



# Coastal Fisheries Creel Report Card

## 13<sup>th</sup> March 2020

### 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 and which are on-going throughout Tuvalu (all islands except Niulakita).

The key indicators we are using to show the health of the resources 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,  $L_m$ ). This value should decline and approach zero as management actions improve, followed by improvements in the resources (Indicator 2).

**Indicator 2:** Catch of fishes per unit of effort (CPUE). For now we are using the number and 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. At a later date we will also present this as catch per dollar cost of fishing.

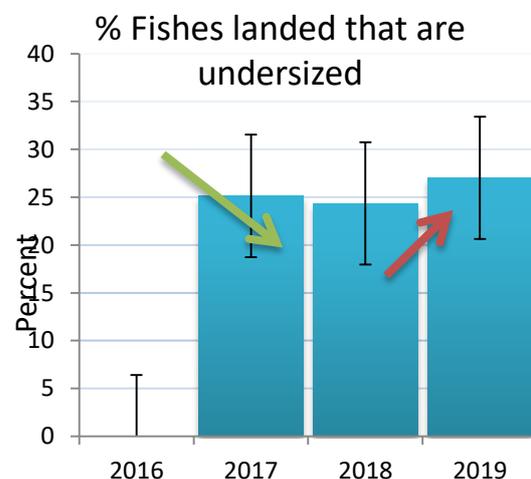
#### Results

Overall status of the coastal resources is poor, with an average of 38% of the fishes overall caught being undersized.

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. This includes better reproduction, better productivity and more fish.

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

Figure 1: Overall percentage of fishes being landed undersized +/-SE by year 2015-2019 on Nanumea Island.



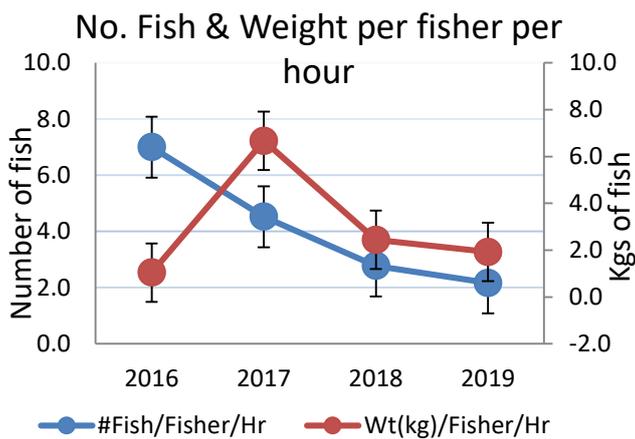
Overall in Nanumea there was a constant trend in Indicator 1 between 2017 and 2019. That is, the number of undersized fishes being landed was a bit controlled, a good sign. In 2019 this trend slightly reversed and the percentage of undersized fishes being caught before they could reproduce increased to 27% which is low (see Figure 1 and Table 1). No

data were shown for 2015 and 2016, thus it is due to either a database updating error or no data during this initiated phase of the program.

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

For Indicator 2a the number of fish being landed per fisher per hour spent fishing (regardless of size of each fish) appears to have slowly increased between 2015 and 2017, becoming steady after that. The total weight of fishes has not changed much over the years except for a peak in 2017 (Figure 2).

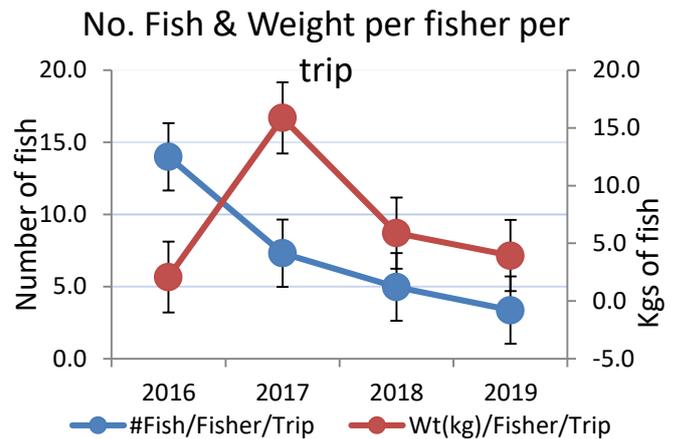
Figure 2: Indicator 2a. Number and Weight (in kg) +/-SE of fishes landed per fishermen per hour spent fishing on Nanumea, 2015-2019.



The number and weight of fishes landed per fisher per entire fishing trip as Indicator 2b (i.e. not per hour) showed a decline over the survey years (Figure 3). This shows that the returns per fishing trip

have declined over that period. However it may be that fishing trips have become shorter, which would give the same result. This needs to be investigated further.

Figure 3: Indicator 2b. Number and Weight (in kg) +/-SE of fishes landed per fishermen per fishing trip on Nanumea, 2015-2019.



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

### Conclusions

Overall there has been little improvement in the health of the coastal fisheries over the past 5 years since surveys were begun. Some improvements in sizes of fishes being landed took place between 2015 and 2018 but were reversed by 2019. Management plans need to be improved and/or implemented more strongly to improve the health of Tuvalu's coastal fisheries.

This table (part of Indicator 1) shows the breakdown of species that have 50% or more fishes landed that are **undersized**, those that are **OK** because more than 50% are larger than the known size at maturity and blank cells show those with no catches recorded for that species in that year. This table shows that many of the species being monitored are being caught undersized, and that this varied by year in some cases.

*Table 1: List of species for which size at maturity (Lm) is known, showing percentages landed which are undersized.*

Fish Name	2015	2016	2017	2018	2019
Afulu Parupeneus multifasciatus			0		
Aseu Caranx melampygus			84	43	76
Aseu uluuli Carangoides plagiotaenia			77	100	
Fakamea, Fagamea Lutjanus bohar				100	100
Filoa Lethrinus elongatus			0		
Gatala (one dot) Epinephelus polyphekadion			0		
Gatalaliki Epinephelus merra			0	0	
Gole Cheilinus fasciatus			0	0	
Kaivete piniki Parupeneus cyclostomus				52	
Kalo Mulloidichthys vanicolensis			0		
Kami, Kamai Elagatis bipinnulata			33		
Kanase Crenimugil crenilabis			2	9	0
Laulaufao, Matapa, Ika fal laulu Alectis   cilia			100		
Loi Cephalopholis argus			67	60	
Mago Carcharinus melanopterus			0	100	
Maiava Siganus argenteus				0	
Malau Myripristis violacea				100	
Malau Sargocentron caudimaculatum			0	0	
Malau puku Myripristis pralinia				0	
Malili, Kaivete Parupeneus barberinus			0		
Manini, Koinava Acanthurus triostegus		0	2	1	3
Munua Epinephelus fuscoguttatus			0	0	
Muu, Mufala Monotaxis grandoculis			95		100
Nanue (Ff, Nm) Kyphosus vaigiensis			96	93	100
Paala Scomberomorus commersoni			100	0	
Ponelolo, Alogo, Pone hamoa Acanthurus lineatus			33	51	
Savane Lutjanus kasmira			88	100	
Tafauli, Tino tafauli (large), Aheu tafauli, Ulua				75	
Tagau Lutjanus argentimaculatus			100	100	
Tagau, Takape Lutjanus fulvus			92	100	100
Taiva Lutjanus monostigma			96	92	100
Taona Scarus psittacus			17		
Taotao Sphyaena forsteri				0	
Teu Caranx sexfasciatus			99	97	93
Tino ulua (lge), Lupo (small), Aseu (med)				100	
Ume, Pokapoka Naso unicornis				0	
Utu Aprion virescens			0		

Fish Name	2015	2016	2017	2018	2019
Valu Gymnosarda unicolor			100	100	