

CONTENTS

PREFACE	V	<i>Chapter 6. THE ANIMAL COMMUNITY: DIVERSITY AND RESOURCES</i>	
LIST OF CONTRIBUTORS	VII	by M. Schaefer	51
Section I. General Aspects		Introduction	51
<i>Chapter 1. INTRODUCTION</i>		Composition of the fauna	51
by E. Röhrig	1	The habitat and the fauna: patterns of occurrence, distribution and spatial dynamics	53
Definitions	1	Diurnal rhythms, seasonality and life cycles	66
Geographical distribution	2	Succession	72
References	4	Trophic relationships	75
<i>Chapter 2. CLIMATIC CONDITIONS</i>		Species diversity	91
by E. Röhrig	7	Resource partitioning	99
General climatic characteristics	7	Organization of the ecosystem and functional relationships	107
Climate diagrams	14	Acknowledgements	108
References	15	References	109
<i>Chapter 3. FLORAL COMPOSITION AND ITS EVOLUTIONARY DEVELOPMENT</i>		Section II. Ecosystem processes	
by E. Röhrig	17	<i>Chapter 7. ECOCHEMISTRY OF TEMPERATE DECIDUOUS FORESTS</i>	
References	23	by P.K. Khanna and B. Ulrich	121
<i>Chapter 4. SEASONALITY</i>		Nutrient-related ecosystem characteristics	121
by E. Röhrig	25	Distribution and dynamics of elements in vegetation components	125
Leaf shedding	25	Element balance in the litter layer	140
Phenology	27	Element-associated processes in the soil layer	146
References	31	Element behaviour in temperate deciduous forests	153
<i>Chapter 5. VEGETATION STRUCTURE AND FOREST SUCCESSION</i>		Conclusions	158
by E. Röhrig	35	References	159
Stand structure	35	<i>Chapter 8. BIOMASS AND PRODUCTIVITY</i>	
Dynamics of forest ecosystems: the concept of succession	40	by E. Röhrig	165
Primary successions	41	Definitions, methods of assessment	165
Secondary successions	42	Biomass	166
Gap dynamics	45	Net primary productivity	172
References	47	References	172
<i>Chapter 6. THE ANIMAL COMMUNITY: DIVERSITY AND RESOURCES</i>		<i>Chapter 9. SECONDARY PRODUCTION AND DECOMPOSITION</i>	
by M. Schaefer	51	by M. Schaefer	175
Introduction	51	Introduction	175
Composition of the fauna	51	Utilization of food: biochemistry, energy and nutrients	175
The habitat and the fauna: patterns of occurrence, distribution and spatial dynamics	53		
Diurnal rhythms, seasonality and life cycles	66		
Succession	72		
Trophic relationships	75		
Species diversity	91		
Resource partitioning	99		
Organization of the ecosystem and functional relationships	107		
Acknowledgements	108		
References	109		

Processes within subunits of the ecosystem	182
Energy flow in the whole ecosystem	200
Nutrient cycles	204
Animals as heterotrophic regulators in forest ecosystems	208
References	210

Section III. Regional aspects

Chapter 10. DECIDUOUS FORESTS OF NORTH AMERICA

by B.V. Barnes 219

Introduction	219
Deciduous species and their major adaptations	232
Southeastern evergreen region	242
Oak-Hickory-Pine Region	255
Appalachian Oak Region	261
Mixed Mesophytic Region	270
Western Mesophytic Region	277
Oak-Hickory Region	281
Beech-Sugar Maple Region	289
Sugar Maple-Basswood Region	293
Northern Hardwood-Conifer Region	298
Boreal Forest	314
River Floodplain Forests	318
Western North American Forests	323
Conclusions	330
References	332

Chapter 11. FAUNA OF THE NORTH AMERICAN TEMPERATE DECIDUOUS FOREST

by J.T. Kitchings and B.T. Walton 345

Introduction	345
Community composition	350
Geographical variation in species diversity and density	358
Ecological distribution	360
Successional patterns	362
Resource partitioning	363
Seasonality	367
Acknowledgements	369
References	369

Chapter 12. TEMPERATE DECIDUOUS FORESTS IN MEXICO AND CENTRAL AMERICA

by E. Röhrig 371

Floristic composition	371
Ecological conditions and stand structures	373
References	375

Chapter 13. TEMPERATE DECIDUOUS FORESTS OF EUROPE

by G. Jahn 377

Introduction	377
Environment	379
Phytogeographical division of Europe	382
Historical survey	388
Deciduous tree species in Europe	399
Forest communities	410
Regional survey on the deciduous forests of Europe	424
Regional survey: the Middle European Region	424
Regional survey: the Alpine Region	457
Regional survey: the Carpathian Region	468
Regional survey: the Pannonian and the Western Pontic Region	470
Regional survey: the Submediterranean and Mediterranean Regions	473
References	492

Chapter 14. FAUNA OF THE EUROPEAN TEMPERATE DECIDUOUS FOREST

by M. Schaefer 503

Introduction	503
Well-studied European deciduous forests	503
Comparison of deciduous forests on mull and mor sites	517
References	522

Chapter 15. DECIDUOUS FORESTS OF THE NEAR EAST

by E. Röhrig 527

Introduction	527
Location	527
Orography and geology	528
Climate	528
Floristic development and composition	528
Forest types	530
References	536

Chapter 16. TEMPERATE DECIDUOUS FORESTS IN EAST ASIA

by K.K. Ching 539

Introduction	539
Deciduous broadleaved forests in China	540
Deciduous broadleaved forests in Japan	548
Deciduous broadleaved forests in Korea	553
Conclusions	554
References	554

Chapter 17. DECIDUOUS FORESTS OF SOUTHERN SOUTH AMERICA

by J. Schmalz 557

Introduction	557
--------------	-----

Location	557
Geology and soils	560
Climate	561
Vegetation history	562
Forest types	563
References	577

SYSTEMATIC LIST OF GENERA	579
-------------------------------------	-----

AUTHOR INDEX	585
------------------------	-----

SYSTEMATIC INDEX	599
----------------------------	-----

GENERAL INDEX	623
-------------------------	-----