

# 生態系的層級觀念

## A Hierarchical Concept of Ecosystems

作者：R. V. O'NELL、D. L. DEANGELIS、J. B. WAIDE、T. F. H. ALLEN

出版處：Princeton University Press Princeton, New Jersey, 253pp

Contents

Acknowledgments

### **第一部份：生態學的理念 Part 1. The Concept of an Ecosystem**

1. 在生態學觀念內的基本曖昧處 Fundamental Ambiguities in the Ecosystem Concept
2. 生態學家對生態系的歷史觀點 A Historical Perspective on How Ecologists Have Viewed Ecosystems

### **第二部分：原始的考慮 Part II Preliminary Considerations**

3. 生態系是一個系統 The Ecosystem as a System
4. 層級理論的觀點和他典型的應用 The Concept of Hierarchy and Its Typical Application

### **第三部份：理論的提案 Part III. A Proposal for a Theory**

5. 層級理論的元素 Some Elements of Hierarchy Theory
6. 層級結構是開放，可分解系統的演化結果 Hierarchical Structure as the Consequence of Evolution in Open, Dissipative Systems

### **第四部分：應用理論於生態系中 Part IV. Applications of the Theory to Ecological Systems**

7. 生態系是物種的層級 Ecosystems as Hierarchies of Species
8. 生態系是過程的層級 Ecosystems as Hierarchies of Processes
9. 生態系是雙重的層級 Ecosystems as Dual Hierarchies

引用文獻 Literature Cited

作者索引 Author Index

主題索引 Subject Index

## CHAPTER 1

### The Concept of an Ecosystem

"Ecosystem" is an intuitively appealing concept to most ecologists. Perhaps because of this appeal, the ecosystem concept has become increasingly important since its introduction by A. G. Tansley in 1935. Despite its widespread use, the concept remains diffuse and ambiguous. To many, "ecosystem" has heuristic value but is difficult to define or to associate with any coherent theory or set of principles. The first part of this book will analyze the current ambiguity before proposing our own viewpoint in later chapters. The approach in Part I may seem overly negative at first sight. Although our critique of past and present concepts about ecosystems will reveal many of their limitations and inadequacies, we do not intend to derogate these concepts or to underrate the tremendous contributions of past and present workers. However, if we are to build new theory, then we must assume that our current ideas are not perfect. In pointing out their weakest points, we may be led to new insights.

Chapter 1 will call into question prevalent concepts of the ecosystem. We will argue that current ideas are fundamentally limited, inadequate as a basis for the development of theory. In particular, the ecosystem concept has often been biased by emphasizing one set of observations over another. We will also contrast the population community and process functional schools of thought.

Chapter 2 is a historical review of how ecologists have looked at environmental systems. The review will show that current concepts are rooted in problem areas that have interested ecologists and natural historians in the past. In many respects, current ambiguities are due to limited concepts of time and space that were adopted because they were useful for earlier problems. Once we have identified the cause of the ambiguity we will be in a position to develop a new and more consistent theory.