Ecologists have long struggled to understand community dynamics. In this groundbreaking book, leading fish ecologists William J. Matthews and Edie Marsh-Matthews apply long-term studies of stream fish communities to enduring questions. This critical synthesis reaches into the heart of ecological theory, testing concepts against more than four decades of data collected by the authors from numerous warm-water stream fish communities in the central and eastern United States.

Stream Fish Community Dynamics provides fresh analyses of the short- and long-term dynamics of numerous streams, each with multiple sampling sites. Conducting repeated surveys of fish communities at temporal scales from months to decades, the authors' research findings will fascinate anyone searching for a deeper understanding of community ecology.

The study sites covered by this book range from small, highly variable headwater creeks to large prairie rivers in Oklahoma and from Ozark and Ouachita mountain streams in Arkansas to the upland Roanoke River in Virginia. The book includes

- A comparison of all global and local communities with respect to community composition at the species and family level, emergent community properties, and the relationship between those emergent properties and the environments of the study sites
- Analyses of traits of individual species that are important to their distribution or success in harsh environments
- A review of evidence for the importance of interactions—including competition and predation—in community dynamics of stream fishes
- An assessment of disturbance effects in fish community dynamics
- New analysis of the short- and long-term dynamics of variation in stream fish communities, illustrating the applicability and importance of the "loose equilibrium concept"
- Novel analyses and comparisons of spatio-temporal variation in community dynamics and beta diversity partitioning
- An overview of the effects of fishes in ecosystems in the central and eastern United States

The book ends with a summary chapter that places the authors' complex findings in broader contexts and describes how the "loose equilibrium concept"—which may be the most appropriate default assumption for dynamics of stream fishes in the changing climate of the future—applies to many kinds of stream fish communities.

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