

## Contents

<i>The Geography of the Great Lakes Region</i>	1
The Watershed of the Great Lakes Region	1
Landforms and Soils of the Great Lakes Region	2
Climatic Factors Affecting the Butterfly Fauna of the Great Lakes Region	4
Ancient Environments of the Great Lakes Region	5
Habitats of the Great Lakes Region	7
<i>The Biology of Butterflies</i>	11
The Evolution of Butterflies	11
Immature Stages	13
The Imago	27
<i>The Butterflies</i>	
<i>Families and Subfamilies of True Butterflies</i>	51
<b>FAMILY PAPILIONIDAE</b>	
Pipe Vine Swallowtail	53
Zebra Swallowtail	56
Old World Swallowtail	58
Black Swallowtail	60
Giant Swallowtail	62
Eastern Tiger Swallowtail	64
Canadian Tiger Swallowtail	67
Spicebush Swallowtail	70
<b>FAMILY PIERIDAE</b>	
Checkered White	73
Western White	75
Mustard White	77
West Virginia White	79
Cabbage Butterfly	81
Large Marble	83
Olympia Marble	85

Falcate Orange-Tip 87  
Clouded Sulphur 89  
Orange Sulphur 91  
Pink-Edged Sulphur 94  
Dog Face 95  
Cloudless Sulphur 97  
Little Sulphur 99  
Sleepy Orange 101  
Mexican Sulphur 103  
Dainty Sulphur 104

#### FAMILY LYCAENIDAE

Harvester 107  
American Copper 109  
Gray Copper 111  
Bronze Copper 112  
Bog Copper 114  
Dorcas Copper 116  
Purplish Copper 117  
Coral Hairstreak 119  
Acadian Hairstreak 121  
Edwards' Hairstreak 122  
Banded Hairstreak 124  
Hickory Hairstreak 126  
Striped Hairstreak 127  
Northern Hairstreak 130  
Olive Hairstreak 131  
Brown Elfin 132  
Hoary Elfin 134  
Frosted Elfin 136  
Henry's Elfin 137  
Eastern Pine Elfin 139  
Western Pine Elfin 141  
White-M Hairstreak 143  
Gray Hairstreak 144  
Early Hairstreak 146  
Reakirt's Blue 147  
Eastern Tailed Blue 149  
Western Tailed Blue 151  
Spring Azure 153  
Summer Azure 155  
Northern Spring Azure 157  
Silvery Blue 159

Karner Blue 161  
Northern Blue 163  
Greenish Blue 164

#### FAMILY RIODINIDAE

Northern Metalmark 167  
Swamp Metalmark 169

#### FAMILY LIBYTHEIDAE

Snout Butterfly 171

#### FAMILY NYMPHALIDAE

Gulf Fritillary 175  
Variegated Fritillary 177  
Great Spangled Fritillary 179  
Aphrodite Fritillary 182  
Regal Fritillary 184  
Atlantis Fritillary 186  
Silver-Bordered Fritillary 188  
Bog Fritillary 189  
Frigga Fritillary 191  
Freija Fritillary 192  
Meadow Fritillary 194  
Arctic Fritillary 195  
Gorgone Checkerspot 197  
Silvery Checkerspot 199  
Harris' Checkerspot 201  
Pearl Crescent 203  
Northern Crescent 205  
Tawny Crescent 207  
Baltimore Checkerspot 209  
Question Mark 211  
Eastern Comma 214  
Satyr Comma 216  
Green Comma 219  
Hoary Comma 221  
Gray Comma 223  
Compton Tortoise Shell 225  
Mourning Cloak 227  
Milbert's Tortoise Shell 229  
American Painted Lady 232  
Painted Lady 234  
Red Admiral 237

Buckeye	239
White Admiral and Red-Spotted Purple	241
Viceroy	245
Goatweed Butterfly	247
Hackberry Emperor	248
Tawny Emperor	250

#### **FAMILY SATYRIDAE**

Northern Pearly Eye	253
Northern Eyed Brown	255
Appalachian Eyed Brown	257
Little Wood Satyr	259
Mitchell's Satyr	261
Common Ringlet	263
Common Wood Nymph	265
Red-Disked Alpine	266
Taiga Alpine	268
Chryxus Arctic	269
Jutta Arctic	272
Macoun's Arctic	273

#### **FAMILY DANAIIDAE**

Queen	277
Monarch	279

<i>Collecting, Preserving, and Conserving Butterflies,</i> by Martin J. Andree, with an introduction by Matthew M. Douglas	283
Getting Started	284
Collecting Specimens	285
Spreading and Curating Specimens	287
Butterfly Conservation and Butterfly Gardening	299

Appendix A. Systematics	303
What Exactly Is a "True" Butterfly?	303
What Is a Species?	304
The Typological Species Concept	307
The Biological Species Concept	307
The Evolutionary Species Concept	308
The Phylogenetic Species Concept	309
Why Have a Species Concept?	310
Species Concepts and Phylogenetic Theory: The Debate	311
Molecules or Morphology?	313



<i>Appendix B. Entomological Organizations: Their Publications and Activities</i>	315
<i>Appendix C. Entomological Supply Houses</i>	319
<i>Glossary</i>	321
<i>References</i>	331
<i>Species Index of Common Names</i>	339
<i>Species Index of Scientific Names</i>	341
<i>Subject Index</i>	343

