes being landed that are undersized is 0, so any actions that will reduce this to lower levels is a step in the right direction and is expected to lead to improvements in the resources.

IDEAL: % UNDERSIZED should DECLINE over time and approach 0%

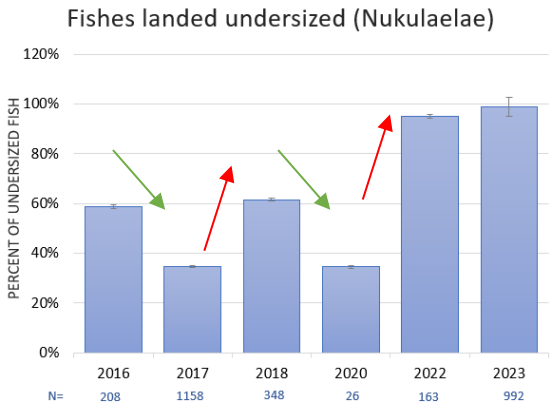

***Figure 1**: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.*

Green arrow = good trend
red arrow = bad trend

In Nukulaelae, there was a decrease in the percentage of undersized fish landed in 2017, which is a good sign. However, this increased in 2018. In 2020, the trend reversed and the number of undersized fish being landed decreased. No coastal fisheries data is available for 2019. For 2021, there is limited data for

coastal fisheries, with no known size at maturity. Yet, in 2022 it increased to triple the size of 2020 and almost 100% of fish landed in 2023 were undersized.

Every fish should have the chance to breed at least once to ensure the resources can be replenished.

Indicator 2a, the total weight of fish being landed per fisher per hour spent fishing, appears to have increased in 2017 for trolling and handlining. The CPUE also increased in 2018 for net fishing (Figure 2).

There is insufficient data for 2022 and 2023 to calculate CPUE for Nukulaelae for indicator 2a.

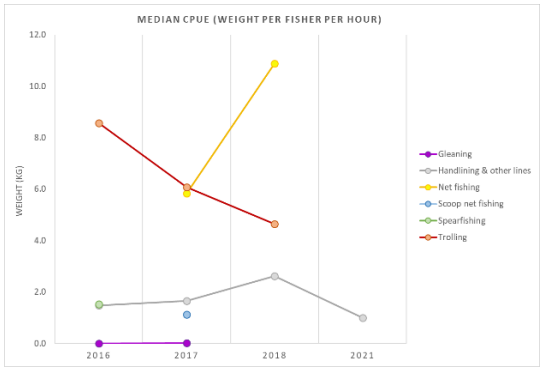

Figure 2: Indicator 2a. Weight (in kg) of fishes landed per fisher per hour spent fishing in Nukulaelae. Fishing hours data is not available for trolling and handlining in 2018.

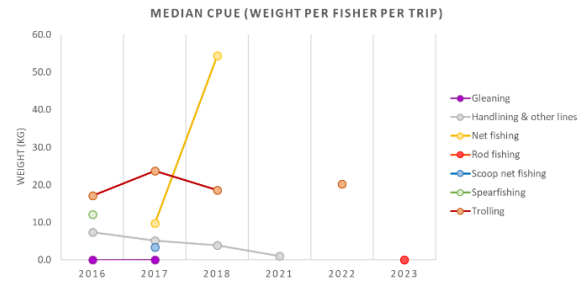

Figure 3: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip across in Nukulaelae. Fishing method data is only available for 2016-2018.

The weight of fishes landed per fisher per entire fishing trip as Indicator 2b (Figure 3) generally showed a similar trend to Indicator 2a (weight per fisher per hour). More data is needed for this trend to be meaningfully interpreted. For example, the data gleaning from 2016 and 2017, and net fishing in 2018, are each based on one fishing trip.

Catch per unit of effort (CPUE) should INCREASE over time in a well-managed fishery.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). These pelagic species accounted for 51% of the species landed that were recorded in the creel surveys (2016-2023). No data is available for 2019. Figure 4 compares the percentage of pelagic and coastal species in the survey years.

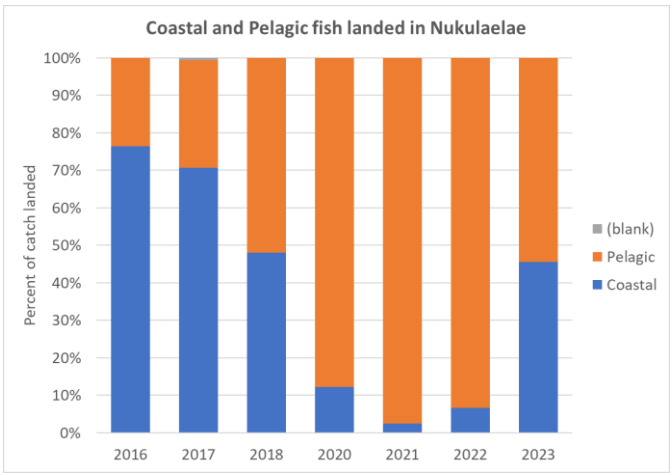

***Figure 4:** Graph contrasting Coastal and Pelagic fish landed per Year in Nukulaelae.*

Conclusions

Overall, there has been minimal improvement to the health of coastal fisheries since surveys begun. More data is needed to better understand the trends in the status of Nukulaelae coastal fisheries resources.

'Laeva Ataeao' - Nukulaelae Coastal Fisheries Management Plan needs to be effectively implemented to improve Nukulaelae coastal resources.

Why are some figures different from the previous report card?

This is due to a number of reasons:

1. We have received more data from the years 2015-2019
2. We have more accurate information on size of maturity from recently published studies
3. We have now included size of maturity data for 30 extra species
4. We have displayed CPUE by fishing method

Appendix I: Size of maturity (L_m) for top species

Table 1 is part of indicator 1. It shows the breakdown of species that have 50% or more fishes landed that are undersized. A value of 100 means that all fishes landed are undersized. The ideal value for a well-managed fishery is 0. Blank cells indicate that no catch has been recorded for that species in that year. This table shows that many of the species being monitored are being caught undersized, and this varies by year.

The species are listed in order of their abundance in the catch landed (% of total catch).

Table 1: List of species for which size at maturity (L_m) is known, showing percentages landed which are undersized (2016-2023)

No.	Scientific Names	Local Name	Sum of weight	2016	2017	2018	2020	2022	2023	Grand Total
1	Caranx melampygus	Aseu	18.6%	80%	46%	77%	67%	95%	99%	89%
2	Caranx lugubris	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	13.8%		95%			100%	100%	99%
3	Hipposcarus longiceps	Ulafi	9.8%		3%	32%				5%
4	Lutjanus gibbus	Taea	9.5%	72%	52%	89%	0%	80%	100%	72%
5	Elagatis bipinnulata	Kami, Kamai	8.3%	80%	67%	33%	0%	100%	92%	81%
6	Caranx sexfasciatus	Teu	5.3%		42%	80%			100%	53%
7	Epinephelus maculatus	Fapuku	4.6%		44%	20%			100%	75%
8	Crenimugil crenilabis	Kanase	3.0%					100%	99%	99%
9	Lethrinus obsoletus	Tanutanu	2.1%	6%	44%	29%			100%	41%
10	Lethrinus microdon	Filoa, Kapatiko	2.0%			100%		100%	100%	100%
11	Epinephelus fuscoguttatus	Munua	2.0%		50%	100%			100%	80%
12	Lethrinus microdon	Kapatiko	1.5%	0%	29%	0%			100%	33%
13	Lutjanus bohar	Fakamea, Fagamea	1.5%	100%	100%			100%	100%	100%
14	Carangoides plagiotaenia	Aseu ululi	1.4%			100%			98%	98%
15	Macolor macularis	Tonu	1.4%		100%	7%				13%
16	Siganus argenteus	Maiava	1.3%					100%	100%	100%
17	Naso caesius	Ume (Ff?), pokapoka (Nm?)	1.2%		6%					6%
18	Naso unicornis	Ume, Pokapoka	1.2%		11%	0%				10%
19	Naso lituratus	Maninilakau	1.2%		0%	0%				0%
20	Lethrinus amboinensis	Noto, Gutulo, Sapotu	1.1%	0%	0%				85%	35%
21	Aphareus furca	Palusega, Kotua, Taelepe, Takuoga	0.9%		85%			100%	100%	94%

22	Kyphosus vaigiensis	Nanue (Ff, Nm)	0.8%		42%	0%			38%
23	Epinephelus macrospilos	Gatala (Ff), fÄpuku (Nm)	0.7%		92%	50%			90%
24	Sphyraena forsteri	Taotao	0.7%			0%			0%
25	Monotaxis grandoculis	Muu, Mufala	0.6%	29%	29%				29%
26	Decapterus macarellus	Atule	0.5%		0%				0%
27	Plectropomus leopardus	Tonu	0.5%		0%				0%
28	Lethrinus variegatus	Noto, Tanutanu	0.4%	0%	0%				0%
29	Fistularia petimba	Taotaoama (NB, Tvd)	0.4%		100%				100%
30	Cephalopholis argus	Loi	0.4%	0%	17%	0%		100%	26%
31	Acanthurus triostegus	Manini, Koinava	0.4%			42%	38%		41%
32	Myripristis berndti	Malau	0.4%					100%	100%
33	Lutjanus monostigma	Taiva	0.3%	0%	18%	0%			14%
34	Ctenochaetus binotatus	Pone uli	0.3%		13%	25%			15%
35	Myripristis violacea	Malau	0.3%					100%	100%
36	Lethrinus erythracanthus	Saputu	0.2%		0%			100%	50%
37	Aprion virescens	Utu	0.2%			0%			0%
38	Lutjanus kasmira	Savane	0.2%		100%			100%	100%
39	Epinephelus merra	Gatalaliki	0.2%	0%	0%			50%	6%
40	Lutjanus fulvus	Tagau,Takape	0.2%	0%	100%	0%		100%	70%
41	Sargocentron spiniferum	Tamalau	0.2%	100%	50%				60%
42	Lutjanus argentimaculatus	Tagau	0.1%		100%	100%		100%	100%
43	Caranx ignobilis	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	0.1%				100%		100%
44	Myripristis pralinia?	Malau puku	0.1%		0%			100%	64%
45	Liza vaigiensis	Kafakafa	0.1%		0%	0%	100%		25%
46	Myripristis adusta	Malau fagamea, Malau matakelkele	0.1%		43%				43%
47	Naso vlamingii	Pokapoka lanulanu	0.1%		50%				50%
48	Acanthurus lineatus	Ponelolo, Alogo, Pone hamoa	0.1%		100%				100%
49	Lethrinus xanthochilus	Tanutanu	0.1%				0%		0%
50	Lethrinus nebulosus	Tanutanu, Morikoi	0.0%					100%	100%
	Grand Total			59%	38%	61%	35%	95%	99%	66%