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Altri autori (Persone)	ZhangLi
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Nota di contenuto	Preface -- Chapter 1 Introduction -- Chapter 2 Preliminaries -- Chapter 3 The effect of stochastic marine environment -- Chapter 4 The effect of marine environmental mutation -- Chapter 5 The effect of time delay -- Chapter 6 The effect of water temperature -- Chapter 7 The effect of plankton cell size -- Chapter 8 The effect of defensive and aggressive behavior -- Chapter 9 The effect of schooling behavior and harvest -- Chapter 10 The effect of toxin and cross-diffusion -- Chapter 11 The effect of advection -- Chapter 12 The effect of herd-taxis -- Chapter 13 The effect of weakly nonlinear diffusion -- Chapter 14 Temporal forcing induced pattern transitions -- Chapter 15 Spatiotemporal dynamics near the Turing-Hopf bifurcation -- Chapter 16 Fractional herd behavior with cross-diffusion -- Chapter 17 Spatial fractional behavior with fear factor and refuge -- Chapter 18 Spatial dynamics with time delay and Allee effect.
Sommario/riassunto	To ultimately address this serious issue, this book begins with the nonlinear dynamic characteristics of marine plankton, focusing on the dynamic behavior of both two-dimensional and spatiotemporal

patterns. As a critical foundation of marine ecosystems, the frequent outbreaks of marine phytoplankton and the toxicity of planktonic animals pose significant threats to marine ecological security and human health. One of the primary reasons we currently struggle to effectively manage the safety issues surrounding marine plankton is the extremely complex nature of their growth environment, which exhibits intricate dynamic and nonlinear characteristics. By constructing reaction-diffusion models and fractional diffusion systems of the planktonic ecosystem, the book characterizes the various factors in different environments and studies the nonlinear behavior of marine organisms. Employing linear stability theory, multi-scale analysis, comparison principle, analytical techniques, and the construction of Lyapunov functions, the book delves into the following topic: the stability of the plankton ecosystem, Hopf bifurcation, Turing bifurcation and other local bifurcations, spatial self-organization behavior of marine plankton, the formation of spatiotemporal patterns, and the persistence and extinction properties and characteristics. Marine ecology and the marine environment are currently hot research topics internationally, with the behavior of marine organisms being a core area of this research. The goal of exploring these issues is to scientifically understand the features of marine organisms, control their behavior, manage ocean pollution effectively, contribute to human development, and support social advancement. Additionally, the authors aime to make academic contributions and provide guidance to graduate students and researchers dedicated to this field.