MANUAL OF METHODS AND TECHNIQUES FOR SURVEYING MANGROVE CRABS IN THE SA'ANAPU-SATAOA CONSERVATION AREA

Prepared for the South Pacific Biodiversity Conservation Programme (SPBCP), South Pacific Regional Environment Programme (SPREP)

by

Karen M. Kool

Crab pot with bait holder

What You Will Need for the Surveys

Equipment

- crab pots with bait holders (30)
- tape measure (30 m)
- buoys (30) - commercial or coconuts
- 30 lengths of 2 m rope
- string to tie up crabs
- flagging tape
- turkey tails as bait (one box per survey day)
  or other suitable bait (0.5 kg per pot)
- data sheets and information sheets
- pencils, pens, notebooks, permanent ink marker, wax crayon
- scales
- callipers
- dinghy and one or two canoes
- map showing location of the two survey sites. This may be found in the accompanying report *Mangrove crabs and the Sa'anapuu-Sataoa Conservation Area, Samoa*. Site 1 was located at the Sataoa end of the mangroves and Site 2 at the Sa'anapu end.
- hessian and fish boxes (or other self-draining boxes) for storing crabs

Preparation for the Surveys

- check that all equipment is in good order
- check that boats and personnel are available for the duration of the surveys
- read the relevant pages from the accompanying report *Mangrove crabs and the Sa'anapuu-Sataoa Conservation Area, Samoa* as a reminder of the rationale for using specific techniques
- read the section at the back of this manual on *How many repeat surveys* in order to familiarize yourself or the survey team on knowing when to stop surveying at a given site

Methods for Day 1

On the first day of the surveys at a site, the crab pots are placed in position on the stream bed alongside the mangroves. This work should be commenced on the incoming tide and will take approximately 3.5 hours to complete.

You will need

- boats: one dinghy and two canoes
- (at least) 6 people
- crab pots with buoys tied on with 2 m rope
- bait
- string
- tape measure
- flagging tape
- permanent ink pen

What to do

dinghy

The two (or more) people in the dinghy are responsible for erecting the pots, baiting the pots, numbering the buoys, and setting the pots. Pots are set to either side of the measured centreline, close to the mangroves in shallow water that will not be exposed at low tide.

canoes

The people in the canoes are responsible for measuring 40 m along the line of the channel between pot sites, checking that the pots have been set correctly (i.e. flat) on the bed, and checking that the rope from the buoy to the pot is long enough to ensure that the buoy will float freely at high tide. For measuring the 40 m between pot sites, a canoe paddles ahead with the tape measure while the dinghy, or other canoe, acts as an anchor at the previous pot position and feeds out the tape.

Methods for Day 2

On day 2 all crab pots are checked, any crabs present removed from the pots and the pots reset. The survey should commence on the incoming tide. Back on land, the crabs are weighed and measured.

On the Water

You will need

- boats: dinghy and (at least) one canoe
- four (or more) people
- bait (defrosted)
- string
- wax crayon
- notebook and pencil
- sack or other place to store crabs

What to do

dinghy

Starting at pot 1, the people in the dinghy are responsible for: tying up the crabs removed from the pot; marking the pot number on the carapace of the crab with a wax crayon; storing the crabs in a cool, damp place on the boat.

canoes

The people in the canoes are responsible for: lifting the pot and taking out crabs through the drawstring hole; removing old bait (and taking it back to discard on land); rebaiting the pot; resetting the pot in the same location.

This is repeated for all pots set.

On Land

You will need

- data sheets and information sheets
- pencils, pens and notebooks
- scales (digital kitchen scales with 5 g increments)
- vernier callipers
- hessian and fish boxes (or other self draining boxes)

What to do

Weigh and measure all crabs and complete data sheet referring to information sheet as needed. Examples of data sheet and information sheet are found at the back of this manual. Weights are to the nearest 5 g and all calliper measurements to the nearest mm. Calliper measurements should be supervised by someone previously trained in their use until competence is achieved. It may be difficult to determine the growth phase for males in which case they should be recorded as U (i.e. unknown).

Storage of crabs

After crabs have been weighed and measured, they should be stored and held until the repeat surveys at a given site are completed. Storage should be in damp hessian in fish boxes (with slats that stack up) or other self draining boxes. It is important to keep the crabs moist and cool. Keep them in the shade and add in salt water. This method is widely used for keeping crabs for up to 10 days with low mortality rates. Crabs should, at all times, be handled with care to avoid dropping claws.

Subsequent Days of Survey

Repeat as for Day 2.

Last Day of Site Survey

Do not replace pots; rather, collapse pots and clean for storage, or for use at second site. Return all crabs held to site of capture.

Measurements of crabs using callipers

Weighing crabs using kitchen scales

HOW MANY SURVEYS

How often to survey

Two sites were surveyed in the Sa'anapu-Sataoa Conservation Area in August/September 1997. Site 1 was located at the Sataoa end of the mangroves and Site 2 at the Sa'anapu end (refer to the report *Mangrove crabs and the Sa'anapu-Sataoa Conservation Area, Samoa* which accompanies this manual). Subsequent surveys should be carried out at the same sites, preferably three or four times per year to allow for seasonal influences on the numbers of mangrove crabs and on the age and sex class distribution to be taken into account. The precise location of the pots does not need to be replicated in future surveys but it is important that both sites are sampled as together they cover most of the mangrove area found in the CA.

How many repeat surveys

The number of repeat surveys to be conducted at a given time may vary. It is important to conduct repeat surveys on a daily basis until the graph showing cumulative catch vs. effort begins to plateau for a given site. This is illustrated below.

MANGROVE CRABS, *SCYLLA SERRATA*, SA'ANAPU-SATAOA CONSERVATION AREA, SAMOA

South Pacific Biodiversity Conservation Programme, SPREP.
Consultant: Dr Karen M. Kool

Site ______________ Surveyor ______________________________________

Date ______________ No. _____ Start __________ End __________ Tide _______

SEX	G.P.	S.I.	WIDTH	CLAW	FLAP	WEIGHT	COMMENTS

MANGROVE CRABS, *SCYLLA SERRATA*, SA'ANAPU-SATAOA CONSERVATION AREA, SAMOA

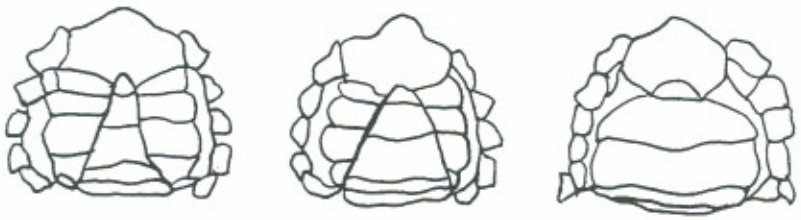
South Pacific Biodiversity Conservation Programme, SPREP.
Consultant: Dr Karen M. Kool

GENERAL

SITE	Creek, Mudflat, Mangrove
SURVEYOR	Name of surveyor
DATE	DDMMMYY e.g. 12SEP97
NO.	Number of pots handled
START	Time pot handling started e.g. 1.30 pm
END	Time pot handling finished e.g. 4.15 pm
TIDE	High, Ebb, Low

CRAB DATA

SEX	**F**	female
	M	male
	U	unknown



male crab - triangular flap

immature female - broad based triangular flap

mature female - rounded flap

G.P. (Growth Phase)	**I**	immature (small claws for male; small, unpigmented flap for female)
	M	mature (large,bulky claws for male; large,pigmented flap for female)
	U	unknown
S.I. (Shell Index)	**1**	intermoult, shell hard
	2	recently moulted, shell soft
WIDTH	**mm**	carapace width spine to spine
CLAW	**mm**	width of largest claw
FLAP	**mm**	width of flap at 2nd joint down
WEIGHT	**g**	drained weight of crab
COMMENTS		Additional information e.g. mating, limb buds, claw or leg missing