Coastal Fisheries Creel Report Card

2022

NANUMEA

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 Nanumea's coastal resources is poor, with an average of 39% of the fishes caught being undersized between 2016 and 2021. This is similar to 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.

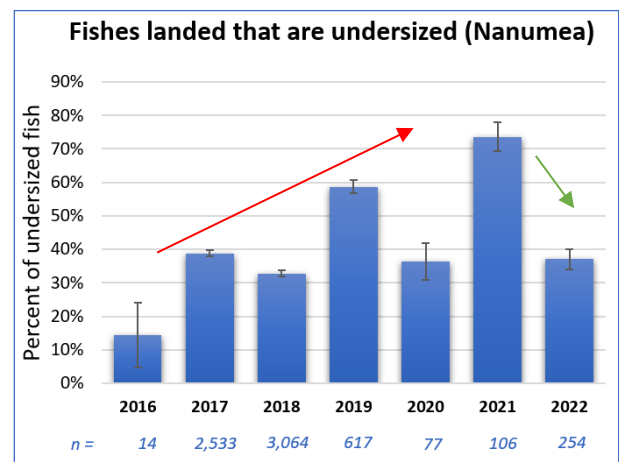> **IDEAL:** % UNDERSIZED should DECLINE over time and approach 0%

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

Indicator 1 generally increased from 2016 to 2021 (although it decreased slightly in 2018 and 2020). 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.

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 reached a peak in 2017 and 2022, and was the lowest in 2020. For most years, weight of fish landed per fisher per hour follows a similar trend to weight of fish landed per fisher per trip. However, in 2021 and 2022 CPUE per fisher per hour increased much more compared to per fisher per trip. This could mean that the trips were shorter in duration, or that different types of fishing methods were dominantly recorded in these two years, compared with other years.
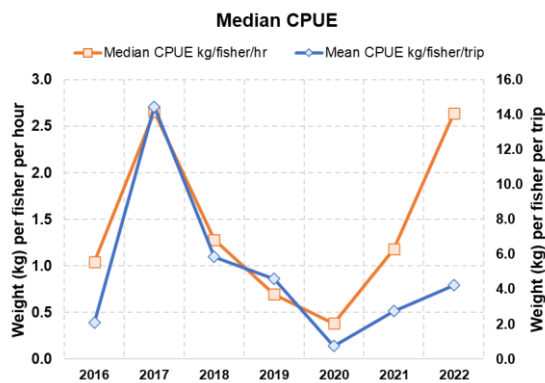

Figure 2: Indicator 2. (a) Weight (in kg) of fishes landed per fisher per hour spent fishing and (b) Weight of fishes landed per fisher per trip in Nanumea from 2016-2022.
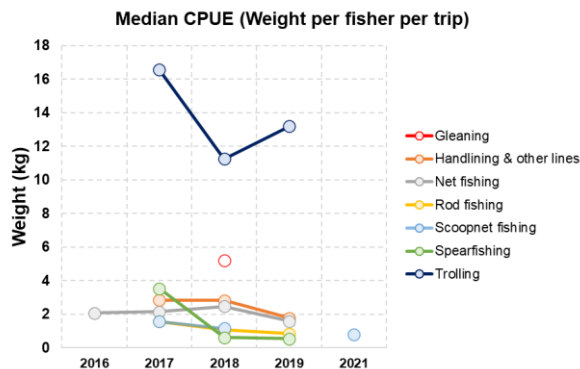

Figure 3: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip in Nanumea

2015-2021. There is no method data for 2020 and 2022.

The weight of fishes landed per fisher per entire fishing trip as Indicator 2b (i.e., not per hour) has generally shown the same trend as weight per fisher per trip, but with smaller changes (Figure 3). The exception is trolling, which showed an opposite trend – a slight decrease in returns per trip in 2018. There were more fishing trips taken in 2018, and were on average 5 hours shorter than trips taken in 2017. 2019 had similar numbers of trolling fishing trips recorded as 2018, but they were slightly shorter than 2018, and returns per trip were not as good.

Conclusions

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

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). Although pelagic species only accounted for 27% of the total catch numbers, they contributed 74% of the biomass, as recorded by 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)

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	2020	2021	2022	Grand Total
1	*Acanthurus lineatus*	Ponelolo, Alogo, Pone hamoa	1.5%		41%	63%					52%
2	*Acanthurus triostegus*	Manini, Koinava	50.6%	14%	26%	19%	37%	39%	35%	37%	25%
3	*Aphareus furca*	Palusega, Kotua, Taelepe, Takuoga	0.7%						100%		100%
4	*Aprion virescens*	Utu	0.0%		0%						0%
5	*Caesio caerulaurea*	Ulia, Ulihega	0.1%		0%	0%					0%
6	*Carangoides plagiotaenia*	Aseu uluuli	0.9%		36%	80%					40%
7	*Caranx ignobilis*	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	0.4%			100%					100%
8	*Caranx lugubris*	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	0.5%			75%			50%		58%
9	*Caranx melampygus*	Aseu, Ulua, Fuaika	2.9%		56%	18%	27%				27%
10	*Caranx sexfasciatus*	Teu	7.7%		99%	97%	95%		75%	75%	96%
11	*Cephalopholis argus*	Loi	0.4%		67%	60%	100%				65%
12	*Cheilinus fasciatus*	Gole	0.1%		0%	0%	0%				0%
13	*Chlorurus (Scarus) microrhino*	Laea	0.1%		43%						43%
14	*Crenimugil crenilabis*	Kanase	7.0%		72%	26%	7%				57%
15	*Ctenochaetus binotatus*	Pone uli	0.1%		0%						50%
16	*Decapterus macarellus*	Atule	0.1%			83%					83%
17	*Elagatis bipinnulata*	Kamai, Kamaa, Kami	0.0%		33%						33%
18	*Epinephelus fuscoguttatus*	Munua	0.1%		0%	67%					57%
19	*Epinephelus macrospilos*	Gatala (Ff), fÄ•puku (Nm)	0.1%		100%	22%					30%
20	*Epinephelus maculatus*	Fapuku	0.1%			80%					80%
21	*Epinephelus merra*	Gatalaliki	0.4%		0%	0%					0%
22	*Epinephelus miliaris*	Gatala	0.1%			0%					0%
23	*Epinephelus polyphekadion*	Gatala (one dot)	0.0%		0%	100%					50%
24	*Hipposcarus longiceps*	Ulafi	4.2%		20%	27%	15%			0%	23%

#	Species	Local name									
25	*Kyphosus cinerascens*	Nanue	3.3%		22%	8%	30%				20%
26	*Kyphosus vaigiensis*	Nanue (Ff, Nm)	2.6%		79%	71%	33%			0%	75%
27	*Lethrinus erythracanthus*	Saputu	0.0%			0%					0%
28	*Lethrinus obsoletus*	Tanutanu	0.2%		0%	0%	0%				0%
29	*Lethrinus olivaceus*		0.0%			0%					0%
30	*Lethrinus variegatus*	Noto, Tanutanu	0.0%		50%						50%
31	*Lethrinus xanthochilus*	Tanutanu	0.2%		78%	0%					58%
32	*Liza vaigiensis*	Kafakafa	5.1%		70%	66%	69%				68%
33	*Lutjanus argentimaculatus*	Tagau	0.4%		100%	100%					100%
34	*Lutjanus bohar*	Fakamea, Fagamea	0.0%			100%	100%				100%
35	*Lutjanus fulvus*	Tagau,Takape	2.8%		14%	12%	80%	0%			15%
36	*Lutjanus gibbus*	Taea	0.1%		40%	0%					33%
37	*Lutjanus kasmira*	Savane	0.6%		88%	53%					60%
38	*Lutjanus monostigma*	Taiva	2.7%		66%	43%	87%				53%
39	*Monotaxis grandoculis*	Muu, Mufala	0.6%		27%	0%	67%	0%			28%
40	*Mulloidichthys vanicolensis*	Kalo	0.2%		0%						0%
41	*Myripristis kuntee*	Malau	0.0%			0%					0%
42	*Myripristis pralinia?*	Malau puku	0.3%			6%	33%				11%
43	*Myripristis violacea*	Malau	0.5%		0%	50%					3%
44	*Naso lituratus*	Maninilakau	0.1%		25%	25%					25%
45	*Naso unicornis*	Ume, Pokapoka	0.0%			0%					0%
46	*Oxycheilinus digrammus*	Gole (Ff)	0.0%								100%
47	*Parupeneus barberinus*	Malili, Kaivete	0.3%		0%	0%					0%
48	*Parupeneus cyclostomus*	Kaivete piniki	0.6%			25%					28%
49	*Parupeneus multifasciatus*	Afulu	0.0%		0%						0%
50	*Sargocentron caudimaculatum*	Malau	0.2%		0%	0%					0%
51	*Sargocentron spiniferum*	Tamalau	0.5%		100%	65%					73%
52	*Scarus oviceps*	Laea	0.0%		0%						0%
53	*Scarus psittacus*	Taona	0.1%		17%						17%
54	*Selar boops*	Salala, Atule	0.2%			21%					21%
55	*Selar crumenophthalmus*	Salala, Atule	0.0%				0%				0%
56	*Siganus argenteus*	Maiava	0.0%			0%					0%
57	*Sphyraena forsteri*	Taotao	0.0%			0%					0%
	Grand Total		**100.0%**	**14%**	**39%**	**33%**	**59%**	**36%**	**74%**	**37%**	**39%**