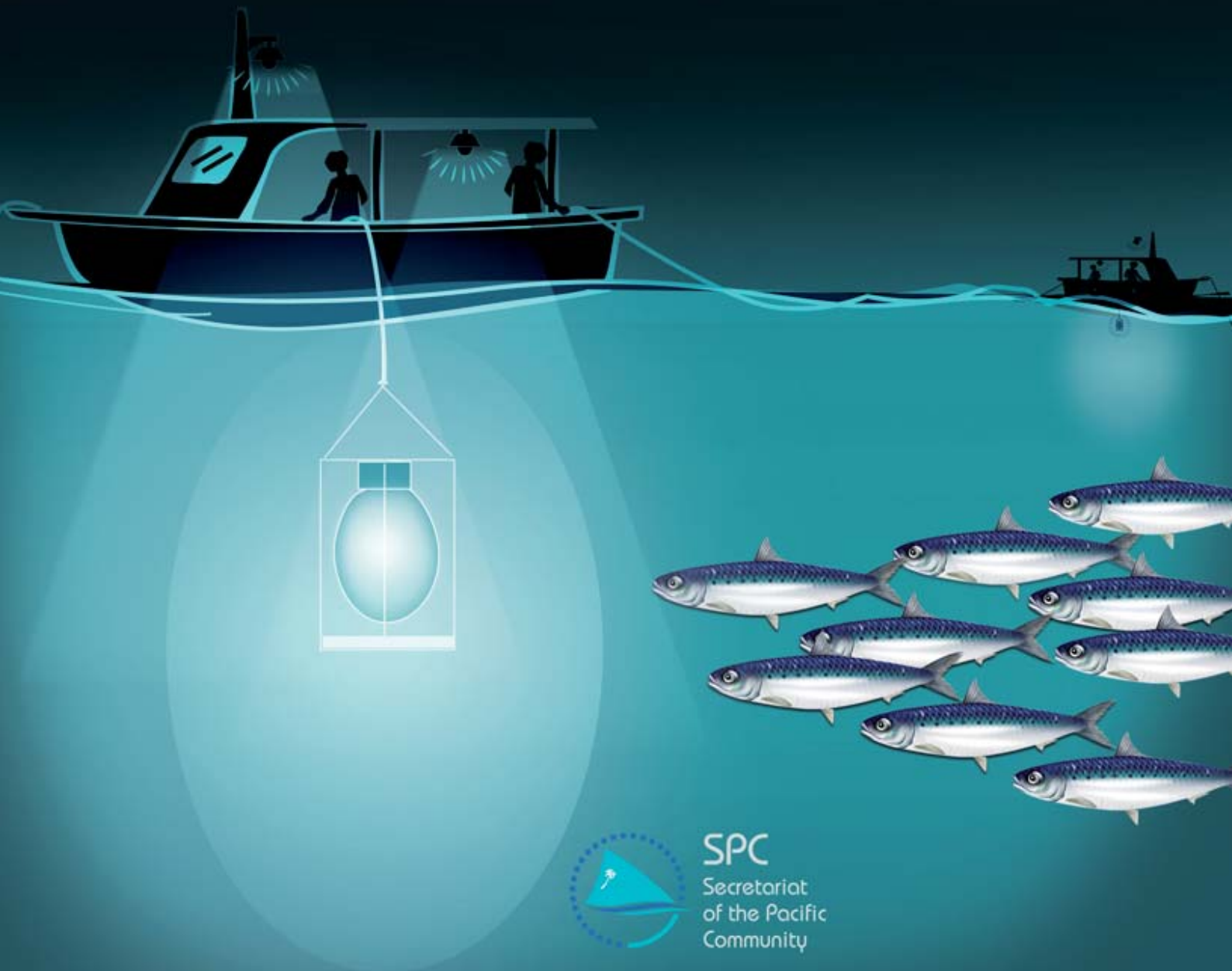




# Small-scale fishing techniques using light

A manual for fishermen



SPC  
Secretariat  
of the Pacific  
Community

# **Small-scale fishing techniques using light**

## **A manual for fishermen**

William Sokimi and Steve Beverly

Secretariat of the Pacific Community  
Noumea, New Caledonia  
2010

---

©Copyright Secretariat of the Pacific Community (SPC) 2010

All rights for commercial / for profit reproduction or translation, in any form, reserved. SPC authorises the partial reproduction or translation of this material for scientific, educational or research purposes, provided that SPC and the source document are properly acknowledged. Permission to reproduce the document and/or translate in whole, in any form, whether for commercial / for profit or non-profit purposes, must be requested in writing. Original SPC artwork may not be altered or separately published without permission.

Original text: English

---

Secretariat of the Pacific Community Cataloguing-in-publication data

Sokimi, William

Small-scale fishing techniques using light: a manual for fishermen/ William Sokimi and Steve Beverly

1. Small-scale fisheries — Oceania — Handbooks, manuals, etc.
2. Bait fishing — Oceania — Handbooks, manuals, etc.
3. Fisheries — Equipment and supplies — Oceania — Handbooks, manuals, etc.

I. Sokimi, William II. Beverly, Steve III. Title IV. Secretariat of the Pacific Community

639.2

AACR2

ISBN: 978-982-00-0449-8

---

**Secretariat of the Pacific Community**  
BP D5, 98848 Noumea Cedex, New Caledonia  
Tel: +687 26.20.00 Fax: +687 26.38.18  
www.spc.int spc@spc.int

Prepared for publication at SPC headquarters, Noumea, New Caledonia, 2010  
Printed at SPC, Noumea, New Caledonia, 2010



---

# Table of contents

Units and conversions	iv
Abbreviations and acronyms	v
Acknowledgements	vii
Introduction	ix
Chapter 1: Fish behaviour and light	1
A. Natural light – the sun	3
B. Natural light – the moon	3
C. Natural light – bioluminescence	3
D. Artificial light	4
E. How do marine organisms respond to light?	4
Chapter 2: Standard fishing gear and equipment	7
A. Fishing tools	8
B. Fishing gear accessories	11
Chapter 3: Types of lights and power sources commonly used	15
A. Lights and lamps	16
B. Lead acid batteries	21
Chapter 4: Night fishing methods using lights	23
A. Net fishing with lights	24
B. Small-scale bouke-ami stick-held dip net fishing	25
C. Small-scale basing lift net method	38
D. Gillnetting with lights	42
E. Offshore handlining and jigging with lights	47



---

## Units and conversions

m = metre

mm = millimetre

1 mm = 0.04 inch

1 inch = 25.38 mm

1 cm = 0.39 inch

1 inch = 2.54 cm

1 m = 3.28 ft

1 ft = 0.31 m

1 m = 0.55 fathoms

1 fathom = 1.83 m

Nominal equivalents for converting between metric and standard US measures

5 mm = 3/16 inch

16 mm = 5/8 inch

6 mm = 1/4 inch

19 mm = 3/4 inch

8 mm = 5/16

22 mm = 7/8 inch

10 mm = 3/8 inch

25 mm = 1 inch

12 mm = 1/2 inch

50 mm = 2 inches

14 mm = 9/16 inch

100 mm = 4 inches



---

# Abbreviations and acronyms

A	amperes (amps)
AC	alternating current
candela	candle power
cm	centimetres
DC	direct current
DSC	deep scattering layer
FAD	fish aggregating device
ft	feet
g	gram
in	inches
kg	kilogram
lb	pound
LED	light emitting diode
mm	millimetres
PVC	polyvinyl chloride
SPC	Secretariat of the Pacific Community
V	voltage (volts)
W	wattage (watts)



---

# Acknowledgements

The authors would like to acknowledge and thank Lindsay Chapman for recommending the development of this manual, and Michel Blanc for his support and encouragement in seeing that the manual is produced.

Special thanks to Youngmi Choi for all of her hard work on the technical illustrations, drawings, cover page and formatting of the manual.

Also, special thanks to Kim Des Rochers for her meticulous editing and advice.

## **Disclaimer**

Any similarities to trade products or reference to trade names does not represent endorsement by the authors or sponsoring agencies for this manual. Reference to any particular gender in this manual is generic unless otherwise specifically stated or expressed by the context.

---

# Introduction

The Secretariat of the Pacific Community (SPC) provides technical assistance to member countries and territories through practical field support, hands-on training and advisory service to both the private and government fisheries sectors. The Nearshore Fisheries Development and Training Section of SPC is partially tasked with promoting fisheries development methods and strategies that encourage the enhancement of economically sustainable fishing practices that encompass the concept of the ecosystem approach to fisheries.

This manual presents some of the small-craft night baiting and fishing techniques commonly used in the Pacific Islands region, and provides Pacific Island fishermen with information that may help develop their small-craft commercial fishing operations. Some of the techniques are improvements in canoe fishing methods and use basic gear, while other techniques include modern fishing equipment used on advanced small-scale fishing craft. Still other methods are adaptations of medium- to large-scale industrial fishing operations to small fishing craft operations.

The night baiting and night fishing methods covered in this manual encourage small-craft commercial fishermen to steer away from bottom fishing operations and move toward fishing for midwater pelagic fish, either inshore or offshore. Fishing methods focus on using light to aggregate phytoplankton and baitfish that in turn attract large pelagic fish.

This manual describes the use of bouke-ami stick-held dip nets, basnig lift nets and gill nets for catching baitfish and small pelagic fish. It is believed that if these net fishing methods are properly managed in coastal fishing communities, the accumulated bait, especially scads and sardinella, can be caught in sufficient volume to subsidise bait used in small-scale commercial tuna longline fishing operations.

The bouke-ami stick-held dip net, basnig lift net, gill net and line fishing methods referred to in this manual were used by the author during SPC projects within the Pacific Islands region. These techniques have resulted in differing levels of fishing success, depending on the skills of the fishermen working with him at the time (i.e. mainly students of fisheries colleges and experienced local fishermen who were selected to participate in fishing skills workshops).

This manual advocates vessel operations and fish harvesting activities that use ecologically compatible fishing methods and post-harvest practices. The ecosystem approach to fisheries is part of the Nearshore Fisheries Development and Training Section's fisheries development strategy, and this approach is promoted regionally to ensure long lasting fisheries resources and workable fisheries management policies.