

### Niue coconut crab assessment and training



*From 17 November to 5 December 2014, the Fisheries Division of Niue, in collaboration with SPC's Coastal Fisheries Programme, Science and Management Section, conducted a series of surveys to determine the status of coconut crabs on the island. The first two weeks were devoted to field surveys, followed by one week of interviews with long-time hunters, restaurant staff and other people involved in using, selling or exporting coconut crabs.*

Previous coconut crab assessments on Niue took place in 1988, 1990 and 1997. Then, apart from an assessment made in 2008 — the results of which were never published — no assessment has been made in the 17-year interim period.

Coconut crabs are highly prized as food and their ease of capture has contributed in their disappearance in many island countries. For Niueans, coconut crab is a local delicacy, eaten regularly and used in celebrations; it is sold locally or sent to compatriots living abroad. It is also used for eco-tourism, with visitors taking guided tours to view crabs in natural habitats. It is, therefore, important to ensure that coconut crabs remains abundant in Niue. On top of the reduction in biodiversity, which could badly affect the fragile Niuean ecosystem, the collapse of the coconut crab stock would have negative consequences for some traditional, sociological and economical aspects of life in Niue.

The current legislation prohibits the interference, taking or killing of coconut crabs with a thoracic length of less than 36 mm, individuals in berry and/or with a soft shell. Another regulation prohibits the export or the facilitation of export from Niue of coconut crabs in any form during the period from 1 December to 28 February each year, without the written approval of cabinet. This regulation remains in force although it has not been enforced following the initial written approval of cabinet

to exempt the provision. Recent research and observations support the need for effective management and regulatory procedures in place to protect this iconic species in order to avoid unsustainable harvesting. There is no specific monitoring system in place to monitor compliance with these regulations, with the focus to date largely being on information and awareness.

The main objectives of the 2014 assessment were to gather information on the population size structure and distribution, and provide an estimate of population abundance. The study endeavoured to determine if changes in the population structure had occurred since the coconut crab surveys of the 1980s and 1990s, or when compared with unpublished results of the 2008 survey. Secondary objectives were to train local staff of the Department of Agriculture Forest and Fisheries (DAFF) in coconut crab assessment methods, and to develop survey protocols so that in the future, DAFF staff would be able to conduct assessments of coconut crab populations on their own.

The sampling design was developed using findings from previous studies and local knowledge. The timing of the survey coincided with the dark phase of the moon and during the summer wet season, which is the period when coconut crabs emerge from underground to begin foraging and migrating towards the coastline. In Niue, crab distribution is related to the distance from the

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coastline and type of vegetation cover. For these reasons, Niue's land area was divided into six habitat categories for the assessment:

1. 1 km from the coastline (primary forest)
2. 1 km from the coastline (light/scattered forest)
3. 1–2 km from the coastline (primary forest)
4. 1–2 km from the coastline (light/scattered forest)
5. >2 km from the coastline (primary forest)
6. >2 km from the coastline (light/scattered forest)

Habitats that were not surveyed included: the coastal and interior fern-land because this type of vegetation provides very poor habitat for coconut crabs; tapu areas in order to respect traditional obligations; and the limestone pinnacle area (particularly on the eastern portion of the island) due to the ruggedness of the terrain — a habitat suitable for coconut crabs but rather hostile for surveyors.

At each surveyed site within the selected habitat categories, bait trails were made and bait (opened coconut halves) was tied to tree roots or limestone coral. Three teams of three surveyors each set bait during the afternoons and then conducted night searches for coconut crabs. For each crab sampled, thoracic and cephalothoracic lengths, sex (if female: presence or absence of eggs), dominant colour, and weight were recorded.

The survey team is undergoing the data analysis. The final report should be completed and available to the public in March 2015. At the end of the field work, the

survey team leader, assisted by SPC's Coastal Fisheries Science and Management Adviser, provided a brief summary of methods used, and preliminary results of overall population size structure and catch per unit of effort (number of crabs recorded per bait set) via an hour session on the local radio and at a public meeting.



*Bait (opened coconut halves) was marked with red ribbons.*



*This coconut crab has a thoracic length of 31 mm. It is below the 36 mm size limit and so must be released alive.*

For the early 1990s assessment, researchers on Niue had collaborated with coconut crab specialists from Vanuatu. The link was revived in 2014, when Malcolm Linawak, from the Vanuatu Fisheries Department, joined the SPC team for the Niue surveys. The arrangement facilitated coconut crab-related knowledge sharing between the two countries.

The information gathered from the three-week mission and the results of the 2014 survey will be used to determine if the management measures currently in place need to be revised, or if their proper enforcement and monitoring would be sufficient to ensure that the coconut crab population remains healthy. Preliminary results indicate an increase in population numbers. However, in comparison with the unpublished findings of the 2008 survey, the average thoracic length has decreased from 27 mm to 25 mm for females, and from 33 mm to 30 mm for males. It has been estimated that of the total population, less than 2% of females and less than 26% of males are above the legal minimum catch size of 36 mm thoracic length. These results suggest that the reproductive viable population may be declining. Increasing the minimum size catch limit is, therefore, required.

The Fisheries Division will inform communities about the status of the coconut crab resource and encourage their collaboration to address key management issues, monitor population numbers and establish harvesting levels.



*Ian Bertram provides details on the survey's findings on a local radio station.*

### For more information:

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*All images in the article by Ian Bertram.*



*The limestone pinnacle area was too rugged to be surveyed.*