Coastal Fisheries Creel Report Card
10th September 2020
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 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, Lm). This value should decline and approach zero as management actions improve, leading to improvements in the resources.

Indicator 2: Catch of fishes per unit of effort (CPUE). 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.

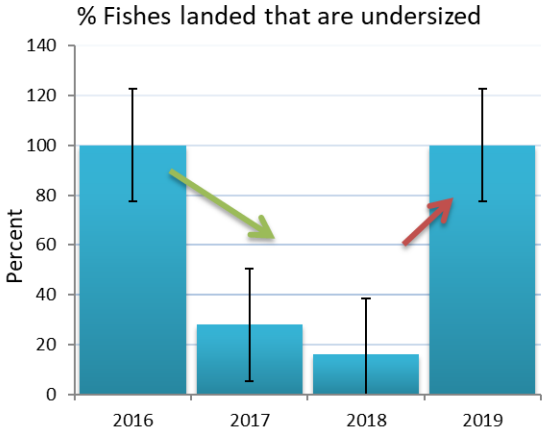
Results

Overall status of the coastal resources is above average for Tuvalu's islands, but is showing clear signs of worsening. An average of 23% of the fishes overall caught being undersized. In 2019, however, almost all fishes landed were undersized, though data or that year were based on only 94 fishes or which size could be evaluated against Lm.

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.



Green arrow = good trend;
Red arrow = bad trend

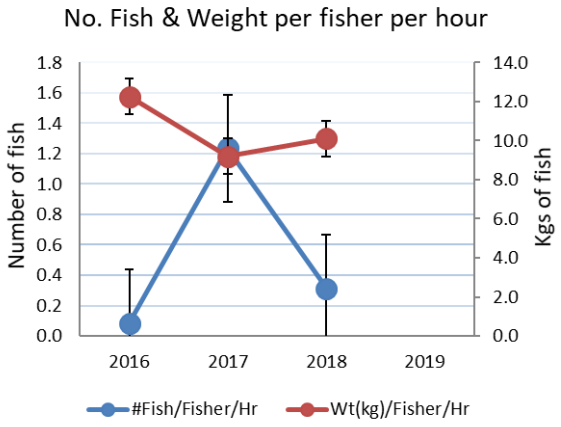
Overall in Niutao there was a decreasing trend in Indicator 1 between 2016 and 2018. That is, the number of undersized

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 100% for just one species (see Figure 1 and Table 1).

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

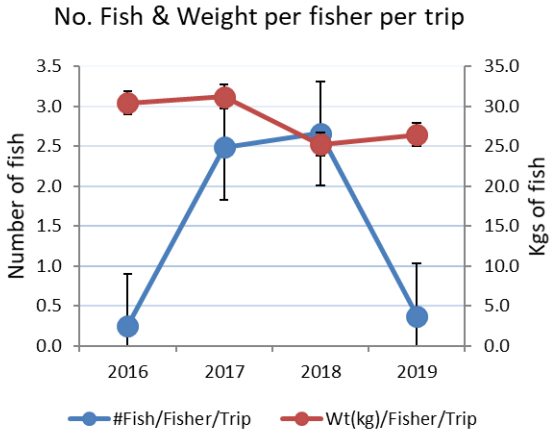
For Indicator 2a the number of fish being landed per fisher per hour spent fishing (regardless of size of each fish) may have increased between 2016 and 2017, but declined again in 2018. The total weight of fishes per fisher per hour appears to have declined between 2016 and 2017, but then remained steady in 2018. No data were available for 2019 (Figure 2).

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



The number and weight of fishes landed per fisher per entire fishing trip as Indicator 2b (i.e. not per hour) was significantly higher in 2017 and 2018 and lower in 2016 and 2019 (Figure 3). The returns per fishing trip do not yet shgow clear a trend and it may be that fishing trips have become shorter, which would give the same result. This needs to be investigated further. The weight landed per fishing trip declined after 2017, and has stayed about 5kg/trip lower in 2018 and 2019.

Figure 3: Indicator 2b. Number and Weight (in kg) +/-SE of fishes landed per fishermen per fishing trip across Tuvalu 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 in 2017-2018 but were reversed by 2019 (but note above mentions off low data for 2019). Management plans need to be developed and implemented to improve and ensure the health of Niutao'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	2016	2017	2018	2019
Aseu | Caranx melampygus			75	100
Fakamea, Fagamea | Lutjanus bohar			100	
Gatala lautalo | Anyperodon leucogrammicus		100		
Gatalaliki | Epinephelus merra		4	0	
Gole (Ff) | Oxycheilinus digrammus			20	
Kalo | Mulloidichthys vanicolensis		100		
Kami, Kamai | Elagatis bipinnulata	100	60	50	
Mago| Triaenodon obesus		0		
Malau | Myripristis berndti		100		
Malau puku | Myripristis pralinia?		0	0	
Malili, Kaivete | Parupeneus barberinus		0		
Manini, Koinava | Acanthurus triostegus		11	0	
Matapa | Priacanthus hamrur			67	
Nanue (Ff, Nm) | Kyphosus vaigiensis		60	50	
Ponelolo, Alogo, Pone hamoa | Acanthurus lineatus		76	56	
Salala | Rastrelliger kanagurta			100	
Savane | Lutjanus kasmira			0	
Tafauli, Tino tafauli (large), Aheu tafauli			93	
Teu | Caranx sexfasciatus		100	0	
Tino ulua (lge), Lupo (small), Aseu (med); Mea tal		100		
Tuna (Ff) | Conger macrocephalus			10	
Utu | Aprion virescens		0		
Valu | Gymnosarda unicolor		0		