

Fish are one of the most important global food sources, supplying a significant share of the world's protein consumption. From stocks of wild Alaskan salmon and North Sea cod to entire fish communities with myriad species, fisheries require careful management to ensure that stocks remain productive, and mathematical models are essential tools for doing so. *Fish Ecology, Evolution, and Exploitation* is an authoritative introduction to the modern size- and trait-based approach to fish populations and communities.

Ken Andersen covers the theoretical foundations, mathematical formulations, and real-world applications of this powerful new modeling method, which is grounded in the latest ecological theory and population biology. He begins with fundamental assumptions on the level of individuals and goes on to cover population demography and fisheries impact assessments. He shows how size- and trait-based models shed new light on familiar fisheries concepts such as maximum sustainable yield and fisheries selectivity—insights that classic age-based theory can't provide—and develops novel evolutionary impacts of fishing. Andersen extends the theory to entire fish communities and uses it to support the ecosystem approach to fisheries management, and forges critical links between trait-based methods and evolutionary ecology.

Accessible to ecologists with a basic quantitative background, this incisive book unifies the thinking in ecology and fisheries science and is an indispensable reference for anyone seeking to apply size- and trait-based models to fish demography, fisheries impact assessments, and fish evolutionary ecology.

Ken H. Andersen is professor of theoretical marine ecology and deputy director of the Centre for Ocean Life at the Technical University of Denmark's National Institute of Aquatic Resources.

"Andersen pulls together a cohesive theory from a synthesis of decades of work. He presents a clear and pragmatic foundation for understanding the dynamics at the heart of fisheries and ecology—of individuals, populations, and communities. This leveler will help pave the way for many to tackle the leviathan that is multispecies fisheries."

—**Beth Fulton**, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

"This book is a fantastic explanation of size- and trait-based analysis of marine ecosystems that should be required reading for marine ecologists and fisheries scientists. Among other results, Andersen provides insights into a community-based approach to ecosystem-based fisheries management."

—**Ray Hilborn**, University of Washington

"Ken Andersen has developed an innovative approach, rooted simultaneously in size spectra and physiology, for thinking about fish and fisheries. In this book, he lays out the ideas and their implications clearly and with examples that bring the theory to life. One need not read it cover to cover but can dip into various spots as desired and always take something important away. I have already used some of Andersen's ideas in my own research and my copy of his book will sit on the corner of my desk for easy access."

—**Marc Mangel**, University of California, Santa Cruz, and University of Bergen

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