



# Coastal Fisheries Creel Report Card

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

### 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 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.

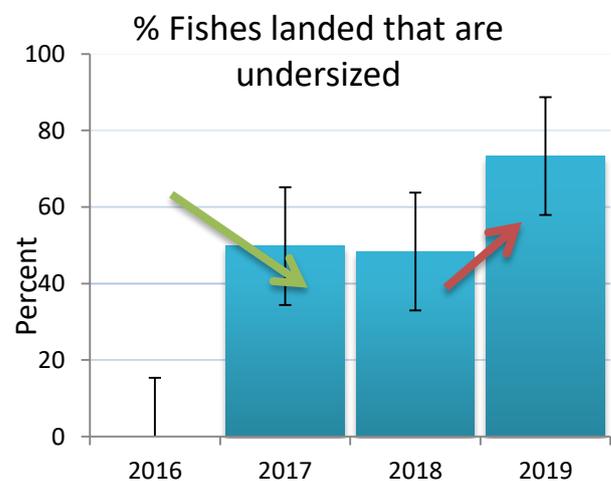
#### Results

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 by year +/-SE.

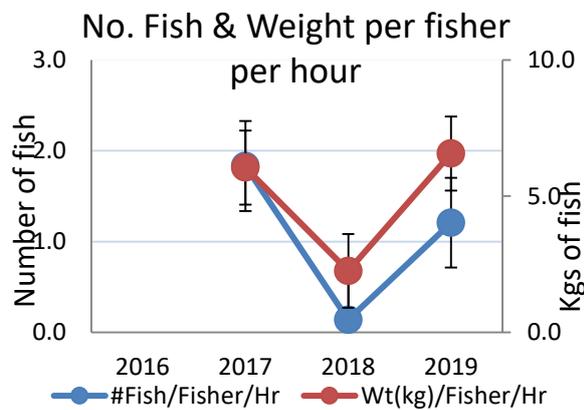


Overall in Nanumaga there was a slight decreasing trend in Indicator 1 between 2017 and 2018. That is, the number of undersized fishes being landed decreased, a good sign. In 2019 this trend reversed and the percentage of undersized fishes being caught before they could reproduce increased to 73% overall (see Figure 1 and Table 1).

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 decreased from 2017 to 2018 and a quick reverse in 2019. No data were appeared for 2015 and 2016, this is due to either no data provided at all or the database is still updating.

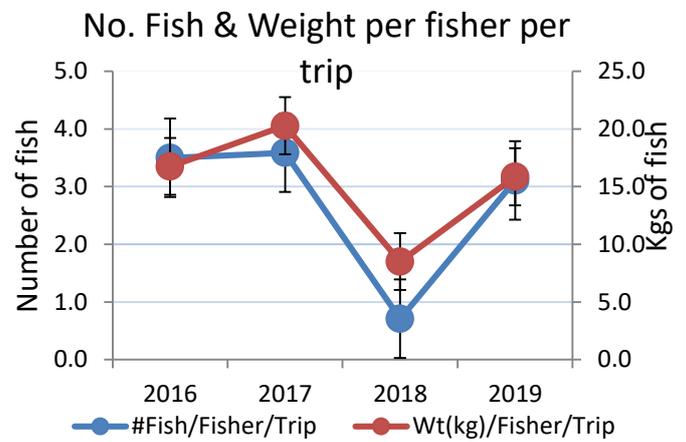
Figure 2: Indicator 2a. Number and Weight (in kg) +/-SE of fishes landed per fishermen per hour spent fishing for Nanumaga from 2015-2019.



The number and weight of fishes landed per fisher per entire fishing trip as Indicator 2b (i.e. not per hour) showed a decline in 2017 (Figure 3) then a quick rise in 2019. 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 for Nanumaga from 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			0	91	100
Fakamea, Fagamea Lutjanus bohar				0	
Filoa Lethrinus elongatus				100	
Gatala lautalo, Gatala lautala Anyperodon leuc			100		
Gatalaliki Epinephelus merra			0	83	
Kaivete piniki Parupeneus cyclostomus				100	
Kami, Kamai Elagatis bipinnulata			93	100	100
Kanase Crenimugil crenilabis	0	0	0	0	
Kapalagi, Maa Acanthurus xanthopterus			0		
Mago Carcharinus amblyrhynchos			0		
Malau Myripristis berndti				100	
Malau puku Myripristis pralinia				18	
Malili, Kaivete Parupeneus barberinus			0		
Manini, Koinava Acanthurus triostegus			0	0	0
Mataele Cephalopholis urodeta			100		
Muu, Mufala Monotaxis grandoculis			100	100	
Nanue (Ff, Nm) Kyphosus vaigiensis			97	100	100
Pokapoka lanulanu Naso vlamingii			50		
Ponelolo, Alogo, Pone hamoa Acanthurus lineatus			100		
Taufauli, Tino tafauli (large), Aheu tafauli, Ulua			87	100	
Tagau Lutjanus argentimaculatus				100	
Tagau, Takape Lutjanus fulvus			100	100	
Taiva Lutjanus monostigma			100	67	
Teu Caranx sexfasciatus			50	92	
Tino ulua (lge), Lupo (small), Aseu (med)			100		
Tuna (Ff) Conger macrocephalus Conger macrocep				67	
Utu Aprion virescens			0		
Valu Gymnosarda unicolor			100	100	