Coastal Fisheries Creel Report Card

2023

VAITUPU

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

Overall status of Vaitupu's coastal resources is poor, with an average of 58% of the fishes caught being undersized from 2015-2023. 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%

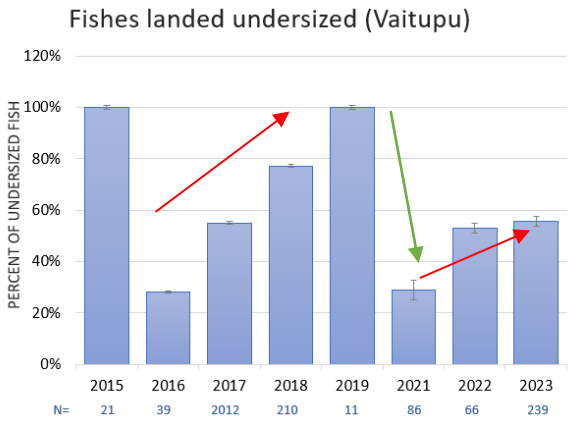

***Figure 1**: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.*

Green arrow = good trend
red arrow = bad trend

There was a significant increase in the percentage of undersized fish landed in Vaitupu between 2016 and 2019 (although there is not much data for 2019). This trend reversed in 2021, which is a good signal. The trend increased again in 2022 and slightly climbed in 2023.

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

For Indicator 2a, the total weight of fish being landed per fisher per hour spent fishing shows a slight decline for most fishing methods between 2017 and 2018. The CPUE for trolling appears to have increased in 2019, but is based on only 2 creel surveys (Figure 2). However, there is not much difference in Indicator 2a throughout 2017 and 2023.

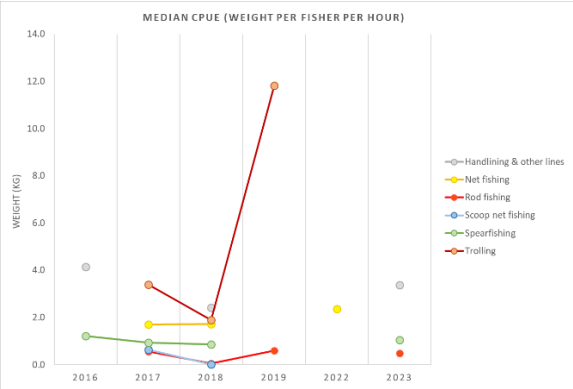

Figure 2: Indicator 2a. Weight (in kg) of fishes landed per fisher per hour spent fishing across Tuvalu 2015-2021. There was no method data available for 2020.

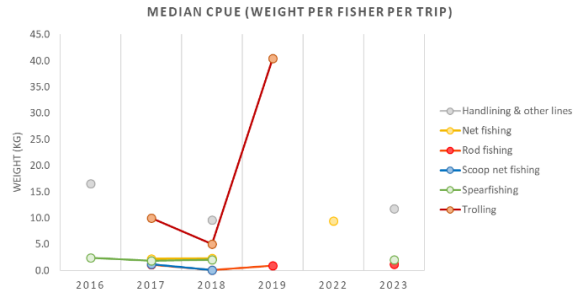

Figure 3: Indicator 2b. (in kg) of fishes landed per fisher per fishing trip across Tuvalu 2015-2021.

The weight of fishes landed per fisher per entire fishing trip as Indicator 2b show similar trends to Indicator 2a – there is a slight decline between 2017 and 2018 for all fishing methods, and an increase in trolling in 2019 (Figure 3).

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

Note: The catch reported does not include offshore fish species such as Atu (skipjack tuna). These pelagic species accounted for 24% of the species landed that were recorded in the creel surveys (2015-2023). Figure 4 compares the percentage of pelagic and coastal species in the survey years.

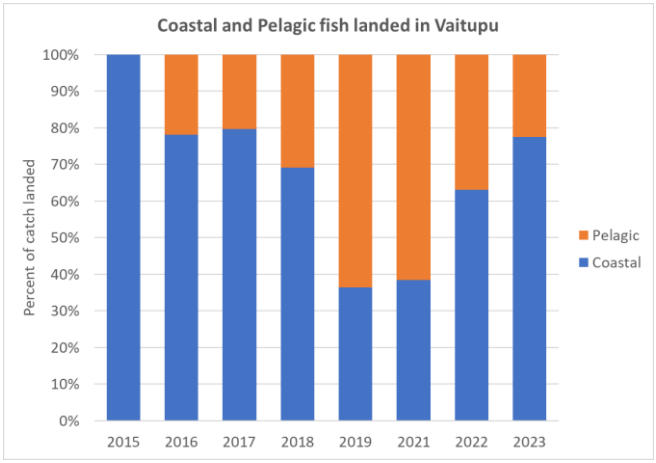

***Figure 4:** Table contrasting Coastal and Pelagic fish landed per Year in Vaitupu.*

Conclusions

Overall, there has been little improvement in the health of coastal fisheries since surveys began. The data suggest that between 2017 and 2018 there was more effort being used to catch fish – a greater number of which were undersized. More consistent data is needed to better understand these trends.

'Te Lagai' – the Vaitupu Coastal Fisheries Management Plan (CFMP) needs to be effectively implemented in order to improve Vaitupu 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 50 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 fish 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 (2015-2021)

No.	Species	Local Name	% Sum of weight of Total catch	2016	2017	2018	2019	2021	2022	2023	Grand Total
1	Siganus argenteus	Maiava	36.1%							0.0%	0.0%
2	Crenimugil crenilabis	Kanase	18.9%		65.1%	100.0%			0.0%	55.0%	64.1%
3	Acanthurus triostegus	Manini, Koinava	8.4%	24.0%	44.8%	76.9%		13.8%	27.3%	13.6%	48.9%
4	Liza vaigiensis	Kafakafa	6.4%		84.2%			100.0%		100.0%	84.7%
5	Kyphosus vaigiensis	Nanue (Ff, Nm)	3.5%		86.8%						86.8%
6	Caranx ignobilis	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	3.0%		66.7%		100.0%		100.0%		88.9%
7	Caranx melampygus	Aseu	2.1%		0.0%					61.9%	50.0%
8	Lutjanus fulvus	Tagau,Takape	2.0%		28.7%			30.8%	0.0%	28.6%	28.7%
9	Epinephelus macrospilos	Gatala (Ff), fÄ puku (Nm)	1.7%	100.0%	100.0%	100.0%	100.0%			100.0%	100.0%
10	Lutjanus monostigma	Taiva	1.5%	0.0%	52.7%			100.0%		66.7%	55.6%
11	Elagatis bipinnulata	Kami, Kamai	1.5%		66.7%		100.0%	100.0%			80.0%
12	Plectropomus areolatus	Tonu gatala	1.4%		88.9%						88.9%
13	Lethrinus microdon	Kapatiko	1.1%							0.0%	0.0%
14	Naso lituratus	Maninilakau	1.1%		0.0%						0.0%
15	Plectropomus leopardus	Tonu	1.0%		0.0%						0.0%
16	Lethrinus obsoletus	Tanutanu	1.0%		44.4%		100.0%	20.0%	42.9%	58.3%	57.1%
17	Caranx lugubris	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	0.8%							0.0%	0.0%

18	Caranx sexfasciatus	Teu	0.8%	100.0%	84.6%		100.0%	100.0%		90.9%
19	Acanthurus nigricauda	Kapalagi, Pone	0.7%		0.0%					0.0%
20	Acanthurus lineatus	Ponelolo, Alogo, Pone hamoa	0.7%	0.0%	28.6%	80.0%				43.8%
21	Epinephelus merra	Gatalaliki	0.6%		21.4%		100.0%	0.0%	11.1%	20.8%
22	Parupeneus barberinus	Malili, Kaivete	0.6%		6.9%					6.9%
23	Hipposcarus longiceps	Ulafi	0.5%		16.7%					16.7%
24	Epinephelus maculatus	Fapuku	0.4%		100.0%					100.0%
25	Selar crumenophthalmus	Salala, Atule	0.3%					100.0%	100.0%	100.0%
26	Monotaxis grandoculis	Muu, Mufala	0.3%		28.6%					28.6%
27	Parupeneus cyclostomus	Kaivete piniki	0.3%		56.3%					56.3%
28	Anyperodon leucogrammicus	Gatala lautalo, Gatala lautala	0.3%		100.0%					100.0%
29	Chlorurus (Scarus) microrhino	Laea	0.3%		66.7%					66.7%
30	Selar boops	Salala, Atule	0.2%					100.0%	100.0%	100.0%
31	Myripristis violacea	Malau	0.2%	0.0%			0.0%			0.0%
32	Ctenochaetus binotatus	Pone uli	0.2%	16.7%	22.2%					20.0%
33	Naso caesius	Ume (Ff?), pokapoka (Nm?)	0.2%		0.0%					0.0%
34	Epinephelus polyphekadion	Gatala (one dot)	0.2%		0.0%					0.0%
35	Decapterus macarellus	Atule	0.2%		100.0%				60.0%	71.4%
36	Cephalopholis argus	Loi	0.2%		0.0%			100.0%	100.0%	50.0%
37	Epinephelus fasciatus	Gatala	0.2%		0.0%					0.0%
38	Lethrinus variegatus	Noto, Tanutanu	0.1%		16.7%					16.7%

39	Mulloidichthys vanicolensis	Kalo	0.1%		0.0%					0.0%
40	Naso vlamingii	Pokapoka lanulanu	0.1%		0.0%					0.0%
41	Lethrinus microdon	Filoa, Kapatiko	0.1%						0.0%	0.0%
42	Lutjanus argentimaculatus	Tagau	0.1%	100.0%	100.0%					100.0%
43	Cephalopholis urodeta	Mataele	0.1%		60.0%					60.0%
44	Myripristis pralinia?	Malau puku	0.1%		0.0%					0.0%
45	Myripristis berndti	Malau	0.1%		33.3%					33.3%
46	Sargocentron spiniferum	Tamalau	0.1%	100.0%	50.0%					66.7%
47	Parupeneus multifasciatus	Afulu	0.1%		0.0%					0.0%
48	Epinephelus miliaris	Gatala	0.1%					100.0%		100.0%
49	Lethrinus miniatus	Noto	0.1%		100.0%					100.0%
50	Aphareus furca	Palusega, Kotua, Taelepe, Takuoga	0.0%		100.0%				100.0%	100.0%
	Grand Total			58.8%	56.2%	80.2%	100.0%	29.1%	53.0%	55.6%	57.9%