

**CSIRO
Marine Laboratories**

REPORT 185

**An Indexed Bibliography
of the Southern Bluefin Tuna (*Thunnus maccoyii*
(Castlenau, 1872))**

G. J. Eckert, J. Kalish, J. Majkowski and R. Pethebridge

1987

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
MARINE RESEARCH LABORATORIES
GPO BOX 1538, HOBART, TAS. 7001, AUSTRALIA

National Library of Australia Cataloguing-in-Publication Entry

An indexed bibliography of the southern bluefin tuna
(*Thunnus maccoyii* (Castelnau, 1872)).

Includes index.

ISBN 0 643 03968 6.

1. Bluefin tuna—Bibliography. I. Eckert, Gillian J. (Gillian Joyce). II. Commonwealth Scientific and Industrial Research Organisation (Australia). Marine Laboratories. (Series: Report (Commonwealth Scientific and Industrial Research Organisation (Australia). Marine Laboratories); no. 185).

016.597'58

© CSIRO Australia 1987. Printed by CSIRO, Melbourne

**An Indexed Bibliography of the
Southern Bluefin Tuna
(*Thunnus maccoyii*
(Castlenau, 1872))**

G.J. Eckert*, J. Kalish, J. Majkowski*
and R. Pethebridge****

* CSIRO Division of Fisheries Research, Marine Laboratories, GPO Box 1538,
Hobart, Tas. 7001.

** Zoology Department, University of Tasmania, GPO Box 252C, Hobart, Tas. 7001.

**Present address: 31 McRacs Avenue, Penhurst, NSW 2222.

CSIRO Marine Laboratories Report No. 185 (1987)

Abstract

This bibliography lists 538 scientific papers, technical reports and articles published before 1985 that contain information on the biology, fisheries and management of the southern bluefin tuna (*Thunnus maccoyii* (Castlenau)). Each entry is indexed by author and subject. Only articles in English or with an English abstract are included; newspaper articles are not included.

Introduction

Southern bluefin tuna (*Thunnus maccoyii* (Castlenau, 1872)) is a 'true' tuna belonging to the tribe Thunnini within the family Scombridae. Highly prized for sashimi and excellent for canning, it has supported an extensive international fishery since the 1950s, with global catches peaking at over 81,000 tonnes in 1961. It is chiefly fished by Japan, Australia and, to a lesser extent, New Zealand. It is Australia's most important fin-fishery. Southern bluefin tuna appear to be a single global stock, with an almost circumpolar distribution between 30°S and 50°S. Individuals are highly migratory: tagged fish have been recaptured up to 13000 km from the point of release.

Southern bluefin tuna is one of the larger teleost fishes, growing to more than 165 kg and living for over 20 years. Warm-blooded and hydrodynamically shaped, it is a high-speed predator that hunts in pelagic schools. It schools near the surface in coastal waters as a juvenile, but lives in deeper oceanic waters as an adult.

Southern bluefin tuna reaches reproductive maturity at about eight years (Shingu, 1978). Its only known spawning ground is south of Java, Indonesia (Shingu, 1978); larvae are found off the northwest coast of Australia (Anon, 1985). An unknown proportion of juveniles then migrate in an anti-clockwise direction around the Australian coast, where some are caught by a surface fishery operating from the southern coast of Western Australia and South Australia. An important fishery also existed off New South Wales, but has recently declined. Most fish are canned; a few are now exported to Japan for sashimi. Some juvenile southern bluefin tuna are also caught off the coast of South Africa by a Japanese surface fishery.

Fish older than six years recruit to the Japanese longline fishery that operates over most of the Southern Ocean. Small numbers of adult southern bluefin tuna are also taken in New Zealand. Both these fisheries supply the Japanese sashimi market.

Concern for the declining parental biomass of southern bluefin tuna as a result of fishing pressure (Murphy and Majkowski, 1981; Majkowski and Hampton, 1983; Hampton et al., 1984; Majkowski, 1985; Hampton and Majkowski, 1986a,b) was the impetus for recent international negotiations on the management of the fishery and subsequent restrictions on catches.

This report is an attempt to collate scientific and technical reports and articles published before 1985 on the biology, fisheries and management of southern bluefin tuna. Only articles in English or with English abstracts are included. Newspaper articles are not listed.

The following computer data bases were searched:

Aquatic Sciences and Fisheries Abstracts

Australian Bibliography of Agriculture

BIOSIS (Biological Abstracts)

In addition, every number of the following journals (between 1950 and 1984 - unless stated otherwise) was searched manually:

Annals and Magazine of Natural History

Annals of the South African Museum

CSIRO Division of Fisheries Report

CSIRO Division of Fisheries. Technical Papers

CSIRO Division of Fisheries and Oceanography Report

CSIRO Institute of Animal and Food Sciences Annual Report

CSIRO Marine Laboratories Reports

Australian Fisheries Newsletter

Australian Fisheries

Australian Journal of Marine and Freshwater Research

Australian Marine Research in Progress

Bulletin du Museum National d'Histoire Naturelle

Bulletin of the Far Seas Fisheries Research Laboratory

Bulletin of the Japanese Society of Fisheries Oceanography

Bulletin of the Japanese Society of Scientific Fisheries

Bulletin of the Misaki Marine Biological Institute, Kyoto University

Bulletin of the Tohoku Regional Fisheries Research Laboratory

Bulletin of the Tokai Regional Fisheries Research Laboratory

Canadian Journal of Fisheries and Aquatic Sciences

Catch

CMFRI Bulletin, Cochin

Copeia

Directory of CSIRO Research Programs

Ecos

FAO Fisheries Circular

FAO Fisheries Reports

FAO Fisheries Synopsis

Far Seas Fisheries Research Laboratory. S Series

FINS

FINTAS

Fishery Bulletin. California Department of Fish and Game

New Zealand Fisheries Research Division. Occasional Publication

Fisheries Technical Report. New Zealand Fisheries Management Division

Fishing Industry Research Committee. Annual Report

Fishing News International

Indo-Pacific Fisheries Council. Proceedings
Infofish Marketing Digest
Inter-American Tropical Tuna Commission. Special Report
International Commission for the Conservation of Atlantic Tunas. Collective
Volume of Scientific Papers
Japanese Journal of Ichthyology
Journal du Conseil
Journal of the College of Agriculture, Imperial University of Tokyo. 8(3), 1923
Journal of the Fisheries Research Board of Canada
Journal of the Shimonoseki University of Fisheries
New Zealand Journal of Marine and Freshwater Research
NOAA Technical Report NMFS Circular
NOAA Technical Report NMFS SSSRF
NOAA Technical Report
Occasional Papers of the California Academy of Sciences. 12, 1926
Occasional Report of Nankai Regional Fisheries Research Laboratory
Oceanography and Marine Biology. An Annual Review
Problems in Ichthyology
Proceedings of the New Zealand Ecological Society
Professional Fisherman
Report of Nankai Regional Fisheries Research Laboratory
SAFIC (South Australian Fishing Industry Council)
Science Newsletter
South Africa, Division of Sea Fisheries, Investigational Report
Misaki Marine Biological Institute, Kyoto University. Special Report
Tasmanian Fisheries Research
Transactions of the Royal Society of New Zealand (Zoology)
Transactions of the Royal Society of South Australia
United States Fisheries and Wildlife Service. Fishery Bulletin. 50-68, 1941-1970
United States Fisheries and Wildlife Service. Special Scientific Report:
Fisheries. 1949-1971
Fishery Bulletin. United States National Marine Fisheries Service
Western Australia Department of Fisheries and Wildlife. Report
World Fishing

The authors wish to thank Dr Vivienne Mawson* for editing the manuscript, Mr Denis Abbott* for assistance in locating references and Ms Bernadette Baker* for checking indexes.

Contents

	Pages
Bibliography - an alphabetical list of all references by author or, for anonymous authors, by title. The reference number preceding each entry identifies the entry in the indexes.	6
Author Index - alphabetical list of all authors, including junior authors. Anonymous articles are indexed under the name of the journal in which they were published. The reference numbers identify the item in the bibliography.	35
Subject Index - alphabetically list of the main topics in each publication. The reference numbers identify the item in the bibliography.	41

Bibliography

- 1
Aaltonen, I. 1981. Operations of Japanese tuna vessels in the Australian Fishing Zone based on observer reports, December 1979-December 1981. Fisheries Division, Department of Primary Industry, Canberra, Australia, 14 pp.
- 2
Abe, T. 1955. Preliminary notes on the "indo-maguro" (a kind of bluefin tuna) taken commercially from the eastern part of the Indian Ocean. Bull. Jpn. Soc. Sci. Fish. 21 (1): 20-23.
- 3
Abe, T. and Hiragaki, T. 1979. A record of an albinistic southern bluefin tuna from the Tasman Sea. Uo, Jpn. Soc. Ichthyol. 30: 2 pp.
- 4
Above average tuna season seems likely. 1981. Aust. Fish. 40(4): 5-6.
- 5
AFIC discusses tuna longline arrangements. 1980. SAFIC (S. Aust. Fish. Indus. Coun.) 4(3): 7-8.
- 6
AFIC wants cut-back in Japanese access to SBF tuna. 1980. Aust. Fish. 39(9): 43.
- 7
Agreement reached on tuna stock. 1983. Sci. Newsl. (Aust. Inform. Serv.) 10(6): 16-17.
- 8
Air freighted tuna. 1972. Aust. Fish. 31(4): 5.
- 9
Akyuz, E.F. 1970. A guide to marks used for tunas. FAO Fish.Circ. 101-Revision 1: 4 pp.
- 10
Allen, R. 1983. Nations concerned about bluefin. Catch '83 (N.Z. Minis. Agric. Fish.) 10(7): 7-8.
- 11
A.L.P. spokesman hits at tuna moves. 1981. Prof. Fisherman (Aust.) 3(7): 34.
- 12
Annual report of effort and catch statistics by area on Japanese tuna longline fishery 1962 (*et seq.*) 1962-1980. Research Department, Fishery Agency of Japan, pg. var.
- 13
Austin, R.H. 1973. CSIRO's role in fisheries and oceanography. Aust. Fish. 32(2): 8-21.
- 14
Australia/Japan agreement renewed. 1982. Prof. Fisherman (Aust.) 5(1): 13.
- 15
Australia-Japan fisheries agreement renegotiated. 1983. Aust. Fish. 42(10): 26.
- 16
Australia, Japan renew tuna pact. 1983. World Fish. 32(1-2): 5,7.
- 17
Australia-Japan tuna agreement. 1981. Aust. Fish. 40(11): 30.
- 18
Australia - multi species potential in round coast exploitation. 1978. World Fish. 27(8): 47, 51-53.
- 19
Australia...national. 1983. Prof. Fisherman (Aust.) 5(9): 12.

- 20
Australian Department of Agriculture. 1975.
1974-1975 tuna season in Australia. FAO
Fish. Rep. 174: 23-28.
- 21
Australian fisheries council meets. 1982. Aust.
Fish. 41(11): 30.
- 22
Australian-made tuna fishing machine. 1975.
Aust. Fish. 34(10): 8.
- 23
Australian tuna for Japan. 1968. FINS (Dept.
Fish. Wildl. Western Australia) 1(1): 9.
- 24
Australian tuna raft experiment raises hopes.
1982. World Fish. 31(6): 3.
- 25
Australian tuna research. 1961. Fish. Newsl.
(Aust.) 20(9): 20-21.
- 26
Australians want fewer Japanese tuna
fishermen. 1981. World Fish. 30(11): 5.
- 27
Australia's 200-mile zone now in force. 1979.
Fish. News Int. 18(11): 23.
- 28
BAE background to finfish market. 1983. Aust.
Fish. 42(2): 11-12.
- 29
BAE warning on 'commercial extinction' of tuna.
1983. Aust. Fish. 42(8): 12-13.
- 30
Bain, R. 1982. An overview of the Australian
fishing industry. Aust. Fish. 41(10): 10-15.
- 31
Baker, W. 1982. Test sashimi tuna potential,
Baker advises. FINTAS (Fishing Industry
News of Tasmania) 5(3): 2-3.
- 32
Beare, M.J., P.D. Lorimer and J.S. Hynd. 1963.
An investigation of tuna long-line fishing in
Japan and the Hawaiian Islands. Fisheries
Division, Department of Primary Industry,
Canberra, Australia, 60pp.
- 33
Bell, A.J. 1982. Daniel Solander arrives.
Catch '82 (N.Z. Minis. Agric. Fish.) 9(5):
31.
- 34
Big poler-trawler to be launched next month.
1981. Aust. Fish. 40(2): 38-39.
- 35
Big schools of tuna reported in Tasmanian
waters. 1970. Aust. Fish. 29(6): 29.
- 36
Big tuna catches in SA. 1981. Aust. Fish.
40(6): 20.
- 37
Bito, M. 1980. Effect of storage temperature
on the discolour- ation during frozen
storage in packed meat prepared from
tuna frozen-stored aboard. Bull. Tokai
Reg. Fish. Res. Lab. 103: 73-82. (In
Japanese with English abstract).
- 38
Blackburn, M. and Rayner, G.W. 1951. Pelagic
fishing experi- ments in Australian waters.
Aust. CSIRO Div. Fish. Tech. Pap. 1: 8 pp.
- 39
Bluefin fishery booming. 1982. Catch '82 (N.Z.
Minis. Agric. Fish.) 9(8): 7.
- 40
Bluefin fishery for Kaikoura? 1983. Catch '83
(N.Z. Minis. Agric. Fish.) 10(6): 14.
- 41
Bluefin quota remains. 1982. Fish. News Int.
21(11): 12.
- 42
Bluefin search. 1983. Catch '83 (N.Z. Minis.
Agric. Fish.) 10(1): 12.

8 Bibliography

- 43
Bluefin tuna catch down. 1978. Aust. Fish. 37(8): 29.
- 44
Bluefin tuna catch varies. 1983. Catch '83 (N.Z. Minis. Agric. Fish.) 10(8): 32.
- 45
Bluefin tuna management plan. 1984. Prof. Fisherman (Aust.) 6(11): 11.
- 46
Bluefin tuna search fails. 1983. Catch '83 (N.Z. Minis. Agric. Fish.) 10(5): 30.
- 47
Boat register for bluefin. 1984. Prof. Fisherman (Aust.) 6(6): 11.
- 48
Boat register for SBT fishery. 1984. Aust. Fish. 43(4): 8.
- 49
Bowerman, M.R. 1976. Tuna fishermen still facing problems despite good season. Aust. Fish. 35(5): 2-5, 8.
- 50
Cade, R. 1982. Restructuring of the Japanese tuna industry. Catch '82 (N.Z. Minis. Agric. Fish.) 9(2): 21.
- 51
Campbell, D. 1983. Finfish - fall in profitability likely in '83. Aust. Fish. 42(2): 3-4.
- 52
Campbell, D. 1984. Outlook for fresh and frozen fish and tuna. Aust. Fish. 43(3): 14-15.
- 53
Castelnau, F.L. 1872. Contribution to the ichthyology of Australia. Proc. Zool. Acclim. Soc. Vict. 1: 29-247.
- 54
Caton, A.E. 1983. What's wrong with the weather? (And what's it doing to the fishing?) Aust. Fish. 42(10): 8-11.
- 55
Caton, A.E. 1984. Catching southern bluefin tuna in roe. Aust. Fish. 43(7): 23-25.
- 56
Caton, A.E. 1984. Useful information from Japanese longline reports. Aust. Fish. 43(1): 44-46.
- 57
Caton, A.E. and Hampton, J. 1984. Japanese scientists search for southern bluefin tuna larvae. Aust. Fish. 43(1): 48-50.
- 58
Changes in tuna processing in Port Lincoln. 1983. Aust. Fish. 42(5): 6-7, 9.
- 59
Collette, B.B. 1978. Adaptations and systematics of the mackerels and tunas. In: Sharp, G.D. and Dizon, A.E. (eds.), The physiological ecology of tunas. Academic Press, New York, pp. 7-39.
- 60
Collette, B.B. and Gibbs, R.H., Jr. 1963. A preliminary review of the fishes of the family Scombridae. FAO Fish. Rep. 6(3): 977-978.
- 61
Collette, B.B. and Nauen, C.E. 1983. FAO species catalogue, vol. 2. Scombrids of the world; an annotated and illustrated catalogue of tunas, mackerels, bonitos and related species known to date. FAO Fish. Synop. 125: 137 pp.
- 62
Collette, B.B. and Smith, B.R. 1981. Bluefin tuna, *Thunnus thynnus orientalis*, from the Gulf of Papua. Jpn. J. Ichthyol. 28(2): 162-168.
- 63
Collins, S. 1982. Longline catch rates off Tasmania falling. Aust. Fish. 41(4): 8-10.

- 64
Collins, S. 1983. Longline catches off Tasmania a record low. *Aust. Fish.* 42(6): 41-42.
- 65
Collins, S. 1984. Japanese longline catches off Tasmania doubled. *Aust. Fish.* 43(5): 6-7.
- 66
Combined study of southern bluefin tuna suggested at IPFC symposium in N.Z. 1972. *Aust. Fish.* 31(12): 14.
- 67
Commercial tuna fishery possible off WA. 1976. *Aust. Fish.* 35(1): 8-11.
- 68
Controls introduced in tuna fishery. 1975. *SAFIC (S. Aust. Fish. Indus. Coun.)* 5: 15.
- 69
Co-operation needed to get most from Pacific tuna species. 1982. *SAFIC (S. Aust. Fish. Indus. Coun.)* 6(3): 29-30.
- 70
Cowper, T.R., Hynd, J.S., Kesteven, G.L., Munro, I.S.R., Robins, J.P., Sproston, N.G. and Vaux, D. 1963. Tuna (*Thunnus thynnus maccoyii*). *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1962-1963: 9-15.
- 71
Cowper, T.R., Hynd, J.S., Kesteven, G.L., Robins, J.P. and Sproston, N.G. 1965. Southern bluefin tuna (*Thunnus thynnus maccoyii*). *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1964-1965: 10-19.
- 72
Cowper, T.R., Hynd, J.S. Kesteven, G.L., Robins, J.P., Sproston, N.G. and Vaux, D. 1964. Tuna (*Thunnus thynnus maccoyii*). *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1963-1964: 18-28.
- 73
Cressey, R. and Cressey, H.B. 1980. Parasitic copepods of mackerel- and tuna-like fishes (Scombridae) of the world. *Smith. Contr. Zool.* 311: 186 pp.
- 74
Crooks, A.D. 1961. Coastal hydrological investigations in the New South Wales tuna fishing area, 1959. *Aust. CSIRO Div. Fish. Oceanogr. Oceanographical Station List* 46: 2-4.
- 75
CSIRO Division of Fisheries. 1950. Fisheries biology: (iv) Tuna. *Aust. CSIRO Div. Fish. Annu. Rep. for the year ending 30th June, 1950:* 4.
- 76
CSIRO Division of Fisheries. 1951. Sea fisheries: (iii) Tuna. *Aust. CSIRO Div. Fish. Annu. Rep. 1950/51:* 5-7.
- 77
CSIRO Division of Fisheries. 1953. Sea fisheries: (iv) Tuna. *Aust. CSIRO Div. Fish. Annu. Rep. 1952/53:* 9-10.
- 78
CSIRO Division of Fisheries. 1954. Sea fisheries: (d) Tuna. *Aust. CSIRO Div. Fish. Annu. Rep. for the year ending 30th June, 1954:* 5.
- 79
CSIRO Division of Fisheries. 1955. Sea fish: (e) Tuna. *Aust. CSIRO Div. Fish. Annu. Rep. for the year ending 30th June, 1955:* 6.
- 80
CSIRO Division of Fisheries and Oceanography. 1956. Sea fish: (e) Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. for the year ending 30th June, 1956:* 8.

10 Bibliography

- 81
CSIRO Division of Fisheries and Oceanography. 1957. Sea fish: (iii) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1956-57: 7-8.
- 82
CSIRO Division of Fisheries and Oceanography. 1958. Sea fish: (iv) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1957-58: 10-12.
- 83
CSIRO Division of Fisheries and Oceanography. 1959. Sea fish: (ii) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1958-59: 10-12.
- 84
CSIRO Division of Fisheries and Oceanography. 1960. Sea fish: (ii) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1959-60: 11.
- 85
CSIRO Division of Fisheries and Oceanography. 1961. Fisheries biology: (c) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1960-61: 16.
- 86
CSIRO Division of Fisheries and Oceanography. 1961. Tuna search programme. Aust. CSIRO Div. Fish. Oceanogr. Southern Pelagic Project Special Report 1: 33 pp.
- 87
CSIRO Division of Fisheries and Oceanography. 1962. Tagging: (iii) Tuna. Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep. 1961-62: 10.
- 88
CSIRO Division of Fisheries and Oceanography. 1979. Sub-programme VA - migratory species (tunas and billfish). CSIRO Research Programmes 1979-1980: 136.
- 89
CSIRO Division of Fisheries and Oceanography. 1980. Migratory species (tuna and billfish). Aust. CSIRO Fish. Oceanogr. Rep. 1977-1979: 60.
- 90
CSIRO Division of Fisheries Research. 1982. Sub-program migratory species (tuna and billfish). Directory of CSIRO Research Programs 1982: 110.
- 91
CSIRO Division of Fisheries Research. 1982. Southern bluefin tuna. CSIRO Institute of Animal and Food Sciences Annual Report 1981/1982: 52-54.
- 92
CSIRO Division of Fisheries Research. 1983. Sub-program migratory species (tuna and billfish). 1983 Directory of CSIRO Research Programs: 133-134.
- 93
CSIRO Division of Fisheries Research. 1983. Australia's fishery resources. Aust. CSIRO Annu. Rep. 1982/1983: 111-119.
- 94
CSIRO Division of Fisheries Research. 1984. Sub-program migratory species (tunas and billfishes). 1984 Directory of CSIRO Research Programs: 141-142.
- 95
CSIRO tagging tuna off Esperance. 1983. Aust. Fish. 42(1): 26-27.
- 96
Disappointing tuna catch. 1970. Aust. Fish. 29(8): 20.
- 97
Domestic catch statistics 1980. 1981. Catch '81 (N.Z. Minis. Agric. Fish.) 8(8): 3-7.
- 98
Dragovich, A. 1969. Review of studies of tuna food in the Atlantic Ocean. U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Fish. 593: 21 pp.

- 99
Dung, D.I.Y. and Royce, W.F. 1953.
Morphometric measurements of Pacific scombrids. U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Fish. 95: 170 pp.
- 100
Economic survey of southern bluefin tuna fishery. 1974. Aust. Fish. 33(5): 7.
- 101
Economic survey of the southern bluefin tuna fishery. 1974. Australian Department of Agriculture, Fisheries Division, Fish. Rep. 9: 26 pp.
- 102
Ehira, S., Uchiyama, H. and Kakuda, K. 1984.
Improvement of determination method of the metmyoglobin to total myoglobin ratio in tuna meat. Bull. Jpn. Soc. Sci. Fish. 50(2): 269-274.
- 103
Elliott, R. 1982. NZ freezer ship takes tuna to Japan. Prof. Fisherman (Aust.) 4(12): 51.
- 104
Elliott, R. 1983. Nations chase NZ tuna expertise. Prof. Fisherman (Aust.) 5(3): 11.
- 105
Experimental rafts feature in record WA tuna catch. 1981. Aust. Fish. 40(12): 30-32.
- 106
Experimental tuna rafts feature in record catches. 1981. FINS (Dept. Fish. Wildl. Western Australia) 14(3): 3-6.
- 107
FAO. 1968. Report of the meeting of a group of experts on tuna stock assessment, Miami, U.S.A., 12-16 August 1968. FAO Fish. Rep. 61: 45 pp.
- 108
FAO. 1969. Report of the IOFC working party on stock assessment in relation to immediate problems of management in the Indian Ocean. Rome, 30 September - 3 October 1969. FAO Fish. Rep. 82: 1 - 25.
- 109
FAO Department of Fisheries. 1973.
Sedentary, migratory and intermingling species, their habitat and distribution. FAO Fish. Circ. 148 - Revision 1: 20 pp.
- 110
FAO Expert Panel for the Facilitation of Tuna Research. 1969. Report of the third session of the FAO panel of experts for the facilitation of tuna research, Cadiz, Spain, 7-10 October 1969. FAO Fish. Rep. 80: 93 pp.
- 111
Far Seas Fisheries Research Laboratory.
1972. A proposal toward conservation of southern bluefin tuna. In: Biological proposition for better management of southern bluefin tuna longline fishery. Far Seas Fish. Res. Lab. S Ser. 6: 39-50. (In Japanese and English).
- 112
Far Seas Fisheries Research Laboratory.
1972. A summary of discussion at the forum on "Resources and fishing of southern bluefin tuna" held by the Federation of Japan Tuna Fishermen's Co-operative Associations and Japan Tuna Fisheries Federation. In: Biological proposition for better management of southern bluefin tuna longline fishery. Far Seas Fish. Res. Lab. S Ser. 6: 5-38. (In Japanese with English abstract).
- 113
Far Seas Fisheries Research Laboratory.
1972. Biological views on conservation measures of southern bluefin tuna. In: Biological proposition for better management of southern bluefin tuna longline fishery. Far Seas Fish. Res. Lab. S Ser. 6: 51-61. (In Japanese and English).

12 Bibliography

- 114
Fischer, W. and Whitehead, P.J.P. (eds.).
1974. FAO species identification sheets for
fishery purposes. Eastern Indian Ocean
(fishing area 57) and Western Central
Pacific (fishing area 71). vol. 4. FAO,
Rome, pag. var.
- 115
Fisheries agreement between Australia and
Japan. 1974. SAFIC (S. Aust. Fish. Indus.
Counc.) 2: 22.
- 116
Fisheries papers at refrigeration conference.
1982. Catch '82 (N.Z. Minis. Agric. Fish.)
9(3): 7-9.
- 117
Fishery Agency of Japan, Research Division.
1978. Report on 1977 research cruise of
the R/V Shoyo-Maru: Distribution of tunas
and billfishes, and their larvae in the
eastern Indian Ocean, October-December,
1977. (In Japanese with English summary).
- 118
Fishery Agency of Japan, Research Division.
1979. Report on 1978 research cruise of
the R/V Shoyo-Maru: Distribution of tunas
and billfishes and their larvae in the eastern
Indian Ocean, December 1978 -
January 1979. (In Japanese with English
summary).
- 119
Foreign tuna pole and line boats off south-east
coast. 1976. Aust. Fish. 35(1): 2.
- 120
Franklin, P. and Kitson, G. 1982. Sashimi - the
Japanese market. Infotish Marketing
Digest (Aust.) 5: 16-21.
- 121
Fraser-Brunner, A. 1950. The fishes of the
family Scombridae. Ann. Mag. Nat. Hist.
12(3): 131-163.
- 122
Freeman, D. 1984. Sashimi factory gives hope
for increased income from tuna. Aust.
Fish. 43(1): 55.
- 123
Fresh tuna air freighted to Japan. 1972. Aust.
Fish. 31(2): 5.
- 124
Fujii, Y. and Higasa, S. 1963. Biochemical
studies on the races of tuna. X. DNA
content in erythrocytes of tunas (Part 2).
Rep. Nankai Reg. Fish. Res. Lab. (17): 9-
15. (In Japanese with English abstract).
- 125
Fujii, Y., Mimoto, K. and Higasa, S. 1960.
Biochemical studies on races of tuna. IV.
Several investigations on the treat- ment of
samples in determination of the base
composition of testis DNA (Part 1). Rep.
Nankai Reg. Fish. Res. Lab. (12): 14-22.
(In Japanese with English abstract).
- 126
Fujii, Y., Mimoto, K. and Higasa, S. 1960.
Biochemical studies of the races of tuna.
V. The base composition of DNA of tuna
(Part 1). Rep. Nankai Reg. Fish. Res. Lab.
(12): 23-32. (In Japanese with English
abstract).
- 127
Fujii, Y., Mimoto, K. and Higasa, S. 1962.
Biochemical studies of the races of tuna.
VI. Several investigations on the treatment
of samples in determination of the base
compo- sition of testis DNA (Part 2). Rep.
Nankai Reg. Fish. Res. Lab. (15): 127-135.
(In Japanese with English abstract).
- 128
Fujii, Y., Mimoto, K. and Higasa, S. 1962.
Biochemical studies on the races of tuna.
VII. The base composition of DNA of tuna
(Part 2). Rep. Nankai Reg. Fish. Res. Lab.
(15): 137 - 145. (In Japanese with English
abstract).
- 129
Fujii, Y., Mimoto, K. and Higasa, S. 1962.
Biochemical studies on the races of tuna;
base composition of testis deoxyribo-
nucleic acid (DNA). Occas. Rep. Nankai
Reg. Fish. Res. Lab. (1): 73-79.

- 130
Fujino, K. 1970. Immunological and biochemical genetics of tunas. Amer. Fish. Soc., Trans. 99(1): 152-178.
- 131
Fujino, K. and T. Kang. 1968. Transferrin groups of tunas. Genetics 59: 79-91.
- 132
Further controls on tuna fishery. 1975. SAFIC (S. Aust. Fish. Indus. Counc.) 6: 20.
- 133
The future for tuna-boom or bust? 1983. Aust. Fish. 42(5): 3-5.
- 134
Gibbs, R.H., Jr. and Collette, B.B. 1967. Comparative anatomy and systematics of the tunas, genus *Thunnus*. U.S. Fish. Wildl. Serv. Fish. Bull. 66(1): 65-130.
- 135
Gibson, A. 1976. Future for purse seiners seen as 'precarious'. Aust. Fish. 35(9): 8-9.
- 136
Gibson, D. 1982. The Japanese tuna longline fishery in N.Z. Catch '82 (N.Z. Minis. Agric. Fish.) 9(6): 27-28.
- 137
Gibson, D. 1982. The west coast southern bluefin fishery. Catch '82 (N.Z. Minis. Agric. Fish.) 9(6): 29-30.
- 138
Gibson, D. 1982. Tuna - more than just a feed. Catch '82 (N.Z. Minis. Agric. Fish.) 9(6): 32.
- 139
Gibson, D. and Beardsell, M. 1982. On board a Japanese long-liner. Catch '82 (N.Z. Minis. Agric. Fish.) 9(6): 31.
- 140
Godfrey, K. and Rogers, P. 1977. Sake and sashimi at sea. FINS (Dept. Fish. and Wildl. Western Australia) 10(2): 38-41.
- 141
Godsil, H.C. and Holmberg, E.K. 1950. A comparison of the blue- fin tunas, genus *Thunnus* from New England, Australia and California. Calif. Dep. Fish Game Fish Bull. 77: 55 pp.
- 142
Good NSW tuna catch. 1979. Aust. Fish. 38(2): 45.
- 143
Good season - but not for all. 1983. Aust. Fish. 42(5): 13.
- 144
Good tuna catches continue in SA. 1976. Aust. Fish. 35(5): 8.
- 145
Graham, J.B. 1975. Heat exchange in the yellowfin tuna, *Thunnus albacares*, and skipjack tuna, *Katsuwonus pelamis*, and the adaptive significance of elevated body temperatures in scombrid fishes. U.S. Nat. Mar. Fish. Serv. Fish. Bull. 73(2): 219-229.
- 146
Green, A.J. 1981. Japanese tuna-longlining operations observed off NSW. Aust. Fish. 40(10): 8-12.
- 147
Greenhood, E.C. and Davis, S.P. 1963. Tuna landings and production 1916 to 1961. FAO Fish. Rep. 6(3): 1395-1407.
- 148
Habib, G. 1977. The NZ tuna fisheries - skipjack and albacore predominate. Catch '77 (N.Z. Minis. Agric. Fish.) 4(10): 6.
- 149
Hampton, J., Majkowski, J. and Murphy, G.I. 1984. The 1982 assessment of the southern bluefin tuna (*Thunnus maccoyii*) population and the determination of catch levels which stabilize the parental biomass. Aust CSIRO Mar. Lab. Rep. 165: 27 pp.

14 Bibliography

150

Hayasi, S. 1974. Stock assessment of southern bluefin tuna based on information up to September 1973 - its conclusions and problems. Bull. Far Seas Fish. Res. Lab. (Shimizu) 11: 51-65. (In Japanese with English abstract).

151

Hayasi, S., Homma, M. and Shingu, C. 1969. Assessment of the southern bluefin tuna stocks, 1960-66. Tuna Fish. 84: 9-23. (In Japanese). (English translation by M.A. Hintze available from Australian CSIRO Marine Laboratories).

152

Hayasi, S. and Kikawa, S. 1970. A comparative study on efficiency of the surface longline fisheries for exploitation of tuna and related species. In: Resources and fisheries of tunas and related fishes in the Atlantic Ocean. Far Seas Fish. Res. Lab. S Ser. 3: 97-114. (In English with Japanese summary).

153

Hayasi, S., Koto, T., Shingu, C., Kume, S. and Morita, Y. 1970. Status of the tuna fisheries resources in the Atlantic Ocean, 1956-67. In: Resources and fisheries of tunas and related fishes in the Atlantic Ocean. Far Seas Fish. Res. Lab. S Ser. 3: 1-72. (In English and Japanese).

154

Hayasi, S., Shingu, C. and Hisada, K. 1972. An inference on rational utilization of southern bluefin tuna based on data obtained from 1957 to 1969. In: Biological proposition for better management of southern bluefin tuna longline fishery. Far Seas Fish. Res. Lab. S Ser. 6: 63-88. (In English and Japanese).

155

Heinz to buy canning fish on open market. 1984. Aust. Fish. 43(5): 20.

156

Heinz tuna price \$325 a tonne. 1976. Aust. Fish. 35(10): 27.

157

Hewitt, G.C. 1968. *Elytrophora brachyptera* Gerstaecker (Euryphoridae, Caligoida) from New Zealand waters, with a tentative revision of the genus. Trans. Roy. Soc. N.Z. (Zool.) 10(12): 117-126.

158

High hopes for NSW tuna season. 1978. Aust. Fish. 37(10): 35.

159

Higher quality is key to success in big Japanese market. 1979. World Fish. 28(12): 5-6.

160

Hirayama, N. 1976. Study on predation damages to hooked tuna by shark in longline fishery. Journal of the Tokyo University of Fisheries 62(2): 125-136.

161

Hisada, K., Shingu, C. and Yonemori, T. 1979. Recent status of the southern bluefin tuna stock. ICCAT (International Commission for the Conservation of Atlantic Tunas) Collective Volume of Scientific Papers 8(2): 454-460.

162

Honma, M. 1973. Calculation of yield - per - recruit and relative stock assessment for fish populations with age-dependant natural mortality. Bull. Far Seas Fish. Res. Lab. 9: 177-199.

163

Hughes, W. 1984. Trans-Tasman co-operation in sashimi course at Eden. Aust. Fish. 43(12): 34.

164

Hynd, J.S. 1963. Experience paper - On the control of F (instantaneous fishing mortality) in the tuna livebait and pole fishery. In: Fisheries Management Seminar, 1963 Report of Proceedings. Fisheries Branch, Department of Primary Industry, Canberra, Australia, pp. 46-51.

- 165
Hynd, J.S. 1963. Experience paper - On the number of tuna vessels or aircraft required to search a given area effectively. In: Fisheries Management Seminar, 1963 Report of Proceedings. Fisheries Branch, Department of Primary Industry, Canberra, Australia, pp. 64-71.
- 166
Hynd, J.S. 1965. Southern bluefin tuna populations in south-west Australia. *Aust. J. Mar. Freshw. Res.* 16(1): 25-32.
- 167
Hynd, J.S. 1968. How sea surface temperature maps aid tuna fishermen. *Aust. Fish. Newsl.* 27(5): 23-29.
- 168
Hynd, J.S. 1969. Isotherm maps for tuna fishermen. *Aust. Fish.* 28(7): 13-22.
- 169
Hynd, J.S. 1969. New evidence on southern bluefin tuna stocks and migrations. *Aust. Fish.* 28(5): 26-30.
- 170
Hynd, J.S. 1973. Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1972-73: 28-31.
- 171
Hynd, J.S. 1974. Unusual bluefin tuna season in N.S.W. *Aust. Fish.* 33(4): 9-11.
- 172
Hynd, J.S. and Brown, C. 1974. Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1973-74: 40-43.
- 173
Hynd, J.S., Jones, B.B., Kerr, I.C. and Sproston, N. 1968. Tunas. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1967- 68: 17-23.
- 174
Hynd, J.S., Jones, B.B., Kesteven, G.L. and Sproston, N. 1967. Tunas. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1966- 67: 20-24.
- 175
Hynd, J.S. and Kerr, I.C. 1969. Tunas. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1968-69: 17-20.
- 176
Hynd, J.S. and Kerrisk, J.M. 1970. Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1969-70: 27-30.
- 177
Hynd, J.S. and Kerrisk, J.M. 1971. Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1970-71: 37-40.
- 178
Hynd, J.S., Kesteven, G.L. and Robins, J.P. 1966. Tuna in southern Australian waters. *Food Technol. Aust.* 18(4): 190-199.
- 179
Hynd, J.S., Kesteven, G.L., Robins, J.P. and Sproston, N. 1966. Southern bluefin tuna (*Thunnus maccoyii*). *Aust. CSIRO Div. Fish. Oceanogr. Annu. Rep.* 1965-66: 10-16.
- 180
Hynd, J.S. and Lucas, C. 1974. Population dynamics of the southern bluefin tuna. *Indo-Pac. Fish. Counc. Proc.* 15(3): 424-435.
- 181
Hynd, J.S. and Robins, J.P. 1967. Tasmanian tuna survey report of first operational period. *Aust. CSIRO Div. Fish. Oceanogr. Tech. Pap.* 22: 55 pp.
- 182
Hynd, J.S. and Vaux, D. 1963. Report on a survey for tuna in Western Australian waters. *Aust. CSIRO Div. Fish. Oceanogr. Rep.* 37: 134 pp.

16 Bibliography

- 183
IAC draft report. 1984. *Aust. Fish.* 43(4): 27.
- 184
IAC report on tuna hearings. 1984. *Aust. Fish.* 43(3): 30.
- 185
IAC's final recommendations on tuna fishery. 1984. *Aust. Fish.* 43(7): 2-4.
- 186
ICCAT. 1970. Report of the first meeting of the International Commission for the Conservation of Atlantic Tunas (Rome, December 1-6, 1969). *FAO Fish. Rep.* 84:
- 187
ICCAT. 1970- . Report for biennial period, 1970-1971 (et seq.). International Commission for the Conservation of Atlantic Tunas, Madrid, 1970- : pg. var.
- 188
Individual boat quotas for southern bluefin tuna fishery considered. 1984. *Aust. Fish.* 43(4): 9-11.
- 189
Industries Assistance Commission 1984. Draft Report on southern bluefin tuna. Australian Government Publishing Service, Canberra, Australia, 108 pp.
- 190
Industries Assistance Commission 1984. Southern bluefin tuna. Industries Assistance Commission Report 349:154 pp.
- 191
Industry talks help shape future tuna management. 1983. *Aust. Fish.* 42(7): 32-34.
- 192
International tuna agreement. 1983. *Prof. Fisherman (Aust.)* 5(8): 15.
- 193
IOFC/IPFC. 1980. Re-estimation of southern bluefin tuna population parameters. *FAO Fish. Rep.* 233: 14-16.
- 194
IPFC/IOFC. 1973. Report of the first session of the IPFC/IOFC ad hoc working party of scientists on stock assessment of tuna, Rome, 7-9 June 1972. *FAO Fish. Rep.* 137: 17 pp.
- 195
IPFC/IOFC. 1974. Report of the second session of the IPFC/IOFC ad hoc working party of scientists on stock assessment of tuna, Nantes, France, 16-18 September 1974. *FAO Fish. Rep.* 152: 19 pp.
- 196
Isotherm maps of little use to South Australian fishermen. 1969. *Aust. Fish.* 28(11): 7.
- 197
ITQs for SBT-what's it all mean? 1984. *Aust. Fish.* 43(9): 2-4.
- 198
Iwai, T. and Nakamura, I. 1964. Olfactory organs of tunas with special reference to their systematic significance. *Bull. Misaki Mar. Biol. Inst. Kyoto Univ.* 7: 1-8.
- 199
Iwai, T., Nakamura, I. and Matsubara, K. 1965. Taxonomic study of the tunas. *Misaki Mar. Biol. Inst. Kyoto Univ. Spec. Rep.* 2: 51 pp. (In Japanese with English abstract).
- 200
de Jager, B. 1963. Synopsis of biological data on bluefin tuna *Thunnus thynnus orientalis* (Temminck and Schlegel) 1842, longfin tuna *Thunnus alalunga* (Bonnaterre) 1788, yellowfin tuna *Thunnus albacares* (Bonnaterre) 1788 and bigeye tuna *Thunnus obesus* (Lowe) 1839 (South Africa). *FAO Fish. Rep.* 6(2): 588-607.
- 201
de Jager, B. van D., Nepgen C.S. de V., and van Wyk, R.J. 1963. A preliminary report on South African west coast tuna. *South Africa, Div. Sea Fish., Invest. Rep.*, 47: 1 - 40.

- 202
James, D.G. 1974. Prospects for marketing fresh tuna in Japan. *Aust. Fish.* 33(6): 4-6.
- 203
Japan/Australia tuna agreement opposed. 1981. *Prof. Fisherman (Aust.)* 3(8): 12.
- 204
Japanese agreement to be renewed. 1982. *Aust. Fish.* 41(10): 25.
- 205
Japanese fish for bluefin off southern Africa. 1969. *Aust. Fish.* 28(11): 30.
- 206
Japanese investigate southern bluefin spawning areas. 1979. *Aust. Fish.* 38(2): 47.
- 207
Japanese keep out. 1981. *Prof. Fisherman (Aust.)* 3(12): 12.
- 208
Japanese longline catch. 1981. *SAFIC (S. Aust. Fish. Indus. Coun.)* 5(6): 25.
- 209
Japanese proposal to restrict tuna long-lining off Australia. 1971. *Aust. Fish.* 30(2): 11.
- 210
Japanese regulate tuna fishery. 1971. *FINS (Dept. Fish. Wildl. Western Australia)* 4(4): 72.
- 211
Japanese talks continuing. 1981. *Aust. Fish.* 40(10): 40.
- 212
Japanese tuna boats out of AFZ SBT area. 1984. *Aust. Fish.* 43(10): 16.
- 213
Japanese tuna catches off Australia drop. 1969. *Aust. Fish.* 28(7): 16.
- 214
Japanese tuna fishing off Australia. 1963. *Fish. Newsl. (Aust.)* 22(5): 16.
- 215
Japanese tuna season poor. 1983. *Catch '83 (N.Z. Minis. Agric. Fish.)* 10(5): 31.
- 216
Japanese tuna tagging. 1972. *FINS (Dept. Fish. Wildl. W. Aust.)* 5(3): 50.
- 217
Japanese vessels excluded from southern bluefin tuna areas. 1984. *Prof. Fisherman (Aust.)* 7(1): 13.
- 218
Japan's ancient tuna industry facing modern dilemma. 1976. *Aust. Fish.* 35(6): 30-33.
- 219
Jordan, D.S. and Evermann, B.W. 1926. A review of the giant mackerel-like fishes, tunnies, spearfishes and swordfishes. *Occas. Pap. Calif. Acad. Sci.* 12: 113 pp.
- 220
Joseph, J. 1973. Scientific management of the world stocks of tunas, billfishes and related species. *J. Fish. Res. Board Can.* 30: 2471-2482.
- 221
Joseph, J. 1975. Problems associated with the exploitation and management of tunas and billfishes. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 40: 63-71.
- 222
Joseph, J. 1978. The management of highly migratory species. *FINS (Dept. Fish. and Wildl. W. Aust.)* 11(1): 15-21, 24. (Reprinted from *Mar. Policy* (1977) 1(4): 275-288).
- 223
Joseph, J. and Greenough, J.W. 1979. International management of tuna porpoise and billfish; biological, legal and political aspects. University of Washington Press, Seattle, 256 pp.

18 Bibliography

- 224
Joseph, J., Klawe, W. and Murphy, P. 1980. Tuna and billfish - fish without a country. Inter-American Tropical Tuna Commission, La Jolla, California, 46 pp.
- 225
Kask, J.L. 1979. International tuna management - A United States view. Aust. Fish. 38(6): 47-50.
- 226
Kawasaki, T. 1960. Biological comparison between the Pacific tunas. Part II. Bull. Tohoku Reg. Fish. Res. Lab. 16: 1-40.
- 227
Kesteven, G.L. 1967. CSIRO fisheries research programme continued. Aust. Fish. Newsl. 26(2): 5.
- 228
Kikawa, S. 1964. A study on indomaguro (*Thunnus thynnus maccoyii?*) in the area south of 20°S. lat. from the examination of ovary weight and maturity. Rep. Nankai Reg. Fish. Res. Lab. 20: 37-57. (In Japanese with English abstract).
- 229
Kikawa, S. 1964. Estimated number of eggs spawned out of the ovaries of an indomaguro (*Thunnus thynnus maccoyii?*). Rep. Nankai Reg. Fish. Res. Lab. 20: 27-35. (In Japanese with English abstract).
- 230
Kikawa, S., Koto, T., Shingu, C. and Nishikawa, Y. 1968. Status of tuna fisheries in the Indian Ocean as of 1968. Far Seas Fish. Res. Lab. S. Ser. 2: 1-28.
- 231
King, M. 1982. 1981 domestic catches in detail. Catch '82 (N.Z. Minis. Agric. Fish.) 9(9): 33-35.
- 232
Kirkwood, G.P. 1981. Generalized models for the estimation of rates of tag shedding by southern bluefin tuna (*Thunnus maccoyii*). J. Cons. Int. Explor. Mer. 39: 256-260.
- 233
Kirkwood, G.P. 1983. Estimation of von Bertalanffy growth curve parameters using both length increment and age-length data. Can. J. Fish. Aquat. Sci. 40: 1405-1411.
- 234
Kishinouye, K. 1923. Contributions to the comparative study of the so-called scombroid fishes. J. Coll. Agric. Imp. Univ. Tokyo 8(3): 293-475.
- 235
Klawe, W.L. 1978. What is a tuna? FINS (Dept. Fish. Wildl. W. Aust.) 11(2): 35-40. (Reprinted from Mar. Fish. Rev. (1977) 39(11): 1-5).
- 236
Klawe, W.L. 1980. Long-line catches of tunas within the 200-mile economic zones of the Indian and Western Pacific Oceans. Dev. Rep. Indian Ocean Programme 48: 83 pp.
- 237
Koerbin, J. 1982. Bluefin tuna contest. FINTAS (Fishing Industry News Tasmania) 4(5): 31.
- 238
Koga, S., Imanishi, H. and Tawara, S. 1972. A fishing condition of the tuna and marlin in the central South Pacific. J. Shimonoseki Univ. Fish. 20(3): 79-99. (In Japanese with English abstract).
- 239
Konagaya, S., Yamabe, K. and Amano, K. 1969. On the body temperatures of tunas at the time of haulage. Bull. Jpn. Soc. Sci. Fish. 35(4): 410-416.

- 240
Koto, T. 1966. Studies on the albacore. XI. Distribution of albacore in the tuna longline fishing grounds of the South Pacific Ocean. Rep. Nankai Reg. Fish. Res. Lab. 23: 43-53.
- 241
Kume, S. 1974. Tuna fisheries and their resources in the Pacific Ocean. Indo-Pac. Fish. Counc. Proc. 15(3):390-423.
- 242
Large southern bluefin tuna taken at head of Bight. 1983. Aust. Fish. 42(4): 2-4.
- 243
Large tonnage. 1976. World Fish. 25(6): 7.
- 244
Le Gall, J.Y., Laurec, A. and Chardy, P. 1975. Mise en evidence des relations phenotypiques et phylogenetiques a l'interieur du genre *Thunnus* par une analyse multicritere. Bull. Mus. Nat. Hist. Nat. (Paris) ser. 3, no. 339, Zoologie 241: 1349-1368. (In French with English abstract).
- 245
Lehane, R. 1980. Australia's fishing zone - vast and largely unknown. Ecos 24: 24-31.
- 246
Lehane, R. 1982. The southern bluefin tuna may be in trouble. Ecos 32: 8-9.
- 247
Lester, R.J.G. and Kelly, W.R. 1983. Tumour-like growths from southern Australian marine fish. Tasm. Fish. Res. 25: 27- 32.
- 248
Limit placed on bluefin tuna purse seiners. 1975. Aust. Fish. 34(6): 4.
- 249
Long liberty for tagged SBF tuna. 1982. Aust. Fish. 41(2): 25.
- 250
Long line agreement needs revision. 1980. Prof. Fisherman (Aust.) 2(9): 3.
- 251
Long line agreements. 1980. Prof. Fisherman (Aust.) 3(1): 13.
- 252
Longline pact reduces Japan's tuna catch in Australian zone. 1982. World Fish. 31(5): 7.
- 253
Lorimer, P.D. 1968. Prospects for purse seining jack mackerel, tuna and other species in south eastern Australian waters. Fisheries Report No. 4, Fisheries Branch, Department of Primary Industry, Canberra, Australia, 21 pp.
- 254
Lucas, C. 1974. Working paper on southern bluefin tuna population dynamics. ICCAT (International Commission for the Conservation of Atlantic Tunas) Collective Volume of Scientific Papers 3: 110-124.
- 255
Maclean, J.L. 1974. Australian migratory fishes. Aust. Fish. 33(3): 12-15.
- 256
Magnuson, J.J. 1963. Tuna behaviour and physiology, a review. FAO Fish. Rep. 6(3): 1057-1066.
- 257
Majkowski, J. (ed.) 1982. CSIRO data base for southern bluefin tuna [*Thunnus maccoyii* (Castlenau)]. Aust. CSIRO Mar. Lab. Rep. 142: 23 pp.
- 258
Majkowski, J. 1982. Estimation of the abundance of the southern bluefin tuna [*Thunnus maccoyii* (Castlenau)] subpopulation exploited by the Australian fishery. Aust. CSIRO Mar. Lab. Rep. 143: 11 pp.

259

Majkowski, J. 1983. Usefulness and applicability of sensitivity analysis in resource management. In: Wadhwa, L.C., James, M.K., Pomeroy, A.B. and Stark, K.P. (eds.). Resource management: issues, techniques, applications. Proceedings of the Workshop on Resource Management held at the James Cook University (14-17 July 1981). James Cook University of North Queensland, Department of Civil and Systems Engineering, pp. 249-261.

260

Majkowski, J. 1984. Southern bluefin tuna - CSIRO studies. In: Documents relating to twenty-fifth meeting held at Waterman, 21-23 August, 1984. Western Fisheries Research Committee, Australia, pp. 151-178.

261

Majkowski, J. and Caton, A.E. 1984. Scientists' concern behind tuna management. Aust. Fish. 43(9): 5-6.

262

Majkowski, J. and Hampton, J. 1983. Deterministic partitioning of the catch of southern bluefin tuna, *Thunnus maccoyii*, into age classes using an age-length relationship. In: Prince, E.D. and Pulos, L.M. (eds.). Proceedings of the International Workshop on "Age Determination of Oceanic Pelagic Fishes: Tunas, Billfishes and Sharks." (February 15-18, 1982, Miami, Fl.). U.S. Dept. Commer., NOAA Tech. Rep. NMFS 8: 87-90.

263

Majkowski, J. and Hampton, J. 1983. The effect of parameter uncertainties in an age-length relationship upon estimating the age composition of catches. Can. J. Fish. Aquat. Sci. 40: 272-280.

264

Majkowski, J. and Hampton, J. 1983. The estimation of a catch level which stabilizes the parental biomass of an exploited fish stock. U.S. Nat. Mar. Serv. Fish. Bull. 81: 723-732.

265

Majkowski, J., Hearn, W.S. and Sandland, R.L. 1984. An experimental determination of the effect of increasing the minimum age (or size) of fish at capture upon the yield per recruit. Can. J. Fish. Aquat. Sci. 41: 736-743.

266

Majkowski, J. and Murphy, G.I. 1983. CSIRO southern bluefin tuna tagging: scientific achievements and future objectives. Aust. Fish. 42(11): 26-27.

267

Majkowski, J., Williams, K. and Murphy, G.I. 1981. Research identifies changing patterns in Australian tuna fishery. Aust. Fish. 40(2): 5-10.

268

Management of southern bluefin tuna. 1984. Prof. Fisherman (Aust.) 6(5): 11.

269

Management of the southern bluefin tuna fishery. 1983. FINNS (Dept. Fish. Wildl. W. Aust.) 16(2): 7-9.

270

Mannering, J. 1981. Southern bluefin in Japan. Catch '81 8(9): 17-19.

271

Manter, H.W. 1970. A new genus of trematode (Digenea: Gorgoderidae) from the ureter of the tuna fish (*Thunnus thynnus maccoyii*) in Australia. Trans. R. Soc. S. Aust. 94: 147-150.

272

Marcille, J., Boely, T., Unar, M., Merta, G.S., Sadhotomo, B. and Uktolseja, J.C.B. 1984. Tuna fishing in Indonesia. Travaux et Documents (ORSTROM) 181: 1-125.

273

Market situation report for tuna. 1980. Aust. Dept. Primary Industry, Fisheries Division, Fish. Rep. 31: 55-63.

- 274
Marketing notes: Tuna. 1982. Aust. Fish. 41(5): 45.
- 275
Marr, J.C. (ed.) 1962. Pacific tuna biology conference, August 14-19, 1961, Honolulu, Hawaii. U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Fish. 415: 45 pp.
- 276
Matsumoto, W.M., Ahlstrom, E.H., Jones, S., Klawe, W.L., Richards, W.L. and Ueyanagi, S. 1972. On the clarification of larval tuna identification particularly in the genus *Thunnus*. U.S. Nat. Mar. Fish. Serv. Fish. Bull. 70(1): 1-12.
- 277
McKenzie, M.K. 1964. The distribution of tuna in relation to oceanographic conditions. Proc. N.Z. Ecol. Soc. 11: 6-10.
- 278
Migratory species. 1982. In: Australian marine research in progress 1982. Victorian Institute of Marine Sciences, Melbourne, Victoria, pp. 294-295.
- 279
Migratory species (tuna and billfishes). 1983. In: Australian marine research in progress 1983. Victorian Institute of Marine Sciences, Melbourne, Victoria, pp. 408-409.
- 280
Mimura, K. 1958. Fishing condition of the so-called Indo-maguro (*Thunnus maccoyii?*) in the eastern seas of the Indian Ocean. Rep. Nankai Reg. Fish. Res. Lab. 7: 49-58. (In Japanese with English abstract).
- 281
Mimura, K. 1962. Studies on Indomaguro, *Thunnus maccoyii?* (Preliminary report). Occas. Rep. of Nankai Reg. Fish. Res. Lab. 1: 15-22.
- 282
Mimura, K. and Warashina, I. 1962. Studies on Indomaguro (*Thunnus maccoyii?*); description of the development of the fishery, geographical difference and seasonal change of distribution and relation which is seen among Indomaguro, southern bluefin and Goshumaguro distributions. Rep. Nankai Reg. Fish. Res. Lab. 16: 135-154. (In Japanese with English abstract).
- 283
Mini-boom in bluefin. 1979. Prof. Fisherman (Aust.) 1(9): 6.
- 284
Minister outlines commonwealth management view. 1982. Aust. Fish. 41(10): 6-7.
- 285
Miyake, M. and Hayasi, S. 1978. Field manual for statistics and sampling of Atlantic tunas and tuna-like fishes (2nd ed.) ICCAT, Barcelona, Spain, 149 pp.
- 286
Miyake, P.M., Nordstrom, V. and Da Rodda, D. 1982. Statistical bulletin Vol. 12. ICCAT (International Commission for the Conservation of Atlantic Tunas) Madrid, 123 pp.
- 287
Miyake, P.M., Wise, J.P., Nordstrom, V. and Da Rodda, D. 1982. Historical statistical bulletin Vol. 2 - 1960-1969. ICCAT (International Commission for the Conservation of Atlantic Tunas) Madrid, 109 pp.
- 288
Mori, K. 1972. Geographical distribution and relative apparent abundance of some scombroid fishes based on the occurrences in the stomachs of apex predators caught on tuna longline. I. Juvenile and young skipjack tuna (*Katsuwonus pelamis*). Bull. Far Seas Fish. Res. Lab. (Shimizu) 6: 111-168.

22 Bibliography

289

Murphy, G.I. 1977. New understanding of southern bluefin tuna. *Aust. Fish.* 36(1): 2-6.

290

Murphy, G.I. 1979. Southern bluefin tuna. *Aust. CSIRO Div. Fish. Oceanogr. Fishery Situation Report 1*: 10 pp.

291

Murphy, G.I. 1982. Migratory species (tunas and billfish). *Aust. CSIRO Mar. Lab. Res. Rep.* 1979-1981: 92.

292

Murphy, G.I. 1982. Recruitment of tropical fishes. In: Pauly, D. and Murphy, G.I. (eds.), *Theory and management of tropical fisheries*. ICLARM conference proceedings 9, International Centre for Living Aquatic Resources Management, Manila, Phillipines and Aust. CSIRO Div. Fish. Res., Cronulla, Australia, pp. 141-148.

293

Murphy, G.I. and Majkowski, J. 1981. State of the southern bluefin tuna population: fully exploited. *Aust. Fish.* 40(11): 20-29.

294

Murphy, G.I., Williams, K.F. and Brown, C.F. 1977. Tuna. *Aust. CSIRO Div. Fish. Oceanogr. Res. Rep.* 1974-77: 40.

295

Myers, D.G. 1984. Satellites aid fish-finding in WA, possibly beyond. *Aust. Fish.* 43(2): 2-4.

296

Nakamura, H. 1962. An outline of tuna longline grounds in the Pacific. *Occas. Rep. Nankai Reg. Fish. Res. Lab.* 1: 1-8.

297

Nakamura, H. 1969. Tuna distribution and migration. *Fishing News (Books) Ltd.*, London, 76 pp.

298

Nakamura, H., Yabuta, Y. and Mimura, K. 1956. Longline tuna fishing grounds in the Indian Ocean. *Indo-Pac. Fish. Council. Proc.* 6(2): 220-238.

299

Nakamura, I. 1965. Relationships of fishes referable to the subfamily Thunninae on the basis of the axial skeleton. *Bull. Misaki Mar. Biol. Inst. Kyoto Univ.* 8: 7-38.

300

Nakamura, I. and Kikawa, S. 1966. Infra-central grooves of tunas with special reference to the identification of young tunas found in the stomachs of large predators. *Rep. Nankai Reg. Fish. Res. Lab.* 23: 55-66.

301

Nakamura, I. and Warashina, Y. 1965. Occurrence of bluefin tuna, *Thunnus thynnus* (Linnaeus) in the eastern Indian Ocean and the eastern south Pacific Ocean. *Rep. Nankai Reg. Fish. Res. Lab.* 22: 9-14.

302

Namakura, E.L. 1969. A review of field observations on tuna behaviour. *FAO Fish. Rep.* 62(2): 59 - 68.

303

Nations agree on state of southern bluefin tuna stock. 1983. *Aust. Fish.* 42(5): 25.

304

Nepgen, C.S. de V. 1970. Exploratory fishing for tuna off the South African west coast. *South Africa, Div. Sea. Fish., Invest. Rep.* 87: 1-26.

305

New Australia-Japan tuna agreement. 1982. *Aust. Fish.* 41(11): 31.

306

New purse seiners make promising catches of mackerel and tuna. 1974. *Aust. Fish.* 33(3): 3.

- 307
New South Australian tuna pole fishing well.
1981. Aust. Fish. 40(4): 24-25
- 308
New type of Japanese long-liner fishing off S.A.
1969. Aust. Fish. 28(5): 4.
- 309
New Zealand building a sashimi tuna trade.
1982. Aust. Fish. 41(4): 12-14.
- 310
New Zealand gets tough over Japanese
poaching. 1978. World Fish. 27(3): 7.
- 311
New Zealand tunamen resent catch control.
1981. Fish. News Int. 20(2): 63.
- 312
Nishikawa, Y. 1985. Identification for larvae of
three species of genus *Thunnus* by
melanophore patterns. Bull. Far Seas
Fish. Res. Lab. (Shimizu) 22: 119-129. (In
Japanese with English abstract).
- 313
Nishikawa, Y., Honma, M., Ueyanagi, S. and
Kikawa, S. 1985. Average distribution of
larvae of oceanic species of scombroid
fishes, 1956-1981. Far Seas Fish. Res.
Lab. S Ser. 12: 99 pp.
- 314
Nishikawa, Y., Kikawa, S., Honma, M. and
Ueyanagi, S. 1978. Distribution atlas of
larval tunas, billfishes and related species -
Results of larval surveys by R/V Shunyo
Maru and Shoyo Maru (1956-1975). Far
Seas Fish. Res. Lab. S Ser. 9: 99 pp. (In
Japanese with English abstract).
- 315
No sashimi tuna. 1977. Aust. Fish. 36(4): 10.
- 316
N.S.W. tuna catch down. 1971. Aust. Fish.
30(2): 11.
- 317
NSW tuna catch down. 1982. Aust. Fish.
41(12): 42-43.
- 318
NSW tuna catch more than 4000 tonnes.
1978. Aust. Fish. 37 (3): 13.
- 319
NSW tuna catch nears 6000 tonnes. 1975.
Aust. Fish. 34(3): 20.
- 320
N.S.W. tuna catch 1000 tons at end of October.
1969. Aust. Fish. 28(11): 7.
- 321
N.S.W. tuna season a record breaker. 1969.
Aust. Fish. 28(1): 3.
- 322
NSW tuna season 'catastrophic'. 1977. Aust.
Fish. 36(2): 31.
- 323
NZ bluefin catch totals 1360 fish. 1984. Aust.
Fish. 43(12): 31.
- 324
NZ progressing with sashimi tuna trade. 1982.
Aust. Fish. 41(12): 43.
- 325
NZ ships tuna to Japan. 1982. Aust. Fish.
41(2): 55.
- 326
NZ tuna to Japan. 1981. Prof. Fisherman
(Aust.) 3(12): 25.
- 327
Olson, R.J. 1980. Synopsis of biological data
on the southern bluefin tuna, *Thunnus*
maccoyii (Castlenau, 1872). Inter- Am.
Trop. Tuna Comm. Spec. Rep. 2: 151-212.
- 328
Parker, R. 1981. South Australian fisherman
to try longlining for tuna. Aust. Fish. 40(4):
15-16.

24 Bibliography

- 329
Pepperell, J.G. 1982. Gamefish tagging newsletter 1981/1982. New South Wales State Fisheries Gamefish Tagging Programme, 14 pp.
- 330
Peterson, P. 1982. Varied response to tuna logbook program. *Aust. Fish.* 41(8): 16-17.
- 331
Phillips, B.F. 1982. The role of the CSIRO in marine living resources management and development. In: Herr, R.A., Hall, R., and Davis, B.W. (eds.). *Issues in Australia's marine and Antarctic policies*. University of Tasmania, p. 47-67.
- 332
Poor SA tuna season. 1979. *Prof. Fisherman (Aust.)* 1(8): 7.
- 333
Pownall, P.C. 1973. Trial exports of sashimi tuna may open up new trade. *Aust. Fish.* 32(4): 7-8.
- 334
Pownall, P. 1979. *Fisheries of Australia*. Fishing News Books Ltd., Franham, U.K., 149pp.
- 335
Pownall, P.C. 1980. Australia thinks again on tuna deal. *Fish. News Int.* 19(3): 48.
- 336
Pownall, P. 1982. First warning, then the slump. *Fish. News Int.* 21(3): 48-49.
- 337
Prawns, tuna, scallops and trawling in AFC discussions. 1983. *Aust. Fish.* 42(10): 3-5.
- 338
Preparing fresh tuna for the Japanese market. 1974. *Aust. Fish.* 33(8): 8-9.
- 339
Purse seiner built on tuna clipper lines. 1976. *Aust. Fish.* 35(5): 7-8.
- 340
Purse-seining for SBT halted till September. 1984. *Aust. Fish.* 43(3): 30.
- 341
Purse seining for tuna restricted. 1975. *FINS (Dept. Fish. Wildl. W. Aust.)* 8(3/4): 63.
- 342
Recent fisheries regulations. 1981. *Catch '81 (N.Z. Minis. Agric. Fish.)* 8(7): 5-6.
- 343
Record Australian tuna catch. 1982. *Aust. Fish.* 41(4): 11.
- 344
Record tuna catch. 1977. *World Fish.* 26(3): 13.
- 345
Record tuna catch - but market problems. 1981. *Aust. Fish.* 40(5): 9-10.
- 346
Record tuna catch in Australia. 1981. *World Fish.* 30(8): 11.
- 347
Record tuna catch in SA. 1976. *Aust. Fish.* 35(10): 46.
- 348
Record two-week tuna catch. 1965. *Aust. Fish. Newsl.* 24(5): 11.
- 349
Report of the special southern bluefin tuna working party. 1975. *FAO Fish. Rep.* 174: 29-43.
- 350
Richards, W.J. and Klawe, W.L. 1972. Indexed bibliography of the eggs and young of tunas and other scombrids (Pisces, Scombridae), 1880-1970. U.S. Dept. Commerce, NOAA Tech. Rep. NMFS SSRF 652: 107 pp.

- 351
Roberts, P. and Canning, S. 1977. Japanese tuna long-lining around New Zealand in 1975. Catch '77 (N.Z. Minis. Agric. Fish.) 4(9): 8-9.
- 352
Roberts, P.E. and Paul, L.J. 1978. Seasonal hydrological changes in continental shelf waters off the west coast, North Island, New Zealand, and comments on fish distribution. N.Z. J. Mar. Freshw. Res. 12(4): 323-339.
- 353
Robins, J.P. 1960. Tuna tagging in S.E. Aust. waters. Fish. Newsl. (Aust.) 19(7): 11.
- 354
Robins, J.P. 1963. Synopsis of biological data on bluefin tuna, *Thunnus thynnus maccoyii* (Castlenau) 1872. FAO Fish. Rep. 6(2): 562-587.
- 355
Robins, J.P. 1975. Some aspects of tuna and its potential in the oceanic waters off Western Australia. Department of Fisheries and Wildlife, Western Australia, Rep. 17: 59 pp.
- 356
Robins, J.P. 1975. Tuna survey in waters off the Western Australian coast during the period August 1973 to August 1974. Department of Fisheries and Wildlife, Western Australia, Rep. 18: 85 pp.
- 357
Rochford, D.J. 1981. Anomalously warm sea surface temperatures in the western Tasman Sea, their causes and effects upon the southern bluefin tuna catch, 1966-1977. Aust. CSIRO Div. Fish. Oceanogr. Rep. 114: 19 pp.
- 358
Rohan, G. 1984. The southern bluefin tuna fishery-facing up to necessary management. SAFIC (S. Aust. Fish. Indus. Counc.) 8(2): 7-9.
- 359
Rough weather slows tuna catches in SA. 1979. Aust. Fish. 38(4): 32.
- 360
SA tuna catch. 1969. Aust. Fish. 28(7): 16.
- 361
SA catch for 1974 nears 6000 tonnes. 1974. Aust. Fish. 33(4): 28.
- 362
S.A. tuna season shaping up well. 1966. Aust. Fish. Newsl. 25(4): 27.
- 363
Sashimi - a magic word for an ailing industry. 1983. Aust. Fish. 42(5): 7-9.
- 364
Sashimi attractive. 1984. Aust. Fish. 43(8): 21.
- 365
Sashimi bluefin tuna fishery off Tasmania? 1983. Aust. Fish. 42(4): 6.
- 366
SBF tuna sets new tag record. 1981. Aust. Fish. 40(10): 40.
- 367
SBT management plan: individual quotas and 14500-t total. 1984. Aust. Fish. 43(8): 8-9.
- 368
SBT to Tokyo. 1984. Aust. Fish. 43(7): 16.
- 369
Serventy, D.L. 1941. The Australian tunas. C.S.I.R., Pamphlet No. 104 (Div. Fish. - Report No. 4).
- 370
Serventy, D.L. 1956. The southern bluefin tuna, *Thunnus thynnus maccoyii* (Castlenau), in Australian waters. Aust. J. Mar. Freshw. Res. 7: 1-43.

- 371
 Sharp, G.D. and Pirages, S.W. 1978. The distribution of red and white swimming muscles, their biochemistry, and biochemical phylogeny of selected scombroid fishes. In: Sharp, G.D. and Dizon, A.E. (eds.), The physiological ecology of tunas. Academic Press, New York, pp. 41-78.
- 372
 Shimada, B.M. 1951. An annotated bibliography on the biology of the Pacific tunas. U.S. Fish. Wildl. Serv. Fish. Bull. 52(58): 58pp.
- 373
 Shimidu, Y. and Higasa, S. 1961. Biochemical studies on the growth and maturation of fish. XIII. Some notes on ribo- flavins in the bile of tunas and marlins. Rep. Nankai Reg. Fish. Res. Lab. 13: 47-51. (In Japanese with English abstract).
- 374
 Shimidu, Y. and Higasa, S. 1963. Biochemical studies on the growth and maturation of fish. XIX. Seasonal variation of the riboflavin contents of the "Indomaguro" caught in the so-called "Oki fishing ground" of the south eastern Indian Ocean. Rep. Nankai Reg. Fish. Res. Lab. 17: 17-23. (In Japanese with English abstract).
- 375
 Shingu, C. 1965. Studies of the southern bluefin, *Thunnus maccoyii* (Castlenau) II. On the distribution of the southern bluefin in the south western Pacific Ocean and on the size of fish taken by the longline fishery. Rep. Nankai Reg. Fish. Res. Lab. 22: 95-104. (In Japanese with English abstract).
- 376
 Shingu, C. 1967. Distribution and migration of the southern bluefin tuna. Rep. Nankai Reg. Fish. Res. Lab. 25: 19-35.
- 377
 Shingu, C. 1970. Studies relevant to distribution and migration of the southern bluefin tuna. Bull. Far Seas Fish. Res. Lab. (Shimizu) 3: 57-114. (In Japanese with English abstract).
- 378
 Shingu, C. 1978. Aim on the study of fisheries resources and its reflection for fishery - The management of southern bluefin tuna stock and its evaluation. Report of Fisheries Resources Investigations by the Scientists of the Fisheries Agency Japanese Government 21: 9-24.
- 379
 Shingu, C. 1978. Ecology and stock of southern bluefin tuna. Japan Association of Fishery Resources Protection Fisheries Study 31: 88 pp. (In Japanese. English translation in the form of Aust. CSIRO. Div. Fish. Oceanogr. Rep. 131: 79 pp. 1981).
- 380
 Shingu, C. and Hisada, K. 1971. Fluctuations in amount and age composition of catch of southern bluefin tuna longline fishery, 1957-1969. Bull. Far Seas Fish. Res. Lab. (Shimizu) 5: 195-218. (In Japanese with English abstract).
- 381
 Shingu, C. and Warashina, I. 1965. Studies on the southern bluefin, *Thunnus maccoyii* (Castlenau) I. Morphometric comparison of southern bluefin. Rep. Nankai Reg. Fish. Res. Lab. 22: 85-93. (In Japanese with English abstract).
- 382
 Shuntov, V.P. 1969. Some features of the ecology of pelagic fishes in the Great Australian Bight. Probl. Ichthyol. 9(6): 801-809.
- 383
 Silas, E.G. and Pallai, P.P. 1982. Resources of tunas and related species and their fisheries in the Indian Ocean. CMFRI Bull., Cochin 32: 174 pp.

- 384
A single Australian fisheries management law. -
1982. Prof. Fisherman (Aust.) 5(1): 16.
- 385
South Australians attack tuna decision. 1981.
Prof. Fisherman (Aust.) 3(7): 18.
- 386
South Australia's tuna catch close to record.
1976. Aust. Fish. 35(6): 5.
- 387
Southern bluefin decline prompts new
research measures. 1983. Int. Angler
45(4): 2, 6.
- 388
Southern bluefin fishery for domestic fleet.
1981. Catch '81 (N.Z. Minis. Agric. Fish.)
8(10): 19.
- 389
Southern bluefin fishery now wide open.
1981. Prof. Fisherman (Aust.) 3(6): 11.
- 390
Southern bluefin gamble pays off. 1979.
Catch '79 6(9): 7.
- 391
Southern bluefin restrictions. 1976. Aust.
Fish. 35(6): 4.
- 392
Southern bluefin tuna. 1968. Aust. Fish.
Newsl. 27(9): 42-45. (Also in Aust. Fish.
1968: 30-32).
- 393
Southern bluefin tuna. 1982. Aust. CSIRO
Information Service Sheet 16(8): 4 pp.
- 394
Southern bluefin tuna - a brief catch history.
1983. FINS (Dept. Fish. Wildl. W. Aust.)
16(2): 10.
- 395
Southern bluefin tuna: fish with a future.
1982. Catch '82 (N.Z. Minist. Agric. Fish.)
9(11): 4-5.
- 396
Southern bluefin tuna freeze lifted. 1981.
Aust. Fish. 40(5): 2-3.
- 397
Southern bluefin tuna management. 1984.
Prof. Fisherman (Aust.) 6(6): 11.
- 398
Southern bluefin tuna situation. 1980. Aust.
Fish. 39(2): 20.
- 399
Southern bluefin tuna steaks popular in Japan.
1968. Aust. Fish. Newsl. 27(3): 9.
- 400
Southern bluefin tuna *Thunnus maccoyii*.
1982. In: Commercial fisheries of New
South Wales. New South Wales State
Fisheries, Sydney, p. 12.
- 401
Special NZ group boosts bluefin tuna fishery.
1982. World Fish. 31(8): 22, 24.
- 402
Spotlight on Port Lincoln. 1983. Aust. Fish.
42(5): 2.
- 403
Sprague, L.M. 1967. Multiple molecular forms
of serum esterase in three tuna species
from the Pacific Ocean. Hereditas 57: 198-
204.
- 404
Sproston, N.G. 1969. A contribution to the
ecology of the *Capsala* on the southern
bluefin tuna (*Thunnus maccoyii*).
Parasitologeski Sbornik 24: 242-243.
- 405
Spurt of tuna vessel building in South Australia
and NSW. 1978 Aust. Fish. 37(11): 14-17.

- 406
Squid-tuna allocations. 1982. Catch '82 (N.Z. Minist. Agric. Fish.) 9(9): 27.
- 407
State aid to WA tuna fisherman. 1984. Aust. Fish. 43(10): 18.
- 408
State of selected stocks of tuna and billfish in the Pacific and Indian Oceans. FAO Fish. Tech. Pap. 200: 89 pp.
- 409
State of the fisheries of Western Australia, 1980. 1982. FINS (Dept. Fish. Wildl. W. Aust.) 15(1): 8-11.
- 410
State of the fisheries 1980. 1981. Department of Fisheries and Wildlife, Perth, Western Australia, 50 pp.
- 411
State of the fisheries 1981. 1982. Department of Fisheries and Wildlife, Perth, Western Australia, 46 pp.
- 412
State of the fisheries 1982. 1983. Department of Fisheries and Wildlife, Perth, Western Australia, 46 pp.
- 413
Statistics of the Japanese tuna fishery. 1970-1975. Federation of Japan Tuna Fisheries Co-operative Associations. Japan Tuna Fisheries Federation, Tokyo, Japan, pag. var.
- 414
Stevens, E.D. and Neill, W.H. 1978. Body temperature relations of tunas, especially skipjack. In: Hoar, W.S. and Randall, D.J. (eds.), Fish physiology, vol. 7. Academic Press, New York, pp. 315-359.
- 415
Stewart, G.W. 1981. A.F.I.C. involved in Australia Japan tuna negotiations. FINS (Dept. Fish. Wildl. W. Aust.) 14(3): 30-31.
- 416
Stewart, G.W. 1982. Japanese tuna longline negotiations. FINS (Dept. Fish. Wildl. W. Aust.) 15(3): 30.
- 417
Stewart, G.W. 1982. Japanese tuna longline renegotiations. FINS (Dept. Fish. Wildl. W. Aust.) 15(2): 29.
- 418
Stewart, G.W. 1983. Interim management measures for southern bluefin tuna fishery. FINS (Dept. Fish. Wildl. W. Aust.) 16(3): 29-30.
- 419
Stewart, G.W. 1983. Tuna industry meeting. FINS (Dept. Fish. Wildl. W. Aust.) 16(2): 31.
- 420
Stewart, G.W. 1984. I.A.C. inquiry into southern bluefin tuna. FINS (Dept. Fish. Wildl. W. Aust.) 17(1): 31.
- 421
Study of southern bluefin tuna recruitment. 1982. In: Fishing Industry Research Committee Annual Report 1981-1982. Department of Primary Industry, Canberra, Australia, p. 11.
- 422
Sturman, M.A. 1978. Australian pelagic fisheries and the 200- mile fishing zone. Occas. Pub. Fish. Res. Div., Minis. Agric. Fish. N.Z. 15: 65-69.
- 423
Suda, A. 1971. Tuna fisheries and their resources in the IPFC area. Far Seas Fish. Res. Lab. S Ser. 5: 58 pp. (In English with Japanese abstract). (Also in Indo-Pac. Fish. Counc. Proc. 14(2):36-66.

- 424
Suda, A. 1973. Observation on the recent status of the tuna longline fishery in the Indian Ocean. In: Investigations on the biological problem relevant to the regulation of tuna fisheries in the international field, 1971-1972. Far Seas Fish. Res. Lab. S Ser. 7: 41-69. (In English with Japanese abstract).
- 425
Suda, A. 1973. Possible problems involved in the regulation of tuna longline fishery. In: Investigations on the biological problem relevant to the regulation of tuna fisheries in the international field, 1971-1972. Far Seas Fish. Res. Lab. S Ser. 7: 71-98. (In English with Japanese abstract).
- 426
Suda, A. 1974. Recent status of resources of tuna exploited by longline fishery in the Indian Ocean. Bull. Far Seas Fish. Res. Lab. (Shimizu) 10: 27-62.
- 427
Sund, P.N. 1981. Tunas, oceanography and meteorology of the Pacific, an annotated bibliography, 1950-1978. U.S. Dept. Commerce, NOAA Tech. Rep. NMFS SSRF 744: 123 pp.
- 428
Sund, P.N., Blackburn, M. and Williams, F. 1981. Tunas and their environment in the Pacific Ocean: a review. Oceanogr. Mar. Biol. Ann. Rev. 19: 443-512.
- 429
Surprise tuna catches in SA. 1979. Aust. Fish. 38(11): 42.
- 430
Suzuki, A. 1963. Serological studies of the races of tuna. VIII. Hemagglutinins contained in the seed of ginkgo and the short-necked clam. Rep. Nankai Reg. Fish. Res. Lab. 19: 95-102. (In Japanese with English abstract).
- 431
TACs for new season announced. 1983. Catch '83 (N.Z. Minis. Agric. Fish.) 10(7): 4-5.
- 432
Tagged tuna caught after 13 years. 1983. Aust. Fish. 42(9): 14.
- 433
Tagging of southern bluefin tuna off the coast of Australia. 1983. Fishing Industry Research Committee Annual Report 1981-82. Department of Primary Industry, Canberra, Australia, p. 11.
- 434
Takeuchi, S. and Taneishi, Y. 1976. Studies on the selection of tuna longline fishing grounds - I. Deterministic model simulation of southern bluefin tuna fishery. Bull. Jpn. Soc. Sci. Fish. 42(6): 637-644. (In Japanese with English abstract).
- 435
Talbot, F.H. and Penrith, M.J. 1963. Synopsis of biological data on species of the genus *Thunnus* (*sensu lato*) (South Africa). FAO Fish. Rep. 6(2): 608 - 646.
- 436
Talbot, F.H. and Penrith, M.J. 1968. The tunas of the genus *Thunnus* in South African waters. Part I. Introduction, systematics, distribution and migrations. Ann. S. Afr. Mus. 52(1): 1-41.
- 437
Talk on tuna. 1975. SAFIC (S. Aust. Fish. Indus. Coun.) 5: 15.
- 438
Tasmanian bluefin catch rate declines. 1982. Catch '82 (N.Z. Minis. Agric. Fish.) 9(6): 30.
- 439
Tasmania hopes to develop handline fishery for southern bluefin tuna. 1983. Aust. Fish. 42(8): 14-15.

- 440
Tasmanian tuna survey not encouraging.
1965. Aust. Fish. Newsl. 24(6): 17.
- 441
Tasmanian tuna survey results. 1965. Aust.
Fish. Newsl. 24(4): 15.
- 442
Tassie sashimi? 1983. Prof. Fisherman (Aust.)
5(7): 15.
- 443
Three nation talks-continuing concern over
SBT stock. 1984. Aust. Fish. 43(6): 14-15.
- 444
Trainor, N. and Peterson, P. 1984. Unusual
pattern emerges from '82-'83 tuna season.
Aust. Fish. 43(1): 43.
- 445
Trilateral consultations on southern bluefin tuna
management. 1984. Prof. Fisherman
(Aust.) 6(9): 11.
- 446
Tuck, P. 1980. Battle over tuna ban continues.
Prof. Fisher- man (Aust.) 2(10): 17.
- 447
Tuck, P. 1982. Japan's NZ catch revealed.
Prof. Fisherman (Aust.) 5(2): 13.
- 448
Tuck, P. 1982. Sashimi intrigue. Prof.
Fisherman (Aust.) 5(2): 19.
- 449
Tuck, P. 1983. Sashimi venture well
researched. Prof. Fisher-man (Aust.) 5(3):
17.
- 450
Tuck, P. 1983. Southern bluefin tuna fishery.
Prof. Fisherman (Aust.) 6(2): 11.
- 451
Tuck, P. 1983. Tuna squabble. Prof.
Fisherman (Aust.) 6(1): 9.
- 452
Tuna. 1984. Prof. Fisherman (Aust.) 6(7): 17.
- 453
Tuna action needed to avoid collapse. 1984.
Prof. Fisherman (Aust.) 6(9): 19.
- 454
Tunas and related species (Scombridae) of the
NZ EEZ. 1978. Catch '78 (N.Z. Minis.
Agric. Fish.) (August supplement: NZ
1977-1978 tuna season): 12-13.
- 455
Tuna boats will be purpose built in future.
1983. Aust. Fish. 42(5): 10-11.
- 456
Tuna catch. 1976. SAFIC (S. Aust. Fish. Indus.
Counc.) 9: 3.
- 457
Tuna catch. 1984. Aust. Fish. 43(3): 30.
- 458
Tuna catch promising. 1980. Aust. Fish. 39(2):
13.
- 459
Tuna catch promising. 1981. Aust. Fish. 40(2):
47.
- 460
Tuna controls. 1979. Prof. Fisherman (Aust.)
1(8): 3.
- 461
Tuna controls for eastern states. 1976. FINS
(Dept. Fish Wildl. W. Aust.) 9(1): 9.
- 462
Tuna discussions successful. 1983. FINS
(Dept. Fish. Wildl. W. Aust.) 16(3): 14.
- 463
Tuna export exclusion fear. 1979. Prof.
Fisherman (Aust.) 1(9): 5.
- 464
Tuna fishery controls introduced. 1976. SAFIC
(S. Aust. Fish. Indus. Counc.) 8: 27.

- 465
Tuna fishery to be controlled. 1975. SAFIC (S. Aust. Fish. Indus. Counc.) 4: 3.
- 466
Tuna fishing to be controlled. 1975. World Fish. 24(8): 8.
- 467
Tuna freeze issue warms up. 1981. AFIC Newsl. (Aust. Fish. Indus. Coun.) 3: 1.
- 468
Tuna freeze stays till March 1981. 1980. Aust. Fish. 39(2): 38.
- 469
Tuna industry task force. 1981. Prof. Fisherman (Aust.) 3(8): 25.
- 470
Tuna limitation still a worry. 1982. SAFIC (S. Aust. Fish. Indus. Counc.) 6(2): 12.
- 471
Tuna logbooks. 1983. FINS (Dept. Fish. Wildl. W. Aust.) 16(1): 25.
- 472
Tuna logs. 1977. SAFIC (S. Aust. Fish. Indus. Coun.) 11: 12.
- 473
Tuna longline operations observed off South Australia. 1981. SAFIC (S. Aust. Fish. Indus. Counc.) 5(4): 3-8.
- 474
Tuna longliner Japanese, Korean or Taiwanese. 1977. Catch '77 (N.Z. Minis. Agric. Fish.) (August supplement: Foreign fishing vessels around New Zealand): 12.
- 475
Tuna management - draft plan distributed. 1983. Aust. Fish. 42(8): 13.
- 476
Tuna offer challenge to vary catches. 1982. Fish. News. Int. 21(5): 20-21.
- 477
Tuna prices. 1980. Aust. Fish. 39(2): 11.
- 478
Tuna purse seined in New South Wales. 1966. Aust. Fish. Newsl. 25(1): 9.
- 479
Tuna quota uproar. 1983. Prof. Fisherman (Aust.) 5(12): 19.
- 480
Tuna search off to a good start. 1965. Aust. Fish. Newsl. 24(3): 7.
- 481
Tuna season looks average. 1980. Aust. Fish. 39(6): 24.
- 482
Tuna season opens promisingly. 1978. Aust. Fish. 37(1): 25.
- 483
Tuna season will be closely watched. 1975. Aust. Fish. 34(10): 4-8.
- 484
Tuna season 1976-1977. 1977. SAFIC (S. Aust. Fish. Indus. Counc.) 13: 17.
- 485
Tuna seiners wanted. 1981. Prof. Fisherman (Aust.) 3(6): 23.
- 486
Tuna stocks could crash. 1982. CSIRO Res. News Rev. 28: 14-15.
- 487
Tuna stocks could crash. 1982. Prof. Fisherman (Aust.) 4(8): 26.
- 488
Tuna tag record. 1979. Aust. Fish. 38(4): 31.
- 489
Tuna tag reward. 1982. Aust. Fish. 41(3): 19.

Bibliography 32

- 490
Tuna tagged off WA caught off NSW. 1981.
Aust. Fish. 40(2): 47.
- 491
Tuna up in SA. 1982. Aust. Fish. 41(3): 19.
- 492
Uda, M. 1970. Advances in fisheries
oceanography of Japan from 1967 to 1969.
Jap. Soc. Fish. Ocean., Advances Fish.
Ocean., 3: 1 - 15.
- 493
Ueyanagi, S. 1966. Part I. Biology of tunas and
billfishes. In: Symposium on tuna fisheries.
Bull. Jpn. Soc. Sci. Fish. 32(9): 739-755,
828. (In Japanese with English abstract).
- 494
Ueyanagi, S. 1969. Observations on the
distribution of tuna larvae in the Indo-Pacific
Ocean with emphasis on the delineation of
the spawning areas of albacore, *Thunnus*
atalunga. Bull. Far. Seas Fish. Res. Lab.
(Shimizu) 2: 177-256. (In Japanese with
English abstract).
- 495
Ueyanagi, S. 1969. The spawning of the
southern bluefin tuna *Thunnus maccoyii*
as indicated by the occurrence of its larvae.
Bull. Far Seas Fish. Res. Lab. (Shimizu) 1:
1-4. (In Japanese with English abstract).
- 496
Unit fisheries of Australia - southern bluefin
tuna fishery. 1967. Aust. Fish. Newsl.
26(4): 23-25.
- 497
Uotani, I., Matsuzaki, K., Makino, Y., Noda, K.,
Inamura, O. and Honkawa, M. 1981. Food
habits of larvae of tunas and their related
species in the area northwest of Australia.
Bull. Jpn. Soc. Sci. Fish. 47(9): 1165-1172.
(In Japanese with English abstract).
- 498
Using the sea around us. 1976. Ecos (CSIRO)
9: 3-9.
- 499
Value of tuna tags doubled if fish returned.
1976. Aust. Fish. 35(5): 17.
- 500
Vaux, D. 1962. Results of tuna search
programme, 1961. Aust. CSIRO Div. Fish.
Oceanogr. Southern Pelagic Project
Special Report 2: 40 pp.
- 501
Vaux, D. 1963. The tuna search programme of
1962 in South Australian waters. Aust.
CSIRO Div. Fish. Oceanogr. Southern
Pelagic Project Special Report 3: 38 pp.
- 502
Victoria looks at tuna. 1982. Prof. Fisherman
(Aust.) 4(9): 26.
- 503
WA tuna bankruptcies. 1984. Prof. Fisherman
(Aust.) 6(10): 15.
- 504
W.A. tuna boat owners seek protection. 1981.
Prof. Fisherman (Aust.) 3(7): 11.
- 505
Wanklyn, N. 1981. Tuna investment in
jeopardy. Prof. Fisherman (Aust.) 3(6): 20.
- 506
Wanklyn, N. 1982. Tuna crisis. Prof. Fisherman
(Aust.) 4(8): 21.
- 507
Wanklyn, N. 1983. Feminine touch for tuna.
Prof. Fisherman (Aust.) 5(7): 18.
- 508
Wanklyn, N. 1984. More sashimi from SA. Prof.
Fisherman (Aust.) 6(8): 13.
- 509
Wanklyn, N. 1984. Sashimi dawn. Prof.
Fisherman (Aust.) 6(5): 13.
- 510
Wanklyn, N. 1984. Tuna fleet slashed. Prof.
Fisherman (Aust.) 7(1): 35.

- 511
Warashina, I. and Hisada, K. 1970. Spawning activity and discoloration of meat and loss of weight in the southern bluefin tuna. Bull. Far Seas Fish. Res. Lab. (Shimizu) 3: 147-166. (In Japanese with English abstract).
- 512
Warashina, I. and Hisada, K. 1972. Geographical distribution and body length composition of two tuna-like fishes, *Gasterochisma melampus* RICHARDSON and *Allothunnus fallai* SERVENTY, taken by Japanese tuna longline fishery. Bull. Far Seas Fish. Res. Lab. (Shimizu) 6: 51-75. (In Japanese with English abstract).
- 513
Warashina, I. and Hisada, K. 1974. Preliminary evaluation of effect of the voluntary regulation on stock of southern bluefin tuna and the longline fishery. Bull. Far Seas Fish. Res. Lab. (Shimizu) 10: 193-220. (In Japanese with English abstract).
- 514
Warm currents held little profit for NSW tuna fleet. 1976. Aust. Fish. 35(2): 20.
- 515
Warren, P. 1977. 1976 NSW tuna 'disaster'. Aust. Fish. 36(4): 23.
- 516
Watanabe, H. 1960. Regional differences in food composition of tunas and marlins from several oceanic areas. Rep. Nankai Reg. Fish. Res. Lab. 12: 75-84. (In Japanese with English abstract).
- 517
Water changes mar NZ tuna trials. 1983. Aust. Fish. 42(6): 42.
- 518
Webb, B.F. 1972. Report on the investigation of the "Lloret Lopez II" 8 January to 2 April 1970, Sect. 6: Tuna catch analysis and sea water temperatures. N.Z. Ministry of Agriculture and Fisheries, Fish. Tech. Rep. 108: 105 pp.
- 519
Webb, B.F. 1974. Report on a tuna polefishing and livebait venture "Hoko Maru 15", 8 February to 21 March 1972, Sect. 3: Polefishing, hydrology, and tuna analysis. N.Z. Ministry of Agriculture and Fisheries, Fish. Tech. Rep. 106: 57 pp.
- 520
Whitley, G.P. 1964. Scombroid fishes of Australia and New Zealand. Symp. Ser. Mar. Biol. Assoc. India 1(1): 221-254.
- 521
Williams, K.F. 1977. Sea surface temperature maps to assist tuna fisheries off New South Wales, Australia. FAO Fish. Tech. Pap. 170: 38-55.
- 522
Williams, K. 1980. Increased tuna tagging off Western Australia. Aust. Fish. 39(1): 11.
- 523
Williams, K. 1981. Aerial survey of pelagic fish resources off south east Australia 1973-1977. Aust. CSIRO Div. Fish. Oceanogr. Rep. 130: 82 pp.
- 524
Williams, K. 1983. Big numbers of SBF tuna tagged off Esperance. Aust. Fish. 42(7): 26-27.
- 525
Wilson, M. 1983. Tuna handlining potential still unknown. FINTAS (Tasmanian Fish. Dev. Authority, Hobart) 6(2): 30-33.
- 526
World tuna market sluggish; Indo. growth planned. 1982. Aust. Fish. 41(8): 42.
- 527
Worst tuna season. 1977. World Fish. 26(5): 13.

528

Yabe, H., Ueyanagi, S. and Watanabe, H. 1966. Studies on the early life history of bluefin tuna *Thunnus thynnus* and on the larvae of the southern bluefin tuna *T. maccoyii*. Rep. Nankai Reg. Fish. Res. Lab. 23: 95-129. (In Japanese with English abstract).

529

Yabe, H. Yabuta, Y. and Ueyanagi, S. 1963. Comparative distribution of eggs, larvae and adults in relation to biotic and abiotic environmental factors. FAO Fish. Rep. 6(3): 979-1009.

530

Yamanaka, I. 1978. Oceanography in tuna research. Cons. Perm. int. Explor. Mer, Rapp. Proces - Verb., 173: 203 - 211.

531

Yamanaka, H. and Anraku, N. 1959. Oceanographic studies on the fishing grounds of tunas in the Indian Ocean. I. General oceanographic conditions in relevant to the distribution of tunas in the winter season. Rep. Nankai Reg. Fish. Res. Lab. 11: 147-164. (In Japanese with English abstract).

532

Yamanaka, H. and Anraku, N. 1961. Oceanographic studies on the fishing grounds of tunas in the Indian Ocean. II. General oceanographic conditions in relevant to the distribution of tunas in summer season. Rep. Nankai Reg. Fish. Res. Lab. 13: 1-19. (In Japanese with English abstract).

533

Yamanaka, H. and Anraku, N. 1962. Relation between the distribution of tunas and water types of the north and south Pacific oceans west of 160° W. Occas. Rep. Nankai Reg. Fish. Res. Lab. 1: 23-34.

534

Yamanaka, H., Morita, J. and Anraku, N. 1969. Relation between the distribution of tunas and water types of the North and South Pacific Ocean. Bull. Far Seas Fish. Res. Lab. (Shimizu) 2: 257-273.

535

York, D. 1979. Catching and handling methods. Catch '79 6(9): 7-10.

536

York, A.G. and Fenaughty, J.M. 1974. Tuna investigations - west coast area of the South Island, New Zealand. Indo- Pac. Fish. Counc. Proc. 15(3): 436-451.

537

Young, C. 1984. Southern bluefin tuna-WA style. Aust. Fish. 43(5): 2-5.

538

Yukinawa, M. 1970. Age and growth of southern bluefin tuna, *Thunnus maccoyii* (Castlenau) by use of scale. Bull. Far Seas Fish. Res. Lab. (Shimizu) 3: 229-257. (In Japanese with English abstract).

Author Index

- Aaltonen, I. 1
- Abe, T. 2, 3
- Ahlstrom, E.H. 276
- Akyuz, E.F. 9
- Allen, R. 10
- Amano, K. 239
- Anaraku, N. 531-532, 533, 534
- Austin, R.H. 13
- Australian Department of
Agriculture, Fisheries Division.
See Fish. Rep.
- Australian Fisheries (Department of
Primary Industry) 1968 , 392;
1969 , 196, 205, 213, 308, 320,
321, 360; 1970 , 35,96; 1971 ,
209, 316; 1972 , 8, 66, 123;
1975, 100, 306, 338, 361;
1975 , 22, 248, 319, 483; 1976 ,
49, 67, 119, 144, 156, 218, 339,
347, 386, 391, 499, 499, 514;
1977 , 315, 322; 1978 , 43,
158, 318, 405, 482; 1979 ,
142,206, 359, 429, 488; 1980 ,
6, 398, 458, 468, 477, 481;
1981 , 4, 17, 34, 36, 105, 211,
307, 328, 345, 366, 396, 459,
490; 1982 , 21, 204, 242, 249,
274, 284, 305, 309, 317, 324,
325, 343, 489, 491, 526; 1983 ,
15, 28, 29, 58, 95, 133, 143,
191, 242, 303, 337, 363, 365,
402, 432, 439, 455, 475, 517;
1984 , 48, 155, 183-185, 188,
197, 212, 323, 340, 364, 367,
368, 407, 443, 444, 457. *See*
also Aust. Fish. Newsl.
- Australian Fisheries Newsletter 25,
214, 348, 362, 399, 440, 441,
478, 480, 496 *See also*
Australian Fisheries
- Australian Fishing Industry Council
Newsletter 467
- Bain, R. 30
- Baker, W. 31
- Beardsell, M. 139
- Beare, M.J. 32
- Bell, A.J. 33
- Bito, M. 37
- Blackburn, M. 38, 428
- Boely, T. 272
- Bowerman, M.R. 49
- Brown, C. 172, 294
- Cade, R. 50
- Campbell, D. 51, 52
- Canning, S. 351
- Castelnau, F.L. 53
- Catch '77, 474
- Catch '78, 454

36 Author Index

- Catch '79, 390
- Catch '81, 97, 342, 388
- Catch '82, 39, 116, 395, 406, 438
- Catch '83, 40, 42, 44, 46, 215, 431
- Caton, A.E. 54-57, 261
- Chardy, P. 244
- Collette, B.B. 59-62, 134
- Collins, S. 63-65
- CSIRO Division of Fisheries 75-79
- CSIRO Division of Fisheries and
Oceanography 80-89
- CSIRO Division of Fisheries
Research 90-94
- CSIRO Information Service Sheet
393
- CSIRO Research News Review
486
- Cowper, T.R. 70-72
- Cressey, H.B. 73
- Cressey, R. 73
- Crooks, A.D. 74
- Da Rodda, D. 286, 287
- Davis, S.P. 147
- Department of Fisheries and
Wildlife, Western Australia 410-
412 *See also* FINS
- Dragovich, A. 98
- Dung, D.I.Y. 99
- Ecos (CSIRO) 498
- Ehira, S. 102
- Elliot, R. 103, 104
- Evermann, B.W. 219
- Far Seas Fisheries Research
Laboratory 111-113
- Fenaughty, J.M. 536
- Fischer, W. 114
- FAO Fisheries Circular 109
- FAO Fisheries Report 20, 107, 108,
110, 186, 193-195, 349
- FAO Fisheries Technical Paper 408
- Fisheries Report (Australian
Department of Agriculture,
Fisheries Division) 101, 273
- Fishery Agency of Japan 12, 117,
188
- FINS (Department of Fisheries and
Wildlife, Western Australia) 23,
106, 210, 216, 269, 341, 394,
409, 461, 462, 471
- Fishing Industry Research
Committee Annual Report
(Department of Primary
Industry) 421, 433
- Fish. News Int.* 27, 41, 311, 476
- Franklin, P. 120
- Fraser-Brunner, A. 121
- Freeman, D. 122
- Fujii, Y. 124-129

- Fujino, K. 130, 131
- Game Tagging Newsletter (NSW Department of Fisheries) 329
- Gibbs, R.H.Jr. 60, 134
- Gibson, A. 135
- Gibson, D. 136-139
- Godfrey, K. 140
- Godsil, H.C. 141
- Graham, J.B. 145
- Green, A.J. 146
- Greenhood, E.C. 147
- Greenough, J.W. 223
- Habib, G. 148
- Hampton, J. 57, 149, 262-264
- Hayasi, S. 150-154
- Hearn, W.S. 265
- Hewitt, G.C. 157
- Higasa, S. 124-129, 373, 374
- Hiragaki, T. 3
- Hirayama, N. 160
- Hisada, K. 154, 161, 380, 511-513
- Holmberg, E.K. 141
- Homma, M. 151
- Honma, M. 162, 313, 314
- Horikawa, M. 497
- Hughes, W. 163
- Hynd, J.S. 32, 70-72, 164-182
- Imanishi, H. 238
- Inamura, O. 497
- Industries Assistance Commission 189, 190
- International Angler 387
- International Commission for the Conservation of Atlantic Tunas (ICCAT) 186, 187
- IOFC/IPFC 193-195
- Iwai, T. 198, 199
- de Jager, B. van D. 200, 201
- James, D.G. 202
- Japan Tuna Fisheries Federation 413
- Jones, B.B. 173, 174
- Jones, S. 276
- Jordan, D.S. 219
- Joseph, J. 220-224
- Kakuda, K. 102
- Kang, T. 131
- Kask, J.L. 225
- Kawasaki, T. 226
- Kelly, W.R. 247
- Kerr, I.C. 173, 175
- Kerrisk, J.M. 176, 177

38 Author Index

- Kesteven, G.L. 70-72, 174, 178, 179, 227
- Kikawa, S. 152, 228-230, 300, 313, 314
- King, M. 231
- Kirkwood, G.P. 232, 233
- Kishinouye, K. 234
- Kitson, G. 120
- Klawe, W.L. 224, 235, 236, 276, 350
- Koerbin, J. 237
- Koga, S. 238
- Konagaya, S. 239
- Koto, T. 153, 230, 240
- Kume, S. 153, 241
- Laurec, A. 244
- Le Gall, J.Y. 244
- Lehane, R. 245, 246
- Lester, R.J.G. 247
- Lorimer, P.D. 32, 253
- Lucas, C. 180, 254
- Maclean, J.L. 255
- Magnuson, J.J. 256
- Majkowski, J. 149, 257-267, 293
- Makino, Y. 497
- Mannering, J. 270
- Manter, H.W. 271
- Marcille, J. 272
- Marr, J.C. 275
- Matsubara, K. 199
- Matsumoto, W.M. 276
- Matsuzaki, K. 497
- McKenzie, M.K. 277
- Merta, G.S. 272
- Mimoto, K. 125-129
- Mimura, K. 280-282, 298
- Miyake, P.M. 286, 287
- Miyake, M. 285
- Mori, K. 288
- Morita, J. 153, 534
- Munro, I.S.R. 70
- Murphy, G.I. 149, 266, 267, 289-294
- Murphy, P. 224
- Myers, D.G. 295
- Nakamura, H. 296-301
- Nakamura, I. 198, 199
- Namakura, E.L. 302
- Nauen, C.E. 61
- Neill, W.H. 414
- Nepgen, C.S. de V. 201, 304

- New South Wales State Fisheries
400 *See also* Game Tagging
Newsletter
- New Zealand Ministry of Agriculture
and Fisheries *See* Catch'77-
'83
- Nishikawa, Y. 230, 312-314
- Noda, K. 497
- Nordstrom, V. 286-287
- Olson, R.J. 327
- Pallai, P.P. 383
- Parker, R. 328
- Paul, L.J. 352
- Penrith, M.J. 435, 436
- Pepperell, J.G. 329
- Peterson, P. 330, 444
- Phillips, B.F. 331
- Pirages, S.W. 371
- Pownall, P.C. 333-336
- Professional Fisherman (Australia)
11, 14, 19, 45, 47, 192, 203,
207, 217, 250, 251, 268, 283,
326, 332, 384, 385, 389, 397,
442, 445, 452, 453, 460, 463,
469, 479, 485, 487, 502-504
- Rayner, G.W. 38
- Richards, W.L. 276, 350
- Roberts, P. 351, 352
- Robins, J.P. 70-72, 178, 179, 181,
353-356
- Rochford, D.J. 357
- Rogers, P. 140
- Rohan, G. 358
- Royce, W.F. 99
- Sadhotomo, B. 272
- Sandland, R.L. 265
- Science Newsletter 7
- Serventy, D.L. 369, 370
- Sharp, G.D. 371
- Shimada, B.M. 372
- Shimidu, Y. 373, 374
- Shingu, C. 151, 153, 154, 161, 230,
375-381
- Shuntov, V.P. 382
- Silas, E.G. 383
- Smith, B.R. 62
- South Australian Fishing Industry
Council 5, 68, 69, 115, 132, 208,
437, 456, 464, 465, 470, 472,
473, 484
- Sprague, L.M. 403
- Sproston, N.G. 70-72, 173, 174,
179, 404
- Stevens, E.D. 414
- Stewart, G.W. 415-420
- Sturman, M.A. 422
- Suda, A. 423-426

40 Author Index

- Sund, P.N. 427, 428
- Suzuki, A. 430
- Takeuchi, S. 434
- Talbot, F.H. 435, 436
- Taneishi, Y. 434
- Tawara, S. 238
- Trainor, N. 444
- Tuck, P. 446-451
- Uchiyama, H. 102
- Uda, M. 492
- Ueyanagi, S. 276, 313, 314, 493-495, 528, 529
- Uotani, I. 497
- Unar, M. 272
- Uktolseja, J.C.B. 272
- Vaux, D. 70, 72, 182, 500, 501
- Victorian Institute of Marine Research 278, 279
- Wanklyn, N. 505-510
- Warashina, I. 282, 301, 381, 511-513
- Warren, P. 515
- Watanabe, H. 516, 528
- Webb, B.F. 518, 519
- Whitehead, P.J.P. 114
- Whitely, G.P. 520
- Williams, F. 428
- Williams, K. 267, 294, 521-524
- Wilson, M. 525
- Wise, J. 287
- World Fishing 16, 18, 24, 26, 159, 243, 252, 310, 344, 346, 401, 466, 527
- van Wyk, R.J. 201
- Yabe, H. 528, 529
- Yabuta, Y. 298, 529
- Yamabe, K. 239
- Yamanaka, H. 531-534
- Yamanaka, I. 530
- Yonemori, T. 161
- York, A.G. 536
- York, D. 535
- Young, C. 537
- Yukinawa, M. 538

Subject Index

- A.A.D.'s. *See* Artificial aggregating devices
- Abundance. *See* Stock, assessment of size of
- Access agreements. *See* Fishing
access agreements: Australia-Japan;
Fishing access agreements: New Zealand-Japan
- Administration of Australian fishery, 190, 200
- Age at first capture, 191, 266, 513. *See also* Yield per recruit
- Age composition of catch, 262, 263, 327; in Australia, 67, 68, 166; effect on spawning stock of, 55; from longlines, 150, 377, 380, 513. *See also* Length-frequency; Weight-frequency
- Age-length relationship, 193, 233, 254, 262, 263, 293, 379. *See also* Length-weight relationship
- Age-weight relationship, 379
- Ageing, 262, 263, 493; using scales, 70, 72, 166, 538
- Aid for Western Australian fishermen, 184, 407. *See also* Industries Assistance Commission
- Albinism, 3
- Anatomy: of circulatory system, 141, 145, 327, 414; of digestive system, 141; of excretory system, 141; of musculature, 371; of olfactory organs, 198; of skeletal system, 134, 141, 300
- Artificial aggregating devices (A.A.D.'s), 24, 105, 106, 410, 537
- Australian Exclusive Economic Zone. *See* Exclusive Economic Zone, Australian
- Australian Southern Bluefin Exporters Pty Ltd, 507
- Automatic poles, 22
- Behaviour, 164, 256, 354, 428. *See also* Migration; Movements; Schooling behaviour
- Bibliography, 372, 427. *See also* Biology: synopsis of
- Biochemistry, 102, 124-131, 327, 371, 373, 374, 403
- Biology, 241, 275, 290, 493; bibliography of, 372; synopsis of, 327, 354
- Blood sampling, 70, 71
- Boats, Australian: number operating, 178, 273, 321; overcapitalization of, 29, 49, 506; register of, 47, 48, 230; upgrading of, 405
- Boats, design of: longliner, 308, 474; longline-poler, 455; poler-trawler, 307, 405; purse-seine, 339. *See also* Fishing methods

42 Subject Index

- Body temperature, 145, 239, 414; effect on quality of sashimi, 116, 239
- Breeding stock decline. *See* Parental biomass: decline in
- Canning, 58. *See also* Prices: for Australian canning fish
- Carrier boats, Japanese. *See* Transportation of sashimi to Japan: by boat
- Catch: global, 191, 273, 286, 287, 423; sampling methods, 257; to stabilize parental biomass, 91, 84, 149, 264
- Catch, Australian: 1937-1941, 369; 1949-1970, 38, 76, 78, 82, 147, 161, 176, 178, 230, 354; 1971-1985, 4, 20, 28, 30, 91, 82, 161, 176, 346, 527; New South Wales; 1950-1970, 75, 79, 175, 178, 196, 209, 316; 1971-1981, 142, 171, 209, 243, 315, 515; South Australia, 144; 1950-1970, 178, 213; 1971-1984, 36, 43, 49, 96, 143, 322, 344, 402, 484; Tasmania, 35; Western Australia, 410-412
- Catch, Indonesian, 272
- Catch, Japanese, 148, 169, 413; in Atlantic Ocean, 153; in Australian Fishing Zone, 1, 18, 26, 56, 64, 65, 208, 213; in Exclusive Economic Zones of Indo-Pacific countries, 236; in Indian Ocean, 194, 205, 230, 424; in New Zealand waters, 103, 215, 351
- Catch, New Zealand, 39, 44, 97, 148, 231
- Catch per unit effort: for Australian fishery, 70, 71, 111, 151, 194, 195, 257, 327, 379; for Japanese longline fishery, 12, 63, 107, 108, 136, 150, 151, 161, 195, 230, 257, 267, 327, 376, 380, 424, 426, 513; for longliners off Tasmania and New Zealand, 269, 351, 376, 379, 438; off South Africa, 304 *See also* Log-books, Australian
- Catchability, 164
- Chromatophores, 312, 494, 495, 528
- Circulatory system, 141, 145, 327, 414
- Cladistic analysis, 244
- Closures. *See* Fishing grounds, closures of
- Cohort analysis, 149, 193, 293, 349
- Colour, 3, 370
- Competitors, 200, 201, 327, 354
- Controls on fishery. *See* Restrictions
- Costs in fishery. *See* Economics of Australian fishery
- Daniel Solander. *See* Transportation of sashimi to Japan: by boat
- Data: base, 257; collection, 257, 285; requirements for management, 223. *See also* Logbooks, Australian
- Diet. *See* Food of tuna
- Digestive System, 141
- Discolouration of sashimi, 102
- Diseases. *See* Parasites; Tumours

- Distribution, 61, 107, 109, 114, 224, 240, 279, 297, 327, 354, 376, 379, 428, 492, 493, 512, 529, 530; in Atlantic, 285; in Australian waters, 143, 355; bathymetric, 428; of high-quality sashimi fish, 511; in Indo-Pacific Ocean, 69, 301, 531, 532, 533, 534, 536; of larvae, 117, 314, 376, 428. *See also* Surveys
- DNA (Deoxyribonucleic acid), 124-129
- Economics of Australian fishery, 49, 51, 52, 100, 101, 189, 190; boat construction costs, 135; fuel costs, 4, 133, 135; insurance costs, 133; labour costs, 135; for longlining, 32; operating costs, 189, 190, 483; profitability, 100, 101, 189, 190; for purse-seiners, 135; survey of, 29, 100, 101
- Economics of international fishery, 223
- Effort, fishing, 150, 180, 254, 380, 424, 513. *See also* Catch per unit effort
- Eggs, 130, 350, 379. *See also* Ovaries; Fecundity
- El Nino, effects on catches of, 54, 421
- Enforcement of restrictions. *See* Restrictions: enforcement of
- Evolutionary relationships. *See* Phylogeny
- Exclusive Economic Zone, Australian, 27, 245, 498. *See also* Offshore Constitutional Settlement
- Excretory system, 141
- Exports from Australia to Italy and U.S.A., 28, 189, 190, 273, 290, 345, 481, 483
- Exports of sashimi to Japan: from Australia, 8, 23, 30, 189, 190, 333; from New Zealand, 33. *See also* Transportation of sashimi to Japan
- Fecundity, 71, 113, 229; of stock, 162. *See also* Reproduction
- Feeding behaviour; 256, 354. *See also* Food of tuna
- Fin-ray counts, 370
- Fish Aggregating Devices. *See* Artificial aggregating devices
- Fisheries: Australian, 18, 189, 190, 245, 267, 334, 370, 422, 537; global, 282, 394; longline, 189, 190, 245, 424; Pacific, 241. *See also* Fishing grounds; Catch: Australian, Japanese, New Zealand
- Fishing access agreements, Australia-Japan, 5, 6, 14, 21, 27, 115, 204, 209, 211, 252, 305, 335, 384, 416, 417, 505; exclusion of Japanese boats, 212; industry views on, 5, 6, 26, 250, 251, 460; industry involvement in, 415; licence fees, 252; opposition to, 26, 203, 207, 446
- Fishing access agreements, New Zealand-Japan, 41, 136, 310, 388, 406, 431; licence fee, 325, 406, 431
- Fishing effort. *See* Effort, fishing
- Fishing grounds, 61, 109, 136, 146, 150, 161, 178, 214, 224, 230, 280-282, 327, 354, 380; in Atlantic Ocean, 285; Australian, 267, 290; closures of, 45, 367; in Indian Ocean, 298; Indonesian, 272; in Pacific Ocean, 296; seasonal changes in, 280, 327, 369, 354, 376; South African, 304

44 Subject Index

- Fishing methods, 290, 327, 334, 354, 392; automatic poles, 22; comparison of efficiency of, 152; handline, 31, 439, 525; improvements to, 50; interactions between, 267, 340; longline, 32, 79, 80, 81, 136, 146, 218, 360, 434, 473; longlining by Australia, 328, 455, 496, 502; longlining by New Zealand, 518, 535; pole and line, 38, 77, 119, 496, 537; purse-seine, 77, 496; trolling, 38, 77, 496, 535. *See also* Boats, design of: Observer reports from Japanese longline vessels
- Fishing mortality, 149, 161, 164, 173, 194, 195, 254, 293, 327, 349, 423; in Australian fishery, 71, 180, 195; in Japanese fishery, 180, 194, 195
- Food of tuna, 61, 70-72, 98, 114, 238, 288, 327, 354, 370, 379, 516, 518; larvae, 497; off South Africa, 200, 201, 304, 435
- Freezer ships. *See* Transportation of sashimi to Japan, by boat
- Freezing. *See* Processing sashimi: freezing
- Gamefishing in Tasmania, 237
- Genetics, 130
- Gill raker counts, 370
- Gonads, 228, 229, 327
- Gonad weight, 282, 528; seasonality in, 376, 379. *See also* Ovaries
- Growth: annual variability in, 370; equations, 233, 327, 349, 379, 538; of juveniles, 528; rates of, 70, 166, 182, 269, 354, 370, 493, 518; seasonality of, 370
- Heat exchange, 145, 327, 414. *See also* Circulatory System
- Identification, 114, 121, 199, 219, 224, 285, 355, 370, 454, 520; key for, 369; of larvae, 276, 312, 494, 495, 528; using vertebral centra, 300
- Immunology, 130
- Imports of tuna to Australia, 28, 45, 155, 273, 345, 346, 483; tariffs requested, 504
- Individual transferable quotas, 45, 188, 189, 190, 367. *See also* Quotas, Australian
- Industries Assistance Commission, 183, 420
- Infra-red radiation thermometer, accuracy of, 167, 168 *See also* Sea-surface temperatures, maps of
- Interactions: between fishing methods, 267, 339; between fisheries, 254, 267, 498
- International management. *See* Management, international
- Isotherm maps *See* Sea-surface temperatures, maps of
- I.T.Q.'s *See* Individual transferable quotas
- Japan-Australia Fisheries Agreement *See* Fishing access agreement, Australia-Japan
- Japan Far Seas Fisheries Research Laboratory Research Programs, 57, 117, 118
- Japanese catches *See* Catch, Japanese
- Korean tuna fleet, 218

- Larvae, 327, 379; bibliography of, 350; depth distribution of, 494; distribution of, 57, 206, 230, 313, 494, 495, 528; gut contents of, 497; identification of, 276, 312, 494, 495, 528; size by season, 528.
- Length-frequency: of Australian catches, 70, 166, 182, 254, 293, 327, 349; of Japanese catches, 161, 281, 293, 327, 376, 377, 379; of Japanese longline catches in Australia, 63-65; of South African catches, 200, 201, 435. *See also* Weight-frequency
- Length-weight relationship, 200, 201, 304, 354, 377, 379, 518. *See also* Age-weight relationship
- Licence fees, for Japanese boats, 252, 325, 406, 431
- Licence restrictions, Australian. *See* Restrictions: on Australian licences
- Liver, 71, 72, 369, 370
- Log-books, Australian, 61, 86, 330, 393, 419, 471, 500, 501
- Longline fishing. *See* Fishing methods, longline
- Longline catches. *See* Catch, Japanese; Catch per unit effort: for Japanese longline fishery
- Management of Australian fishery; 183, 268, 284, 327, 358, 419, 450; criticism of, 11, 479; industry view, 122, 191, 133, 437; licence freeze, 385, 389, 391, 396; need for, 29, 394, 419, 453, 486, 487; options for, 189, 190; plan for 29, 45, 367, 418, 475; size-limits, 452; quota-systems, 269, 337. *See also* Quotas, Australian; Restrictions, on Australian fishery
- Management, international, 7, 10, 19, 42, 108, 111, 225, 443, 445; catch levels to stabilise parental biomass, 149; data requirements for, 221; of migratory species, 221, 222, 223, 225; organisations for, 220, 223
- Management of Japanese fishery: alternatives, 513; potential problems with, 425; voluntary regulation, 327, 378, 379, 426, 513
- Management of New Zealand fishery, 311, 431
- Management systems, 52, 113, 223, 225
- Market situation for tuna: in Australia, 189, 190, 290; for Australian tuna in Japan, 189, 190, 399; in Japan, 28; for New Zealand tuna in Japan, 103, 401; in U.S.A., 28
- Marketing sashimi in Japan, 120, 137, 202, 218, 270; consumption levels, 120; difficulties for access, 463; from New Zealand, 309, 324, 326
- Melanophores. *See* Chromatophores
- Metaglobin/Myoglobin ratio, 102
- Migration, 91, 93, 109, 169, 230, 255, 289, 298, 327, 331, 354, 376, 377, 379, 392, 423, 428, 436. *See also* Movements
- Morphometrics, 70, 99, 141, 244, 327, 370, 381
- Mortality. *See* Fishing mortality; Natural mortality
- Movements, 71, 72, 84, 169, 178, 327, 370, 436. *See also* Migration
- Musculature, 371

- Myoglobin, 102
- Natural mortality, 149, 173, 180, 195, 254, 293, 327, 423
- New South Wales catch. *See* Catch, Australian: New South Wales
- New Zealand: domestic quota, 41; sashimi fishery, 40, 137, 159, 476. *See also* Catch, New Zealand
- Nomenclature, 2, 60, 61, 62, 199, 219, 235, 244, 299, 354, 370; local names, 61, 285, 435
- Observer reports from Japanese longliners, 1, 64, 65, 139, 146, 473
- Oceanography, fisheries, 72, 277, 427, 428, 492, 530, 534; of NSW tuna grounds, 74, 81, 82, 83; of Western Australia, 355; of New Zealand, 352. *See also* Sea-surface temperatures
- Olfactory organs, 198
- Offshore Constitutional Settlement, 269, 419. *See also* Exclusive Economic Zone, Australian
- Ovaries, 228, 229, 327 *See also* Eggs; Fecundity
- Ovary weight-body length relationship, 377, 379
- Oxytetracycline for marking tuna, 87, 95, 182
- Parasites, 70-73, 157, 270, 271, 327, 354, 404
- Parental biomass: assessment of, 149, 230; catch levels to stabilise, 91, 84, 149, 264; decline in, 7, 10, 19, 185, 191, 194, 195, 261, 453
- Phylogeny 124, 244, 371, 414
- Physiology, 59, 145, 256, 327, 371, 414, 428
- Pigmentation *See* Chromatophores
- Population dynamics *See* Stock
- Predators of tuna, 160, 200, 201, 327, 354, 435, 528
- Prices: for Australian canning fish, 4, 28, 49, 51, 52, 92, 93, 133, 135, 156, 189, 190, 266, 273, 278, 290, 317, 322, 343, 345, 451, 477, 481, 483, 506, 515, 527; for Australian sashimi, 8, 266, 364; determinates of sashimi prices, 120; international, 266, 364, 526; in Italy, 273, 290; in New Zealand, 97, 231, 120; for New Zealand sashimi, 390, 401; for sashimi in Japan, 8, 26, 31, 39, 92, 103, 104, 120, 123, 133, 137, 138, 218, 270, 274, 379
- Processing sashimi, 508, 535; course on, 163; on longliners, 146; freezing, 37, 58, 103, 116, 120; fresh, 202, 338; handling and storage, 120; manual for, 104, 401, 448, 449. *See also* Quality control for sashimi
- Processing methods: canning, 58, 369; smoking, 369. *See also* Processing sashimi
- Purse-seiners in Australia: catches by, 306, 483; economics of operation of, 135; potential for; 242, 253; restrictions on, 68, 132, 185, 248, 269, 340, 341, 397, 398, 450, 465, 466; from United States of America, 478. *See also* Fishing methods, purse-seine
- Quality control for sashimi, 202; discolouration, 102; effect of body temperature at haulage, 239; grading, 138; lactic acid levels, 116

- Quotas, Australian, 45, 52, 183, 188-190, 246, 358, 367, 418, 419, 450, 451; Australian industry view, 470; formula for allocation, 197; international 223, 225, 358; monitoring, 197; New Zealand, 41, 342; South Australia, 510; Western Australia,
- Radio reports of Japanese catches, 56
- Rafts *See* Artificial aggregating devices
- Recruitment, 111, 149, 150, 195, 254, 289, 293, 327; development of index of, 421; to longline fishery, 379
- Regulations *See* Restrictions
- Reproduction, 61, 224, 354; age of first, 71, 72, 327, 518; effect on quality of sashimi of, 511; size at first, 379. *See also* Fecundity; Spawning
- Research programs, CSIRO, 13, 25, 75, 398; **1951-1960**, 76-79, 80-84; **1961-1970**; 85-87, 173-176, 227; **1971-1980**, 88, 170, 172, 177, 289; **1981-1984**, 90, 91-93, 89, 95, 279, 291
- Restrictions: on Australian fishery, 11, 68, 132, 327; on Australian licences, 437, 461, 464, 467, 468 ; on Australian purse-seiners, 68, 132, 185, 189, 190, 248, 269, 340-24, 397, 398, 419, 450, 465, 466; effect on South Australian industry, 510; enforcement of, 223; international agreement on, 7, 18, 19; Japanese voluntary, 112, 150, 194, 195, 210, 213, 327, 513; potential problems with, on Japanese fishery, 425; on New Zealand fishery, 311. *See also* Size limits, Australian
- Retia mirabilia, 327, 414
- Review of tunas and environment, 428
- Sashimi, 120 ; effect of spawning on quality of, 511; industry in Australia, 8, 23, 56, 122, 123, 133, 509; potential industry in Australia, 31, 363, 365, 439, 442, 525; potential industry in New Zealand, 309, 390, 395. *See also* Exports of sashimi to Japan; Marketing sashimi in Japan; Processing sashimi; Quality control for sashimi
- Scales, use in ageing, 70, 72, 166, 538
- Schooling behaviour, 256, , 302, 327, 354
- Sea-surface temperatures; effect on distribution, 428, 521; effect on longline catches, 379, 420; maps of, 13, 67, 72, 158, 167, 168, 176-179, 181, 182, 196, 362, 500, 501, 521; effect on New South Wales catches, 69, 70, 76, 77, 82-84, 167, 168, 171, 181, 321, 500, 501, 514, 515, 521, 523; effect on New Zealand catches, 352, 517, 518, 519, 535; satellite mapping of, 295; effect on South African catches, 200, 201
- Sensitivity analysis, 259, 263, 264
- Sex ratio, 200, 201, 304, 327, 354, 425
- Size composition of catches. *See* Length-frequency
- Size limits, Australian, 189, 190, 337, 452, 470, 479, 537
- Skeletal system, 141, 299, 300
- South Australian catches. *See* Catch, Australian: South Australia

- Spawning, 69, 230, 327; effect of, on quality of sashimi, 511; frequency of, 166; grounds, 55, 185, 206, 228, 282, 327, 354, 428, 495; seasons, 280, 354, 428, 495; timing of, 228. *See also* Fecundity; Reproduction
- Spawning stock. *See* Parental biomass
- Spotter aircraft in Australia, 4
- Stock: assessment of size of, 7, 71, 108, 111, 149-151, 161, 178, 180, 241, 261, 289, 293, 303, 327, 392, 408, 423, 426, 468, 483; decline in, 261, 486, 487, 506, 513; fecundity, 161, identity, 72, 107, 166; -recruitment relationship, 292. *See also* Parental biomass
- Stomach contents *See* Food of tuna
- Storage. *See* Processing sashimi
- Surveys: efficiency of aircraft and vessel searching, 164, 165; for larvae, 117, 118, 206; in New South Wales, 86; in New Zealand, 42, 46, 536; planning, 165; off South Africa, 201, 304; of Southeastern Australia, 523; of spawning grounds, 117, 118 in Tasmania, 71, 179, 181, 440 441, 480; Victorian longline, 502; in Western Australia, 67, 76, 182, 355
- Swim bladder, 370
- Systematics, 59, 60, 134, 141, 198, 354, 435, 436
- Tagging: by CSIRO, 13, 25, 70-72, 82, 84, 85, 87, 95, 169, 173, 174, 175, 176, 179, 180, 182, 227, 254, 266, 387, 433, 522, 524; by CSIRO in New South Wales, 353; by CSIRO in Tasmania, 348; data base, 257; estimation of abundance from, 258, 266; by fishermen, 321; by gamefishermen, 329; international guide to tuna tags, 9; international inventory of projects, 9; by Japan, 216; method, 25, 257, 524, survival after, 354. *See also* Tag-recaptures; Tag-shedding model
- Tag-recaptures, 25, 169, 170, 172-180, 249, 353, 366, 432, 488, 490, 522, 524; rewards for, 489, 499, 522, 524. *See also* Movements; Migration; Tagging
- Tag-shedding model, 169, 180, 232
- Tasmania, sashimi potential, 31
- Taxonomy. *See* Systematics
- Temperature, relationship to distribution of tuna, 277, 327, 428, 436, 521. *See also* Sea-surface temperatures
- Thermocline, 277
- Thermoregulation, 145, 327, 414. *See also* Circulatory system
- Transportation of sashimi to Japan: by air, 159; by boat, 33, 39, 45, 50, 103, 104, 137, 325, 333
- Trilateral Management Agreements. *see* Management, international
- Tumours, 247
- Tuna task force, 469
- United States of America, experimental purse-seining by, 478

Vascular anatomy. *See* Anatomy, of
circulatory system

Vertebral centra, 300

Virtual population analysis. *See* Cohort
analysis

Weather, effect on fishing of, 54, 382,
427, 519. *See also* Oceanography,
fisheries

Weight-frequency: of handline catches in
New Zealand, 136-31; of longline
catches, 281. *See also* Length-
Frequency

Western Australian catches. *See* Catch,
Australian; Western Australia

Yield per recruit, 113, 161, 162, 230, 265,
289, 293, 327, 423, 426

CSIRO

Marine Laboratories

comprises

Division of Oceanography

Division of Fisheries Research

HEADQUARTERS

Castray Esplanade, Hobart, Tas
GPO Box 1538, Hobart, Tas 7001,
Australia

QUEENSLAND LABORATORY

233 Middle Street, Cleveland, Qld
PO Box 120, Cleveland, Qld 4163

WESTERN AUSTRALIAN LABORATORY

Leach Street, Marmion, WA
PO Box 20, North Beach, WA 6020