

GENERAL AND LANDSCAPE
ECOLOGY

OF TEMPERATE FOREST ECOSYSTEMS

Ivica Tikvić Damir Ugarković



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Ivica Tikvić and Damir Ugarković

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Foreword

All organisms on Earth, including humans, live in specific ecosystems that represent the living space of organisms with particular ecological traits. In ecosystems, organisms establish different types of relationships with their living and non-living environment. The living environment is made up of other organisms, while the non-living environment is made up of the habitat or ecological factors. Understanding these relationships has given rise to numerous scientific disciplines, including the fundamental science of the relationship of organisms in ecosystems: ecology. Over the past 150 years, ecology has developed with a wide spectrum of knowledge on how organisms function in ecosystems. The field continues to develop and evolve, with this knowledge published in over 400 international scientific journals dedicated to ecology. At the Faculty of Forestry and Wood Technology of the University of Zagreb, ecology has been taught for over 50 years.

This textbook outlines the most important natural laws concerning the development of plants, animals, microorganisms and humans in different forest ecosystems in the temperate zone. The textbook includes five sections that cover the areas of general and landscape ecology, functioning of forest ecosystems, relationships between organisms and ecological factors, interrelationships of organisms in forest ecosystems, and the application of general and landscape ecology of forest ecosystems in the profession. The main topics of this textbook are covered in 24 chapters. The first three chapters examine the basics of and history of general and landscape ecology. The second section includes seven chapters that examine the organisms, environment, habitats, requirements of life and ecological processes, functioning of forest ecosystems, and impacts of humans on forest ecosystems. The third section includes ten chapters examining the relationships between organisms and light, heat, water, air, matter, climate, relief, forest soil, geological substrate, and space. The fourth section is its own chapter and it examines the interrelations among organisms in forest ecosystems, while the fifth section and its two chapters cover the condition of organisms and their habitats, and the general forest functions and forest ecosystem services. The final chapter gives an outline of the literature references.

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Understanding general and landscape ecology in forest ecosystems contributes to the proper management and protection of forest ecosystems, forest habitats and forest ecosystems as a whole. This knowledge can be applied to managing forests and urban forests, in arboriculture, horticulture, landscaping, landscape architecture, nature conservation, environmental protection, and more.

It is our hope that this textbook will assist students of forestry and other study programmes, and scientists, experts and others interested to better understand the functioning of forest ecosystems.

In Zagreb, September 2021

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