Coastal Fisheries Creel Report Card

2022

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 **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. This is well above the national average of 36%.

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%

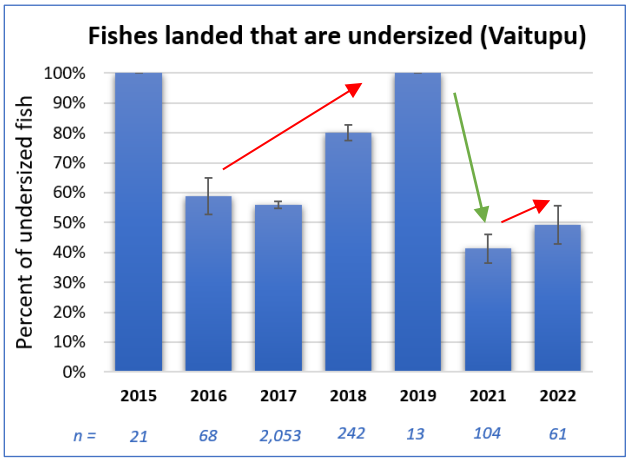

***Figure 1**: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.*

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. This trend was reversed in 2021, which is a good signal. However, in 2022, the number of fish landed undersized increased slightly.

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

For Indicator 2, CPUE increases between 2015 and 2017, and then decreases in 2018 (see Figure 2). After 2018, the weight of fish being landed per fisher per hour spent fishing shows an opposite trend to the weight of fish per fisher per trip. This difference could be due to different fishing methods being captured in the creel surveys, or a change in the duration of fishing trips. More data is needed to better understand this.

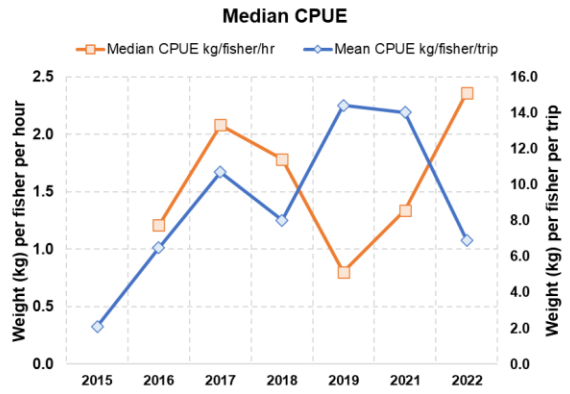

***Figure 2**: Indicator 2. (a) Weight (in kg) of fishes landed per fisher per hour spent fishing and (b) Weight of fishes landed per fisher per trip in Vaitupu from 2015-2022. There is no data for 2020.*

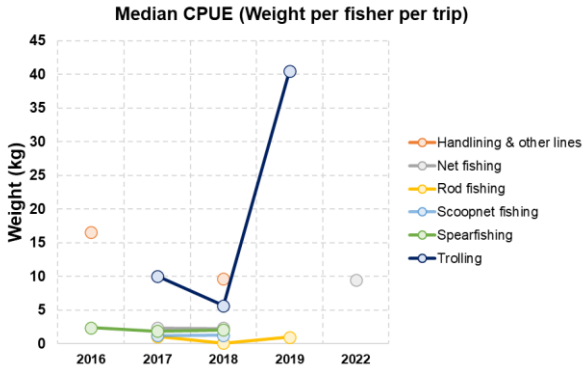

***Figure 3**: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip in Vaitupu (2015-2021).*

Indicator 2b, the weight of fishes landed per fisher per entire fishing trip, shows a slight decline for most fishing methods between 2016 and 2018 (Figure 3). The CPUE for trolling appears to have increased in 2019, but is based on only 2 creel surveys. In 2022, there is only data available for net fishing.

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

Conclusions

Overall, there has been some improvement to the health of coastal fisheries. The percentage of fish landed undersize decreased in 2021, and slightly increased in 2022. A coastal fisheries management plan is being developed in order to implement measures that will bring more consistent improvements to Vaitupu's coastal fisheries.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). Although these pelagic species accounted for 24% of the total catch numbers, they contributed to majority (80%) of the biomass recorded in the creel surveys (2015-2022).

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 2015-2021
2. Instead of using the average CPUE, which can be influenced by really low or really high numbers, we report median CPUE

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 (2015-2022)

	Species	Local Name	% in catch	2015	2016	2017	2018	2019	2021	2022	Grand Total
1	*Acanthurus lineatus*	Ponelolo, Alogo, Pone hamoa	1.2%		0%	29%	80%				44%
2	*Acanthurus nigricauda*	Kapalagi, Pone	0.1%			0%					0%
3	*Acanthurus triostegus*	Manini, Koinava	37.1%		24%	45%	77%		14%	27%	50%
4	*Anyperodon leucogrammicus*	Gatala lautalo, Gatala lautala	0.9%			100%					100%
5	*Aphareus furca*	Palusega, Kotua, Taelepe, Takuoga	0.0%			100%					100%
6	*Caranx ignobilis*	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	0.3%			67%		100%		100%	89%
7	*Caranx melampygus*	Aseu, Ulua, Fuaika	0.5%			0%					0%
8	*Caranx sexfasciatus*	Teu	0.6%		100%	85%			100%		88%
9	*Cephalopholis argus*	Loi	0.1%			0%				100%	33%
10	*Cephalopholis urodeta*	Mataele	0.2%			60%					60%
11	*Chlorurus (Scarus) microrhino*	Laea	0.1%			67%					67%
12	*Crenimugil crenilabis*	Kanase	19.9%	100%		65%	100%			0%	64%
13	*Ctenochaetus binotatus*	Pone uli	0.6%		17%	22%					20%
14	*Decapterus macarellus*	Atule	0.1%			100%					100%
15	*Elagatis bipinnulata*	Kamai, Kamaa, Kami	0.2%			67%		100%	100%		80%
16	*Epinephelus fasciatus*	Gatala	0.1%			0%					0%
17	*Epinephelus macrospilos*	Gatala, fapuku	4.3%		100%	100%	100%	100%			100%
18	*Epinephelus maculatus*	Fapuku	1.2%			100%					100%
19	*Epinephelus merra*	Gatalaliki	2.4%			21%			100%	0%	24%
20	*Epinephelus miliaris*	Gatala	0.2%						100%		100%
21	*Epinephelus polyphekadion*	Gatala (one dot)	0.0%			0%					0%
22	*Hipposcarus longiceps*	Ulafi	0.2%			17%					17%
23	*Kyphosus vaigiensis*	Nanue (Ff, Nm)	2.5%			87%					87%
24	*Lethrinus miniatus*	Noto	0.2%			100%					100%
25	*Lethrinus obsoletus*	Tanutanu	1.6%			44%		100%	20%	43%	57%

26	*Lethrinus variegatus*	Noto, Tanutanu	0.2%			17%					17%
27	*Liza vaigiensis*	Kafakafa	10.0%			84%			100%		85%
28	*Lutjanus argentimaculatus*	Tagau	0.2%		100%	100%					100%
29	*Lutjanus fulvus*	Tagau,Takape	4.6%			29%			31%	0%	29%
30	*Lutjanus gibbus*	Taea	0.0%			100%					100%
31	*Lutjanus monostigma*	Taiva	2.2%		0%	53%			100%		55%
32	*Monotaxis grandoculis*	Muu, Mufala	0.3%			29%					29%
33	*Mulloidichthys vanicolensis*	Kalo	0.3%			0%					0%
34	*Myripristis berndti*	Malau	0.2%			33%					33%
35	*Myripristis pralinia?*	Malau puku	0.3%			0%					0%
36	*Myripristis violacea*	Malau	0.9%		0%				0%		0%
37	*Naso caesius*	Ume, pokapoka	0.0%			0%					0%
38	*Naso lituratus*	Maninilakau	0.9%			0%					0%
39	*Naso vlamingii*	Pokapoka lanulanu	0.1%			0%					0%
40	*Parupeneus barberinus*	Malili, Kaivete	1.1%			7%					7%
41	*Parupeneus cyclostomus*	Kaivete piniki	0.6%			56%					56%
42	*Parupeneus multifasciatus*	Afulu	0.1%			0%					0%
43	*Plectropomus areolatus*	Tonu gatala	0.7%			89%					89%
44	*Plectropomus leopardus*	Tonu	0.1%			0%					0%
45	*Sargocentron spiniferum*	Tamalau	0.1%		100%	50%					67%
46	*Selar boops*	Salala, Atule	0.1%							100%	100%
47	*Selar crumenophthalmus*	Salala, Atule	1.9%							100%	100%
	Grand Total		**100.0%**	**100%**	**59%**	**56%**	**80%**	**100%**	**41%**	**49%**	**58%**