Coastal Fisheries Creel Report Card

2022

NANUMAGA

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 Nanumaga's coastal resources is poor, with an average of 53% of the fishes caught being undersized between 2016 and 2021. This is well above the national average of 36%.

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

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

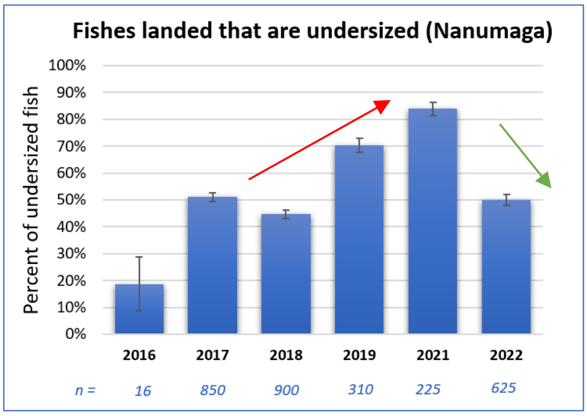

***Figure 1**: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.*

Green arrow = good trend
red arrow = bad trend

Indicator 1 generally increased from 2016 to 2021 (although it decreased slightly in 2018). This upward trend is not a good sign because it means that higher percentages of fish are being landed undersize. However, this trend reversed in 2022 – potentially showing signs of improvement. There is no coastal fisheries data available for 2020.

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

For Indicator 2, the weight of fish being landed per fisher per hour spent fishing and the total weight landed per fisher per fishing trip have fluctuated between 2016 and 2022 (see Figure 2). CPUE was quite low in 2018 and 2021. CPUE was highest in 2020, however, from Figure 3 we see that this is only because trolling data was recorded in 2020.

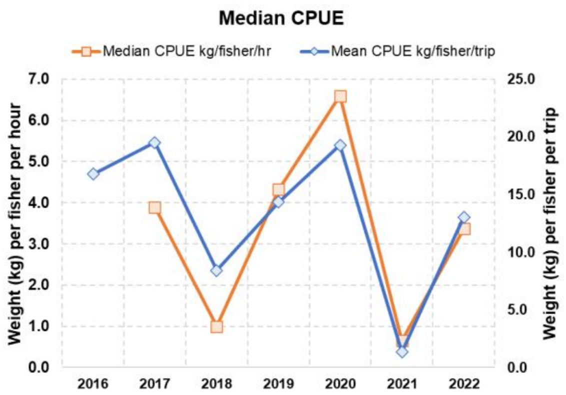

__Figure 2__: Indicator 2. (a) Weight (in kg) of fishes landed per fisher per hour spent fishing and (b) Weight of fishes landed per fisher per trip in Nanumaga from 2016-2022.

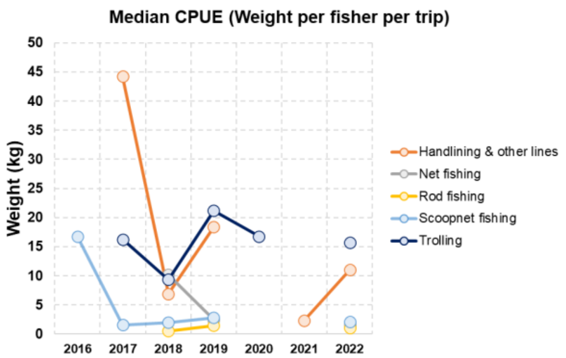

__Figure 3__: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip in Nanumaga 2016-2021.

The weight of fishes landed per fisher per entire fishing trip as Indicator 2b (i.e., not per hour) is different depending on the fishing method. For scoopnet fishing, indicator 2b declined in 2017, and then stabilised (Figure 3). For handlining and trolling, there was a decline between 2017 and 2018 and this improved in 2019. This is in contrast to net fishing where the returns decreased between 2018 and 2019. More data is needed to interpret these differences.

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. Since 2016, there has been a gradual increase in the percentage of fish landed undersize. However, this trend was reversed in 2022. To bring more consistent improvements to Nanumaga's coastal fisheries, a coastal fisheries management plan is being developed and will be implemented in 2024.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). Majority of the landings recorded were pelagic: they accounted for 71% of the total catch numbers and 96% of the biomass recorded in the creel surveys (2016-2022).

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 (2016-2022)

	Species	Local Name	% in catch	2016	2017	2018	2019	2021	2022	Grand Total
1	*Acanthurus lineatus*	Ponelolo, Alogo, Pone hamoa	0.0%		100%					100%
2	*Acanthurus triostegus*	Manini, Koinava	25.5%		20%	23%	40%		22%	23%
3	*Acanthurus xanthopterus*	Kapalagi, Maa	0.0%		0%					0%
4	*Anyperodon leucogrammicus*	Gatala lautalo, Gatala lautala	2.0%		100%					100%
5	*Aphareus furca*	Palusega, Kotua, Taelepe, Takuoga	6.3%			100%		100%	100%	100%
6	*Aprion virescens*	Utu	0.1%		0%			0%		0%
7	*Caranx ignobilis*	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	0.4%		100%				100%	100%
8	*Caranx lugubris*	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	8.6%		87%	100%		83%	82%	85%
9	*Caranx melampygus*	Aseu, Ulua, Fuaika	3.1%		0%	63%	92%	0%	73%	72%
10	*Caranx sexfasciatus*	Teu	0.7%		50%	87%		0%	0%	70%
11	*Cephalopholis argus*	Loi	0.1%			0%				0%
12	*Cephalopholis sexmaculata*	Mataele	0.9%						100%	100%
13	*Cephalopholis urodeta*	Mataele	0.1%		100%			0%	100%	75%
14	*Crenimugil crenilabis*	Kanase	0.5%	0%	0%	50%				7%
15	*Decapterus macarellus*	Atule	1.3%		46%					46%
16	*Elagatis bipinnulata*	Kamai, Kamaa, Kami	7.6%		83%	83%	100%		50%	83%
17	*Epinephelus macrospilos*	Gatala (Ff), fÄ�puku (Nm)	2.9%			87%	83%			86%
18	*Epinephelus merra*	Gatalaliki	5.0%		3%	83%			0%	14%
19	*Epinephelus polyphekadion*	Gatala (one dot)	0.1%						100%	100%
20	*Kyphosus cinerascens*	Nanue	1.6%			0%	100%		9%	70%
21	*Kyphosus vaigiensis*	Nanue (Ff, Nm)	5.5%		62%	40%	99%		100%	90%
22	*Lethrinus erythracanthus*	Saputu	0.5%			93%				93%
23	*Lethrinus microdon*	Filoa, Kapatiko	0.2%			100%			0%	86%
24	*Lethrinus obsoletus*	Tanutanu	0.1%			67%				67%
25	*Liza vaigiensis*	Kafakafa	0.6%	33%	0%					17%
26	*Lutjanus argentimaculatus*	Tagau	0.1%			100%				100%
27	*Lutjanus bohar*	Fakamea, Fagamea	0.6%			0%		67%	100%	67%

28	*Lutjanus fulvus*	Tagau,Takape	2.3%		68%	33%			0%	65%
29	*Lutjanus kasmira*	Savane	0.0%			0%				0%
30	*Lutjanus monostigma*	Taiva	1.2%		100%	28%	0%		67%	32%
31	*Monotaxis grandoculis*	Muu, Mufala	0.3%		100%	50%			100%	63%
32	*Mugil cephalus*	Kanase	0.1%						67%	67%
33	*Myripristis berndti*	Malau	0.2%			100%				100%
34	*Myripristis pralinia?*	Malau puku	6.9%			7%				7%
35	*Naso lituratus*	Maninilakau	0.1%						33%	33%
36	*Naso vlamingii*	Pokapoka lanulanu	0.1%		0%					0%
37	*Parupeneus barberinus*	Malili, Kaivete	0.2%		100%					100%
38	*Parupeneus cyclostomus*	Kaivete piniki	0.2%			33%				33%
39	*Parupeneus multifasciatus*	Afulu	0.1%		0%			0%		0%
40	*Plectropomus areolatus*	Tonu gatala	0.0%					100%		100%
41	*Sargocentron spiniferum*	Tamalau	0.4%			40%	50%			42%
42	*Sargocentron tiere*	Malau gutu loa, Malua mata loa	12.2%			55%	8%			49%
43	*Selar crumenophthalmus*	Salala, Atule	1.0%						75%	75%
	Grand Total		**100.0%**	**19%**	**51%**	**45%**	**70%**	**84%**	**50%**	**53%**