



# **PUBLICATIONS**

# **1986/87**

**Biological Sciences Branch  
Pacific Region**



Fisheries and Oceans  
Pêches et Océans

**Canada**

**PUBLICATIONS LIST**

**1986-1987**

**Biological Sciences Branch  
Pacific Biological Station  
Nanaimo, B.C. V9R 5K6**

## **INTRODUCTION**

This report summarizes staff publications in 1986 and 1987. Publications for each year are listed in two categories. "Reviewed publications" are reviewed by world authorities on the relevant topic and are published in recognized scientific journals. "Other publications" usually receive peer review but are not published in the scientific literature. All publications are available from the authors. Please consult the list of scientific staff included in this publication for the locations and mailing address of the authors.

Headquarters for Biological Sciences Branch is the Pacific Biological Station in Nanaimo. Other facilities operated by the Branch include the West Vancouver Laboratory, the Cultus Lake Laboratory and the Rosewall Creek Experimental Hatchery. Staff are also located on the waterfront in Vancouver and Prince Rupert, at the Institute of Ocean Sciences in Sidney, and at Regional DFO Headquarters in Vancouver.

**R. J. Beamish**  
Director  
Biological Sciences Branch

**SCIENTIFIC STAFF OF THE BIOLOGICAL SCIENCES BRANCH  
PACIFIC AND YUKON REGION**

<b>Dr. R. J. Beamish</b>	<b>Director</b>
<b>A. Steele</b>	<b>Director's Executive Assistant</b>
<b>K. Francis</b>	<b>Technology Transfer Officer</b>
<b>J. A. Thomson</b>	<b>Science Coordinator</b>

NAME	DISCIPLINE
<b>Dr. D. F. Alderdice</b>	<b>Water quality, salmon incubation</b>
<b>R. Bams</b>	<b>Salmonid incubation systems</b>
<b>Dr. T. Beacham</b>	<b>Stock assessments, population dynamics, pink and chum salmon</b>
<b>Dr. R. J. Beamish</b>	<b>Stock assessments, ageing techniques, lamprey</b>
<b>Dr. G. Bell</b>	<b>Diseases of fishes</b>
<b>Dr. F. Bernard</b> (Section Head)	<b>Stock assessments, salmon, molluscan taxonomy</b>
<b>Dr. M. Bigg</b>	<b>Marine mammals</b>
<b>Dr. T. Bilton</b>	<b>Size and time-of-release, salmonid incubation</b>
<b>Dr. I. Birtwell<sup>1</sup></b>	<b>Pollution and fish habitat research</b>
<b>Dr. D. Blackburn</b>	<b>Stock assessments, salmon</b>
<b>Dr. N. Bourne</b>	<b>Oysters, clams and scallops, aquaculture</b>
<b>J. A. Boutillier</b>	<b>Stock assessment and biology of shrimp and prawns</b>
<b>Dr. S. Bower</b>	<b>Diseases of marine invertebrates</b>
<b>Dr. R. O. Brinkhurst<sup>4</sup></b>	<b>Benthic ecology, ecosystem stress</b>
<b>R. M. Brown<sup>4</sup></b>	<b>Biological oceanography, physical influences</b>
<b>T. J. Brown</b>	<b>Coastal ecology</b>
<b>A. Cass</b>	<b>Stock assessment and ecology of lingcod</b>
<b>Dr. C. Clarke</b>	<b>Growth and smolting in salmonids, salmonid aquaculture</b>
<b>Dr. K. L. Denman<sup>4</sup></b> (Section Head)	<b>Biological oceanography, physical influences</b>
<b>Dr. E. Donaldson<sup>1</sup></b> (Section Head)	<b>Controlled reproduction, stress and salmonid culture</b>
<b>H. Dye<sup>1</sup></b>	<b>Biochemistry, hormone analysis</b>
<b>Dr. T. Evelyn</b>	<b>Diseases of fishes</b>
<b>J. Fargo</b>	<b>Stock assessment and biology of flatfish</b>
<b>Dr. U. Fagerlund<sup>1</sup></b>	<b>Effects of stress on fish</b>
<b>J. R. Forbes<sup>4</sup></b>	<b>Phytoplankton ecology</b>
<b>R. Foucher</b>	<b>Stock assessment biology of groundfish</b>
<b>J. Fulton</b>	<b>Marine plankton, euphausiids, invertebrate stock assessment</b>
<b>T. Gjernes</b>	<b>Recreational fisheries</b>
<b>R. Gordon<sup>3</sup></b>	<b>Aquatic toxicology</b>
<b>Dr. C. Groot</b>	<b>Ethology and migration of salmonids</b>
<b>C. Haegle</b>	<b>Stock identification and spawn assessment of herring</b>
<b>V. Haist</b>	<b>Stock assessment of herring</b>
<b>Dr. B. Hargreaves</b>	<b>Early sea life of salmon, oceanography</b>
<b>Dr. G. Hartman</b>	<b>Fish-forestry interactions</b>
<b>Dr. D. Hay</b>	<b>Ecology and biology of herring</b>
<b>Dr. M. Healey</b>	<b>Ecology and stock assessment of salmon</b>
<b>Dr. M. A. Henderson<sup>2</sup></b>	<b>Stock assessment of salmon</b>
<b>D. Heritage</b>	<b>Clams and mussels, assessment and culture, squid</b>
<b>Dr. D. Higgs<sup>1</sup></b>	<b>Nutritional requirements of cultured salmonids, smolt quality</b>
<b>M. A. Holmes</b>	<b>Salmon data management and analysis</b>
<b>Dr. B. Holtby</b>	<b>Fish-forestry interactions</b>
<b>G. Hoskins</b>	<b>Diagnostics of fish diseases</b>
<b>G. Hudson</b>	<b>Salmon data management and analysis</b>
<b>G. Hunter<sup>1</sup></b>	<b>Control of reproduction in fish, aquaculture</b>
<b>Dr. K. Hyatt</b>	<b>Lake enrichment research, sockeye salmon</b>

Dr. J. Irvine	Oceanography and pollution, stream habitat
Dr. G. S. Jamieson (Section Head)	Crustaceans and molluscs, stock assessment and biology
J. Jensen	Incubation, water quality
Dr. Z. Kabata (Senior Scientist)	Parasitology
R. Kadowaki	Salmon ecology, coho
B. Kask	Estuarine ecology, harpacticoid taxonomy
O. Kennedy	Marine plankton, early sea life of salmon
D. Kieser	Microbiology, fish health
Dr. R. Kieser	Hydroacoustic estimation of populations
H. Kreiberg	Herring impoundments
Dr. G. Kruzynski <sup>1</sup>	Habitat interactions research
B. Kuhn	Scientific information salmon stocks
L. Lapi	Population dynamics of salmonids, data bases
B. Leaman	Stock assessment and biology of rockfish
Dr. R. LeBrasseur	Ecology plankton, northern pink stocks
R. Lauzier <sup>1</sup>	River habitats
Dr. C. Levings <sup>1</sup> (Section Head)	Coastal and estuarine habitat
Dr. C. McAllister	Coastal ecology
Dr. J. McBride <sup>1</sup>	Histophysiology and stress in fish
T. McDonald	Parasitology
Dr. S. Macdonald <sup>1</sup>	Estuarine habitat
G. McFarlane (Section Head)	Stock assessments and biology of hake, sablefish, dogfish, pollock
R. McIlwaine <sup>2</sup>	Fisheries development
E. MacIsaac <sup>1</sup>	Limnology
Dr. D. L. Mackas <sup>4</sup>	Zooplankton ecology, biological oceanography
J. Manzer	Lake enrichment, sockeye
Dr. L. Margolis (Section Head)	Parasitology
J. Markert <sup>1</sup>	Salmonid diet, development of quality control
D. Martens <sup>3</sup>	Aquatic toxicology
B. Morley	Hatchery optimization techniques
J. Morris	Salmon ecology
K. Morton <sup>3</sup>	Zooplankton and fish feeding mechanisms
Dr. T. J. Mulligan	Hydroacoustics, stock identification, fleet dynamics, enhancement analysis
Dr. H. Mundie	Stream enhancement and enrichment
C. Murray	Pink and chum salmon
D. Nagtegaal	Salmon
Dr. D. Noakes	Mathematics
P. Olesiuk	Marine mammals
A. Phillips	Invertebrates
P. Rankin	Lake enrichment
Dr. L. Richards	Non-salmonid sports fishery
Dr. B. Riddell	Genetics of salmonids, salmon assessments
Dr. H. Rogers <sup>1</sup>	Organic chemistry
M. Saunders	Stock assessment and biology of groundfish
Dr. J. Schnute	Mathematical analysis and modelling
J. Schweigert	Ecology and biology of herring
C. Scrivener	Fish-forestry interactions
G. Serbic	Scientific mortality salmon statistics
Dr. J. Servizi <sup>3</sup>	Pollution and fish habitat research
W. Shaw	Stock assessment and biology of groundfish
J. Shelbourn	Physiology of young salmon, growth studies
Dr. C. S. Shirvell	Habitat interaction, stream flows
K. Shortreed <sup>1</sup>	Limnology of enriched lakes
K. Simpson	Stock assessment and biology of coho salmon
Dr. N. Sloan	Invertebrate biology
H. D. Smith <sup>2</sup> (Associate Director)	Stock assessment and biology of Babine Lake salmon

S. Spohn	Pollution toxicology
R. Stanley	Groundfish stock assessment and biology, sampling studies
P. Starr	Stock assessment of salmon
G. Steer <sup>2</sup>	Salmon data
Dr. M. Stocker	Population dynamics, assessments and forecasts of herring
Dr. J. Stockner <sup>1</sup>	Recruitment mechanisms, limnology
(Section Head)	
R. Tanasichuk	Ecology and biology of herring
J. A. Thomson	Management systems and data bases
G. Traxler	Diseases of fishes
Dr. H. Tsuyuki <sup>2</sup>	Roe technology
Dr. A. V. Tyler	Groundfish dynamics, multispecies
Dr. M. Waldichuk <sup>1</sup>	Oceanography and pollution, stream habitat
Dr. D. Ware	Feeding energetics and biology of herring
(Section Head)	
S. J. Westrheim	Stock assessment and biology of Pacific cod
D. Whitaker	Parasitology
Dr. J.N.C. Whyte	Marine plants and shellfish
I. Williams	Salmon production in lakes and streams
K. Wilson <sup>2</sup>	Stock assessments, salmon
R. Withler	Salmon genetics
Dr. C. Wood	Stock assessments, sockeye

#### SCIENTIFIC SUPPORT

W. B. Ross	Chief, Support Services
M. Arbanas	Financial Services
C. Armstrong	Technical Services
P. Bolton	Materiel and Office Services
J. Brennan	Ships
S. McKinnell	Computer Services
G. Miller	Library Services
P. Vogt	Facilities Management

Pacific Biological Station  
Hammond Bay Road  
Nanaimo, B.C.  
V9R 5K6

West Vancouver Laboratory<sup>1</sup>  
4160 Marine Drive  
West Vancouver, B.C.  
V7V 1N6

Department of Fisheries and Oceans<sup>2</sup>  
555 West Hastings Street  
Vancouver, B.C.  
V6B 5G3

Cultus Lake Laboratory<sup>3</sup>  
4222 Columbia Valley Highway  
Cultus Lake, B.C.  
VOX 1H0

Institute of Ocean Sciences<sup>4</sup>  
9860 West Saanich Road  
P.O. Box 6000  
Sidney, B.C.  
V8L 4B2

## PRIMARY PUBLICATIONS 1986

- Bakkala, R., T. Maeda, and G. McFarlane. 1986. Distribution and stock structure of pollock (*Theragra chalcogramma*) in the north Pacific Ocean. P. 3-20 in Symposium on biology, stock assessment and management of pollock, Pacific cod, and hake in the north Pacific region. Int. North Pac. Fish. Comm. Bull. 45.
- Balcomb, K. C., and M. A. Bigg. 1986. Population biology of the three resident killer whale pods in Puget Sound and off southern Vancouver Island. P. 85-95 in B. C. Kirkevold and J. S. Lockard (eds.) Behavioral biology of killer whales. Zoo. Biol. Monogr. 1.
- Beacham, T. D. 1986. Type, quantity, and size of food of Pacific salmon (*Oncorhynchus*) in the Strait of Juan de Fuca, British Columbia. Fish. Bull. (U.S.) 84:77-89.
- Beacham, T. D., and C. B. Murray. 1986. Comparative developmental biology of chum salmon (*Oncorhynchus keta*) from the Fraser River, British Columbia. Can. J. Fish. Aquat. Sci. 43:252-262.
- Beacham, T. D., and C. B. Murray. 1986. Comparative developmental biology of pink salmon (*Oncorhynchus gorbuscha*) in southern British Columbia. J. Fish Biol. 28:233-246.
- Beacham, T. D., and C. B. Murray. 1986. Sexual dimorphism in length of upper jaw and adipose fin of immature and maturing Pacific salmon (*Oncorhynchus*). Aquaculture 58:269-276.
- Beacham, T. D., and C. B. Murray. 1986. The effect of spawning time and incubation temperature on meristic variation in chum salmon (*Oncorhynchus keta*). Can. J. Zool. 64:45-48.
- Beamish, R. J., and G. A. McFarlane. 1986. Biology and fishery of Pacific hake (*Merluccius productus*) in the Strait of Georgia. P. 365-392 in Symposium on biology, stock assessment and management of pollock, Pacific cod, and hake in the north Pacific region. Int. North Pac. Fish. Comm. Bull. 45.
- Beamish, R. J., and G. A. McFarlane. 1986. Pacific hake stocks off the west coast of Vancouver Island. P. 393-412 in Symposium on biology, stock assessment and management of pollock, Pacific cod, and hake in the north Pacific region. Int. North Pac. Fish. Comm. Bull. 45.
- Beamish, R. J., and R. E. Withler. 1986. A polymorphic population of lampreys that may produce parasitic and a nonparasitic varieties. P. 31-49 in T. Uyeno, R. Arai, T. Taniuchi, and K. Matsuura (eds.) Indo-Pacific fish biology: proceedings of the Second International Conference on Indo-Pacific Fishes. Ichthyological Society of Japan, Tokyo.
- Bell, G. R., D. Slind, and J. W. Bagshaw. 1986. Pictorial atlas of histology of the sablefish (*Anoplopoma fimbria*). Can. Spec. Publ. Fish. Aquat. Sci. 94:93 p.
- Bell, G. R., and G. S. Traxler. 1986. Resistance of the Pacific lamprey, *Lampetra tridentata* (Gairdner), to challenge by *Renibacterium salmoninarum*, the causative agent of kidney disease in salmonids. J. Fish Dis. 9(3):277-279.

- Benfey, T. J., and D. A. Methven. 1986. Pilot-scale rearing of larval and juvenile lumpfish (Cyclopterus lumpus L.), with some notes on early development. *Aquaculture* 56:301-306.
- Benfey, T. J., I. I. Solar, G. DeJong, and E. M. Donaldson. 1986. Flow-cytometric confirmation of aneuploidy in sperm from triploid rainbow trout. *Trans. Am. Fish. Soc.* 115:838-840.
- Bernard, F. R. 1986. Crassodoma gen. nov. for "Hinnites" giganteus (Gray, 1825) from the northeastern Pacific Ocean (Bivalvia: Pectinidae). *Venus* 45:69-73.
- Beverley-Burton, M., T. E. McDonald, and D. Murith. 1986. Monogenea from some marine fishes taken off the Pacific Coast of Canada. *J. Parasitol.* 72(3):479-480.
- Bigg, M. A. 1986. Arrival times of northern fur seals (Callorhinus ursinus) at the Pribilof Islands, Alaska. *Fish. Bull. (U.S.)* 84:383-394.
- Bigg, M. A. 1986. Foreword. P. xv-xvi in B. C. Kirkevoid and J. S. Lockard (eds.) Behavioral biology of killer whales. *Zoo. Biol. Monogr.* 1. R. Liss Inc., N.Y.
- Bigg, M. A. 1986. Situation de l'otarie de Steller (Eumetopias jubatus) et de l'otarie de Californie (Zalophus californianus) en Colombie-Britannique. *Publ. spec. can. sci. halieut. aquat* 77:27 p.
- Bigg, M. A., and V. B. Scheffer. 1986. Killer whale. P. 140-147 in D. Haley (ed.) Marine mammals of eastern north Pacific and Arctic waters. Pacific Seattle Press, Seattle.
- Bilton, H. T. 1986. Marking chum salmon fry vertebrate with oxytetracycline. *North Am. J. Fish. Manage.* 6:126-128.
- Bourne, N. 1986. Bivalve fisheries: their exploitation and management with particular reference to the northeast Pacific region. P. 2-13 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. *Can. Spec. Publ. Fish. Aquat. Sci.* 92.
- Boutillier, J. A. 1986. Fishing effort standardization in British Columbia prawn (Pandalus platyceros). P. 176-181 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrate. *Can. Spec. Pub. Fish. Aquat. Sci.* 92.
- Boutillier, J. A. 1986. Shrimp. P. 58-64 in G. S. Jamieson and K. Francis (eds.) Invertebrate and marine plant fishery resources of British Columbia. *Can. Spec. Publ. Fish. Aquat. Sci.* 91.
- Breen, P. A. 1986. Management of the British Columbia fishery for northern abalone (Haliotis kamtschatkana). P. 300-312 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. *Can. Spec. Pub. Fish. Aquat. Sci.* 92.
- Brett, J. R. 1986. Production energetics of a population of sockeye salmon, Oncorhynchus nerka. *Can. J. Zool.* 64:555-564.
- Cembella, A. D., and N. J. Antia. 1986. The determination of phosphonates in seawater by fractionation of the total phosphorus. *Mar. Chem.* 19:205-210.



- Cembella, A. D., N. J. Antia, and F. J. R. Taylor. 1986. The determination of total phosphorus in seawater by nitrate oxidation of the organic component. *Water Res.* 20:1197-1199.
- Chilton, D. E., and H. T. Bilton. 1986. New method for ageing chinook salmon (*Oncorhynchus tshawytscha*) using dorsal fin rays, and evidence of its validity. *Can. J. Fish. Aquat. Sci.* 43:1588-1594.
- Clarke, W. C., and J. E. Shelbourn. 1986. Delayed photoperiod produces more uniform growth and greater seawater adaptability in underyearling coho salmon (*Oncorhynchus kisutch*). *Aquaculture* 56:287-299.
- Donaldson, E. M. 1986. The integrated development and application of controlled reproduction techniques in Pacific salmonid aquaculture. *Fish Physiol. Biochem.* 2:9-24.
- Druehl, L. D., and P. A. Breen. 1986. Some ecological effects of harvesting *Macrocystis integrifolia*. *Bot. Mar.* 29:97-103.
- Dye, H. M., J. P. Sumpter, U. H. M. Fagerlund, and E. M. Donaldson. 1986. Changes in reproductive parameters during the spawning migration of pink salmon (*Oncorhynchus gorbuscha*). *J. Fish Biol.* 29:167-176.
- Evelyn, T. P. T., J. E. Ketcheson, and L. Prospero-Porta. 1986. Use of erythromycin as a means of preventing vertical transmission of *Renibacterium salmoninarum*. *Dis. Aquat. Org.* 2(1):7-11.
- Evelyn, T. P. T., L. Prospero-Porta, and J. E. Ketcheson. 1986. Experimental intra-ovum infection of salmonid eggs with *Renibacterium salmoninarum* and vertical transmission of the pathogen with such eggs despite their treatment with erythromycin. *Dis. Aquat. Org.* 1(3):197-202.
- Evelyn, T. P. T., L. Prospero-Porta, and J. E. Ketcheson. 1986. Persistence of the kidney-disease bacterium, *Renibacterium salmoninarum*, in coho salmon, *Oncorhynchus kisutch* (Walbaum), eggs treated during and after water-hardening with povidone-iodine. *J. Fish Dis.* 9(5):461-464.
- Furnell, D. J., and J. R. Brett. 1986. Model of monthly marine growth and natural mortality for Babine Lake sockeye salmon (*Oncorhynchus nerka*). *Can. J. Fish. Aquat. Sci.* 43:999-1004.
- Furnell, D. J., and J. R. Brett. 1986. Model of monthly marine growth and natural mortality for Babine Lake sockeye salmon (*Oncorhynchus nerka*) - Reply. *Can. J. Fish. Aquat. Sci.* 43:2536-2537.
- Groot, C., T. P. Quinn, and T. J. Hara. 1986. Responses of migrating adult sockeye salmon (*Oncorhynchus nerka*) to population-specific odours. *Can. J. Zool.* 64:926-932.
- Hankin, D., and M. C. Healey. 1986. Dependence of exploitation rates for maximum yield and stock collapse on age and sex structure of chinook salmon (*Oncorhynchus tshawytscha*) stocks. *Can. J. Fish. Aquat. Sci.* 43:1746-1759.
- Hardy, F. J., K. S. Shortreed, and J. G. Stockner. 1986. Bacterioplankton, phytoplankton, and zooplankton communities in a British Columbia coastal lake before and after nutrient reduction. *Can. J. Fish. Aquat. Sci.* 43:1504-1514.

- Hargreaves, N. B., and R. J. LeBrasseur. 1986. Size selectivity of coho (Oncorhynchus kisutch) preying on juvenile chum salmon (O. keta). Can. J. Fish. Aquat. Sci. 43:581-586.
- Hay, D. E. 1986. Effects of delayed spawning on viability of eggs and larvae of Pacific herring. Trans. Am. Fish. Soc. 115:155-161.
- Hay, D. E., Cooke, K. D., and C. V. Gissing. 1986. Experimental studies of Pacific herring gillnets. Fish. Res. 4:191-211.
- Healey, M. C. 1986. Optimum size and age at maturity in Pacific salmon and effects of size selective fisheries. P. 39-52 in D. J. Meerburg (ed.) Salmonid age at maturity. Can. Spec. Pub. Fish. Aquat. Sci. 89.
- Holtby, L. B., and M. C. Healey. 1986. Selection for adult size in female coho salmon (Oncorhynchus kisutch). Can. J. Fish. Aquat. Sci. 43:1946-1959.
- Hunter, G. A., I. I. Solar, I. Baker, and E. M. Donaldson. 1986. Feminization of coho salmon (Oncorhynchus kisutch) and chinook salmon (Oncorhynchus tshawytscha) by immersion of alevins in a solution of estradiol-17. Aquaculture 53:295-302.
- Irvine, J. R. 1986. Effects of varying discharge on the downstream movement of salmon fry, Oncorhynchus tshawytscha, Walbaum. J. Fish Biol. 28:17-28.
- Jamieson, G. S. 1986. A perspective on invertebrate fisheries management - the British Columbia experience. P. 57-74 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. Can. Spec. Publ. Fish. Aquat. Sci. 92.
- Jamieson, G. S. 1986. Implications of fluctuations in recruitment in selected crab populations. Can. J. Fish. Aquat. Sci. 43:2085-2098.
- Jamieson, G. S., and N. Bourne (eds.). 1986. North Pacific workshop on stock assessment and management of invertebrates. Can. Spec. Pub. Fish. Aquat. Sci. 92:430 p.
- Jamieson, G. S., and J. F. Caddy. 1986. Research advice and its application to management of shellfish resources: a workshop overview. P. 416-424 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. Can. Spec. Pub. Fish. Aquat. Sci. 92.
- Jamieson, G. S., and K. Francis (eds.). 1986. Invertebrate and marine plant fishery resources of British Columbia. Can. Spec. Publ. Fish. Aquat. Sci. 91:89 p.
- Jensen, J. O. T., J. Schnute, and D. F. Alderdice. 1986. Assessing juvenile salmonid response to gas supersaturation using a general multivariate dose-response model. Can. J. Fish. Aquat. Sci. 43:1694-1709.
- Kabata, Z. 1986. Redescriptions of and comments on four little-known Lernaepodidae (Crustacea : Copepoda). Can. J. Zool. 64:1852-1859.
- Kabata, Z. 1986. Type specimens of Erqasilus funduli Kroyer, 1863 (Crustacea: Copepoda) re-examined. Steenstrupia 12(9):153-156.
- Kabata, Z., and D. J. Whitaker. 1986. Distribution of two species of Kudoa (Myxozoa : Multivalvulida) in the offshore population of the Pacific hake, Merluccius productus (Ayres, 1855). Can. J. Zool. 64:2103-2110.

- Kabata, Z., D. J. Whitaker, and J. W. Bagshaw. 1986. Kudoa thyrasitis (Gilchrist) (Myxosporaea : Multivalvulida) in coho salmon, Oncorhynchus kisutch (Walbaum). Can. J. Zool. 64:1038-1040.
- Kathman, R. D., W. C. Austin, J. C. Saltman, and J. D. Tilton. 1986. An identification manual to the Mysidacea and Euphausiacea of the northeast Pacific. Can. Spec. Publ. Fish. Aquat. Sci. 93:411 p.
- Ketchen, K. S. 1986. L'aiguillat commun (Squalus acanthias) dans le nord-est du Pacifique et histoire de son utilisation. Publ. spec. can. sci. halieut. aquat. 88:85 p.
- Ketchen, K. S. 1986. The spiny dogfish (Squalus acanthias) in the northeast Pacific and a history of its utilization. Can. Spec. Publ. Fish. Aquat. Sci. 88:78 p.
- Knoechel, R., and L. B. Holtby. 1986. Cladoceran filtering rate: body-length relationships for bacterial and large algal particles. Limnol. Oceanogr. 31:195-200.
- Knoechel, R., and L. B. Holtby. 1986. Construction and validation of a body-length based model for the prediction of cladoceran community filtering rates. Limnol. Oceanogr. 31:1-16.
- Levings, C. D., C. D. McAllister, and B. D. Chang. 1986. Differential use of the Campbell River estuary, British Columbia, by wild and hatchery-reared juvenile chinook salmon (Oncorhynchus tshawytscha). Can. J. Fish. Aquat. Sci. 43:1386-1397.
- Lundqvist, H., W. C. Clarke, L. O. Eriksson, P. Funegard, and B. Engstrom. 1986. Seawater adaptability in three different river stocks of Baltic salmon (Salmo salar L.) during smolting. Aquaculture 52:219-229.
- Luternauer, J. L., R. H. Linden, S. J. Westrheim, and R. E. Thomson. 1986. Sedimentology of Amphitrite Bank, a commercially exploited groundfish habitat, southwestern continental shelf, British Columbia, Canada. Environ. Geol. Water Sci. 8(3):107-121.
- MacDonald, B. A., and R. J. Thompson. 1986. Influence of temperature and food availability on the ecological energetics of the giant scallop Placopecten magellanicus III. Physiological ecology, the gametogenic cycle and scope for growth. Mar. Biol. 93:37-48.
- Macdonald, J. S., and R. H. Green. 1986. Food resource utilization by five species of benthic feeding fish in Passamaquoddy Bay, New Brunswick. Can. J. Fish. Aquat. Sci. 43:1534-1546.
- Manzer, J. I., and I. Miki. 1986. Fecundity and egg retention of some sockeye salmon (Oncorhynchus nerka) stocks in British Columbia. Can. J. Fish. Aquat. Sci. 43:1643-1655.
- Margolis, L., and T. E. McDonald. 1986. Parasites of white sturgeon, Acipenser transmontanus, from the Fraser River, British Columbia. J. Parasitol. 72(5):794-796.
- Mason, J. C. 1986. Fecundity of the Pacific hake, Merluccius productus, spawning in Canadian waters. Fish. Bull. (U.S.) 84:209-217.
- Mason, J. C., and A. C. Phillips. 1986. An improved otter surface sampler. Fish. Bull. (U.S.) 84:480-484.

- McBride, J. R., U. H. M. Fagerlund, H. M. Dye, and J. Bagshaw. 1986. Changes in structure of tissues and in plasma cortisol during the spawning migration of pink salmon (Oncorhynchus gorbuscha). J. Fish Biol. 29:153-166.
- McFarlane, G. A., and R. J. Beamish. 1986. A tag suitable for assessing long-term movements of spiny dogfish and preliminary results from use of this tag. North Am. J. Fish. Manage. 6(1):69-76.
- McFarlane, G. A., and R. J. Beamish. 1986. Production of strong year-classes of sablefish (Anoplopoma fimbria) off the west coast of Canada. P. 91-202 in Symposium on biological interactions in the north Pacific region and on factors affecting recruitment, distribution and abundance of non-anadromous species. North Pac. Fish. Comm. Bull. 47.
- Mulligan, T. J., and R. Kieser. 1986. Comparison of acoustic population estimates of salmon in a lake with a weir count. Can. J. Fish. Aquat. Sci. 43:1373-1385.
- Mundie, J. H., and R. Bell-Irving. 1986. Predictability of the consequences of the Kemano Hydroelectric Proposal for natural salmon populations. Can. Water Resour. 11:14-25.
- Murray, C. B., and T. D. Beacham. 1986. Effect of density and substrate on the development of chum salmon (Oncorhynchus keta) eggs and alevins. Prog. Fish-Cult. 48:242-249.
- Murray, C. B., and T. D. Beacham. 1986. Effect of varying temperature regimes on the development of pink salmon (Oncorhynchus gorbuscha) eggs and alevins. Can. J. Zool. 64:670-676.
- Mysak, A. L., C. Groot, and K. Hamilton. 1986. A study of climate and fisheries: interannual variability of the northeast Pacific Ocean and its influence on homing migration rates of sockeye salmon. Clim. Bull. 20:26-35.
- Noakes, D. 1986. Quantifying changes in British Columbia Dungeness crab (Cancer magister) landings using intervention analysis. Can. J. Fish. Aquat. Sci. 43:634-639.
- Norman-Boudreau, K., D. Burns, C. A. Cooke, and A. Austin. 1986. A simple technique for detection of feeding in newly metamorphosed abalone. Aquaculture 51:313-317.
- Oliveira, L., and N. J. Antia. 1986. Nickel ion requirements for autotrophic growth of several marine microalgae with urea serving as nitrogen source. Can. J. Fish. Aquat. Sci. 43:2427-2433.
- Overholtz, W. J., and A. V. Tyler. 1986. An exploratory simulation model of competition and predation in a demersal fish assemblage on Georges Bank. Trans. Am. Fish. Soc. 115:805-817.
- Perez, M. A., and M. A. Bigg. 1986. Diet of northern fur seals Callorhinus ursinus off western North America. Fish. Bull. (U.S.) 84:957-971.
- Phillips, A. C., and J. C. Mason. 1986. A towed, self-adjusting sled sampler for demersal fish eggs and larvae. Fish. Res. 4:235-242.

- Porter, T. R., M. C. Healey, M. F. O'Connell, E. T. Baum, A. T. Bielak, and Y. Cote. 1986. Implications of varying the sea age at maturity of Atlantic salmon (Salmo salar) on yield to the fisheries. P. 110-117 in D. J. Meerburg (ed.) Salmonid age at maturity. Can. Spec. Publ. Fish. Aquat. Sci. 89.
- Quinn, T. P., and T. J. Hara. 1986. Sibling recognition and olfactory sensitivity in juvenile coho salmon (Oncorhynchus kisutch). Can. J. Zool. 64:921-925.
- Quinn, T. P., and G. M. Tolson. 1986. Evidence of chemically mediated population recognition in coho salmon (Oncorhynchus kisutch). Can. J. Zool. 64:84-87.
- Ramsay, M. A., and R. L. Dunbrack. 1986. Physiological constraints on life history phenomena, the example of small bear cubs at birth. Am. Nat. 127:735-743.
- Richards, L. J. 1986. Depth and habitat distributions of three species of rockfish (Sebastes) in British Columbia: observations from the submersible PISCES IV. Environ. Biol. Fish. 17:13-21.
- Richards, L. J., and J. T. Schnute. 1986. An experimental and statistical approach to the question: Is CPUE an index of abundance? Can. J. Fish. Aquat. Sci. 43:1214-1227.
- Richardson, N. L., D. A. Higgs, and R. M. Beames. 1986. The susceptibility of juvenile chinook salmon (Oncorhynchus tshawytscha) to cataract formation in relation to dietary changes in early life history. Aquaculture 52:237-243.
- Riddell, B. E. 1986. A genetic perspective regarding selective fishing and age-at-maturity in Atlantic salmon. P. 102-109 in D. J. Meerburg (ed.) Salmonid age at maturity. Can. Spec. Publ. Fish. Aquat. Sci. 89.
- Riddell, B. E., and D. Sorensen. 1986. Growth rate variation between populations of coho salmon. Aquaculture 57:374-375.
- Robert, G., and G. S. Jamieson. 1986. Commercial fishery data isopleths and their use in offshore sea scallop (Placopecten magellanicus) stock evaluation. P. 76-82 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. Can. Spec. Publ. Fish. Aquat. Sci. 92.
- Rogers, I. H., I. K. Birtwell, and G. M. Kruzynski. 1986. Organic extractables in municipal wastewater, Vancouver, British Columbia. Water Poll. Res. J. Can. 21:187-204.
- Rombough, P. J. 1986. Mathematical model for predicting the dissolved oxygen requirements of steelhead (Salmo gairdneri) embryos and alevins in hatchery incubators. Aquaculture 59:119-137.
- Schnute, J., and J. O. T. Jensen. 1986. A general multivariate dose-response model. Can. J. Fish. Aquat. Sci. 43:1684-1693.
- Servizi, J. A., and R. W. Gordon. 1986. Detoxification of TMP and CTMP effluents alternating in a pilot scale aerated lagoon. Pulp Paper Can. 87(11):404-409.

- Servizi, J. A., D. W. Martens, R. W. Gordon, J. P. Kutney, M. Singh, E. Dimitriadis, G. M. Hewitt, P. J. Salisbury, and L. S. L. Choi. 1986. Microbiological detoxification of resin acids. *Water Poll. Res. J. Can.* 21:119-129.
- Shariff, M., Z. Kabata, and C. Sommerville. 1986. Host susceptibility to Lernaea cyprinacea L. and its treatment in a large aquarium system. *J. Fish Dis.* 9(5):393-401.
- Shaw, W., and G. A. McFarlane. 1986. Biology, distribution and abundance of walleye pollock (Theragra chalcogramma) off the west coast of Canada. P. 262-283 in Symposium on biology, stock assessment and management of pollock, Pacific cod, and hake in the north Pacific region. *Int. North Pac. Fish. Comm. Bull.* 45.
- Shepherd, B. G., G. F. Hartman, and W. J. Wilson. 1986. Relationships between stream and intragravel temperatures in coastal drainages, and some implications for fisheries workers. *Can. J. Fish. Aquat. Sci.* 43:1818-1822.
- Shortreed, K. S., and J. G. Stockner. 1986. Trophic status of 19 sub-arctic lakes in the Yukon Territory. *Can. J. Fish. Aquat. Sci.* 43:797-805.
- Sloan, N. A. 1986. Sea cucumber. P. 3-8 in G. S. Jamieson and K. Francis (eds.) Invertebrate and marine plant fishery resources of British Columbia. *Can. Spec. Publ. Fish. Aquat. Sci.* 91.
- Sloan, N. A. 1986. World jellyfish and tunicate fisheries and the northeast Pacific echinoderm fishery. P. 23-33 in G. S. Jamieson and N. Bourne (eds.) North Pacific workshop on stock assessment and management of invertebrates. *Can. Spec. Publ. Fish. Aquat. Sci.* 92.
- Smith, B. D. 1986. The implications of population dynamics and interspecific competition for harvest management of Laminaria in Nova Scotia. *Mar. Ecol. Prog. Ser.* 33:7-18.
- Sorensen, D. A., and B. W. Kennedy. 1986. Analysis of selection experiments using mixed model methodology. *J. Anim. Sci.* 63:245-258.
- Stehr, C., and D. J. Whitaker. 1986. Host-parasite interaction of the myxosporeans Kudoa paniformis Kabata & Whitaker, 1981 and Kudoa thyrsites (Gilchrist, 1924) in the muscle of Pacific whiting, Merluccius productus (Ayres): an ultrastructural study. *J. Fish Dis.* 9(6):505-517.
- Stockner, J. G., and N. J. Antia. 1986. Algal picoplankton from marine and freshwater ecosystems: a multidisciplinary perspective. *Can. J. Fish. Aquat. Sci.* 43:2472-2503.
- Sumpter, J. P., and E. M. Donaldson. 1986. The development and validation of a radioimmunoassay to measure blood ACTH levels in salmonid fishes. *Gen. Comp. Endocrinol.* 62:367-376.
- Sumpter, J. P., H. M. Dye, and T. J. Benfey. 1986. The effects of stress on plasma ACTH,  $\beta$ -MSH, and cortisol levels in salmonid fishes. *Gen. Comp. Endocrinol.* 62:377-385.
- Swales, S., R. B. Lauzier, and C. D. Levings. 1986. Winter habitat preferences of juvenile salmonids in two interior rivers in British Columbia. *Can. J. Zool.* 64:1506-1514.

- Tallman, R. F. 1986. Genetic differentiation among seasonally distinct spawning populations of chum salmon, Oncorhynchus keta. *Aquaculture* 57:211-217.
- Thomas, W. K., R. E. Withler, and A. T. Beckenbach. 1986. Mitochondrial DNA sequence evolution in Pacific salmonids. *Can. J. Zool.* 64:1058-1064.
- Traxler, G. S. 1986. An epizootic of infectious haematopoietic necrosis in 2-year-old kokanee, Oncorhynchus nerka (Walbaum) at Lake Cowichan, British Columbia. *J. Fish Dis.* 9(6):545-549.
- Tyler, A. V., and S. J. Westrheim. 1986. Effects of transport, temperature, and stock size on recruitment of Pacific cod (Gadus macrocephalus). P. 175-190 *in* Symposium on biological interactions in the North Pacific region and on factors affecting recruitment, distribution and abundance of non-anadromous species, Tokyo, Japan, 1985. *Int. North Pac. Fish. Comm. Bull.* 47.
- Van Der Kraak, G., and E. M. Donaldson. 1986. Steroidogenic capacity of coho salmon ovarian follicles throughout the periovulatory period. *Fish. Physiol. Biochem.* 1:179-186.
- Van Der Kraak, G., E. M. Donaldson, and J. P. Chang. 1986. Dopamine involvement in the regulation of gonadotropin secretion in coho salmon. *Can. J. Zool.* 64:1245-1248.
- Waldichuk, M. 1986. Biological availability of metals as a factor in monitoring marine sediments for pollution. P. 30-61 *in* Yu. A. Israel, A. V. Tsyban, A. S. Sarkisyan, S. P. Bavinova, O. E. Geroimenkova, and V. O. Manayev (eds.) *Integrated Global Ocean Monitoring: Proceedings of the I International Symposium, Tallin, USSR, October 2-10, 1983, Vol. 2.* Gidrometeoizdat, Leningrad, U.S.S.R.
- Waldichuk, M. 1986. Management of the estuarine ecosystem against cumulative effects of pollution and development. P. 93-105 *in* Cumulative environmental effects: a binational perspective; proceedings of the Workshop on Cumulative Environmental Effects: a binational perspective. Canadian Environmental Assessment Research Council, Ottawa; United States National Research Council, Washington, D.C.
- Walters, C., and B. Riddell. 1986. Multiple objectives in salmon management: chinook sport fishery in the Strait of Georgia, B.C. *Northwest Environ. J.* 2(1):15.
- Walters, C. J., M. Stocker, A. V. Tyler, and S. J. Westrheim. 1986. Interaction between Pacific cod (Gadus macrocephalus) and herring (Clupea harengus pallasii) in Hecate Strait, British Columbia. *Can. J. Fish. Aquat. Sci.* 43:830-837.
- Ware, D. M., and G. A. McFarlane. 1986. Relative impact of Pacific hake, sablefish and Pacific cod on west coast of Vancouver Island herring stocks. P. 67-77 *in* Symposium on biological interactions in the North Pacific region and on factors affecting recruitment, distribution and abundance of non-anadromous species, Tokyo, Japan, 1985. *Int. North Pac. Fish. Comm. Bull.* 47.
- Welch, D. W. 1986. Identifying the stock-recruitment relationship for age-structured populations using time-invariant matched linear filters. *Can. J. Fish. Aquat. Sci.* 43:108-123.

- Westrheim, S. J., and R. P. Foucher. 1986. Fluctuations in year-class abundance of Pacific cod (Gadus macrocephalus) off western Canada. P. 287-294 in Symposium on biology, stock assessment and management of pollock, Pacific cod, and hake in the north Pacific region. Int. North Pac. Fish. Comm. Bull. 45.
- Whyte, J. N. C., J. R. Englar, B. L. Carswell, and K. E. Medic. 1986. Influence of starvation and subsequent feeding, on body composition and energy reserves in the prawn Pandalus platyceros Brandt. Can. J. Fish. Aquat. Sci. 43:1142-1148.
- Williams, I. V., and J. R. Brett. 1986. The critical swimming speed of Fraser and Thompson River pink salmon. Can. J. Fish. Aquat. Sci. 43:348-356.
- Williams, I. V., J. R. Brett, G. R. Bell, G. S. Traxler, J. Bagshaw, J. R. McBride, U. H. M. Fagerlund, H. M. Dye, J. P. Sumpter, E. M. Donaldson, E. Bilinski, H. Tsuyuki, M. D. Peters, E. M. Choromanski, J. H. Y. Cheng, and W. L. Coleridge. 1986. The 1983 early run Fraser and Thompson River pink salmon; morphology, energetics and fish health. Int. Pac. Salmon Fish. Comm. Bull. 23:55 p.
- Withler, R. E. 1986. Genetic variation in carotenoid pigment deposition in the red-fleshed and white-fleshed chinook salmon (Oncorhynchus tshawytscha) of Quessnel River, British Columbia. Can. J. Gen. Cyt. 28:587-594.
- Withler, R. E., J. D. McPhail, and R. H. Devlin. 1986. Electrophoretic polymorphism and sexual dimorphism in the freshwater and anadromous threespine sticklebacks (Gasterosteus aculeatus) of the Little Campbell River, British Columbia. Biochem. Genet. 24:701-713.
- Wood, C. C. 1986. Dispersion of common merganser (Mergus merganser) breeding pairs in relation to the availability of juvenile Pacific salmon in Vancouver Island streams. Can. J. Zool. 64:756-765.
- Youson, J. H., and R. J. Beamish. 1986. Morphological comparison of organs in several species of lampreys on the west coast of Canada. P. 926 in T. Uyeno, R. Arai, T. Taniuchi and K. Matsuura (eds.) Indo-Pacific fish biology: proceedings of the Second International Conference on Indo-Pacific Fishes. Ichthyological Society of Japan, Tokyo.



## OTHER PUBLICATIONS 1986

- Baker, I. 1986. Hormonal treatment application. P. 19-22 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver.
- Barner, L. W., C. B. Murray, and T. D. Beacham. 1986. Size, age, meristics and morphometrics of chum salmon returning to British Columbia during 1983-1985. Can. Tech. Rep. Fish. Aquat. Sci. 1484:42 p.
- Bell, G. R. 1986. Book review. Anthony E. Ellis (ed.) Fish and shellfish pathology. J. Fish Dis. 9:287.
- Benfey, T. J. 1986. Control of ploidy. P. 23-24 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop, October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Bernard, F. R. 1986. Adipose clipped fish returns in 1986--Japanese port sampling program. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 2 p.
- Bernard, F. R. 1986. Data record: Flying squid drift-net and oceanographic cruise by W. E. RICKER, August-September 1986. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 17 p.
- Birtwell, I. K., and J. Andrew. 1986. Effects of biota. P. 71-88 in F. Mah, and M. McPhee (comps.) Toxic chemicals research needs in the lower Fraser River: workshop proceedings. Environment Canada, Regional Toxic Chemicals Committee, Vancouver, B.C.
- Birtwell, I. K., and G. M. Kruzynski. 1986. A laboratory apparatus for studying organisms in stratified waters. P. 173-177 in G. H. Geen and K. L. Woodward (eds.) Proceedings of the eleventh annual Aquatic Toxicity Workshop: November 13-15, 1984, Vancouver, B.C. Can. Tech. Rep. Fish. Aquat. Sci. 1480.
- Boutillier, J. A., and W. R. Harling. 1986. G. B. REED shrimp cruise 85-L-1. May 4-14, 1985: west coast of Vancouver Island and Queen Charlotte Sound. Can. Data Rep. Fish. Aquat. Sci. 563:54 p.
- Bower, S. M. 1986. Survey of diseases in Manila clams and oysters from British Columbia. B.C. Aquacult. News. 6(4):25-27.
- Bower, S. M., R. Harbo, B. Adkins, and N. Bourne. 1986. Investigation of Manila clam (Tapes philippinarum) mortalities during the spring of 1985 in the Strait of Georgia, with a detailed study of the problem on Savary Island, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1444:25 p.
- Brown, T. J., B. A. Kask, M. S. Kotyk, C. D. McAllister, C. D. Levings, and J. S. Macdonald. 1986. Salmonid catch-data from Campbell River and Discovery Passage, 1986. Can. Data Rep. Fish. Aquat. Sci. 617:61 p.
- Brown, T. J., B. A. Kask, C. D. McAllister, M. Kotyk, C. D. Levings, and J. S. Macdonald. 1986. 1985 Campbell River zooplankton samples. Can. Data Rep. Fish. Aquat. Sci. 572:45 p.

- Brown, T. J., B. A. Kask, C. D. McAllister, M. S. Kotyk, C. D. Levings, and J. S. Macdonald. 1986. 1986 Campbell River zooplankton samples. Can. Data Rep. Fish. Aquat. Sci. 618:29 p.
- Burt, D. W., and J. H. Mundie. 1986. Case histories of regulated stream flow and its effects on salmonid populations. Can. Tech. Rep. Fish. Aquat. Sci. 1477:98 p.
- Byres, R. D., and J. A. Servizi. 1986. Dissolved atmospheric gases and reaeration coefficients for the Nechako River. Can. Tech. Rep. Fish. Aquat. Sci. 1459:83 p.
- Carmichael, J. R., and N. Bourne. 1986. Proposed techniques for the assessment of recreational invertebrate harvest in British Columbia. Can. MS Rep. Fish. Aquat. Sci. 1869:30 p.
- Carter, E. W., L. A. Lapi, and E. A. R. Ball. 1986. Catch, size, and age of chinook and coho salmon taken in the Strait of Georgia troll fishery in 1983. Can. Data Rep. Fish. Aquat. Sci. 585:96 p.
- Carter, E. W., L. A. Lapi, and E. A. R. Ball. 1986. Catch, size and age of chinook and coho salmon taken in the Strait of Georgia troll fishery in 1984 and comparisons with 1983 data. Can. Tech. Rep. Fish. Aquat. Sci. 1456:73 p.
- Cass, A. J. 1986. Canadian field research studies for 1986 in the northeast Pacific. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 3 p.
- Cass, A. J. 1986. Lingcod. P. 2-12 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Cass, A. J., G. A. McFarlane, M. S. Smith, I. Barber, and K. Rutherford. 1986. Lingcod tagging in the Strait of Georgia, 1983-84. Can. MS Rep. Fish. Aquat. Sci. 1875:49 p.
- Cass, A. J., L. J. Richards, and J. R. Selsby. 1986. A summary of rockfish samples collected from the commercial handline fishery in statistical area 13 between July 1984 and March 1985. Can. MS Rep. Fish. Aquat. Sci. 1881:49 p.
- Cass, A. J., J. R. Selsby, and L. J. Richards. 1986. Lingcod maturity cruise off southwest Vancouver Island and in Queen Charlotte Sound, R/V G.B. REED, August 20-September 5, 1985. Can. Data Rep. Fish. Aquat. Sci. 594:78 p.
- Clarke, W. C. 1986. Fish feeding husbandry trials at DFO. P. 14 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Clarke, W. C. 1986. General culture issues: coho culture in Japan and France. P. 8-9 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Clarke, W. C. 1986. Photoperiod acceleration of smolting. P. 14 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop, October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.

- Clarke, W. C., and G. Hunter. 1986. Discussion of general issues related to coho culture. P. 13 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop, October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Derksen, G. A., U. H. M. Fagerlund, J. R. McBride, and H. M. Dye. 1986. A potential in situ fish bioassay sampler for large rivers - measuring corticosteroid stress due to sampler confinement. P. 290 in G. H. Geen and K. L. Woodward (eds.) Proceedings of the 11th annual Aquatic Toxicity Workshop. Can. Tech. Rep. Fish. Aquat. Sci. 1480.
- Donaldson, E. M. 1986. Control of sex and growth in coho: General discussion. P. 28 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop, October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Donaldson, E. M. 1986. Control of sex and growth: Overview. P. 15-17 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop, October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Donaldson, E. M. 1986. Use of recombinant somatotropins in Pacific salmon. P. 25 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Down, N. E. 1986. Hormonal growth control. P. 25 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Dunbrack, R., and D. M. Ware. 1986. Particle-size spectrum estimation of the standing stock of pelagic fish. P. 3 in A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Evelyn, T. P. T. 1986. A historical note on bacterial kidney disease (BKD) in Canada. Fish Health Sect./Am. Fish. Soc. Newsl. 14(4):6.
- Fargo, J. 1986. Flatfish. P. 16-29 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Fargo, J., and D. Davenport. 1986. F/V DOUBLE DECKER species assemblage survey of Hecate Strait, Jan. 30-Feb. 19, 1986. Can. Data Rep. Fish. Aquat. Sci. 603:106 p.
- Fargo, J., and A. V. Tyler. 1986. Hecate Strait fish-assemblage distribution surveys. P. 4-10 in A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Fargo, J., and S. J. Westrheim. 1986. Results of the annual trawl surveys of juvenile flatfish in Hecate Strait, 1980-85. Can. MS Rep. Fish. Aquat. Sci. 1884:71 p.
- Fleming, J. O., J. S. Nathan, C. MacPherson, and C. D. Levings. 1986. Survey of juvenile salmonids in gravity-fed irrigation ditches, Nicola and Coldwater River valleys, 1985. Can. Data Rep. Fish. Aquat. Sci. 662:47 p.

- Fulton, J. D. 1986. Catch and effort statistics of the Canadian crab fishery on the Pacific coast in 1985. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986.
- Fulton, J. D. 1986. Catch and effort statistics of the Canadian shrimp fishery on the Pacific coast in 1986. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 7 p.
- Gjernes, T. W., K. D. Hyatt, and D. P. Rankin. 1986. Development of specifications for the use of an uncalibrated echo sounder to estimate populations of small limnetic fish. Can. Tech. Rep. Fish. Aquat. Sci. 1509:35 p.
- Goldes, S., G. Traxler, and G. Seaton. 1986. Isolation of IHNV from native British Columbia rainbow trout broodstock. Fish Health Sect./Am. Fish. Soc. Newsl. 14(4):5.
- Groot, C., K. Cooke, G. Ellis, and R. Bailey. 1986. Data record of juvenile sockeye salmon and other fish species captured by purse seine and trawl in the Strait of Georgia, Johnstone Strait, and Queen Charlotte Strait in 1982, 1983, 1984, and 1985. Can. Data Rep. Fish. Aquat. Sci. 561:150 p.
- Haegele, C. W. 1986. Egg loss in British Columbia herring spawns. P. 141-142 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Haegele, C. W. 1986. Observed recovery rates for anchor tags in British Columbia herring. P. 92-93 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Haegele, C. W. (ed.). 1986. Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871:164 p.
- Haegele, C. W. 1986. Returns from anchor taggings of herring in British Columbia, 1979 to 1985. Can. Data Rep. Fish. Aquat. Sci. 582:129 p.
- Haist, V. 1986. Evaluation of certain aspects of B.C. herring stock dynamics. P. 50-58 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Haist, V., and J. Schweigert. 1986. Summary of 1986 herring stock assessment. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 7 p.
- Haist, V., J. F. Schweigert, and M. Stocker. 1986. Stock assessments for British Columbia herring in 1985 and forecasts of the potential catch in 1986. Can. MS Rep. Fish. Aquat. Sci. 1889:48 p.
- Hamer, B. L., N. L. Venables, F. R. Crabbe, and J. B. Lucas. 1986. An inventory of biological samples taken in the British Columbia groundfish fishery during 1984. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 15 p.
- Hamer, B. L., N. L. Venables, J. B. Lucas, and D. P. Adams. 1986. An inventory of biological samples taken in the British Columbia groundfish fishery during 1985. Can. Data Rep. Fish. Aquat. Sci. 606:15 p.

- Hartman, G. F., and J. C. Scrivener. 1986. Some strategy considerations for small stream restoration and enhancement with special emphasis on high rainfall area streams such as Carnation Creek. P. 69-84 *in* J. H. Patterson (ed.) Proceedings of the Workshop on Habitat Improvements, May 8-10, 1984, Whistler, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1483.
- Hay, D. E. 1986. A stock hypothesis based on spawn and winter distribution. P. 145-148 *in* C. W. Haegle (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Hay, D. E. 1986. Larval herring distribution in Hecate Strait. P. 31 *in* A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Hay, D. E., R. Kieser, and P. B. McCarter. 1986. Distribution of herring in winter. P. 11-15 *in* A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Hay, D. E., and P. B. McCarter. 1986. Feeding and summer distribution of herring and other pelagic fishes. P. 20-21 *in* A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Healey, M. C. 1986. A model to estimate abundance and size of salmon species in Hecate Strait based on alternative hypotheses. P. 12-17 *in* A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Healey, M. C. 1986. Regional and seasonal attributes of catch in the British Columbia troll fishery. Can. Tech. Rep. Fish. Aquat. Sci. 1494:65 p.
- Healey, M. C., B. Riddell, F. P. Jordan, and J. F. T. Morris. 1986. The 1981-1983 west coast troll log book project: data from the 1982 and 1983 seasons on the food habits of chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon. Can. Data Rep. Fish. Aquat. Sci. 591:936 p.
- Healey, M. C., B. Riddell, F. P. Jordan, and J. F. T. Morris. 1986. The 1981-1983 west coast troll log book project; 4. Biological data for chinook (*Oncorhynchus tshawytscha*) and coho (*O. kitsutch*) salmon. Can. Data Rep. Fish. Aquat. Sci. 573:1036 p.
- Higgs, D. A. 1986. Fish nutrition research: a means of increasing the profitability of Pacific salmon farming. Can. Aquacult. Mag. 2(2):15, 17, 18, 26.
- Higgs, D. A. 1986. Improving the cost effectiveness of Pacific salmon diets. P. 26-27 *in* K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Higgs, D. A. 1986. Role of carbohydrates in salmonid nutrition. P. 4-5 *in* K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Higgs, D. A. 1986. Types of diet. P. 9-10 *in* K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.

- Higgs, D. A., and G. A. Hunter. 1986. Addressing fish nutrition problems on a regional basis. P. 27-28 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Holtby, L. B., and G. F. Hartman. 1986. Factors limiting productions of outmigrant salmonid from Carnation Creek before and after logging. Proc. West. Asso. Fish Wild. Agencies - West. Div. Am. Fish. Soc. 1986:68.
- Hoskins, G. E., and D. Kieser. 1986. The occurrence of proliferative kidney disease in British Columbia. P. 23 in R. P. Hedrick (ed.) Proliferative kidney disease (PKD) in North America: proceedings of a Workshop on Proliferative Kidney Disease (PKD) among salmonid fish in North America, Davis, California, 1985. Marine Advisory Program University of California, Davis, California.
- Hyatt, K. D. 1986. Some options for habitat manipulation in B.C. coastal lakes to enhance salmonid production. P. 35-37 in J. H. Patterson (ed.) Proceedings of the Workshop on Habitat Improvements, Whistler, B.C., May 8-10, 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1483.
- Jamieson, G. S., C. K. Robinson, and T. H. Butler. 1986. King and tanner crabs in northern British Columbia mainland inlets, May 4-June 18, 1982. Can. MS Rep. Fish. Aquat. Sci. 1880:127 p.
- Johnston, N. T., J. R. Irvine, and C. J. Perrin. 1986. A comparative evaluation of fence count, mark-recapture and Bendix sonar estimates of salmon escapements in the Keogh River, a variable-flow coastal B.C. stream. Can. Tech. Rep. Fish. Aquat. Sci. 1453.
- Johnston, N. T., J. R. Irvine, and C. J. Perrin. 1986. Catch, size, and tagging data for adult salmonid runs into the Keogh River, B.C., 1985. Can. Data Rep. Fish. Aquat. Sci. 592:80 p.
- Jordan, F. P., and E. W. Carter. 1986. 1985 West coast troll log program. Can. Data Rep. Fish. Aquat. Sci. 587:48 p.
- Kask, B. A., and T. J. Brown. 1986. Epibenthic sled samples from Campbell River estuary and Discovery Passage, 1984. Can. Data Rep. Fish. Aquat. Sci. 612:141 p.
- Kask, B. A., T. J. Brown, and C. D. McAllister. 1986. Nearshore epibenthos of the Campbell River estuary and Discovery Passage, 1982, in relation to juvenile chinook diets. Can. Tech. Rep. Fish. Aquat. Sci. 1449:53 p.
- Kotyk, M. S., T. J. Brown, B. A. Kask, C. D. Levings, C. D. McAllister, and J. S. Macdonald. 1986. Data record on coded wire tags recovered from juvenile salmonids at Campbell River estuary and Discovery Passage, 1985. Can. Data Rep. Fish. Aquat. Sci. 581:19 p.
- Kotyk, M. S., T. J. Brown, B. A. Kask, C. D. Levings, C. D. McAllister, and J. S. Macdonald. 1986. Length, weight and coded wire tag data for juvenile salmonids sampled in the Campbell River estuary and Discovery Passage, 1986. Can. Data Rep. Fish. Aquat. Sci. 630:27 p.
- Kotyk, M. S., T. J. Brown, B. A. Kask, C. D. Levings, C. D. McAllister, J. S. Macdonald, and B. D. Chang. 1986. Length and weight data for unmarked juvenile salmonids sampled in the Campbell River estuary and Discovery Passage, 1984. Can. Data Rep. Fish. Aquat. Sci. 513:54 p.

- Kreiberg, H. 1986. Progress in sac-roe impoundment research and options for management. P. 37 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, Oct. 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Kreiberg, H., J. R. Brett, A. Solmie, and R. A. Carter. 1986. A handbook on impounding sac-roe herring. Can. Ind. Rep. Fish. Aquat. Sci. 168:46 p.
- Kruzynski, G. M., I. K. Birtwell, and I. H. Rogers. 1986. Studies on chinook salmon (Oncorhynchus tshawytscha) and municipal waste from the Iona Island sewage treatment plant, Vancouver, B.C. P. 240-250 in G. H. Geen and K. L. Woodward (eds.) Proceedings of the eleventh annual Aquatic Toxicity Workshop: November 13-15, 1984. Vancouver, B.C. Can. Tech. Rep. Fish. Aquat. Sci. 1480.
- Lauzier, R. B., and C. A. McPherson. 1986. Length and weight data for juvenile salmonids sampled during rearing studies in the Nicola/Coldwater River system, during December 1984 and in 1985. Can. Data Rep. Fish. Aquat. Sci. 599:165 p.
- Leaman, B. M. 1986. Slope rockfishes. P. 57-75 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Leaman, B. M., and D. A. Nagtegaal. 1986. Biomass survey of rockfish stocks in the Dixon Entrance-southeast Alaska region, July 5-22, 1983 (R/V G.B. REED and M/V FREE ENTERPRISE NO. 1). Can. Tech. Rep. Fish. Aquat. Sci. 1510:63 p.
- Leaman, J. E. 1986. Catch and effort statistics of the Canadian groundfish fishery on the Pacific coast in 1985. Can. Tech. Rep. Fish. Aquat. Sci. 1508:80 p.
- Leaman, J. E. 1986. Summary of vessel size in the Canadian trawl fleet on the Pacific coast, 1970-85. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 5 p.
- Levings, C. D. 1986. Consumptive and non-consumptive uses of vegetation in Pacific Northwest aquatic ecosystems. P. 95-113 in R. Strickland (ed.) Wetland functions, rehabilitating and creation in the Pacific Northwest: state of our understanding. Wash. State Dept. Ecol. Publ. 86-14.
- Levings, C. D. 1986. Estuarine and marine habitat improvements. P. 4-6 in J. H. Patterson (ed.) Proceeding of the Workshop on Habitat Improvements, Whistler, B.C., 8-10 May, 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1483.
- Levings, C. D. 1986. Fish and invertebrate utilization of Campbell River Estuary Islands. P. 16-19 in J. H. Patterson (ed.) Proceeding of the Workshop on Habitat Improvements, Whistler, B.C., 8-10 May, 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1483.
- Light, J. T., and R. LeBrasseur. 1986. Japanese ocean salmon research-- synopsis of observations aboard Shin Riasu Maru, 11 June to 20 July 1986. Document submitted to Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 24 p.
- Margolis, L. 1986. Low impact of the myxosporean parasite Ceratomyxa shasta on survival of Fraser River, British Columbia, chinook salmon smolts. Fish Health Sect./Am. Fish. Soc. Newsl. 14(2):5.

- McBride, J. R. 1986. Density considerations. P. 11-12 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- McBride, J. R. 1986. Toxicology. P. 15 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- McCarter, P. B., C. W. Haegeler, D. C. Miller, and D. E. Hay. 1986. Hecate Strait herring survey July 22-August 8, 1985, G. B. REED Cruise 85-8. Can. Data Rep. Fish. Aquat. Sci. 615:35 p.
- Morley, R. B., and D. Brouwer. 1986. A time and size at release study on chum salmon: details of releases from Conuma Hatchery in the spring of 1985. Can. MS Rep. Fish. Aquat. Sci. 1901:20 p.
- Mundie, J. H. 1986. Stream morphology and enrichment. P. 104-107 in J. Patterson (ed.) Proceedings of the Workshop on Habitat Improvements, Whistler, B.C. 8-10 May, 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1483.
- Nagtegaal, D. A., B. M. Leaman, and R. D. Stanley. 1986. Catches and trawl locations of R/V G.B. REED and M/V EASTWARD HO during the Pacific Ocean perch assessment cruise to Queen Charlotte Sound, August-September, 1984. Can. Data Rep. Fish. Aquat. Sci. 611:109 p.
- Noakes, D., and G. S. Jamieson. 1986. Preliminary analysis of British Columbia commercial landing statistics for 1979 to 1984 inclusive: a multispecies approach. Can. MS Rep. Fish. Aquat. Sci. 1882:191 p.
- Piferrer, F. 1986. Sex control in coho. P. 22-23 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods, Ltd., Syndel International Inc., Vancouver, B.C.
- Quinn, T. P., K. D. Cooke, and G. Ellis. 1986. The responses of adult sockeye salmon (Oncorhynchus nerka) to a commercial purse seine. Can. Tech. Rep. Fish. Aquat. Sci. 1511:13 p.
- Rankin, D. P., and J. E. Radziul. 1986. Zooplankton abundance and size in British Columbia lakes sampled by the lake enrichment program in 1979. Can. Data Rep. Fish. Aquat. Sci. 588:9 p.
- Rankin, D. P., and J. E. Radziul. 1986. Zooplankton abundance and size in British Columbia lakes sampled by the lake enrichment program in 1980. Can. Data Rep. Fish. Aquat. Sci. 589:174 p.
- Richards, L. J. 1986. PSARC Working Paper G86-1. 1986 Assessment for commercially exploited rockfish stocks in the Strait of Georgia. Can. MS Rep. Fish. Aquat. Sci. 1885:55 p.
- Richards, L. J., H. I. McElderry, J. Carolsfeld, and C. P. Lauridsen. 1986. SCUBA survey of rockfish assemblages in the Strait of Georgia, B.C. statistical areas 15 and 16, September to November 1985. Can. Data Rep. Fish. Aquat. Sci. 586:112 p.
- Richardson, N. 1986. Nutritional cataracts in salmonids. P. 16 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.



- Rielzer, W. G., and J. R. Brett. 1986. Ferris Neave 1901-1986. Trans. R. Soc. Can. Ser. 5 1:329-331.
- Rogers, I. H., I. K. Birtwell, and G. M. Kruzynski. 1986. Organic extractables in primary treated municipal wastewater and uptake in exposed juvenile chinook salmon: a preliminary study at Iona Island sewage treatment plant, Vancouver, B.C. Can. Tech. Rep. Fish. Aquat. Sci. 1433:35 p.
- Rosenfeld, L., and V. Haist. 1986. Summary of British Columbia herring sampling data for the 1985-86 season. Can. Data Rep. Fish. Aquat. Sci. 619:125 p.
- Roy, R. 1986. Influence of nutrition on broodstock production. P. 18 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Rutherford, D. T., K. D. Hyatt, J. E. Radziul, and G. J. Steer. 1986. Physical parameters of sockeye salmon (Oncorhynchus nerka) rearing lakes under study by the Enhancement Assessment Unit. Can. MS Rep. Fish. Aquat. Sci. 1878:119 p.
- Saunders, M. 1986. Dogfish. P. 41-50 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Saunders, M. 1986. Sablefish. P. 30-34 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Saunders, M. W., R. P. Foucher, A. V. Tyler, and D. F. Moore. 1986. Groundfish food-resource division sub-project of the Hecate Strait Project R/V G.B. REED cruises in Hecate Strait, B.C., during June 7-17, and September 23-October 4, 1985. Can. Data Rep. Fish. Aquat. Sci. 602:209 p.
- Saunders, M., and W. Shaw. 1986. Walleye pollock. P. 51-56 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Saunders, M., and A. V. Tyler. 1986. Food-resource division in four fish assemblages. P. 23-25 in A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Schweigert, J. F. 1986. A multivariate approach to describe Pacific herring stocks from size at age and age structure information. P. 149-150 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Shaw, W., G. A. McFarlane, and S. E. MacLellan. 1986. Biological survey of Pacific hake, walleye pollock and spiny dogfish in the Strait of Georgia. R/V G.B. REED, March 19-30, 1984. Can. Data Rep. Fish. Aquat. Sci. 590:95 p.
- Shaw, W., and M. Saunders. 1986. Pacific hake. P. 35-40 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.

- Shirvell, C. S. 1986. Pitfalls of physical habitat simulation in the instream flow incremental methodology. Can. Tech. Rep. Fish. Aquat. Sci. 1460:68 p.
- Sloan, N. A. 1986. Underwater world. Red sea urchin. Communication Branch, Department of Fisheries and Oceans, Ottawa. 4 p.
- Sloan, N. A. 1986. Underwater world. Sea cucumber. Communication Branch, Department of Fisheries and Oceans, Ottawa. 4 p.
- Solar, I. I. 1986. Hormonal control of spawning. P. 26-27 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.
- Solar, I. I., I. J. Baker, and E. M. Donaldson. 1986. Production of monosex stocks of chinook salmon (Oncorhynchus tshawytscha) at commercial mariculture facilities in British Columbia. Proc. Northwest Fish Cult. 37(1986):13.
- Solar, I. I., I. J. Baker, E. M. Donaldson, G. A. Hunter, and E. T. Stone. 1986. Coded wire tag recoveries from the first release of all-female and sterile groups of coho salmon (O. kitsutch) into the marine environment. Can. Data Rep. Fish. Aquat. Sci. 609:29 p.
- Solar, I. I., and E. M. Donaldson. 1986. The use of androgens for the production of sterile rainbow trout for mariculture. Proc. Northwest Fish Cult. Conf. 36(1985):131-139.
- Solmie, A. J. 1986. Basics of fish feeding. P. 13-14 in K. Harker (ed.) British Columbia Fish Nutrition Workshop, Nanaimo, B.C., July 14-16, 1986. Seastar Resource Corp., Vancouver, B.C.
- Stanley, R. 1986. Shelf rockfish (silvergray, yellowtail, canary rockfish). P. 76-104 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Steer, G. J., N. B. F. Cousens, H. Stiff, and K. D. Hyatt. 1986. An analysis of gear selectivity and sources of bias in estimates of age and stock composition of the 1980-1984 Barkley Sound sockeye salmon (Oncorhynchus nerka) catch. Can. Tech. Rep. Fish. Aquat. Sci. 1445:81 p.
- Stocker, M. 1986. Environmental-dependent Ricker stock-recruitment models for Pacific herring (Clupea harengus pallasii). P. 119-125 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Stocker, M. 1986. Forecasting year-class strengths of Pacific herring using environment-dependent Ricker stock-recruitment models. P. 32-35 in A. V. Tyler (ed.) Hecate Strait Project: results of the first two years. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Tanasichuk, R. W., and D. M. Ware. 1986. The influence of inter-annual variations in winter sea temperatures on the fecundity and egg size of Pacific herring. P. 105 in C. W. Haegele (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.

- Tyler, A. V. (ed.). 1986. Hecate Strait Project: results of the first two years of multispecies fisheries research. Can. Tech. Rep. Fish. Aquat. Sci. 1470:50 p.
- Tyler, A. V., R. P. Foucher, and J. Fargo (eds.). 1986. Groundfish stock assessments for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897:108 p.
- Tyler, A. V., L. J. Richards, and C. J. Walters. 1986. Hecate Strait Project report on the Hecate Strait ecosystem modelling workshop. Can. MS Rep. Fish. Aquat. Sci. 1879:23 p.
- Tyler, A. V., and M. W. Saunders (eds.). 1986. Groundfish stock assessments for the west coast of Canada in 1986 and recommended yield options for 1987. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 163 p.
- Tyler, A. V., S. J. Westrheim, and R. P. Foucher. 1986. Pacific cod. P. 13-15 in A. V. Tyler, R. P. Foucher and J. Fargo (eds.) Groundfish stock assessment for the west coast of Canada in 1985 and recommended yield options for 1986. Can. MS Rep. Fish. Aquat. Sci. 1897.
- Vespestad, V., and M. Stocker. 1986. Workshop summary. P. 163-164 in C. W. Haegle (ed.) Proceedings of the Fifth Pacific Coast Herring Workshop, October 29-30, 1985. Can. MS Rep. Fish. Aquat. Sci. 1871.
- Waldichuk, M. 1986. Book Review: (O. Kinne (ed.) Marine ecology: a comprehensive integrated treatise of life in oceans and coastal waters. Vol. V: Ocean management, Pt. 3: Pollution and protection of the seas radioactive materials, heavy metals and oil). Helgol. Meeresunters. 40:446-447.
- Waldichuk, M. 1986. Implementation of the London Dumping Convention. Ocean Dump. News 886-1:6-11.
- Waldichuk, M. 1986. Sediment contamination problems in False Creek, an urban marine inlet in Vancouver, British Columbia. Water Sci. Tech. 18:351.
- Welch, D., and R. P. Foucher. 1986. Analysis of natural population regulation in Hecate Strait Pacific cod. P. 49-50 in A. V. Tyler (ed.) Hecate Strait Project: results of the first two years of multispecies fisheries research. Can. Tech. Rep. Fish. Aquat. Sci. 1470.
- Westrheim, S. J. 1986. Canadian regulations of non-domestic fisheries, 1977-86. Submitted to the Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986.
- Westrheim, S. J., and M. G. Pedersen. 1986. An anomalous Pacific cod fishery in Juan de Fuca Strait. Can. MS Rep. Fish. Aquat. Sci. 1891:55 p.
- Whitaker, D. J. 1986. Intensity of infection by two species of the myxosporean parasite Kudoa and its distribution in six areas of the flesh of Pacific hake (Merluccius productus). Can. Data Rep. Fish. Aquat. Sci. 598:23 p.
- Withler, R. E. 1986. Comparison of growth rates in saltwater strains. P. 5 in K. Harker (ed.) Summary of the Fisheries Research Branch--B.C. Salmon Farming Industry, Coho Strategies Workshop. October 1-3, 1986. Pacific Aquafoods Ltd., Syndel International Inc., Vancouver, B.C.

- Withler, R. E., W. C. Clarke, B. E. Riddell, and H. Kreiberg. 1986. Freshwater survival and growth of chinook salmon (Oncorhynchus tshawytscha) under hatchery conditions. Can. Data Rep. Fish. Aquat. Sci. 583:37 p.
- Wood, C. C. 1986. Catch statistics for the Canadian albacore fishery, 1952-1985. Document submitted to Annual Meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1986. 4 p.

## PRIMARY PUBLICATIONS 1987

- Alderdice, D. F. 1987. Osmotic and ionic regulation in teleost eggs and larvae. P. 163-251 in W. S. Hoar and D. J. Randall (eds.) Fish physiology, Volume XI The physiology of developing fish, part A. Eggs and larvae. Academic Press, Toronto.
- Bailey, R. E. 1987. The use of frozen carcasses in parasite surveys: critical comment. J. Parasitol. 73:1115.
- Bailey, R. E., and L. Margolis. 1987. Comparison of parasite fauna of juvenile sockeye salmon (Oncorhynchus nerka) from southern British Columbia and Washington State lakes. Can. J. Zool. 65:420-431.
- Baker, I. J., I. I. Solar, and E. M. Donaldson. 1987. Masculinization of chinook salmon (Oncorhynchus tshawytscha) by immersion treatments using 17 $\alpha$ -methyltestosterone around the time of hatching. Aquaculture 72:359-368
- Bakke, T. A., and R. E. Bailey. 1987. Phyllodistomum umblae (Fabricius) (Digenea, Gorgoderidae) from British Columbia salmonids: a description based on light and scanning electron microscopy. Can. J. Zool. 65:1703-1712.
- Barber, W. E., and G. A. McFarlane. 1987. Evaluation of three techniques to age Arctic char from Alaskan and Canadian waters. Trans. Am. Fish. Soc. 116:874-881.
- Beacham, T. D. 1987. Variation in length and age at sexual maturity of Atlantic groundfish--a reply. Environ. Biol. Fish. 19:149-153.
- Beacham, T. D., A. P. Gould, R. E. Withler, C. B. Murray, and L. W. Barner. 1987. Biochemical genetic survey and stock identification of chum salmon (Oncorhynchus keta) in British Columbia. Can. J. Fish. Aquat. Sci. 44:1702-1713.
- Beacham, T. D., and C. B. Murray. 1987. Adaptive variation in body size, age, morphology, egg size and developmental biology of chum salmon (Oncorhynchus keta) in British Columbia. Can. J. Fish. Aquat. Sci. 44:244-261.
- Beacham, T. D., and C. B. Murray. 1987. Effects of transferring pink (Oncorhynchus gorbuscha) and chum (Oncorhynchus keta) salmon embryos at different developmental stages to a low incubation temperature. Can. J. Zool. 65:96-105.
- Beacham, T. D., and C. B. Murray. 1987. Variation in early growth and survival of pink salmon (Oncorhynchus gorbuscha) families with respect to temperature and transfer to salt water. Aquaculture 64:257-265.
- Beacham, T. D., and R. E. Withler. 1987. Developmental stability and heterozygosity in chum (Oncorhynchus keta) and pink (Oncorhynchus gorbuscha) salmon. Can. J. Zool. 65:1823-1826.
- Beamish, R. J. 1987. Evidence that parasitic and nonparasitic life history types are produced by one population of lamprey. Can. J. Fish. Aquat. Sci. 44:1779-1782.

- Beamish, R. J., and G. A. McFarlane. 1987. Current trends in age determination methodology. P. 15-42 in R. C. Summerfelt and G. E. Hall (eds.) Age and growth of fish. Iowa State University Press, Ames, Iowa.
- Beamish, R. J., and J. H. Youson. 1987. Life history and abundance of young adult Lampetra ayresi in the Fraser River and their possible impact on salmon and herring stocks in the Strait of Georgia. *Can. J. Fish. Aquat. Sci.* 44:525-537.
- Benfey, T. J., H. M. Dye, E. M. Donaldson, and T. G. Owen. 1987. Determination of vitellogenin levels in ovulatory Pacific salmonids using an homologous radioimmunoassay for coho salmon (Oncorhynchus kisutch) vitellogenin. P. 191 in D. R. Idler, L. W. Grim, and J. M. Walsh (eds.) Proceedings of the Third International Conference on the Reproductive Physiology of Fish. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's, Newfoundland.
- Beschta, R. L., R. E. Bilby, G. W. Brown, L. B. Holtby, and T. D. Hofstra. 1987. Stream temperature and aquatic habitat: fisheries and forestry interactions. P. 191-232 in E. O. Salo and T. W. Cundy (eds.) Streamside management: forestry and fishery interaction. Univ. Wash. Inst. For. Resour. Contrib. 57.
- Birtwell, I. K., and G. M. Kruzynski. 1987. Laboratory apparatus for studying the behavior of organisms in vertically stratified waters. *Can. J. Fish. Aquat. Sci.* 44:1343-1350.
- Birtwell, I. K., G. M. Kruzynski, I. H. Rogers, and M. D. Nassichuk. 1987. General considerations regarding pollution research; Deas Slough, Municipal waste, fish behaviour and future projects. P. 90-93 in Status report on water quality in the Fraser River estuary 1987. Fraser River Estuary Management Program, Government of Canada - Province of British Columbia, New Westminster, B.C.
- Birtwell, I. K., M. D. Nassichuk, and H. Beune. Underyearling sockeye salmon (Oncorhynchus nerka) in the estuary of the Fraser River. P. 25-35 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.
- Blackbourn, D. J. 1987. Sea surface temperature and pre-season prediction of return timing in Fraser River sockeye salmon (Oncorhynchus nerka). P. 296-306 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.
- Boutillier, J. A., and N. A. Sloan. 1987. Effect of trap design and soak time on catches of the British Columbia prawn (Pandalus platyceros). *Fish. Res.* 6:69-79.
- Bower, S. M. 1987. Artificial culture of Labyrinthuloides hallotidis (Protozoa: Labyrinthomorpha), a pathogenic parasite of abalone. *Can. J. Zool.* 65:2013-2020.
- Bower, S. M. 1987. Labyrinthuloides hallotidis n.sp. (Protozoa: Labyrinthomorpha), a pathogenic parasite of small juvenile abalone in a British Columbia mariculture facility. *Can. J. Zool.* 65:1996-2007.
- Bower, S. M. 1987. Pathogenicity and host specificity of Labyrinthuloides hallotidis (Protozoa: Labyrinthomorpha), a parasite of juvenile abalone. *Can. J. Zool.* 65:2008-2012.

- Bower, S. M. 1987. The life-cycle and ultrastructure of a new species of thraustochytrid (Protozoa: Labyrinthomorpha) pathogenic to small abalone. *Aquaculture* 67:269-272.
- Bower, S. M., and A. B. Thompson. 1987. Hatching of the Pacific salmon leech (*Piscicola salmositica*) from cocoons exposed to various treatments. *Aquaculture* 66:1-8.
- Breen, P. A. 1987. Mortality of Dungeness crabs caused by lost traps in the Fraser River estuary, British Columbia. *North Am. J. Fish. Manage.* 7:429-435.
- Brinkhurst, R. O., and M. Marchese. 1987. A contribution to the taxonomy of the aquatic Oligochaeta (Haplotaxidae, Phreodrilidae, Tubificidae) of South America. *Can. J. Zool.* 65:3154-3197.
- Chilton, D. E., and M. Stocker. 1987. A comparison of otolith and scale methods for aging Pacific herring (*Clupea harengus pallasii*). *North Am. J. Fish. Manage.* 7:202-206.
- Clarke, W. C. 1987. Environmental influences on growth and smoltification. P. 358 in E. Ohnishi, Y. Nagahama and H. Ishizaki (eds.) *Proceedings of the First Congress of the Asia and Oceania Society for Comparative Endocrinology*. *Proc. Jpn. Soc. Comp. Endocrinol.* Z.
- Donaldson, E. M., and T. J. Benfey. 1987. Current status of induced sex manipulation. P. 108-119 in D. R. Idler, L. W. Crim, and J. M. Walsh (eds.) *Proceedings of the Third International Conference on the Reproductive Physiology of Fish*. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's, Newfoundland.
- Dunbrack, R. L., and L. A. Giguere. 1987. Adaptive responses to accelerating costs of movement: a bioenergetic basis for the type-III functional response. *Am. Nat.* 130(1):147-160.
- Dunbrack, R. L., and D. M. Ware. 1987. Energy constraints and reproductive trade-offs determining body size in fishes. P. 191-218 in P. Calow (ed.) *Evolutionary physiological ecology*. Cambridge University Press, New York.
- Everest, F. H., R. L. Beschta, J. C. Scrivener, K. Koski, J. R. Sedell, and C. J. Cederholm. 1987. Fine sediment and salmonid production a paradox? P. 98-142 in E. O. Salo and T. W. Cundy (eds.) *Streamside management: forestry and fishery interactions*. Univ. Wash., Inst. For. Resour. Contrib. 57.
- Fargo, J., and D. E. Chilton. 1987. Age validation for rock sole in Hecate Strait, British Columbia. *Trans. Am. Fish. Soc.* 116:777-778.
- Franzin, W. G., and G. A. McFarlane. 1987. Comparison of Floy anchor tags and fingerling tags for tagging white suckers. *North Am. J. Fish. Manage.* 7:307-309.
- Furnell, D. J. 1987. Partitioning of locomotor and feeding metabolism in sablefish (*Anoplopoma fimbria*). *Can. J. Zool.* 65:486-489.
- Groot, C., and K. Cooke. 1987. Are the migrations of juvenile and adult Fraser River sockeye salmon (*Oncorhynchus nerka*) in near-shore waters related? P. 53-60 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) *Sockeye salmon (*Oncorhynchus nerka*) population biology and future management*. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.

- Groot, C., and T. P. Quinn. 1987. Homing migration of sockeye salmon, Oncorhynchus nerka, to the Fraser River. Fish. Bull. (U.S.) 85:455-469.
- Haldorson, L., and L. J. Richards. 1987. Post-larval copper rockfish in the Strait of Georgia: habitat use, feeding and growth in the first year. P. 129-141 in B. R. Melteff (ed.) Proceedings of the International Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Hartman, G. F., and T. G. Brown. 1987. Use of small, temporary, flood-plain tributaries by juvenile salmonids in a west coast rain-forest drainage basin: Carnation Creek, British Columbia. Can. J. Fish. Aquat. Sci. 44:262-270.
- Hartman, G. F., J. C. Scrivener, and T. E. McMahon. 1987. Fisheries-forestry research at Carnation Creek: saying that logging is either "good" or "bad" for fish doesn't tell you how to manage the system. For. Chorn. 63:159-164.
- Hartman, G., J. C. Scrivener, L. B. Holby, and L. Powell. 1987. Some effects of different stream-side treatments on physical conditions and fish population processes in Carnation Creek, a coastal rain-forest stream in British Columbia. P. 330-372 in E. O. Salo and T. W. Cundy (eds.) Streamside management: forestry and fishery interactions. Univ. Wash., Instit. For. Resour. Contrib. 57.
- Hay, D. E., and A. R. Kronlund. 1987. Factors affecting the distribution, abundance, and measurement of Pacific herring (Clupea harengus pallasii) spawn. Can. J. Fish. Aquat. Sci. 44:1181-1194.
- Hay, D. E., D. M. Outram, B. A. McKeown, and M. Hurlburt. 1987. Ovarian development and oocyte diameter as maturation criteria in Pacific herring (Clupea harengus passasi). Can. J. Fish. Aquat. Sci. 44:1496-1502.
- Healey, M. C. 1987. The adaptive significance of age and size at maturity in female sockeye salmon (Oncorhynchus nerka). P. 110-117 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Healey, M. C., and C. Groot. 1987. Marine migration and orientation of ocean-type chinook (Oncorhynchus tshawytscha) and sockeye salmon (Oncorhynchus nerka). P. 298-312 in M. J. Dadswell, R. J. Klauda, C. M. Moffitt, R. L. Saunders, R. A. Rulifson, and J. E. Cooper (eds.) Common strategies of anadromous and catadromous fishes. Am. Fish. Soc. Symp. 1.
- Healey, M. C., and R. R. Wallace. 1987. Canadian aquatic resources, an introduction. P 1-11 in M. C. Healey and R. R. Wallace (eds.) Canadian aquatic resources. Can. Bull. Fish. Aquat. Sci. 215.
- Healey, M. C., and R. R. Wallace (eds.). 1987. Canadian aquatic resources. Can. Bull. Fish. Aquat. Sci. 215:533 p.
- Henderson, M. A., D. Peacock, and R. Goruk. 1987. Evaluation of the reliability of several models used to forecast the size of adult sockeye salmon (Oncorhynchus nerka) runs. P. 266-272 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.



- Hilborn, R., and C. J. Walters. 1987. A general model for simulation of stock and fleet dynamics in spatially heterogeneous fisheries. *Can. J. Fish. Aquat. Sci.* 44:1366-1369.
- Hyatt, K. D., and G. J. Steer. 1987. Barkley Sound sockeye (*Oncorhynchus nerka*): evidence for over a century of successful stock development, fisheries management, research and enhancement effort. P. 435-457 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.
- Irvine, J. R. 1987. Effects of varying flows in man-made streams on rainbow trout (*Salmo gairdneri*) fry. P. 83-97 in J. F. Craig and J. B. Kemper (eds.) *Regulated streams; advances in ecology*. Plenum Press, New York.
- Irvine, J. R., and I. G. Jowett. 1987. Flow control. P. 94-112 in P. R. Henriques (ed.) *Aquatic biology and hydroelectric power development in New Zealand*. Oxford University Press, Auckland, New Zealand.
- Irvine, J. R., I. G. Jowett, and D. Scott. 1987. A test of the instream flow incremental methodology for underyearling rainbow trout, *Salmo gairdneri*, in experimental New Zealand streams. *N. Z. J. Mar. Freshwater Res.* 21:35-40.
- Kabata, Z. 1987. *Acanthochondria hippoglossi* sp. nov. (Copepoda, Chondracanthidae), a crustacean parasite of some flatfishes off the Pacific coast of North America. *Can. J. Zool.* 65:213-216.
- Kabata, Z. 1987. The developmental stages of *Neobrachiella robusta* (Wilson, 1912), a parasitic copepod of *Sebastes* (Teleostei: Scorpaeniformes). *Can. J. Zool.* 65:1331-1336.
- Kabata, Z., and I. U. Tareen. 1987. A new and a rare parasitic copepod from fishes of Kuwait. *Syst. Parasitol.* 9:137-142.
- Kieser, R., T. J. Mulligan, N. J. Williamson, and M. O. Nelson. 1987. Intercalibration of two echo integration systems based on acoustic backscattering measurements. *Can. J. Fish. Aquat. Sci.* 44:562-572.
- Kreiberg, H., G. A. Hunter, E. M. Donaldson, W. C. Clarke, and I. Baker. 1987. Induced ovulation and spermiation in the Pacific herring (*Clupea harengus pallasi*) using salmon pituitary preparations and a synthetic gonadotropin-releasing hormone analogue. *Aquaculture* 61:155-161.
- Kreiberg, H., and A. Solmie. 1987. A production-scale towable netpen for efficient high-volume transport of Pacific herring: design and comparative performance. *Aquacul. Eng.* 6:289-299.
- Leaman, B. M. 1987. Incorporating reproductive value into Pacific ocean perch management. P. 355-368 in B. R. Melteff (ed.) *Proceedings of the International Rockfish Symposium*. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Leaman, B. M., and D. A. Nagtegaal. 1987. Age validation and revised natural mortality rate for yellowtail rockfish. *Trans. Am. Fish. Soc.* 116:171-175.
- Leaman, B. M., and Z. Kabata. 1987. *Neobrachiella robusta* (Wilson, 1912) (Copepoda: Lernaepodidae) as a tag for identification of stocks of its host, *Sebastes alutus* (Gilbert, 1890) (Pisces: Teleostei). *Can. J. Zool.* 65:2579-2582.

- Leaman, B. M., and D. A. Nagtegaal. 1987. Identification of species assemblages and results of management applications for shelf and slope rockfishes off British Columbia. P. 309-328 in B. R. Melteff (ed.) Proceedings of the International Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Levings, C. D., C. D. McAllister, and J. S. Macdonald. 1987. Capacity of estuarine wetlands for juvenile salmonid production - Campbell River estuary, British Columbia, Canada. Northwest Environ. Jour. 3:145-146.
- MacDonald, B. A., and N. F. Bourne. 1987. Growth, reproductive output, and energy partitioning in weathervane scallops, Patinopecten caurinus, from British Columbia. Can. J. Fish. Aquat. Sci. 44:152-160.
- MacDonald, P. D. M., H. D. Smith, and L. Jantz. 1987. The utility of Babine smolt enumerations in management of Babine and other Skeena River sockeye salmon (Oncorhynchus nerka) stock. P. 280-295 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Macdonald, J. S., I. K. Birtwell, and G. M. Kruzynski. 1987. Food and habitat utilization by juvenile salmonids in the Campbell River estuary. Can. J. Fish. Aquat. Sci. 44:1233-1246.
- Macdonald, J. S., and K. G. Waiwood. 1987. Feeding chronology and daily ration calculations for winter flounder (Pseudopleuronectes americanus), plaice (Hippoglossoides platessoides), and ocean pout (Macrozoarces americanus) in Passamaquoddy Bay, New Brunswick. Can. J. Zool. 65:499-503.
- MacLellan, S. E. 1987. How old is that fish? Discovery 16:87-89.
- McFarlane, G. A., and R. J. Beamish. 1987. Selection of dosages of oxytetracycline for age validation studies. Can. J. Fish. Aquat. Sci. 44:905-909.
- McFarlane, G. A., and R. J. Beamish. 1987. Validation of the dorsal spine method of age determination for spiny dogfish (Squalus acanthias). P. 287-300 in R. C. Summerfelt and G. E. Hall (eds.) Age and growth of fish. Iowa State University Press, Ames, Iowa.
- McLeay, D. J., I. K. Birtwell, G. F. Hartman, and G. L. Ennis. 1987. Responses of Arctic grayling (Thymallus arcticus) to acute and prolonged exposure to Yukon placer mining sediment. Can. J. Fish. Aquat. Sci. 44:658-673.
- McLeod, A. I., D. J. Noakes, K. W. Hipel, and R. M. Thompstone. 1987. Combining hydrologic forecasts. J. Water Resour. Plan. Manage. 113:29-41.
- Margolis, L., and T. P. T. Evelyn. 1987. Aspects of disease and parasite problems in cultured salmonids in Canada, with emphasis on the Pacific region, and regulatory measures for their control. P. 4-19 in A. Stenmark and G. Malmberg (eds.) Parasites and diseases in natural waters and aquaculture in Nordic countries. Z. Naturhistoriska Riksmuseet, Stockholm, Sweden.
- Margolis, L., and F. Moravec. 1987. A record of Clavinema mariae (Layman, 1930) (Nematoda: Philometridae) from a North American freshwater fish, with notes on the systematic status of Philometra americana Kuitunen-Ekbaum, 1933. Folia Parasitol. 34:31-36.

- Morantz, D. L., R. K. Sweeney, C. S. Shirvell, and D. A. Longard. 1987. Selection of microhabitat in summer by juvenile Atlantic salmon (Salmo salar). Can. J. Fish. Aquat. Sci. 44:120-129.
- Mulligan, T. J., R. Kieser, and T. Gjernes. 1987. A model for comparing fish density estimates from seine catches and from echo integration. Can. J. Fish. Aquat. Sci. 44:1024-1030.
- Murray, C. B., and T. D. Beacham. 1987. The development of chinook (Oncorhynchus tshawytscha) and chum salmon (Oncorhynchus keta) embryos and alevins under varying temperature regimes. Can. J. Zool. 65:2672-2681.
- Noakes, D., D. W. Welch, and M. Stocker. 1987. A time series approach to stock-recruitment analysis: transfer function noise modelling. Nat. Resour. Model. 2(2):213-233.
- O'Neill, S. M., and K. D. Hyatt. 1987. Competition for food between sockeye salmon (Oncorhynchus nerka) and sticklebacks (Gasterosteus aculeatus) in a British Columbia coastal lake. P. 143-160 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Otsuki, A., H. Seki, C. D. McAllister, and C. D. Levings. 1987. Measurement of net growth rates of herbivorous benthic animals using periphyton labeled simultaneously with C<sup>13</sup> and N<sup>15</sup>. Limnol. Oceanogr. 32:499-503.
- Piferrer, F., and E. M. Donaldson. 1987. Influence of estrogen, aromatizable and non-aromatizable androgen during ontogenesis on sex differentiation in coho salmon (Oncorhynchus kisutch). P. 135 in D. R. Idler, L. W. Crim, and J. M. Walsh (eds.) Proceedings of the Third International Conference on the Reproductive Physiology of Fish. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's, Newfoundland.
- Plisetskaya, E. M., E. M. Donaldson, and H. M. Dye. 1987. Plasma circulating levels of insulin during the spawning migration of the pink salmon (Oncorhynchus gorbuscha). J. Fish Biol. 31:21-26.
- Quinn, T. P., and R. F. Tallman. 1987. Seasonal environmental predictability and homing in riverine fishes. Environ. Biol. Fish. 18:155-159.
- Quinn, T. P., C. C. Wood, L. Margolis, B. E. Riddell, and K. D. Hyatt. 1987. Homing in wild sockeye salmon (Oncorhynchus nerka) populations as inferred from differences in parasite prevalence and allozyme allele frequencies. Can. J. Fish. Aquat. Sci. 44:1963-1971.
- Ramsay, M. A., and R. L. Dunbrack. 1987. Is the giant panda a bear? Oikos 50:267.
- Randall, R. G., M. C. Healey, and J. B. Dempson. 1987. Variability in length of freshwater residence of salmon, trout, and char. P. 27-41 in M. J. Dadswell, R. J. Klauda, C. M. Moffitt, R. L. Saunders, R. A. Rulifson, and J. E. Cooper (eds.) Common strategies of anadromous and catadromous fishes. Am. Fish. Soc. Symp. 1.
- Richards, L. J. 1987. Comparing imprecise abundance indices with a symmetric model. Can. J. Fish. Aquat. Sci. 44:793-802.
- Richards, L. J. 1987. Copper rockfish (Sebastes caurinus) and quillback rockfish (S. maliger) habitat in the Strait of Georgia, British Columbia. Can. J. Zool. 65:3188-3191.

- Richards, L. J., and A. J. Cass. 1987. The British Columbia inshore rockfish fishery: stock assessment and fleet dynamics of an unrestricted fishery. P. 299-308 in B. R. Melteff (ed.) Proceedings of the International Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Rogers, I. H., and K. J. Hall. 1987. Chlorophenols and chlorinated hydrocarbons in starry flounder (Platichthys stellatus) and contaminants in estuarine sediments near a large municipal outfall. Water Pollut. Res. J. Can. 22(2):197-210.
- Russell, J. E., F. W. H. Beamish, and R. J. Beamish. 1987. Lentic spawning by the Pacific lamprey (Lampetra tridentata). Can. J. Fish. Aquat. Sci. 44:476-478.
- Schnute, J. 1987. A general fishery model for a site-structured fish population. Can. J. Fish. Aquat. Sci. 44:924-940.
- Schnute, J. 1987. Data uncertainty, model ambiguity, and model identification. J. Resour. Model. Assoc. 2:159-212.
- Scott, D., and C. S. Shirvell. 1987. A critique of the instream flow incremental methodology and observations on flow determination in New Zealand. P. 27-43 in J. F. Craig and J. B. Kemper (eds.) Regulated streams: advances in ecology. Plenum Press, New York.
- Seki, H., Y. Hara, T. J. Brown, and C. D. McAllister. 1987. Contribution of the microbial activities in winter to the nutrient cycling in salmonid habitats of the Campbell River estuary. Arch. Hydrobiol. 111:225-234.
- Seki, H., A. Otsuki, Y. Hara, D. V. Stephens, C. D. Levings, and C. D. McAllister. 1987. Dynamics of organic materials in the Campbell River estuary at the time of the spring bloom of phytoplankton. Arch. Hydrobiol. 111:209-216.
- Servizi, J. A., R. W. Gordon, and D. W. Martens. 1987. Acute toxicity of Garlon 4 and Roundup herbicides to salmon, Daphnia, and trout. Bull. Environ. Contam. Toxicol. 39:15-22.
- Servizi, J. A., and D. W. Martens. 1987. Some effects of suspended Fraser River sediments on sockeye salmon (Oncorhynchus nerka). P. 254-264 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (Oncorhynchus nerka) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Singh, T. P., B. Lal, A. K. Yadav, and E. M. Donaldson. 1987. Comparative immunological responses between Catla, Cyprinus and Mystus pituitary GtH and their relative biological activity after purification. P. 75-76 in D. R. Idler, L. W. Crim, and J. M. Walsh (eds.) Proceedings of the Third International Conference on the Reproductive Physiology of Fish. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's Newfoundland.
- Sloan, N. A., C. P. Lauridsen, and R. M. Harbo. 1987. Recruitment characteristics of the commercially harvested red sea urchin (Strongylocentrotus franciscanus) in southern British Columbia, Canada. Fish. Res. 5:55-69.
- Small, S. A., and T. J. Benfey. 1987. Cell size in triploid salmon. J. Exp. Zool. 241:339-342.

- Smith, H. D., L. Margolis, and C. C. Wood (eds.). 1987. Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96:486 p.
- Solar, I. I., I. J. Baker, and E. M. Donaldson. 1987. Effect of salmon gonadotropin and a gonadotropin releasing hormone analog on ovarian hydration and ovulation in captive sablefish (*Anoplopoma fimbria*). Aquaculture 62:319-325.
- Solar, I. I., I. J. Baker, and E. M. Donaldson. 1987. Induced ovulation in sablefish (*Anoplopoma fimbria*) using gonadotropin releasing hormone analogues. P. 101 in D. R. Idler, L. W. Crim, and J. M. Walsh (eds.) Proceedings of the Third International Conference on the Reproductive Physiology of Fish. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's, Newfoundland.
- Sprout, P. E., and R. K. Kadowaki. 1987. Managing the Skeena River sockeye salmon (*Oncorhynchus nerka*) fishery: the process and the problems. P. 385-395 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Stanley, R. D. 1987. A comparison of age estimates derived from the surface and cross-section methods of otolith reading for Pacific ocean perch (*Sebastes alutus*). P. 187-196 in B. E. Melteff (ed.) Proceedings of the International Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Stanley, R. D. 1987. Use of a length frequency simulator to explore the information content in length data for long-lived species, silvergray rockfish (*Sebastes brevispinis*). P. 155-170 in B. E. Melteff (ed.) Proceedings of the International Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Stockner, J. G. 1987. Lake fertilization, the enrichment cycle and lake sockeye salmon (*Oncorhynchus nerka*) production. P. 198-215 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
- Stoss, J., and U. H. M. Fagerlund. 1987. Stripping of salmon from salt water: an investigation with chum salmon. Norsk Fiskeoppdrett 3-85.
- Sutterlin, A. M., H. Holder, and T. J. Benfey. 1987. Early survival rates and subsequent morphological abnormalities in landlocked, anadromous and hybrid (landlocked x anadromous) diploid and triploid Atlantic salmon. Aquaculture 64:157-164.
- Suttle, C. A., J. G. Stockner, and P. J. Harrison. 1987. Effects of nutrient pulse on community structure and cell size of a freshwater phytoplankton assemblage in culture. Can. J. Fish. Aquat. Sci. 44:1768-1774.
- Swales, S. 1987. The use of small wire-mesh traps in sampling juvenile salmonids. Aquac. Fish. Manage. 18:187-195.
- Tanasichuk, R. W., and D. M. Ware. 1987. Influence of interannual variations in winter sea temperature on fecundity and egg size in Pacific herring (*Clupea harengus pallasii*). Can. J. Fish. Aquat. Sci. 45:1485-1495.

- Thompson, A. B., and L. Margolis. 1987. Descriptions of Neolebouria tinkerbella n.sp. (Trematoda: Digenea: Opecoelidae) from experimental fish hosts, and of metacercariae of N. tinkerbella and an unidentified digenean from Pandalus jordani (Decapoda: Penaeidae) from the Pacific coast of Canada. *Can. J. Zool.* 65:188-193.
- Thompson, A. B., and L. Margolis. 1987. Determination of population discreteness in two species of shrimp, Pandalus jordani and Pandalopsis dispar, from coastal British Columbia using parasite tags and other population characteristics. *Can. J. Fish. Aquat. Sci.* 44:982-989.
- Van Der Kraak, G., E. M. Donaldson, H. M. Dye, G. A. Hunter, J. E. Rivier, and W. W. Vale. 1987. Salmon GnRH and analogues: effects on plasma gonadotropin and ovulation in coho salmon (Oncorhynchus kisutch). *Can. J. Fish. Aquat. Sci.* 44:1930-1935.
- Waldichuk, M. 1987. Exchange of substances between the atmosphere and the oceans. Proceedings of the Third International Symposium on Integrated Global Monitoring of the State of the Biosphere, Tashkent, U.S.S.R., October 13-20, 1985. World Meteorological Organization, Geneva, Switzerland.
- Waldichuk, M. 1987. Mineral extraction from the sea and potential environmental effects. *Mar. Pollut. Bull.* 18:378-380.
- Waldichuk, M. 1987. Pollution by abandoned mines. *Mar. Pollut. Bull.* 18:422-423.
- Waldichuk, M. 1987. Sea turtles, endangered species. *Mar. Pollut. Bull.* 18:623-627.
- Waldichuk, M. 1987. The role of estuaries in salmonid production. *Mar. Pollut. Bull.* 18:571-572.
- Waldichuk, M., W. D. Jamieson, and S. S. Berman. 1987. Reference materials as assurance of quality in analysis of seawater, marine-sediments, and biological tissues. *Mar. Pollut. Bull.* 18:477-481.
- Welch, D. W. 1987. Frequency domain filtering of age-structured population-data. *Can. J. Fish. Aquat. Sci.* 44:605-618.
- Welch, D. W. 1987. Influence of three life history strategies on the information content of stock recruitment data. *Can. J. Fish. Aquat. Sci.* 44:1375-1379.
- Welch, D. W. 1987. Use and precision of age structure based recruitment filtering theory: reply to Evans. *Can. J. Fish. Aquat. Sci.* 44:691-694.
- Westrheim, S. J. 1987. Keynote Address: Quality starts with fundamentals. P. 5-11 in B. E. Melteff (ed.) Proceedings of the Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Westrheim, S. J. 1987. The rockfish fisheries off western Canada, 1860-1985. P. 43-50 in B. E. Melteff (ed.) Proceedings of the Rockfish Symposium. Lowell Wakefield fisheries symposium. Alaska Sea Grant Rep. 87-2.
- Whitaker, D. J. and Z. Kabata. 1987. Early infection of Merluccius productus (Ayres) (Pisces: Teleostei) with Kudoa thyrsites (Gilchrist) (Myxozoa). *Can. J. Zool.* 65:936-939.

- Whyte, J. N. C. 1987. Biochemical composition and energy content of 6 species of phytoplankton used in mariculture of bivalves. *Aquaculture* 60:231-241
- Whyte, J. N. C., N. Bourne, and C. A. Hodgson. 1987. Assessment of biochemical composition and energy reserves in larvae of the scallop *Patinopecten yessoensis*. *J. Exp. Mar. Biol. Ecol.* 113:113-124.
- William, I. V. 1987. Attempts to re-establish sockeye salmon (*Oncorhynchus nerka*) populations in the upper Adams River, British Columbia, 1949-1984. P. 235-242 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.
- Withler, R. E. 1987. Genetic variation in flesh pigmentation of chinook salmon (*Oncorhynchus tshawytscha*). P. 421-429 in K. Tiews (ed.) Selection, hybridization, and genetic engineering in aquaculture. *Schr. Bundesforschungsanst. Fisch. Hamb.* 16/17.
- Withler, R. E. 1987. Genetic variation in survival of chinook salmon (*Oncorhynchus tshawytscha*) alevins exposed to an unidentified agent of mortality. *Genome* 29:839-845.
- Withler, R. E., W. C. Clarke, B. E. Riddell, and H. Kreiberg. 1987. Genetic-variation in freshwater survival and growth of chinook salmon (*Oncorhynchus tshawytscha*). *Aquaculture* 64:85-96.
- Wood, C. C. 1987. Predation of juvenile Pacific salmon by the common merganser (*Mergus merganser*) on eastern Vancouver Island. I: Predation of seaward-migrating juvenile salmon. *Can. J. Fish. Aquat. Sci.* 44:941-949.
- Wood, C. C. 1987. Predation of juvenile Pacific salmon by the common merganser (*Mergus merganser*) on eastern Vancouver Island. II: Predation of stream-resident juvenile salmon by merganser broods. *Can. J. Fish. Aquat. Sci.* 44:950-959.
- Wood, C. C., S. McKinnell, T. J. Mulligan, and D. A. Fournier. 1987. Stock identification with the maximum-likelihood mixture model: sensitivity analysis and application to complex problems. *Can. J. Fish. Aquat. Sci.* 44:866-881.
- Wood, C. C., B. E. Riddell, and D. T. Rutherford. 1987. Alternative juvenile life histories of sockeye salmon (*Oncorhynchus nerka*) and their contribution to production in the Stikine River, northern British Columbia. P. 12-24 in H. D. Smith, L. Margolis, and C. C. Wood (eds.) Sockeye salmon (*Oncorhynchus nerka*) population biology and future management. *Can. Spec. Publ. Fish. Aquat. Sci.* 96.
- Yamada, S. B., and T. J. Mulligan. 1987. Marking nonfeeding salmonid fry with dissolved strontium. *Can. J. Fish. Aquat. Sci.* 44:1502-1506.
- Yamada, S. B., T. J. Mulligan, and D. Fournier. 1987. Role of environment and stock on the elemental composition of sockeye salmon (*Oncorhynchus nerka*) vertebrae. *Can. J. Fish. Aquat. Sci.* 44:1206-1212.





## OTHER PUBLICATIONS 1987

- Alderdice, D. F., and A. N. Hally. 1987. Tissue levels of Na<sup>+</sup>, K<sup>+</sup>, and Ca<sup>2+</sup> in Chehalis Hatchery chinook alevins, 1985-86. P. 70-89 in D. F. Alderdice and D. R. Harding (eds.) Studies to determine the cause of mortality in alevins of chinook salmon (Oncorhynchus tshawytscha) at Chehalis Hatchery, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1590.
- Alderdice, D. F., and D. R. Harding (eds.). 1987. Studies to determine the cause of mortality in alevins of chinook salmon (Oncorhynchus tshawytscha) at Chehalis Hatchery, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1590:101 p.
- Alderdice, D. F., J. O. T. Jensen, and F. P. J. Velsen. 1987. Influence of hydromineral additions and wetted aluminum surfaces on survival of chinook alevins at Chehalis Hatchery, 1985-86. P. 47-69 in D. F. Alderdice and D. R. Harding (eds.) Studies to determine the cause of mortality in alevins of chinook salmon (Oncorhynchus tshawytscha) at Chehalis Hatchery, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1590.
- Alderdice, D. F., and P. J. Rombough. 1987. Tissue levels of Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>+</sup>, and Mg<sup>2+</sup> in chinook alevins, 1983-84. P. 29-45 in D. F. Alderdice and D. R. Harding (eds.) Studies to determine the cause of mortality in alevins of chinook salmon (Oncorhynchus tshawytscha) at Chehalis Hatchery, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1590.
- Andersen, B. C. 1987. Fish populations of Carnation Creek and other Barkley Sound streams 1985-1986. Can. Data Rep. Fish. Aquat. Sci. 657:57 p.
- Beacham, T. D. 1987. Genotype--environment interactions in growth of chum salmon. Can. Tech. Rep. Fish. Aquat. Sci. 1517:11 p.
- Bell, G. R. 1987. An outline of anesthetics and anesthesia for salmonids, a guide for fish culturists in British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1534:16 p.
- Benfey, T. J., I. Solar, and E. M. Donaldson. 1987. The reproductive physiology of triploid Pacific salmonids. P. 128 in D. R. Idler, L. W. Grim, and J. M. Walsh (eds.) Proceedings of the Third International Conference on the Reproductive Physiology of Fish. Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John's, Newfoundland.
- Bigg, M. A., G. M. Ellis, J. K. B. Ford, and K. C. Balcomb. 1987. Killer whales; a study of their identification, genealogy and natural history. Phantom Press, Nanaimo, B. C. 79 p.
- Birtwell, I. K., G. M. Kruzynski, I. H. Rogers, and M. D. Nassichuk. 1987. General considerations regarding pollution research: Deas Slough; municipal waste, fish behaviour and future projects. P. 90-93 in Status report on water quality in the Fraser River estuary, 1987. Standing Committee on Fraser River Water Quality Plan, Fraser River Estuary Management Plan, New Westminster, B.C.
- Birtwell, I. K., M. D. Nassichuk, H. Beune, and M. Gang. 1987. Deas Slough, Fraser River estuary, British Columbia: general description and some aquatic characteristics. Can. MS Rep. Fish. Aquat. Sci. 1926:45 p.

- Blackbourn, D. J. 1987. Sea surface temperature and the prediction of age-at-return in stocks of chum salmon from the Fraser River, British Columbia, and other areas. P. 95-110 in P. Rigby (ed.) Proceedings 1987 Northeast Pacific Pink and Chum Salmon Workshop. Alaska Department of Fish and Game, Juneau.
- Blackburn, J., and W. C. Clarke. 1987. Revised procedure for the 24 hour seawater challenge test to measure seawater adaptability of juvenile salmonids. Can. Tech. Rep. Fish. Aquat. Sci. 1515:35 p.
- Bourne, N., R. A. Carmichael, and B. Bishop-Lowen. 1987. Recreational clam harvest survey, 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1570:61 p.
- Boutillier, J. A., and W. R. Harling. 1987. W. E. RICKER shrimp survey 87-S-1 to the West Coast of Vancouver Island, August 4-14, 1987. Can. Data Rep. Fish. Aquat. Sci. 675:42 p.
- Bower, S. M. 1987. Book review. O. Kinne (ed.) Diseases of Marine Animals. Volume IV, Part I. Introduction, Pisces. J. Parasit. 73:249.
- Brinkhurst, R. O. (ed.). 1987. Distribution and abundance of macrobenthic infauna from the continental shelf off southwestern Vancouver Island, British Columbia. Can. Tech. Rep. Hydrogr. Ocean Sci. 85:86 p.
- Brinkhurst, R. O., B. J. Burd, and R. D. Kathman. 1987. Benthic studies in Alice Arm, B.C. during and following cessation of mine tailings disposal, 1982 to 1986. Can. Tech. Rep. Hydrogr. Ocean Sci. 89:50 p.
- Brown, T. G. 1987. Characterization of salmonid over-wintering habitat within seasonally flooded land on the Carnation Creek flood-plain. Br. Col. Min. For. Land Manage. Rep. 44:42 p.
- Brown, T. G., I. V. Williams, and B. C. Andersen. 1987. Fish survey of Barkley Sound streams, Vancouver Island. Can. MS Rep. Fish. Aquat. Sci. 1953:61 p.
- Brown, T. G., I. V. Williams, and A. Langston. 1987. Watershed data base: Barkley Sound, Vancouver Island. Can. Data Rep. Fish. Aquat. Sci. 1935:37 p.
- Brown, T. G., I. V. Williams, and R. T. E. Pulfer. 1987. Watershed data base: Clayoquot Sound, Vancouver Island. Can. Data Rep. Fish. Aquat. Sci. 668:87 p.
- Brown, T. J., C. D. McAllister, and B. A. Kask. 1987. Calanoid and cyclopoid copepods from nearshore epibenthic sled samples taken at Campbell River estuary and Discovery Passage in 1982. Can. MS Rep. Fish. Aquat. Sci. 1935:37 p.
- Brown, T. J., C. D. McAllister, and B. A. Kask. 1987. Plankton samples in Campbell River and Discovery Passage in relation to juvenile chinook diets. Can. MS Rep. Fish. Aquat. Sci. 1915:42 p.
- Brown, T. J., C. D. McAllister, and M. S. Kotyk. 1987. A summary of the salmonid catch-data from Campbell River estuary and Discovery Passage for the years 1982 to 1986. Can. Data Rep. Fish. Aquat. Sci. 650:103 p.
- Burd, B. J., and R. O. Brinkhurst. 1987. Macrobenthic infauna from Hecate Strait, British Columbia. Can. Tech. Rep. Hydrogr. Ocean Sci. 88:130 p.

- Burd, B. J., D. Moore, and R. O. Brinkhurst. 1987. Distribution and abundance of macrobenthic infauna from Boundary and Mud Bays near the British Columbia/U.S. border. Can. Tech. Rep. Hydrogr. Ocean Sci. 84:34 p.
- Burns, T., R. A. Bams, T. Morris, T. Fields, and B. D. Tutty. 1987. Cowichan watershed fry salvage and coho colonization operations (1986): a review and preliminary results. Can. MS Rep. Fish. Aquat. Sci. 1949:4 p.
- Cass, A. J., and L. J. Richards. 1987. Lingcod hook and line survey in the Gulf Island Region (Statistical Area 17) of the Strait of Georgia, October-December 1985. Can. MS Rep. Fish. Aquat. Sci. 1934:65 p.
- Clarke, W. C. 1987. Seawater challenge/time of release studies. P. 37-49 in G. R. Bouck (ed.) Improving hatchery effectiveness as related to smoltification: proceedings of a workshop, Warm Springs, Oregon, May 20-23, 1985. U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Portland, Oregon.
- Cooke, K. R., R. Hungar, C. Groot, and G. Tolson. 1987. Data record of adult sockeye salmon and other fish species captured by purse seine in Queen Charlotte Strait, Johnstone Strait and the Strait of Georgia in 1985 and 1986. Can. Data Rep. Fish. Aquat. Sci. 680:127 p.
- Dinnel, P. A., D. A. Armstrong, R. R. Lauth, and G. S. Jamieson. 1987. Use of the PISCES IV submersible for determining the distribution of Dungeness crab, shrimp, and bottomfish in Port Gardner, Washington. Univ. Wash. Fish. Res. Inst. FRI-UW-8709:16 p.
- Donaldson, E. M. 1987. Sex control strategies. P. 109-119 in G. R. Bouck (ed.) Improving hatchery effectiveness as related to smoltification: proceedings of a workshop, Warm Springs, Oregon, May 20-23, 1985. U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Portland, Oregon.
- Donaldson, E. M., N. E. Down, H. M. Dye, and L. M. Souza. 1987. Growth response in coho salmon (*Oncorhynchus kisutch*) after administration of recombinant vertebrate somatotropin during seawater culture. P. 1 in Abstracts of papers presented at the 13th Conference of European Comparative Endocrinologists, Belgrade, Yugoslavia, Sept. 7-12, 1986, Belgrade, Yugoslavia. Gen. Comp. Endocrinol. 66(1).
- Down, N. E. 1987. Hormonal growth control. P. 25 in K. Harker (ed.) Summary of the Fisheries Research Branch - B.C. salmon farming industry, coho strategies workshop, October 1-3, 1986.
- Evelyn, T. P. T. 1987. Book review. (P. De Kinkelin, Ch. Michel and P. Ghittino. *Precis de pathologie des poissons*). Fish Health Sect. Am. Fish. Soc. Newsl. 15(4):6.
- Evelyn, T. P. T. 1987. Book review. (H. Moller and K. Anders. *Diseases and parasites of marine fishes*). Aquaculture 67:385-386.
- Fagerlund, U. H. M., D. A. Higgs, J. R. McBride, C. Archdekin, B. S. Dosanjh, and J. G. Eales. 1987. Nutritional value of canola meal protein for juvenile coho salmon (*Oncorhynchus kisutch*). P. 5-13 in 8th Progress report, Research on canola seed, oil, meal and meal fractions. Canola Council of Canada, Winnipeg, Manitoba.

- Fagerlund, U. H. M., J. R. McBride, B. S. Dosanjh, and E. T. Stone. 1987. Culture density and size effects on performance to release of juvenile chinook salmon and subsequent ocean survival: smolt releases from Capilano Hatchery in 1980 and 1981. Can. Tech. Rep. Fish. Aquat. Sci. 1572:27 p.
- Fargo, J., M. Saunders, and A. V. Tyler (ed.). 1987. Groundfish stock assessments for the west coast of Canada in 1987 and recommended yield options for 1988. Can. Tech. Rep. Fish. Aquat. Sci. 1617:304 p.
- Fargo, J., and S. J. Westrheim. 1987. Results, through 1985, of the rock sole (Lepidopsetta bilineata) tagging experiments in Hecate Strait, British Columbia, during April-May 1982 with regard to stock delineation. Can. MS Rep. Fish. Aquat. Sci. 1912:54 p.
- Fielden, R. J., and L. B. Holtby. 1987. Standing crop and habitat characteristics of juvenile salmonids at sites in the Cowichan River system. Can. MS Rep. Fish. Aquat. Sci. 1950:73 p.
- Fleming, J. O., J. S. Nathan, C. McPherson, and C. D. Levings. 1987. Survey of juvenile salmonids in gravity-fed irrigation ditches, Nicola and Coldwater River valleys, 1985. Can. Data Rep. Fish. Aquat. Sci. 622:47 p.
- Ford, J. K. B. 1987. A catalogue of underwater calls produced by killer whales (Orcinus orca) in British Columbia. Can. Data Rep. Fish. Aquat. Sci. 633:165 p.
- Foreman, R. E., and J. N. C. Whyte. 1987. Phycocolloid production by British Columbia red algae: 1984-1985 annual report. Science Council of British Columbia, Vancouver, B.C. 46 p.
- Foucher, R. P. 1987. Length composition of Pacific cod (Gadus macrocephalus) from commercial landings by Canadian trawlers, 1974-1985. Can. Data Rep. Fish. Aquat. Sci. 621:43 p.
- Foucher, R. P. 1987. Standardized landings statistics for Pacific cod (Gadus macrocephalus) and important shelf co-habitants from off southwest Vancouver Island, and from Queen Charlotte Sound and Hecate Strait, 1956-85. Can. Data Rep. Fish. Aquat. Sci. 620:81 p.
- Foucher, R. P., J. Fargo, and J. B. Lucas. 1987. Cruise of the F/V NUCLEUS, January 5-17, 1987 to Hecate Strait to study reproductive biology of Pacific cod and English sole. Can. MS Rep. Fish. Aquat. Sci. 1941:25 p.
- Foucher, R. P., and D. W. Welch. 1987. Port sample and research cruise maturity-at-length data collected for female Pacific cod (Gadus macrocephalus) from Hecate Strait, 1960-1987. Can. Data Rep. Fish. Aquat. Sci. 652:19 p.
- Fulton, J. D. 1987. Catch and effort statistics of the Canadian crab fishery on the Pacific coast in 1986. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 4 p.
- Fulton, J. D. 1987. Catch and effort statistics of the Canadian shrimp fishery on the Pacific coast in 1986. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 6 p.

- Haegele, C. W., and M. J. Hamey. 1987. Shoreline vegetation maps of herring spawning grounds in the upper west coast of Vancouver Island. Can. MS Rep. Fish. Aquat. Sci. 1921:43 p.
- Haegele, C. W., and J. F. Schweigert. 1987. Herring stock estimates from diving surveys of spawn for the lower east coast of the Queen Charlotte Islands in 1987. Can. MS Rep. Fish. Aquat. Sci. 1956:41 p.
- Haegele, C. W., and J. F. Schweigert. 1987. Herring stock estimates from diving surveys of spawn for the west coast of Vancouver Island in 1985. Can. MS Rep. Fish. Aquat. Sci. 1922:71 p.
- Haegele, C. W., and J. F. Schweigert. 1987. Herring stock estimates from diving surveys of spawn on the west coast of Vancouver Island in 1986. Can. MS Rep. Fish. Aquat. Sci. 1959:63 p.
- Haist, V., and J. Schweigert. 1987. Summary of 1987 herring stock assessment. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 9 p.
- Haist, V., J. Schweigert, and D. Fournier. 1987. Stock assessment for British Columbia herring in 1986 and forecasts of the potential catch in 1987. Can. MS Rep. Fish. Aquat. Sci. 1929:63 p.
- Hand, C. M., and L. J. Richards. 1987. Hook and line survey of lingcod (Ophiodon elongatus) and rockfish (Sebastes spp.) stocks in the Gulf Islands region (MSA 17) of the Strait of Georgia, January and February, 1987. Can. MS Rep. Fish. Aquat. Sci. 1957:57 p.
- Harbo, R. M., and G. S. Jamieson (eds.). 1987. Status of invertebrate fisheries off the Pacific coast of Canada (1985/86). Can. Tech. Rep. Fish. Aquat. Sci. 1576:158 p.
- Hargreaves, N. B. 1987. Incidence of lost or discarded drift nets recovered in Canadian waters during 1986, and preliminary observations for 1987. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 10 p.
- Hargreaves, N. B. 1987. Salmonid catches and related observations aboard the Japanese research vessel "Hokko Maru," June 1-22, 1987. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 15 p.
- Hargreaves, N. B., and E. W. Carter. 1987. The troll logbook program: a summary of CPUE data. Westcoast Fisherman 2(7):31-33.
- Hargreaves, N. B., E. W. Carter, and R. J. LeBrasseur. 1987. Beach seine catches of juvenile salmon and other fish in Masset Inlet and Masset Sound, British Columbia, in 1984. Can. Data Rep. Fish. Aquat. Sci. 640:79 p.
- Hargreaves, N. B., B. A. Patten, and R. J. LeBrasseur. 1987. Beach seine catches of juvenile salmon and other fish in Masset Inlet and Masset Sound, B.C. in 1985. Can. Data Rep. Fish. Aquat. Sci. 632:256 p.
- Healey, M. C. 1987. Book review. (El Niño North). Northwest Environ. J. 3:184-185.
- Henderson, M. A. 1987. Forecasts of the size of the Area 10 sockeye salmon (Oncorhynchus nerka) stock from 1985-1990. Can. MS Rep. Fish. Aquat. Sci. 1916:21 p.

- Higgins, P. S., I. K. Birtwell, B. T. Atagi, D. Chilton, M. Gang, G. M. Kruzynski, H. Mahood, G. E. Piercey, B. A. Raymond, I. H. Rogers, and S. Spohn. 1987. Some characteristics of the eulachon (Thaleichthys pacificus) captured in the Fraser River estuary, British Columbia, April 1986. Can. MS Rep. Fish. Aquat. Sci. 1913:47 p.
- Higgs, D. A., B. S. Dosanjh, J. R. Markert, and J. R. McBride. 1987. Evaluation of canola oil, pork lard and marine lipid singly and in combination as supplemental dietary lipid sources for juvenile Pacific salmon. P. 233-242 in 8th Progress report, Research on canola seed, oil, meal and meal fractions. Canola Council of Canada, Winnipeg, Manitoba.
- Hyatt, K. D. 1987. Advice on Barkley Sound sockeye. P. 77-97 in M. Stocker (ed.) Pacific Stock Assessment Review Committee annual report for 1986. Can. MS Rep. Fish. Aquat. Sci. 1951.
- Iwata, M., and W. C. Clarke. 1987. Cutting sho Japanese style. Can. Aquacult. Mag. 3(1):28-31.
- Jamieson, G. S., and G. D. Heritage. 1987. Experimental flying squid fishing off British Columbia, 1985 and 1986. Can. Ind. Rep. Fish. Aquat. Sci. 179:101 p.
- Johnston, N. T., J. R. Irvine, and C. J. Perrin. 1987. Coho salmon (Oncorhynchus kisutch) utilization of tributary lakes and streams in the Keogh River drainage, British Columbia. Can. MS Rep. Fish. Aquat. Sci. 1973:54 p.
- Johnston, N. T., J. R. Irvine, and C. J. Perrin. 1987. Instream indexing of coho salmon (Oncorhynchus kisutch) escapement in French Creek, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1573:37 p.
- Jordan, F. P., and E. W. Carter. 1987. 1986 West coast troll log program and summaries of 1984-1986 data. Can. Data Rep. Fish. Aquat. Sci. 653:69 p.
- Kieser, R., D. E. Hay, C. W. Haegele, D. C. Miller, and T. J. Mulligan. 1987. Hydroacoustic herring survey results and trawl catches from Hecate Strait, October 15 to November 5, 1984: G. B. REED cruise GBR84C and M. V. CANADIAN #1 cruise CAN84-1. Can. MS Rep. Fish. Aquat. Sci. 1917:107 p.
- Kotyck, M. S., T. J. Brown, B. A. Kask, C. D. Levings, C. D. McAllister, and J. S. Macdonald. 1987. Length, weight and coded wire tag data for juvenile salmonids sampled in the Campbell River Estuary and Discovery Passage, 1986. Can. Data Rep. Fish. Aquat. Sci. 630:27 p.
- Kreiberg, H. 1987. Transport criteria for smolts of Pacific salmonids. Can. Aquacult. 3:41-45.
- Lauzier, R. 1987. Physical parameters and fish capture data at selected Nicola River Basin sites during 1985. Can. Data Rep. Fish. Aquat. Sci. 655:24 p.
- Lauzier, R., and C. McPherson. 1987. Data record of juvenile salmonids captured by inclined plane trap in the Nicola River, British Columbia, during 1985. Can. Data Rep. Fish. Aquat. Sci. 649:129 p.
- Leaman, J. E. 1987. Summary of vessel size in the Canadian trawl fleet on the Pacific coast, 1970-86. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.

- Leaman, J. E., and R. D. Stanley. 1987. Catch and effort statistics of the Canadian groundfish fishery on the Pacific coast in 1986. Can. Tech. Rep. Fish. Aquat. Sci. 1584:85 p.
- Leaman, J. E., and R. D. Stanley. 1987. Catch and effort statistics of the Canadian groundfish fishery on the Pacific coast in 1986. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.
- LeBrasseur, R., B. Riddell, and T. Gjernes. 1987. Ocean salmon studies in the Pacific Subarctic Boundary Area. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987. 16p.
- Marshall, M., and P. Neaves. 1987. A user's guide to nonlinear response surface analysis software part II: plotting response surface contours (RSAPLOT). Can. Tech. Rep. Fish. Aquat. Sci. 1553:51 p.
- Martin, A. C., J. H. Mundie, C. P. Newcombe, L. L. Bahls, J. J. Fraley, C. J. Martinka, and J. E. Vashro. 1987. Predicted impacts of the proposed Sage Creek Coal Ltd. mine on the aquatic and riparian resources of the Flathead River Basin, British Columbia and Montana. Flathead River International Study Board, International Joint Commission. 308 p. + 10 addenda.
- McCarter, P. B., R. Kieser, D. E. Hay, and D. C. Miller. 1987. Hydroacoustic herring survey results and trawl catches from Hecate Strait, November 26 to December 12, 1985. G. B. REED cruise GBR85E and M. V. SUNNFJORD cruise SUN85-1. Can. MS Rep. Fish. Aquat. Sci. 1940:131 p.
- McDonald, T. E., V. J. Swiatkiewicz, E. D. Lane, F. Dalziel, and L. Margolis. 1987. Release and recovery data for tagged Fraser River white sturgeon (Acipenser transmontanus) in 1985. Can. Data Rep. Fish. Aquat. Sci. 639:27 p.
- Morris, J. F. T., and M. C. Healey. 1987. Hecate Strait juvenile salmon surveys, July 6-12 and July 30-August 3, 1986. Can. Data Rep. Fish. Aquat. Sci. 636:65 p.
- Nidle, B. H., and K. S. Shortreed. 1987. Limnological results from the 1985 British Columbia lake enrichment program. Can. Data Rep. Fish. Aquat. Sci. 631:59 p.
- Olesiuk, P. F. 1987. The UTILITY of scat analysis in assessing pinniped diets (abstract). P. 51 in Proceedings of The Seventh Biennial Conference on the Biology of Marine Mammals, December 1987, Miami, Florida.
- Plotnikoff, M. D., C. Cross, and J. R. Markert. 1987. Results of chemical analyses of Oregon Moist Pellet fish food, component meals and marine lipid sources used by DFO Salmonid Enhancement Program facilities from February 1982 to March 1986. Can. Data Rep. Fish. Aquat. Sci. 647:37 p.
- Richards, L. J. 1987. Canadian field research studies for 1987 in the northeast Pacific. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.
- Richards, L. J., and A. J. Cass. 1987. 1986 research catch and effort data on nearshore reef-fishes in British Columbia Statistical Areas 12, 13 and 16. Can. MS Rep. Fish. Aquat. Sci. 1903:123 p.

- Richards, L. J., and C. M. Hand. 1987. 1987 research catch and effort data on nearshore reef-fishes in British Columbia Statistical Areas 12 and 13. Can. MS Rep. Fish. Aquat. Sci. 1958:59 p.
- Richards, L. J., and J. E. Leaman. 1987. British Columbia groundfish fisheries and their investigations in 1986. Submitted to annual meeting, Technical Sub-committee of the Canada-United States Groundfish Committee, Seattle, Washington, June 1987. 30 p.
- Ricker, W. E. 1987. Effects of the fishery and of obstacles to migration on the abundance of Fraser River sockeye salmon (Oncorhynchus nerka). Can. Tech. Rep. Fish. Aquat. Sci. 1522:81 p.
- Riley, P. M., B. A. Raymond, S. Liegh-Spencer, and M. S. Kotyk. 1987. Data report on benthic sampling on artificial islands at Campbell River estuary, 1982-1986. Can. Data Rep. Fish. Aquat. Sci. 659:69 p.
- Rosenfeld, L., and V. Haist. 1987. Summary of British Columbia herring sampling data for the 1986-1987 season. Can. Data Rep. Fish. Aquat. Sci. 679:113 p.
- Rosenfeld, L., V. Haist, and D. Chalmers. 1987. Distribution and abundance of Pacific herring off the west coast of Vancouver Island, September 26-October 30, 1984. Can. MS Rep. Fish. Aquat. Sci. 1924:23 p.
- Ryall, R., and C. D. Levings. 1987. Juvenile salmon utilization of rejuvenated tidal channels in the Squamish estuary, British Columbia. Can. MS Rep. Fish. Aquat. Sci. 1904:26 p.
- Shaw, W. 1987. Canadian regulations on non-domestic fisheries, 1977-1987. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.
- Shaw, W., D. Davenport, and G. A. McFarlane. 1987. Biological survey of Pacific hake, walleye pollock, and spiny dogfish in the Strait of Georgia, R/V G. B. REED, March 18-29, 1985. Can. Data Rep. Fish. Aquat. Sci. 656:39 p.
- Shaw, W., G. A. McFarlane, and D. Davenport. 1987. Distribution and abundance of larval sablefish (Anoplopoma fimbria) in the surface waters off the west coast of Vancouver Island, April 9-24, 1985. Can. MS Rep. Fish. Aquat. Sci. 1945:49 p.
- Shaw, W., R. Tanasichuk, D. M. Ware, D. Davenport, and G. A. McFarlane. 1987. Biological and species interaction survey of Pacific hake, sablefish, spiny dogfish and Pacific herring off the southwest coast of Vancouver Island, F/V EASTWARD HO, August 10-22, 1985. Can. Data Rep. Fish. Aquat. Sci. 651:159 p.
- Shirvell, C. S. 1987. Does the IFIM have biological significance: a critique. Instream Flow Chron. 4 (2):1-3.
- Sloan, N. A. 1987. Howe Sound juvenile prawn (Pandalus platyceros) survey with a review of estuaries as shrimp and prawn nursery habitats. Can. MS Rep. Fish. Aquat. Sci. 1936:25 p.
- Solar, I. I., I. J. Baker, and E. M. Donaldson. 1987. Experimental use of "female sperm" in the production of monosex female stocks of chinook salmon (Oncorhynchus tshawytscha) at commercial fish farms. Can. Tech. Rep. Fish. Aquat. Sci. 1552:14 p.



- Stanley, R. D., and A. C. C. Otterdyks. 1987. Round weight conversion factors for Pacific ocean perch (Sebastes alutus) processed by British Columbia freezer trawlers. Can MS Rep. Fish. Aquat. Sci. 1925:28 p.
- Steer, G. J., and K. D. Hyatt. 1987. Use of a run timing model to provide in-season estimates of sockeye salmon (Oncorhynchus nerka) returns to Barkley Sound, 1985. Can. Tech. Rep. Fish. Aquat. Sci. 1557:42 p.
- Stocker M. (ed.). 1987. Pacific stock assessment review committee (PSARC) annual report for 1986. Can. MS Rep. Fish. Aquat. Sci. 1951:97 p.
- Traxler, G. S., J. B. Rankin, and V. Ewart. 1987. IHN mortality of sockeye salmon fry at Weaver Creek, British Columbia spawning channel. Fish Health Sect. Am. Fish. Soc. News. 15(4):7.
- Tyler, A. V., J. Fargo, R. P. Foucher, and J. B. Lucas. 1987. Studies on the reproductive biology of Pacific cod and English sole in Hecate Strait from the cruise of the FRV W. E. RICKER, November 25-29, 1986. Can. MS Rep. Fish. Aquat. Sci. 1937:43 p.
- Tyler, A. V., and M. W. Saunders (eds.). 1987. Groundfish stock assessments for the west coast of Canada in 1986 and recommended yield options for 1987. Can. MS Rep. Fish. Aquat. Sci. 1930:165 p.
- Valiela, D., J. H. Mundie, C. P. Newcombe, D. D. MacDonald, T. Willingham, and J. A. Stanford. 1987. Ambient water quality criteria for selected variables in the Canadian portion of the Flathead River Basin, British Columbia, Canada. Flathead River International Study Board, International Joint Commission. 74 p.
- Velsen, F. P. J. 1987. Temperature and incubation in Pacific salmon and rainbow trout: compilation of data on median hatching time, mortality and embryonic staging. Can. Data Rep. Fish. Aquat. Sci. 626:58 p.
- Vreeling, M. C., L. Hop Wo, A. P. Gould, W. Luedke, S. R. Heizer, and T. D. Beacham. 1987. Biochemical genetic stock identification of chum salmon in southern British Columbia, 1986. Can. Data Rep. Fish. Aquat. Sci. 634:19 p.
- Welch, D. W. 1987. Efficient frequency domain filtering algorithm for small data sets. Can. Tech. Rep. Fish. Aquat. Sci. 1559:27 p.
- Westrheim, S. J. 1987. Parabranchial x-cell lesions in trawl-caught Pacific cod (Gadus macrocephalus) off the west coast of Canada--incidence and effects. Can. Tech. Rep. Fish. Aquat. Sci. 1593:45 p.
- Westrheim, S. J., and R. P. Foucher. 1987. Stock assessment of Pacific cod (Gadus macrocephalus) in Georgia and Juan de Fuca straits, 1954-1984. Can. MS Rep. Fish. Aquat. Sci. 1905:84 p.
- Westrheim, S. J., and G. Miller. 1987. A partial bibliography of Pacific cod (Gadus macrocephalus) in the north Pacific Ocean, through December 1985. Can. Tech. Rep. Fish. Aquat. Sci. 1518:53 p.
- Withler, R. E. 1987. Genetic variation in chinook alevin survival: a summary. P. 19-27 in D. F. Alderdice and D. R. Harding (eds.) Studies to determine the cause of mortality in alevins of chinook salmon (Oncorhynchus tshawytscha) at Chehalis Hatchery, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1590.

- Withler, R. E., and T. P. T. Evelyn. 1987. Genetic variation in BKD susceptibility in coho salmon. P. 49-51 in B. D. Hicks and W. Pennell (eds.) Bacterial kidney disease research priorities. B.C. Salmon Farmer's Association; British Columbia Ministry of Agriculture and Food, West Vancouver, B.C.
- Wood, C. C. 1987. Catch statistics for the Canadian albacore fishery 1952-1986. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.
- Wood, C. C, and G. T. Oliver. 1987. Stock identification of sockeye salmon (Oncorhynchus nerka) using biological markers. Document submitted to Annual Meeting, International North Pacific Fisheries Commission, Vancouver, British Columbia, October 1987.
- Wood, C. C., B. E. Riddell, D. T. Rutherford, and K. L. Rutherford. 1987. Variation in biological characters among sockeye salmon populations of the Stikine River with potential application for stock identification in mixed-stock fisheries. Can. Tech. Rep. Fish. Aquat. Sci. 1535:61 p.

