

## **Final Report to the Pollock Conservation Cooperative Research Center**

**Grant title: Finishing work on the new book:**

*Fishes, Catches and Science of Alaska Seas* by Albert V. Tyler

**Principal Investigator:**      **Albert V. Tyler, Ph. D.**  
   **Professor Emeritus, Fishery Division**  
   **SFOS, University of Alaska Fairbanks**  
   **Fairbanks, Alaska 99775-7220**

**Mailing Address:**              **1510 Beddis Rd.**  
   **Salt Spring Island, B.C.**  
   **Canada V8K 2E3**  
   **250-538- 5508**  
   **tyler@sfos.uaf.edu**

**Duration: 1 year**

**Start date: 01 April 2004**

**Amount awarded: \$22,965**

**Date of Final Report: December 15, 2004**

**ABSTRACT:**

Funds were received for the finishing work on a new book, *Fishes, Catches, And Science Of Alaska Seas*. First, The P.I. scanned and digitized relevant drawings from published literature with permission of the copyright holders. A professional artist drew a series of illustrations in a unifying format from the published illustrations, Second, a copy editor familiar with the fisheries literature edited the text to help put the writing in plain and correct English. This proposal comes under the educational category of PCCRC funding.

**BACKGROUND AND RELEVANCE TO RESEARCH PRIORITIES**

For a decade I taught a course called FISH 400. 'Fishery Science' as part of the curriculum of the School of Fisheries and Ocean Sciences. My class notes became handouts, and my handouts became a rough draft of a book. The book quite naturally includes sections on the Alaska walleye pollock fishery and the many other groundfish fisheries of the oceans around Alaska. This proposal was aimed at acquiring funds for completion of technical aspects. The book is suitable for the informed public as well as students. The book brings out the many aspects of the complex ocean fisheries that I have experienced while I was doing research and teaching at the University of Alaska Fairbanks. While much is written in newspapers and magazines about these fisheries, there is no book that provides a synthesis and overview. There is a gap that when filled will help readers to grasp the fascinating complexities of Alaska fisheries and its science. In fact Alaska fisheries are sufficiently complex that sometimes people working in one sector are not familiar with other sectors. This book will provide much needed information for University students.

Through my work with the Science and Statistical Committee of the North Pacific Fishery Management Council I came to realize that fishery science was much more than biology. I have endeavored to capture those other science aspects of fisheries that are grist for the mill of fisheries management and business. The book treats several of the subjects of interest to the Pollock Conservation Cooperative Research Center, including stock dynamics, of walleye pollock and other groundfish species, assemblage classifications of marine species, biology of marine mammals, and economics of marine fisheries. During the last five months, three colleagues wrote chapters on Seafood Technology (Himelbloom), Product Marketing (Fong), Salmon ranching and shellfish aquaculture (RaLonde). My PCC-RC grant helped them with illustrations for the book.

**WORK ACCOMPLISHED**

A special fisheries editor agreed to review the text prior to sending it to the publisher. This editor, Ms. Natalie Moir, is retired from the Canadian Journal of Fisheries and Aquatic Sciences. She knows the technical language, and helped me to make it understandable without the jargon. She smoothed and clarified the text. Funds were used to pay her for the special copy editing of 10 of the chapters. The publisher, the University of Alaska Press, is a non-profit organization and could not provide these services.

This grant covered the expense of designing a common format for the many illustrations of the book. Illustrations were scanned and digitized from original research publications,

and redrawn in the new format. Proper citations of the original publications are given in the figure captions and in acknowledgements. To date the illustrator, Mr. Donald Gunn, has completed 80 hand-drawn illustrations, redrawn from the original research publications. There are 5 or 6 more to go.

Editor, Ms. Natalie Moir, has gone through all chapters and has provided written editing for a total of 153 pages. This total does not include the first six chapters that she edited prior to being on my grant, nor does it include the pages for the four co-author chapters. I edited my co-author's chapters, and I personally paid for Ms. Moir to edit the first six chapters last year prior to my knowing that I had received my grant from the PCCRC. The total number of pages in the typescript of the book now comes to 353, not including the figures.

No funds were asked for the P.I. to finish the writing. The P.I.'s salary came from his pension. A week of Dr. Tyler's salary in the grant covered the work of finalizing and integrating the products of the special editor and artist.

#### SCOPE OF THE BOOK

Alaska ocean fisheries and relevant sciences are synthesized from a biologist's point of view to reflect the emerging concept of a study area integrated over a sweep of disciplines: oceanography, marine biology, fish population dynamics, aquaculture, economics, seafood science and market analysis. The book shows how such differing subjects have feedback relationships to one another, and focuses on the science basics behind the solutions to fishery management issues.

Regional oceanography has led to greater insights into fishery biology. The understanding of population dynamics of fish stocks has been changed by ocean ecology and computer science. Biological advances have influenced resource economics, seafood technology, and fisheries marketing. These subjects are crucial understanding catch allocation among user groups, and the generation of increased fishing effort. The levels of fishing effort and fishery profits are the drivers in this resource management system, and fishing effort in turn is driven by market opportunities and product development owing much to seafood science. Aquaculture has responded to economics, fish ecology, advances in genetics and health science.

There is no other book on Alaska fisheries oriented to a practical, holistic approach to problem solving and understanding the complexities of the fisheries. Much has been written on Pacific salmon, so while dealing with salmon, this book focuses on cod, pollock, flatfish, herring, crabs and other fully oceanic species that make up the multi-billion dollar-a-year landings. One chapter takes the time to delve into a fishery complex in some detail: the amazing halibut and its recently revolutionized fishery. Alaska waters are one of the few places in the world where most of the fish stocks have not been over-exploited.

## WHO WILL READ THIS BOOK?

In draft form the book has been useful as a fourth-year university text, but its use goes beyond university interest. It will fill a void for the hundreds of educated people involved in Alaska fisheries who want to know more about this incredible ocean fishery giant. Management of Alaska fisheries has always been material for newspapers, so a book pulling together the scattered news reports will be welcome. Conservationists, business people and politicians want to know in some depth what's really going on. Possibly as many copies will be sold as there are fishing boats in the Gulf of Alaska and the Bering Sea. Companies from Japan, China, Korea, Taiwan, Russia and Poland will wish to buy copies for reference since they all have large fleets in the Pacific Ocean, or buy raw or processed fish from U.S. Companies. Alaska and North Pacific fish is one of the great export commodities of the United States and Canada. In addition there are hundreds of people involved in the management of these fisheries who work with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the International Pacific Halibut Commission, the Alaska Department of Fish and Game, the State of Washington Department of Fish and Game, the Oregon Department of Fish and Wildlife.

## CHAPTER ORGANIZATION

All except four chapters are by Albert V. Tyler

**Chapter 1. A philosophy of fishery science**

**Chapter 2. Valuable fish and shellfish and the gear to catch them**

**Chapter 3. Trends in catches and landed values**

**Chapter 4. The fishery complex of Pacific halibut**

**Chapter 5. Patterns of ocean habitats**

**Chapter 6. Fishery trends and climate change**

**Chapter 7. Natural production domains of the region**

**Chapter 8. Ecology of fish distributions and feeding relationships**

**Chapter 9. Year-class success and the biological basis for sustainable fisheries**

**Chapter 10. Causes of variability of year-class success**

**Chapter 11. Basic dynamics of fished stocks and their economics**

**Chapter 12. Seafood marketing - moving Alaska products to the world  
by Quentin Fong**

**Chapter 13. Seafood Science and Technology by Brian Himelbloom**

**Chapter 14. Alaska Salmon Ranching. by Ray RaLonde**

**Chapter 15. Shellfish Aquaculture in Alaska by Ray RaLonde**

**Chapter 16. At-sea surveys and satellite applications in fisheries**

**Chapter 17. Ecosystem issues of Alaska ocean fisheries**

**Chapter 18. Fishery science synthesis: diverse information and integration.**