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Titolo Ecosystem Conservation and Management : Models and Application / /

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Soggetti Environmental engineering

Biotechnology Bioremediation Biodiversity Epidemiology

Environmental sciences - Mathematics

Stochastic models

Environmental Engineering/Biotechnology

Mathematical Applications in Environmental Science

Stochastic Modelling

Lingua di pubblicazione Inglese

Formato Materiale a stampa

Livello bibliografico Monografia

Nota di bibliografia Includes bibliographical references and index.

Nota di contenuto Part I. Species and populations threatened by extinction -- Chapter 1.

Threatened biodiversity -- Chapter 2. The risk of extinction: Allee effect and genetic deterioration -- Chapter 3. Extinction risk analysis: demographic and environmental stochasticity -- Chapter 4. Problems on the analysis of Extinction Risk (ER) -- Part II. Populations in spatially explicit landscapes -- Chapter 5. Movement of organisms and the dynamics of populations in space -- Chapter 6. Habitat fragmentation and destruction: the dynamics of metapopulations -- Chapter 7. Problems on Spatial Ecology (SE) -- Part III. Sustainabilty of biomass harvesting and its harvesting (M) -- Chapter 8. The management of natural populations harvesting -- Chapter 9. Problems on the

Management of renewable resource harvesting (M) -- Part IV. Parasite

Sommario/riassunto

and disease ecology -- Chapter 10. Ecology of parasites and infectious diseases -- Chapter 11. Problems on the Ecology of Parasites and Disease (PD).

This textbook provides basic quantitative models allowing researchers and decision makers to a) assess viability of threatened populations and evaluate the success of species reintroductions, b) estimate invasion abilities of alien species, c) evaluate the persistence of metapopulations subjected to habitat destruction and fragmentation, d) analyze policies and strategies for the sustainable harvesting of biological resources, and e) assess the course of human and nonhuman diseases and the possible containment measures. Air and water pollution, overexploitation of renewable resources (e.g. marine fish stocks and forests), massive land-use change together with climate change impact the Earth biodiversity and impair the functioning of ecosystems. Globalization increases the risk of diffusion of alien species and new pathogens. A panoply of numerical problems mainly based on real data from the ecological literature enables the reader to practice the presented modelling tools. .