

Collection Policy: ECOLOGY & SYSTEMATICS

[Subject Scope](#) | [Priority Tables](#) | [Other policies . . .](#)

1.0 TEACHING, RESEARCH AND EXTENSION PROGRAMS

1.1 Mission and emphases of the department

The mandate of the Section of Ecology and Systematics is to conduct research and to educate students in the fundamental disciplines of ecology and evolutionary biology. Particular strengths include high level of faculty scholarship, commitment to graduate and undergraduate education, broad coverage of ecology, zoology, and evolutionary biology, strong commitment to curation of biotic collections.

1.2 Faculty research

21 Faculty, 7 joint appointees, and 5 Research Associates (Fall 1995). Faculty interests can be broken down as follows:

Ecology

- Community ecology
- Ecosystems
- Global ecology
- Conservation biology

Evolution

- Molecular evolution
- Systematics
- Paleobiology
- Population genetics

Organismal biology

- Functional morphology
- Physiology
- Life histories
- Organismal evolution

The following taxa are of interest:

Vertebrates

- Humans
- Other mammals
- Birds (Ornithology)
- Reptiles and amphibians (Herpetology)

Fish (Ichthyology)

Invertebrates

Freshwater and marine invertebrates

Insects (Entomology)

1.3 Graduate program

For Fall 1995 there were 76 graduate students. Areas of concentration include animal ecology, applied ecology, community and ecosystem ecology, paleobiology, vertebrate zoology, ecological genetics and limnology.

1.4 Undergraduate program

The number of students electing Ecology and Evolutionary Biology is 110 with an enrollment of 1,797 in courses in 1994-5. This figure is distributed over some 30 courses offered every year or some in alternate years.

1.5 Extension activity

There are no Extension associates.

1.6 Noteworthy facilities (e.g. unique classrooms, laboratories, farms, etc.)

These include aquarium rooms, animals rooms, greenhouses, plant ecology rooms, shops, storage and receiving facilities and the teaching and laboratory facilities in Stimson Hall with its 6 laboratories for limnology, vertebrate, invertebrate and human biology courses. In addition, there is the Vertebrate Collection at Research Park, which includes specimens of mammals, birds, fish, amphibians and reptiles and related taxonomic and physiological data. Other facilities include field research sites such as the Shoals Marine Laboratory and Cornell experimental ponds. The Laboratory of Ornithology in Sapsucker Woods and the Paleontological Research Institute are also available.

2.0 SUBJECT DESCRIPTION AND GUIDELINES

2.1 Subject definition

Ecology and Systematics includes the study of organisms, their relationships and their evolution.

2.2 Subject scope

The study of Systematics will not be covered in this policy; a separate policy will be created at a later date. The following topics are collected at a Research level:

ECOLOGY OF PLANTS AND ANIMALS

Physiological/Functional Ecology

- Environmental adaptation
- Physiological ecology, especially water balance, energetics, and temperature regulation
- Host-recognition mechanisms
- Functional morphology and biomechanics

Population Ecology

- Population dynamics and regulation
- Competition, predation, mutualism and parasitism
- Models of population processes
- Ecology of invading species
- Conservation biology
- Life history theory and data on specific plants and animals

Community Ecology

- Community ecology of terrestrial and aquatic systems
- Marine littoral and reef communities. Marine ecology
- Limnology
- Models of community dynamics
- Community structure and dynamics
- Stream ecology
- Microbial ecology
- Plant-herbivore relations
- Plant-pathogen interactions,
- Chemical ecology
- Agricultural ecology, including nutrient dynamics in agroecosystems, intercropping, biological pest control and evolutionary processes in agriculture.
- Natural history of various locales
- The effects of climate of organisms and communities
- Species diversity and species interactions

Ecosystem and Global Ecology

- Biogeochemistry
- Biogeography
- Nutrient dynamics of terrestrial and aquatic ecosystems
- Impact of human activities on ecosystems, such as acid rain, global warming, oil spills

- Marine, terrestrial and arctic ecology
- Biological aspects of oceanography
- Models of ecosystem processes and responses of ecosystems to stress
- Landscape ecology

General

- General techniques of field ecology: observation, journal-keeping, sampling, use of scientific collections, dating methods

EVOLUTIONARY BIOLOGY

- Evolution of organisms, including insects, marine invertebrates, mammals, fishes, birds, amphibians, reptiles, plants, microbes (bacteria, viruses)
- Development and evolution
- Rates of evolution
- Developmental constraints on evolution
- Ontogeny, phylogeny and heterochrony
- Evolutionary processes. Hybrid zones.
- Molecular evolution
- Evolution of coloniality
- Human evolution.
- Models of evolutionary change in populations.
- Coevolution
- Macroevolution and paleobiology
- Vertebrate and invertebrate paleontology.
- Life history evolution
- Evolution of behavior
- Ecological genetics, including concepts of fitness, methods for measuring genetic variation and natural selection on ecologically important traits, genetics of competitive ability and predator avoidance, character displacement, maintenance of genetic variability, limits to selection

Systematics theory and Taxonomy will be covered in a separate Systematics policy.

2.3 Emerging trends in the subject area

Environmental problem solving is a major focus of emerging interest in ecology. Specific fields include: conservation biology, landscape ecology, agroecology and sustainable agriculture, the importance of organisms to biogeochemical cycles. In evolutionary biology, areas of increasing interest are: molecular aspects of development, molecular evolution and systematics, applied phylogenetics, mathematical ecology and evolution, the integration of evolution and development, the integration of biology and geological aspects of the earth's history. Documentation and preservation of the earth's biota (biodiversity) is a special interest of both ecologists and evolutionary biologists.

3.0 SPECIAL INFORMATION NEEDS AND RESOURCES

3.1 Special information needs of those working in this subject area.

Faculty would like access to videotapes, or, since videotapes are not collected by Mann Library, video catalogs and review for independent selection. Geographic Information Systems are potentially useful. Databases used by this department on the Mann Gateway are BIOSIS, AGRICOLA and Zoological Record. Science Citation Index would be useful.

3.2 Special collections or noteworthy resources in the field

3.3 Endowment funds or special funding arrangements

- Burnham Endowment--botany
- Mann--general biology
- Sherman--general biology
- Wright--vertebrate biology
- Clausen--treatises in biology
- Raney--ichthyology

4.0 TYPES OF MATERIALS

4.1 Priorities for types of materials

See Priority Table for [Ecology](#) and [Evolution](#).

Case studies and personal reminiscences in the field, unless of exceptional quality, are a low priority. They should be sent to the liaison for review.

4.2 Format

4.3 Geographical guidelines

Interest is global, with selection generally at a country level. Regions for collecting are prioritized as follows: (1) U.S., Western Hemisphere, Neotropics, (2) Southeast Asia, Africa, (3) Middle East, Australia, (4) Europe.

4.4 Language guidelines

Conceptual materials are collected in English only. Factual materials, e.g., natural history, may also be collected in Spanish and Portuguese.

4.5 Chronological guidelines

Current for conceptual materials; historical coverage is necessary for systematics, conservation biology, and some factual information.

5.0 OTHER RELATED LIBRARY COLLECTIONS

- Engineering -- global mineral cycles, oceanography, except specifically biological aspects, paleontology, except specifically biological aspects, water analysis.
- Olin -- history of biology and evolutionary thought (overlaps with Mann collection), archeology, physical anthropology.
- Kroch -- older natural history .
- Entomology
- Ornithology
- Bailey Hortorium
- Veterinary -- morphology, development, vertebrate zoology (overlaps with Mann).
- Physical Sciences -- extraterrestrial ecology.

6.0 POLICY QUESTIONS, COLLECTION NEEDS, FUNDING PROBLEMS OR OPPORTUNITIES

Should the following be included in Mann's collection:

Human paleontology (if not, is it collected in Olin or Engineering?)? Ken Kennedy needs to be consulted.

Plant paleontology and paleobotany? The following faculty should be consulted: Crepet (Bailey Hort.), Niklas (Plant Biology) Nixon (Bailey Hort.), Dawson.

Shells? Mann should consult Drew Horvell and John Cisne and include shells in the Systematics policy.

7.0 PRINCIPAL LC CLASSES

QH 359-425
QH 540-549
QK 901-977

8.0 RELATED COLLECTION POLICIES

- Population Studies -- population ecology of human beings.
- Agronomy -- soil ecology.
- Neurobiology and behavior -- overlaps with evolution of behavior.
- Genetics and Development -- overlaps with evolution and genetic aspects of behavior. Genetics covers the evolution of protein and gene structures.
- [Biometrics](#)
- Natural Resources
- Ornithology
- Plant Biology
- Entomology
- Physiology
- Systematics (to be completed)

9.0 MATERIALS NOT COLLECTED BY MANN

- Statistical analysis programs
- Modelling and simulation programs
- Maritime studies: coastal and oceanic law and policy
- Nautical science: sailing, navigation, ships, physics of sailing
- Underwater archeology
- Videotapes

Priorities Table for Ecology

Code	IMPORTANCE/INTENSITY CODES DEFINITIONS
NA	Not applicable to the discipline.

0	Ephemeral; of insufficient value to be provided by library.
1	Of short term interest, but with little or no enduring value; very selectively acquired; retained, uncataloged, for limited duration only, e.g. newsletters in newly emerging, poorly documented areas, and manuals or pamphlets for reserve reading.
2	Limited scholarly interest or utility; collected very selectively, but not of high priority.
3	Important for research and/or instruction; should be well represented, but collected selectively rather than intensively.
4	Very important for faculty and/or students; intensively collected, i.e. every effort is made to provide as deep coverage of this literature as possible.
5	Essential to work in the discipline; the most important type of material for research or instruction purposes. Ensuring the highest possible coverage should be the library's top priority in this discipline.

Code	SERIALS	Notes
5	Journals, scholarly	-
5	Journals, technical	-
-	Journals, other (describe)	-
5	Annual reviews, advances in...	-
4	Scientific and technical reports and research bulletins of major academies, learned societies, professional research and educational organizations and government agencies	-
3	Proceedings, of international congresses and symposia	-
3	Proceedings, national or local	-

4	Statistical series	-
NA	Trade journals and periodicals	-
2	Popular periodicals, hobby	-
3	Popular periodicals, semi-technical	-
2	Popular periodicals, farm press	-
1	Newsletters/newspapers	-
NA	Proceedings of legislative bodies	-
-	Student publications	-
-	Administrative publications of major academies, learned societies, professional, research and educational organizations and government agencies	-
NA	Corporate annual reports	-
-	Yearbooks	-
1	Press releases	-
-	Lists	-
-	Working papers	-
Code	MONOGRAPHS	Notes
5	Major scholarly monographs	-
5	Professional and technical	-

4	Subject histories	-
5	Textbooks, upper division, graduate	-
4	Biographies	-
-	Popular monographs	-
-	Technical reports	-
-	Government reports	-
-	Proceedings, international	-
-	Proceedings, other	-
-	Theses and dissertations (outside CU)	-
-	Festschrift	-
NA	Patents	-
-	Corporate histories	-
-	How-to books & lab manuals	-
-	Pamphlets	-
-	Ephemera (describe)	-
3	Maps	-
-	Technical bulletins/handbooks/compendia	-

Code	ELECTRONIC INFORMATION	Notes
-	Applications programs	-
-	Bibliographic databases	-
-	Bulletin boards	-
-	Fulltext files	-
-	Geographic information systems	-
-	Numeric/statistical files	-
-	Other (describe, taking as much space a necessary)	-

Priorities Table for Evolution

Code	SERIALS	Notes
5	Journals, scholarly	-
5	Journals, technical	-
-	Journals, other (describe)	-
5	Annual reviews, advances in...	-

5	Scientific and technical reports and research bulletins of major academies, learned societies, professional research and educational organizations and government agencies	Be selective
3	Proceedings, of international congresses and symposia	Be selective
-	Proceedings, national or local	-
-	Statistical series	-
0	Trade journals and periodicals	-
0	Popular periodicals, hobby	-
-	Popular periodicals, semi-technical	Be selective
0	Popular periodicals, farm press	-
-	Newsletters/newspapers	-
0	Proceedings of legislative bodies	-
0	Student publications	-
0	Administrative publications of major academies, learned societies, professional, research and educational organizations and government agencies	-
0	Corporate annual reports	-
0	Yearbooks	-
0	Press releases	-
0	Lists	-

0	Working papers	-
Code	MONOGRAPHS	Notes
-	Major scholarly monographs	-
-	Professional and technical	-
-	Subject histories	-
-	Textbooks, upper division, graduate	-
-	Biographies	-
0	Popular monographs	Or be very selective
-	Technical reports	-
-	Government reports	-
-	Proceedings, international	-
-	Proceedings, other	-
0	Theses and dissertations (outside CU)	-
-	Festschrift	-
0	Patents	-
0	Corporate histories	-
-	How-to books & lab manuals	-

0	Pamphlets	-
0	Ephemera (describe)	-
-	Maps	-
-	Technical bulletins/handbooks/compendia	-
Code	ELECTRONIC INFORMATION	Notes
-	Applications programs	-
4-5	Bibliographic databases	-
0	Bulletin boards	-
-	Fulltext files	-
-	Geographic information systems	-
-	Numeric/statistical files	-
0	Other (describe, taking as much space a necessary)	-

Completed by: Kenneth A. R. Kennedy and Peter Marks

February 19, 1993

Revised by Linda Stewart, Alex Flecker, Amy McCune, Sam Demas

August 21, 1996

[Top of Page](#)