



# Coastal Fisheries Creel Report Card

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

### NUKULAEAE

#### 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<sub>m</sub>). 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

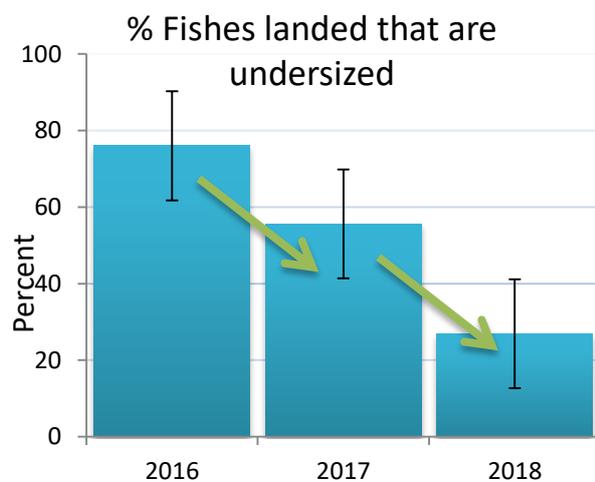
Overall status of the coastal resources is poor, with an average of 38% of the fishes overall caught being undersized.

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 2015-2019 on Nukulaelae +/-SE.

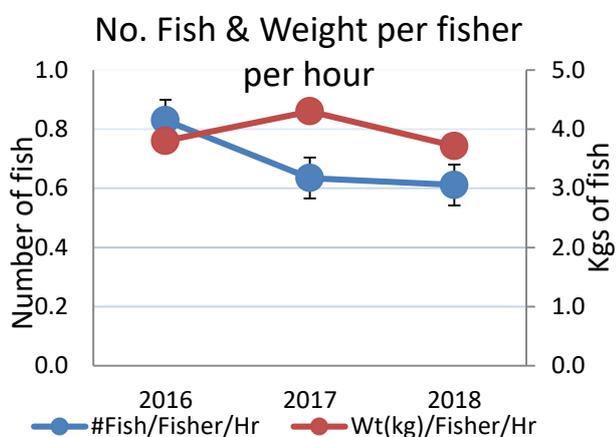


Overall in Nukulaelae there was a decreasing trend in Indicator 1 between 2016 and 2018. That is, the number of undersized fishes being landed decreased, a good sign. In 2019, no data being shown and this is due to the updating of MIS database and the percentage of undersized fishes being caught before they could reproduce decreased to 27% 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 slowly increased between 2016 and 2017, becoming reverse after that. No data appeared in 2019 can either be an indication of no data collected or a database updating error (Figure 2).

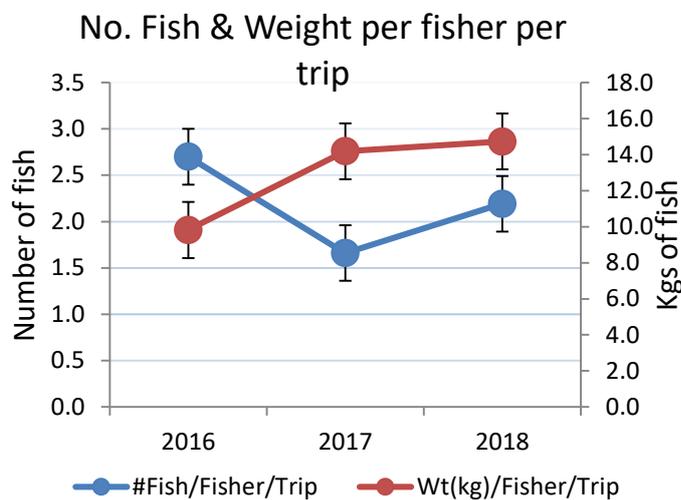
Figure 2: Indicator 2a. Number and Weight (in kg) +/-SE of fishes landed per fishermen per hour spent fishing across Nukulaelae, 2015-2019.



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 2016-2017 and a slightly increase in the year 2018 (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 across Nukulaelae, 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 on Nukulaelae which are undersized.*

| Sum of %Undersized<br>Row Labels                   | Column Labels |      |      |
|--|---------------|------|------|
|  | 2016          | 2017 | 2018 |
| Aseu Caranx melampygyus                            | 100           | 84   | 85   |
| Fakamea, Fagamea Lutjanus bohar                    | 100           | 100  |      |
| Filoa Lethrinus elongatus                          | 0             | 0    |      |
| Gatalaliki Epinephelus merra                       | 0             | 0    |      |
| Kaivete piniki Parupeneus cyclostomus              |               | 100  | 100  |
| Kami, Kamai Elagatis bipinnulata                   | 80            | 83   | 0    |
| Loi Cephalopholis argus                            | 0             | 17   | 0    |
| Malau puku Myripristis pralinia?                   |               | 0    |      |
| Manini, Koinava Acanthurus triostegus              |               |      | 0    |
| Munua Epinephelus fuscoguttatus                    |               | 33   | 100  |
| Muu, Mufala Monotaxis grandoculis                  | 100           | 86   |      |
| Nanue (Ff, Nm) Kyphosus vaigiensis                 |               | 73   |      |
| Pokapoka lanulanu Naso vlamingii                   |               | 50   |      |
| Ponelolo, Alogo, Pone hamoa Acanthurus lineatu     |               | 100  |      |
| Savane Lutjanus kasmira                            |               | 100  |      |
| Tafauli, Tino tafauli (large), Aheu tafauli, Uluat |               | 18   |      |
| Tagau Lutjanus argentimaculatus                    |               | 100  | 100  |
| Tagau, Takape Lutjanus fulvus                      | 100           | 100  |      |
| Taiva Lutjanus monostigma                          | 100           | 73   |      |
| Taotao Sphyræna forsteri                           |               |      | 0    |
| Teu Caranx sexfasciatus                            |               | 42   | 0    |
| Tonu Macolor macularis                             |               | 100  | 7    |
| Tonu Plectropomus leopardus                        |               | 0    |      |
| Ume, Pokapoka Naso unicornis                       |               | 11   |      |
| Utu Aprion virescens                               |               |      | 0    |
| Valu Gymnosarda unicolor                           |               | 100  | 67   |