



Coastal Fisheries Creel Report Card

2022

NUKUFETAU

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 state 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, L_m). 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 Nukufetau's coastal resources is poor, with an average of 27% of the fishes caught being undersized (2016-2021). However, this is better than the national average of 36%.

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%

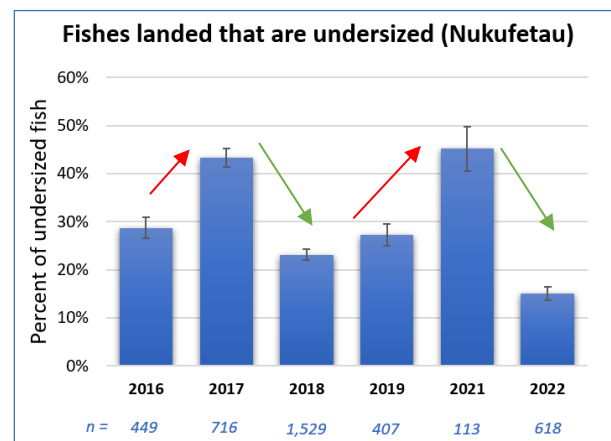


Figure 1: Percentage of fishes being landed undersized by year +/-SE. The sample size (n) is reported in blue.

Green arrow = good trend
Red arrow = bad trend

The number of undersized fishes being landed in Nukufetau had fluctuated over the last 6 years, increasing in 2017, and subsequently decreasing in 2018 and 2019 (see Figure 1). Unfortunately, the percentage of undersized fishes increased once again in 2021. In 2022, the data shows a significant improvement, with only 15% of the landed fish being undersized. This is much lower than the Nukufetau's average of 27%.

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

Indicator 2, the total weight of fish being landed per fisher per hour spent fishing, and weight landed per fisher per trip, decreased between 2016 and 2019 (see Figure 2). CPUE peaked in 2020, decreased in 2021, and increased once again in 2022.

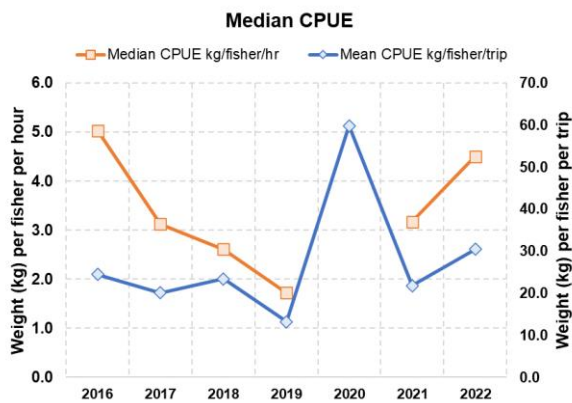


Figure 2: Indicator 2. (a) Weight (in kg) of fishes landed per fisher per hour spent fishing and (b) Weight of fishes landed per fisher per trip in Nukufetau from 2016-2022.

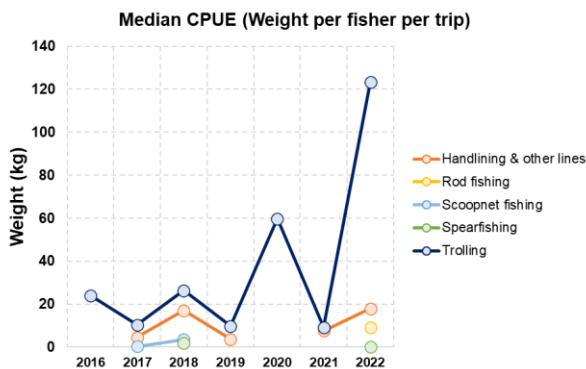


Figure 3: Indicator 2b. Weight (in kg) of fishes landed per fisher per fishing trip in Nukufetau 2016-2022.

The weight of fishes landed per fisher per entire fishing trip as Indicator 2b (Figure 3) generally fluctuated between 2016 and 2022. For trolling there was a peak in 2022. More data is needed

for any trends in fishing method to be meaningfully interpreted. For example, the trolling data from 2016, 2017 and 2020 are each based on one fishing trip, and two trips for 2022.

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

Conclusions

Overall, there has been good improvement to the health of coastal fisheries in 2022 in Nukufetau. The CPUE also appears to have increased in 2022, signalling that less effort is being used to catch fish. A coastal fisheries management plan is being developed and will be implemented in 2024, to more efficiently to improve the health of Nukufetau's coastal fisheries.

Note: The catch reported do not include offshore fish species such as Atu (skipjack tuna). These pelagic species accounted for 31% of the total catch numbers and 66% of the biomass recorded in the creel surveys (2015-2022). There is no data for 2020.

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 – 2021
2. Instead of using the average CPUE, which can be influenced by really low or really high numbers, we report median CPUE

Appendix I: Size of maturity (L_m) for top 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 (2016-2022)

| | Species | Local Name | % in catch | 2016 | 2017 | 2018 | 2019 | 2021 | 2022 | Grand Total |
|----|--------------------------------------|-----------------------------------------------------|------------|------|------|------|------|------|------|-------------|
| 1 | <i>Acanthurus triostegus</i> | Manini, Koinava | 1.6% | | 0% | 30% | | 0% | | 11% |
| 2 | <i>Anyperodon leucogrammicus</i> | Gatala lautalo, Gatala lautala | 0.2% | 0% | | | | | 0% | 0% |
| 3 | <i>Aphareus furca</i> | Palusega, Kotua, Taelepe, Takuoga | 0.5% | | 100% | 100% | 100% | 100% | 100% | 100% |
| 4 | <i>Aprion virescens</i> | Utu | 0.9% | 67% | 0% | 63% | 56% | 75% | 50% | 59% |
| 5 | <i>Caranx lugubris</i> | Taufauli, Tino tafauli (large), Aheu tafauli, Uluat | 1.8% | 17% | 0% | 54% | 0% | 60% | 67% | 37% |
| 6 | <i>Caranx melampygus</i> | Aseu, Ulua, Fuaika | 0.8% | 0% | 0% | 0% | 0% | 0% | 100% | 19% |
| 7 | <i>Caranx sexfasciatus</i> | Teu | 5.2% | 94% | 58% | 63% | | | 67% | 68% |
| 8 | <i>Cephalopholis argus</i> | Loi | 0.0% | 0% | | | | | | 0% |
| 9 | <i>Chlorurus (Scarus) microrhino</i> | Laea | 0.0% | | 100% | | | | | 100% |
| 10 | <i>Crenimugil crenilabis</i> | Kanase | 3.6% | 0% | 0% | | | | 100% | 6% |
| 11 | <i>Decapterus macarellus</i> | Atule | 2.2% | | 7% | | | | | 7% |
| 12 | <i>Elagatis bipinnulata</i> | Kamai, Kamaa, Kami | 0.4% | 60% | 0% | 0% | | 50% | | 41% |
| 13 | <i>Epinephelus fasciatus</i> | Gatala | 0.1% | | | | 0% | | | 0% |
| 14 | <i>Epinephelus fuscoguttatus</i> | Munua | 4.8% | | 86% | 100% | | | 0% | 85% |
| 15 | <i>Epinephelus macrospilos</i> | Gatala (Ff), fapuku (Nm) | 0.4% | | 20% | 0% | | | | 19% |
| 16 | <i>Epinephelus maculatus</i> | Fapuku | 1.4% | | | 78% | 63% | 0% | 74% | 68% |
| 17 | <i>Epinephelus merra</i> | Gatalaliki | 1.2% | | | 0% | 0% | | 0% | 0% |
| 18 | <i>Epinephelus polyphkadion</i> | Gatala (one dot) | 3.3% | 55% | 50% | 40% | 13% | | 43% | 38% |
| 19 | <i>Hipposcarus longiceps</i> | Ulafi | 1.4% | | 63% | | | | | 63% |
| 20 | <i>Kyphosus vaigiensis</i> | Nanue (Ff, Nm) | 0.1% | | | 75% | | | | 75% |
| 21 | <i>Lethrinus amboinensis</i> | Noto, Gutulo, Sapotu | 1.6% | 0% | | | 4% | | 0% | 2% |
| 22 | <i>Lethrinus erythracanthus</i> | Saputu | 0.4% | | 0% | 25% | 0% | | 100% | 27% |
| 23 | <i>Lethrinus microdon</i> | Kapatiko | 1.0% | 0% | 0% | 0% | 0% | | 0% | 0% |
| 24 | <i>Lethrinus microdon</i> | Filoa, Kapatiko | 2.3% | | | 0% | 26% | 100% | 4% | 10% |
| 25 | <i>Lethrinus miniatus</i> | Noto | 0.3% | | | | 71% | 100% | 0% | 70% |
| 26 | <i>Lethrinus obsoletus</i> | Tanutanu | 8.3% | 50% | 0% | 1% | 5% | 100% | 3% | 2% |
| 27 | <i>Lethrinus olivaceus</i> | | 0.7% | | | | | 100% | | 100% |

| | | | | | | | | | | |
|----|------------------------------------|----------------------------------|---------------|------------|------------|------------|------------|------------|------------|------------|
| 28 | <i>Lethrinus variegatus</i> | Noto, Tanutanu | 0.4% | | 0% | | 0% | | | 0% |
| 29 | <i>Liza vaigiensis</i> | Kafakafa | 0.1% | 100% | | | | | | 100% |
| 30 | <i>Lutjanus argentimaculatus</i> | Tagau | 0.4% | | | 100% | | | | 100% |
| 31 | <i>Lutjanus bohar</i> | Fakamea, Fagamea | 0.5% | 100% | | 44% | 0% | 100% | 60% | 47% |
| 32 | <i>Lutjanus fulvus</i> | Tagau, Takape | 0.6% | 0% | | 10% | 0% | | 0% | 4% |
| 33 | <i>Lutjanus gibbus</i> | Taea | 34.1% | 35% | 6% | 18% | 18% | 27% | 4% | 15% |
| 34 | <i>Lutjanus kasmira</i> | Savane | 7.4% | 24% | 33% | 51% | 53% | 100% | 58% | 49% |
| 35 | <i>Lutjanus monostigma</i> | Taiva | 3.2% | 0% | | 6% | 75% | 0% | 8% | 11% |
| 36 | <i>Macolor niger</i> | Tilapia | 0.1% | | | 50% | | | 100% | 67% |
| 37 | <i>Monotaxis grandoculis</i> | Muu, Mufala | 0.6% | 50% | 0% | 50% | 0% | | 46% | 33% |
| 38 | <i>Mugil cephalus</i> | Kanase | 0.7% | | 86% | | | | | 86% |
| 39 | <i>Mulloidichthys vanicolensis</i> | Kalo | 0.0% | | | 100% | | | | 100% |
| 40 | <i>Myripristis adusta</i> | Malau fagamea, Malau matakelleke | 0.1% | 0% | 0% | | | | | 0% |
| 41 | <i>Myripristis berndti</i> | Malau | 0.4% | 29% | | 0% | | | | 25% |
| 42 | <i>Myripristis kuntee</i> | Malau | 0.1% | | | 0% | | | 0% | 0% |
| 43 | <i>Myripristis pralinia?</i> | Malau puku | 0.3% | | 0% | 0% | | | 0% | 0% |
| 44 | <i>Myripristis violacea</i> | Malau | 0.2% | | | | 0% | | 0% | 0% |
| 45 | <i>Naso brevirostris</i> | Pokapoka, Kosotu | 0.0% | 0% | | | | | | 0% |
| 46 | <i>Naso lituratus</i> | Manirilakau | 0.4% | | | 0% | | | | 0% |
| 47 | <i>Naso vlamingii</i> | Pokapoka lanulau | 0.0% | | | 100% | | | | 100% |
| 48 | <i>Priacanthus hamrur</i> | Matapa | 0.0% | | | 0% | | | | 0% |
| 49 | <i>Sargocentron spiniferum</i> | Tamalau | 3.9% | | 20% | 27% | 55% | | 29% | 31% |
| 50 | <i>Sargocentron tiere</i> | Malau gutu loa, Malua mata loa | 0.1% | | | | | | 75% | 75% |
| 51 | <i>Selar crumenophthalmus</i> | Salala, Atule | 0.9% | | | | 31% | | | 31% |
| 52 | <i>Siganus argenteus</i> | Maiava | 0.5% | | 0% | | | | | 0% |
| 53 | <i>Sphyraena forsteri</i> | Taotao | 0.4% | | 0% | 17% | | | 0% | 14% |
| | Grand Total | | 100.0% | 29% | 43% | 23% | 27% | 45% | 15% | 27% |