Coastal Fisheries Creel Report Card

2022

NIUTAO

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 Niutao's coastal resources is poor, with an average of 49% of the fishes caught being undersized between 2016 and 2019. 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.

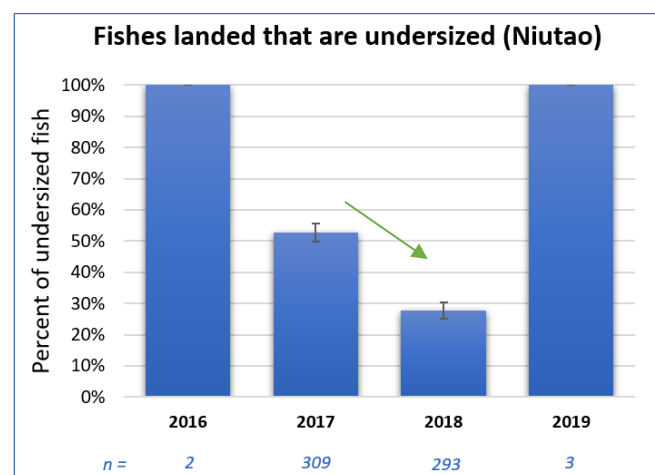**IDEAL:** % UNDERSIZED should DECLINE over time and approach 0%

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

Indicator 1 decreased between 2017 and 2018, a good sign as the number of undersized fish being landed decreased. There are insufficient sample numbers in 2016 and 2019 to determine any meaningful long-term trends. There is no data on the size of fishes landed for 2020-2022.

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

For Indicator 2a, the weight of fish being landed per fisher per hour spent fishing appears to have decreased between 2016 and 2018 (see Figure 2). Indicator 2b, the weight of fish being landed per fisher per trip increased a little in 2917, then decreased in 2018 and 2019. In 2022, the CPUE increased once again. This may mean that it is easier to catch fish on each fishing trip, or that the data in 2022 reflect different fishing methods, such as trolling, which yield much higher catches than other methods like gleaning or spearfishing.
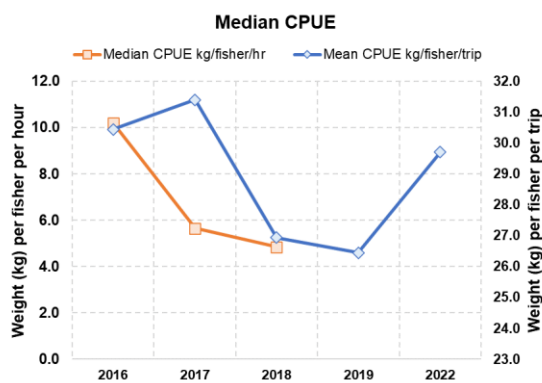

Figure 2 *Indicator 2. (a) Weight (in kg) of fishes landed per fisher per hour spent fishing and (b) Weight of fishes landed per fisher per trip in Niutao from 2016-2022.*
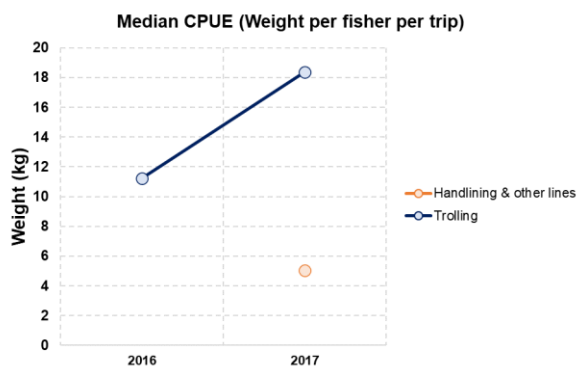

Figure 3: *Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip. Fishing method data is only available for 2016 and 2017.*

Indicator 2b, the weight of fishes landed per fisher per entire fishing trip (i.e., not per hour) appears to have increased between 2016 and 2017 for trolling (Figure 3).

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

Conclusions

Overall, there is not enough data to assess trends effectively/accurately. There was some improvement in the fishery between 2018 and 2019. However, more consistent data collection is needed to better understand the status of resources. A coastal fisheries management plan is being developed and will be implemented in 2024, to more efficiently to improve the health of Niutao's coastal fisheries.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). Majority of the landings recorded in the creel surveys were pelagic: they comprised 67% of the total catch numbers and contributed to 95% of the biomass recorded in the creel surveys (2016-2022). There is no data for 2020-2021.

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 <u>median</u> 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	Grand Total
1	*Acanthurus lineatus*	Ponelolo, Alogo, Pone hamoa	5.9%		88%	75%		83%
2	*Acanthurus triostegus*	Manini, Koinava	36.5%		62%	6%		37%
3	*Anyperodon leucogrammicus*	Gatala lautalo, Gatala lautala	1.6%		100%			100%
4	*Aphareus furca*	Palusega, Kotua, Taelepe, Takuoga	2.4%			100%		100%
5	*Aprion virescens*	Utu	0.1%		0%			0%
6	*Caranx ignobilis*	Tino ulua (lge), Lupo (small), Aseu (med); Mea tal	1.3%		100%			100%
7	*Caranx lugubris*	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	2.1%			93%		93%
8	*Caranx melampygus*	Aseu, Ulua, Fuaika	1.0%			75%	100%	86%
9	*Caranx sexfasciatus*	Teu	0.4%		100%	0%		67%
10	*Chlorurus (Scarus) microrhino*	Laea	0.1%		100%			100%
11	*Ctenochaetus binotatus*	Pone uli	0.4%		33%			33%
12	*Elagatis bipinnulata*	Kamai, Kamaa, Kami	1.3%	100%	40%	50%		56%
13	*Epinephelus macrospilos*	Gatala (Ff), fapuku (Nm)	15.6%			100%		100%
14	*Epinephelus merra*	Gatalaliki	16.7%		14%	0%		9%
15	*Kyphosus vaigiensis*	Nanue (Ff, Nm)	5.2%		10%	0%		6%
16	*Liza vaigiensis*	Kafakafa	0.1%		100%			100%
17	*Lutjanus bohar*	Fakamea, Fagamea	0.1%			100%		100%
18	*Lutjanus kasmira*	Savane	0.1%			0%		0%
19	*Mulloidichthys vanicolensis*	Kalo	1.3%		100%			100%
20	*Myripristis berndti*	Malau	0.3%		100%			100%
21	*Myripristis pralinia?*	Malau puku	4.6%		0%	3%		3%
22	*Naso lituratus*	Maninilakau	0.1%		100%			100%
23	*Oxycheilinus digrammus*	Gole (Ff)	0.7%			20%		20%
24	*Parupeneus barberinus*	Malili, Kaivete	0.3%		50%			50%
25	*Priacanthus hamrur*	Matapa	0.4%			100%		100%
26	*Rastrelliger kanagurta*	Salala	0.4%			100%		100%
27	*Sargocentron spiniferum*	Tamalau	0.1%		100%			100%
28	*Sargocentron tiere*	Malau gutu loa, Malua mata loa	0.6%			25%		25%
	Grand Total		100.0%	100%	53%	28%	100%	49%