

Super Sites for Environmental Education

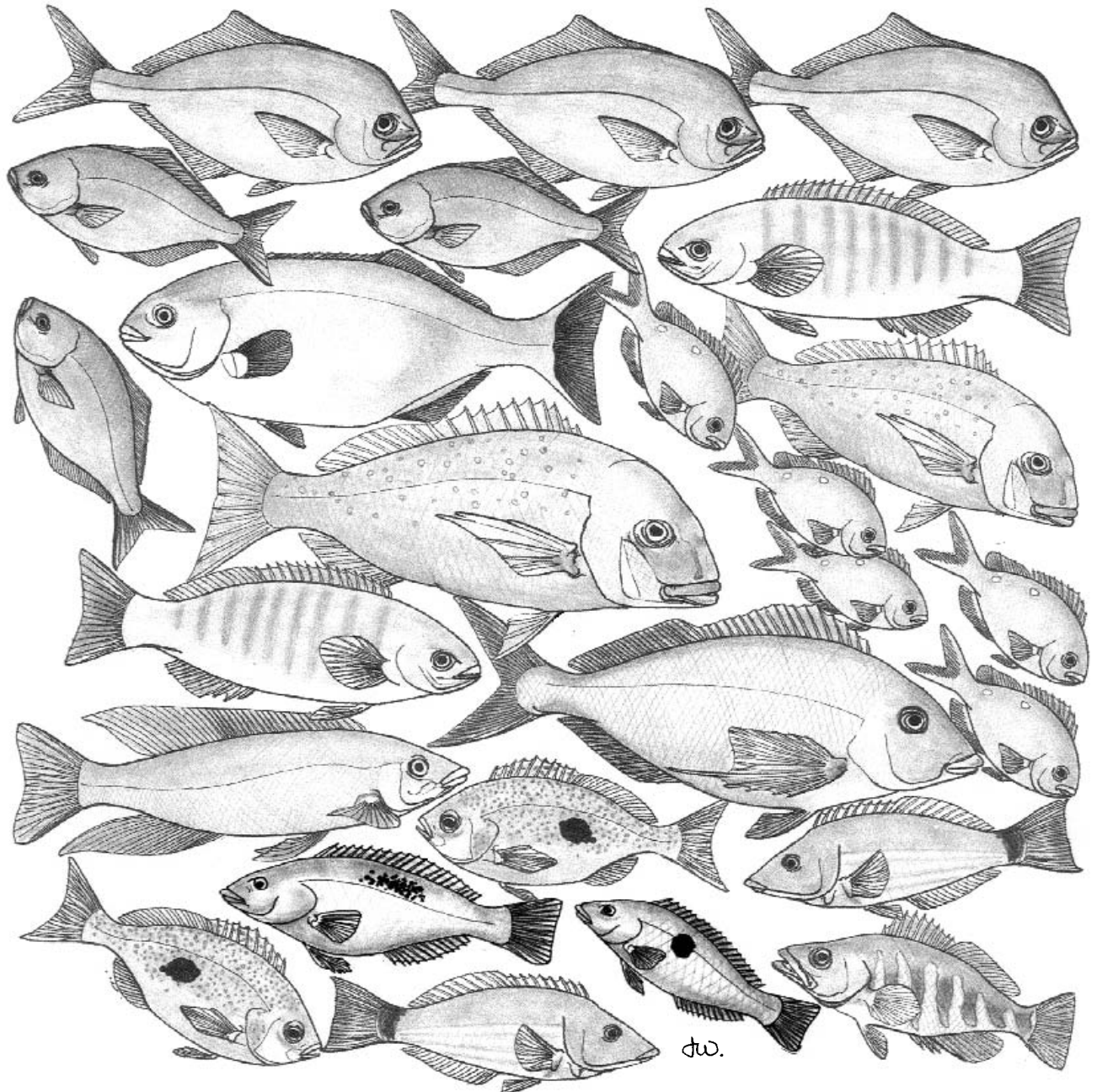
Marine Reserves

Education Kit

Written and illustrated by John Walsby



Department of Conservation
Te Papa Atawhai



education 
in, about and for the **environment**

Published by the Auckland Conservancy
of the Department of Conservation
Private Bag 68 908, Newton
Phone (09) 307 9279, Fax (09) 377 2919
www.doc.govt.nz

First edition September 2001
Second edition June 2002
Third edition September 2004

Edited by Linda Bercusson
Designed by Verso Visual Communications
Curriculum links by Sue Reid

The text and illustrations in the Marine Reserves
Education kit are covered by copyright. The kit is
designed for bulk photocopying for use only in
conjunction with a school teaching programme.

ISBN 0-478-22151-7

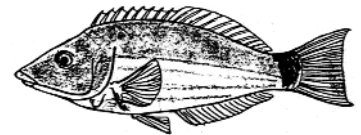
Contents

7 Introduction

- 7 Studying marine reserves and marine science in a reserve
or Hard learnt lessons for teachers!

9 Ready for a trip to a marine reserve to study the beach and underwater life?

- 10 Planning
- 12 Equipment to take on to the shore
- 13 Basic equipment for shore study kit for senior students
- 15 Collecting specimens for a class aquarium
- 15 Transporting live animals
- 16 Learning to look at the beach



18 Long Bay – Okura Marine Reserve

- 18 The marine reserve at a glance
- 19 What's special about the marine reserve?
- 19 Planning a visit
- 20 Teaching resources
- 21 Help look after the marine reserve

22 Cape Rodney – Okakari Point Marine Reserve

- 22 The marine reserve at a glance
- 23 What's special about the reserve?
- 23 Planning a visit
- 24 Teaching resources
- 24 Help look after the marine reserve

29 Feeding fish in marine reserves

- 29 Cross-curricular approach to a Marine Reserve issue
- 30 Why do people feed fish? (Sociology)
- 32 Fish feeding – the law ... and being bitten
- 35 First thoughts about fish feeding
- 36 Familiarity with relevant sections of the Marine Reserves Act

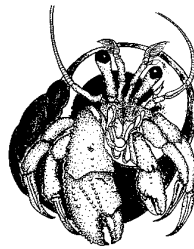
- 45 Experiment: polluting the shallows with waste food (Science)
- 46 What do fish really eat?
- 47 Getting the message across – making a poster
(Art Language and Science)
- 48 A page from a fish's diary (Science and Language)
- 48 'Don't Feed the Fish' – designing a public notice board
(Art and Language)
- 50 A tonne of bread and peas
(Science, Mathematics and Sociology)

51 How intertidal animals avoid drying out

- 51 The problem – pre-visit preparation
- 51 Some facts about drying out
- 52 How do animals cope with the stresses of drying out?
- 55 Desiccation demonstrations (Senior Studies)

56 The seashore food cycle

- 56 Teaching approaches for food types and feeding methods
- 56 The food cycle
- 58 Food types and feeding methods



70 Biodiversity

- 71 Factors affecting biodiversity
- 74 Pollution threats at Goat Island
- 75 Pollution threats at Long Bay
- 76 Biodiversity poster (Art and Language)
- 76 Table of pollution threats (Social Science, Science, Language)
- 77 Shore exercise: biodiversity treasure hunt (Biological Science, Ecology)
- 78 List of seashore animals
- 79 Common marine animals – biodiversity checksheet

85 The hermit crab – model study

89 Fish identification and habitat relationships

- 89 Fish frenzy
- 93 Exercises at Goat Island Bay

98 Zonation on terraced rocky shores

98 Long Bay and Goat Island Bay

105 An example of distribution at Goat Island Bay

108 Examples of distribution at Long Bay

112 Life in rock pools

113 Rock pool diversity (art and science – junior levels)

114 Measuring animals in a marine reserve

116 Measurements of abundance

117 Sampling and averaging

117 Counting and measuring

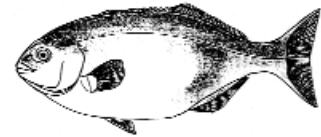
126 Environmentally acceptable measurement exercises

128 Soft shore shells (Biodiversity)

130 Long Bay – sandy beach. Driftline shells: common names

131 Long Bay – sandy beach. Driftline shells: common and scientific names

132 Marine reserve resources



138 Environmental education –
an action-orientated approach

140 Environmental education – teaching activities

143 Super Sites for Education in Marine Reserves
Resource kit evaluation form

146 Curriculum links and achievement aims

146 The key concepts underlying environmental education

146 The key dimensions of environmental education

146 Science in the New Zealand curriculum, achievement aims for:
'Making Sense of the Living World'

