Coastal Fisheries Creel Report Card

2021

FUNAFUTI

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 status 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 Funafuti's coastal resources is poor. On average, 31% of the fishes landed caught undersized between 2015 and 2021. This is similar to the national average, 35%.

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%

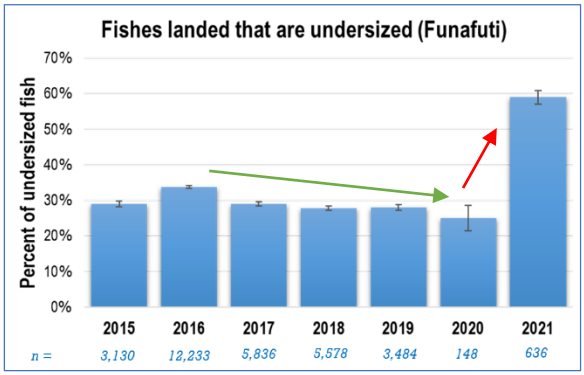

***Figure 1**: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.*

Green arrow = good trend
red arrow = bad trend

There was a slightly decreasing trend in Indicator 1 between 2015 and 2020, with an average of 30% of the fishes landed caught undersized. In 2021, this doubled to 59% undersized (Figure 1). Indicator 1 shows that a greater portion of the catch was landed in 2021 before it had a chance to reproduce, indicating overfishing may be taking place.

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 appears to have decreased over the survey years for all fishing methods (Figure 2).

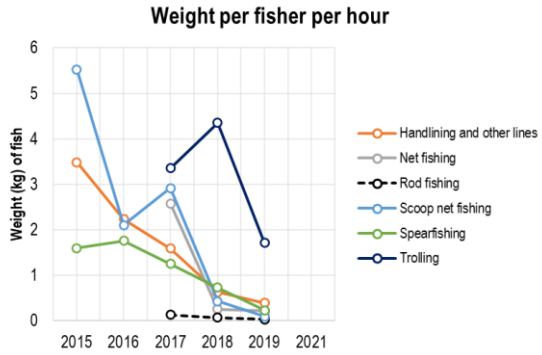

Figure 2: *Indicator 2a. Weight (in kg) of fishes landed per fisher per hour spent fishing across Tuvalu 2015-2021. There was no method data available for 2020 and no data on fishing hours for 2021.*

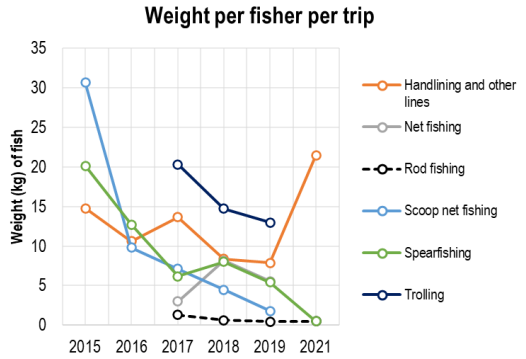

Figure 3*: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip across Tuvalu 2015-2021.*

The weight of fishes landed per fisher per entire fishing trip - Indicator 2b (i.e., not per hour) - generally showed a decline between 2015 and 2021 (Figure 3). The exception was handling and other lines, where weight per fisher per fishing trip increased between 2019 and 2021.

This shows that the returns per fishing trip have declined over the years. However, for handlining, the returns per fishing trip more than doubled in 2021 compared with 2019.

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

Conclusions

Overall, there has been little improvement to the health of coastal fisheries in Funafuti over the past 7 years since surveys begun. Small improvements in sizes of fishes being landed took place between 2016 and 2020 but these were reversed by 2021.

The percentage of fish landed undersize doubled in 2021, and could reflect an increased reliance on coastal fisheries resources due to lack of affordable protein alternatives in the as a result of COVID-19 pandemic restrictions.

The management measures in the Funafuti Reef Fisheries Stewardship Plan (FRFSP) need to be improved and better implemented in order to improve the health of Funafuti's coastal fisheries.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). These pelagic species accounted for 20% of the total catch numbers recorded in the creel surveys (2016-2021).

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 2015-2019
2. Recent studies have provided us more accurate information on size of maturity
3. We have now included size of maturity data for 30 extra species
4. CPUE has now been displayed 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 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 – 2021).

	Scientific Name	Local Name	% of total catch	2015	2016	2017	2018	2019	2020	2021
1	*Lutjanus gibbus*	Taea	17.5%	20	23	20	26	6	0	25
2	*Lutjanus kasmira*	Savane	4.5%	59	56	61	39	42	100	
3	*Acanthurus lineatus*	Ponelolo, Alogo, Pone hamoa	4.3%	7	47	20	19	8	100	17
4	*Decapterus macarellus*	Atule	4.2%	31	66					
5	*Naso lituratus*	Maninilakau	3.1%	49	27	15	6	4	0	1
6	*Lethrinus obsoletus*	Tanutanu	2.5%	10	42	9	13	3	0	
7	*Acanthurus triostegus*	Manini, Koinava	2.2%	0	9	61	30	32	43	
8	*Myripristis berndti*	Malau	2.0%	29	26	13	42			
9	*Lethrinus amboinensis*	Noto, Gutulo, Sapotu	1.8%	0	7	10	11	0		
10	*Myripristis pralinia?*	Malau puku	1.8%	0	4	1	2	0	0	
11	*Sargocentron spiniferum*	Tamalau	1.6%	66	62	46	42			78
12	*Monotaxis grandoculis*	Muu, Mufala	1.4%	74	71	41	59	27		0
13	*Naso unicornis*	Ume, Pokapoka	1.3%	60	49	29	71	75		33
14	*Epinephelus polyphekadion*	Gatala (one dot)	1.1%	54	41	26	25	44		
15	*Naso brevirostris*	Pokapoka, Kosotu	1.1%	6	27	3	2	9	0	9
16	*Naso vlamingii*	Pokapoka lanulanu	1.1%	0	33	18	15	0		50
17	*Caesio caerulaurea*	Ulia, Ulihega	1.1%	0	9		0			0
18	*Selar crumenophthalmus*	Salala, Atule	0.9%	4	8					100
19	*Lutjanus fulvus*	Tagau,Takape	0.9%	0	6	0	8	10		
20	*Crenimugil crenilabis*	Kanase	0.9%			20	50	66		
21	*Lutjanus bohar*	Fakamea, Fagamea	0.8%	66	81	64	82	55		
22	*Caranx sexfasciatus*	Teu	0.8%	33	78	46	49	62		

23	*Lethrinus erythracanthus*	Saputu	0.7%	61	52	35	47			
24	*Myripristis kuntee*	Malau	0.7%	6	6	50				
25	*Siganus argenteus*	Maiava	0.7%	0	30	37	39	0		5
26	*Lutjanus monostigma*	Taiva	0.7%	3	8	9	23	50	0	
27	*Sargocentron tiere*	Malau gutu loa, Malua mata loa	0.7%	50	48	77	32	38	0	
28	*Lethrinus variegatus*	Noto, Tanutanu	0.6%			2		0		
29	*Chlorurus (Scarus) microrhinos*	Laea	0.6%	0	46	47				
30	*Lethrinus miniatus*	Noto	0.5%	91	75	88	84	0	0	
31	*Lethrinus xanthochilus*	Tanutanu	0.5%		73	84				
32	*Priacanthus hamrur*	Matapa	0.5%	33	14	2	4			
33	*Epinephelus macrospilos*	Gatala (Ff), fÄpuku (Nm)	0.5%	13	0	68	33	41	8	50
34	*Aphareus furca*	Palusega, Kotua, Taelepe, Takuoga	0.5%	78	96	89	100	100		
35	*Epinephelus merra*	Gatalaliki	0.4%	4	0	0	0	0	0	
36	*Sphyraena forsteri*	Taotao	0.4%	19	6	4	19	0		
37	*Hipposcarus longiceps*	Ulafi	0.4%	24	22	14	11	50		
38	*Liza vaigiensis*	Kafakafa	0.4%			71	100	65		
39	*Aprion virescens*	Utu	0.4%	50	71	51	34			
40	*Fistularia petimba*	Taotaoama	0.4%	100	100	100	0			
41	*Ctenochaetus binotatus*	Pone, uli	0.4%	0	2	0	50			
42	*Lutjanus argentimaculatus*	Tagau	0.4%	100		100	100			
43	*Naso caesius*	Ume (Ff?), pokapoka (Nm?)	0.4%	0	9	23	57	40		50
44	*Caranx lugubris*	Tafauli, Tino tafauli (large), Aheu tafauli, Uluat	0.4%	0	0	22	18			0
45	*Naso hexacanthus*	Pokapoka, Ume tinae sega	0.3%	0	66	64	55	100	100	100
46	*Rastrelliger kanagurta*	Salala	0.3%		0					100
47	*Myripristis adusta*	Malau fagamea, Malau matakelkele	0.3%	60	60	17	82			
48	*Lethrinus microdon*	Filoa, Kapatiko	0.3%				20	0		60
49	*Anyperodon leucogrammicus*	Gatala lautalo, Gatala lautala	0.3%	8	5	21	0			0
50	*Selar boops*	Salala, Atule	0.2%				1			100