

useful, one standout chapter is Growth Estimation: Growth Models and Statistical Inference. This chapter provides a very thorough examination using clear examples and explanations using the R programming environment.

This volume achieves the editors' goals and will serve as a useful reference and textbook. It will be of interest to undergraduate and graduate students as well as professionals in the fields of fishery management and fish biology.

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#### THE OCEAN ECOLOGY OF PACIFIC SALMON AND TROUT.

*Edited by Richard J. Beamish. Bethesda (Maryland): American Fisheries Society. \$98.00. xii + 1147 p.; ill.; index. ISBN: 978-1-934874-45-5. 2018.*

No part of salmon and trout life history is more important or mysterious than the time spent at sea. The adage of the ocean as a "black box" into which many venture yet few return, conjures a sense of fundamental intractability and remains ingrained in the salmon lexicon. The black box of the ocean is now more brightly illuminated than ever before in *The Ocean Ecology of Pacific Salmon and Trout*, edited by Richard J. Beamish. Writing in nine chapters, 41 contributing expert authors fill over 1000 pages into a volume weighing 2.6 kg (which according to Figure 3.22 on page 756 is approximately the weight of a 575 mm male masu salmon).

Following a general introduction by Beamish in which he provides his own interpretations of the key findings, the volume is organized into chapters for each of the eight focal species (presented in descending order of abundance). The inclusion of masu (cherry) salmon, steelhead, and coastal cutthroat trout is a welcome aspect of the book as these species that are rarer and generally less commercially valuable tend to get bypassed in reviews. The volume concludes with an assembly of short works on methods used to study Pacific salmon and trout in the ocean. The largest contributions of this work to the field are twofold. First, substantial new information is brought forth, most notably substantial research published in Russian. Long has the language barrier plagued knowledge exchange between west and east; a divide that led salmon researcher Bill Ricker to famously teach himself Russian and eventually publish a technical Russian-English dictionary that is still used today. The incorporation of original Russian research not only shrinks the gap between worlds, but also helps illustrate the evidence that has led to divergent world views concerning the role of salmon in the ocean. Second, the book serves a veritable roadmap for addressing the most pressing

knowledge gaps by the current and likely future generation of salmon researchers. Although some of the recommendations for future work reinforce the consensus of the scientific community (e.g., better understand the role of nearshore carrying capacity during the early stages of ocean entry), others are perhaps less obvious (e.g., the need to better understand the role of native and invasive pathogens and parasites on salmon ecology in a changing climate).

Where the volume falls short is ironically not in presenting too little, but rather trying to do too much. Specifically, each chapter includes new information on freshwater ecology that ultimately felt out of place not only with the primary focus (and hence title) of the book but did not and could not do justice to information on the freshwater phase of the life histories. It is in this regard that the volume fails to serve as a full update to the classic review of life histories by Groot and Margolis (1991. *Pacific Salmon Life Histories*. Vancouver (Canada): University of British Columbia Press). An inherent consequence of the layout into species-specific chapters is the complication of drawing among species comparisons with regards to things such as diet, distribution, or diel vertical movement. On the bright side, the summaries provided in the book serve as logical starting places for syntheses on topics across species.

Regardless of these criticisms, *The Ocean Ecology of Pacific Salmon and Trout* is destined to be a foundational classic and go-to reference for years to come. Salmon researchers should clear off some time on the calendar to work through the volume and dedicate space in their libraries. Just be sure to shore up your bookshelves first.

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#### THE BEHAVIOR AND ECOLOGY OF PACIFIC SALMON AND TROUT. *Second Edition.*

*By Thomas P. Quinn. Published in association with the American Fisheries Society, Bethesda (Maryland) by the University of Washington Press, Seattle (Washington). \$60.00 (paper). xii + 547 p. + 10 pl.; ill.; index. ISBN: 9780295743332 (pb); 9780295743349 (eb). 2018.*

Summarizing the behavior and ecology of fishes of such fascination and connection to human societies through millennia as Pacific salmon and trout is a Sisyphean task; as soon as one rolls the massive stone of literature to the top of the hill of knowledge, it rolls back down again owing to the stone's ever expanding size. *The Behavior and Ecology of Pacific Salmon and Trout* is a seriously updated (36% longer, expanded citations; outstanding color graphics and