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Statement by Philip S. Humphrey, Interim Secretary,
Association of Systematics Collections
Before Special Subcommittee on Arts and Humanities, U. S. Senate,
Washington, D. C. July 19, 1973

Mr. Chairman, I appreciate the opportunity to appear before the Special Subcommittee on Arts and Humanities today in support of the Museum Services Act. I appear as Interim Secretary of the Association of Systematics Collections. This Association is a group of museums and institutions housing collections of museum specimens which together comprise a major national resource. The Association has a membership of forty-three institutions of which forty are United States institutions and three are Canadian. A listing of the present members is shown at the conclusion of my statement.

The U. S. members of the Association of Systematics Collections have among their holdings approximately 80% of systematic biological collections of the United States, containing more than 125 million specimens. They include representative samples of nearly all of the half-million known plant species and one million known animal species. Generations of time and talent have gone into the building of these irreplaceable collections which are today, more than ever, an information resource of critical importance to the Nation. Together they form an information network serving a national and international scientific community. No other similar resource exists in this country for the storage and retrieval of basic biological information concerning the distribution, characteristics, and biology of plants and animals.

These museums also serve an important and diverse educational function, ranging from pre-school, in some instances, on to the doctoral and post-doctoral level. They exist throughout the country--from the collections of Harvard University to the San Diego Museum of Natural History, from the Florida State Museum to the Bernice P. Bishop Museum in Hawaii.

They also serve the federal government directly and indirectly in many ways. In some instances partial compensation is received for such services; more often the services are performed without charge or reimbursement.

Most of these museums provide storage, care and taxonomic identification of collections, resulting from major, federally supported research and applied research programs such as the International Biological Program, International Indian Ocean Expedition, epidemiological surveys, environmental impact studies, Archaeological and Paleontological Salvage in federal highway projects, etc. Little or no federal support has been provided to

help defray the costs of storing, identifying, and making accessible the vast numbers of specimens generated by federal programs and federally supported programs.

I cite only one example (there are hundreds of others):

The U. S. Naval Medical Research Unit No. 3 (NAMRU-3), based in Cairo, Egypt since 1948, has as its major responsibility the determination of patterns of distribution of blood parasites and viruses transmitted by insects, ticks, and related organisms in Africa and western Asia. The Field Museum of Natural History has provided identification of more than 20,000 specimens of vertebrate hosts of ectoparasitic insects and ticks without reimbursement by the federal government. Staff of the Field Museum have prepared guides to field identification of certain ectoparasites, and three staff members have participated in research at the request of NAMRU-3, without compensation from the federal government. The Field Museum also acts as a depository for 35,000 specimens collected by NAMRU-3. Costs of preparing, cataloguing, and maintaining these specimens for current and future study are borne by the Field Museum without compensation. In addition, the Field Museum's Division of Insects has acted as a clearing house for information concerning the distribution of certain groups of parasites to specialists.

Some natural history museums are operated by private nonprofit corporations, others are public, operated by federal, state, county or city governments. They all serve the Nation, yet only the federal institutions receive federal funds in support of their operating costs. It is true that categorical federal aid is available from a number of agencies, notably the National Science Foundation, and such aid has been critical to the survival of these institutions. However, such funds are almost always research project oriented and with rare exceptions have not been available to support the underlying costs of institutional operation. In fiscal 1967 (regrettably the only year for which consolidated data are available), twenty of the institutions I represent received income of \$25,238,000. (The National Museum of Natural History, Smithsonian Institution, is not included in these figures since its funding comes, in the main, from direct congressional appropriation). Of this total 50% came from private sources, 35% came from city, county, and state funds, 13% from federal government research grants and contracts, and only 1.4%, or \$343,000, from direct federal support. It is clear that in the late 1960's private philanthropy and non-federal governmental units were carrying a responsible load. Since that time the federal proportion has almost certainly declined, given the relatively level funding of federal research budgets, while inflation had increased overall operating budgets to \$40 million in 1970, an upward pattern that has continued to this day.

In the same year of 1967 eighteen of the institutions now members of the Association of Systematics Collections provided educational programs

to the following number of individuals in escorted groups from educational institutions:

Elementary school students	584,000
Secondary school students	59,000
College undergraduates	<u>13,000</u>
	656,000

It is regrettably necessary to report, however, that in that same year the following number of individuals visited in escorted groups but were provided no service because of inadequate staff strength:

Elementary school students	1,334,000
Secondary school students	264,000
College undergraduates	<u>36,000</u>
	1,634,000

Thus, less than 30% of the students in organized groups that visited these eighteen museums in 1967 received service from the teachers and lecturers of the museums. The situation is roughly the same today. It is the consistent experience of these museums that other groups are either turned away or discouraged from visiting during certain seasons because of lack of staff or facilities. No statistics can be quoted, however.

I should like to quote from a document entitled The Systematic Biology Collections of the United States¹ which appeared in 1970 as the result of the work of a committee of the Conference of Directors of Systematic Collections, a forerunner organization to the Association of Systematics Collections. This document tells of the use of collections and of the problems existing at the time of the publication of the report--1970.

Everywhere today there is growing awareness that in our unbalanced relationship with the natural world--signified by rampant starvation, heedless exploitation, appalling pollution, and disappearing species--we are edging ever closer to the tolerance limits of the delicate, complex fabric of natural law. The growing fight to save our environment will not be won with an occasional Earth Day, but with nothing less than consistent, consecutive, systematic thought and action. It will require all the energy we can muster. It will draw upon the resources of all human institutions.

¹The Systematic Biology Collections of the United States: An Essential Resource, Part I. The Great Collections: Their Nature, Importance, and Future. The New York Botanical Garden, Bronx, New York, January 1971.

To survive, man must comprehend the total picture of nature and see himself as a part of a great complex system of intertwining natural forces; he can no longer place himself above or outside this world ecosystem. Central to victory in this, mankind's greatest challenge, is the realization that he must learn to share the resources of this earth by participating, not exploiting; by cycling, not wasting; by appreciating, not destroying.

The health of the world ecosystem depends squarely on keeping as much diversity in the natural world as we possibly can. Because knowledge of the kinds of creatures in our world is fundamental to real understanding of their interaction, the great specimen collections are the very cornerstones to studying, comprehending and living within the world ecosystem. Responsible for bringing together and preserving these catalogs of world life are the natural history museums, botanical gardens, and herbaria of this country. Never economically secure, these institutions have come, after decades of intolerable stringency and strain, to the threshold of financial collapse. Their steadily diminishing support from prevailingly local sources makes it impossible for them to respond to vital national responsibilities. This nation must recognize the critical character of this absolutely essential national resource and deliver proper national support to its maintenance and use. The integrity and security of these information treasuries are in immediate danger.

This is not a plea for luxuriant support or for grandiose schemes. It is simply an urgent request for effective legislation that will provide adequate funds to maintain the great systematic biology collections as a national information resource--awake to new data processing methodology, responsive to the call of environmental crises, accessible to study requirements of organic diversity. A million species of animals, half a million of plants is the tally thus far; two to three times that number are believed waiting to be discovered. Because difference in kind reflects difference in structure, function, requirement, and relationship to the organic and inorganic world, the first step in any biological study is to identify the organisms under investigation.

Today much if not most administrative energy in the institutions housing the great systematic biology collections goes simply into keeping the institutions alive. Results:

1. They are unable to respond to today's call for participation and action dealing with current human problems, such as those in the vast field of environmental crisis.
2. They cannot get on with the job of completing the world inventory of living things--this at a critical time when burgeoning human populations threaten natural habitats everywhere.
3. They are unable to employ modern techniques to wrest new data from existing collections.
4. They lack sufficient funds to protect their research scientists

from routine housekeeping chores that could be done equally well by a cadre of subprofessional workers.

The only answer to these symptoms of financial insufficiency is a new support base at the national level. Given this, attention could again be turned outward, away from the expediency and rule-of-thumb measures that are an inevitable part of month-by-month, year-by-year cliff-hanging, to consideration of legitimate problems and to formulation of a national strategy in which the resources of these great collections can be directed to human betterment. Such a plan must be carefully conceived to avoid the pitfalls of over-centralization as well as those of excessively diffuse decentralization.

Today critical problems loom on all sides. Everywhere facilities are inadequate; most were built before 1925, some before 1876, and all bursting at the seams. Equipment is insufficient and often antiquated. Staffing is woefully below even skeleton requirements, as at the California Academy of Sciences where three curators are responsible for a mammoth collection of 5,600,000 insects.

In recent years these longstanding woes have been intensified by new pressures:

1. The great influx of new specimens (a 420% increase in animal specimens at the Field Museum, for example, in two decades) resulting largely from government-financed research projects.
2. Stepped-up use of collections in response to specific practical questions as well as to intensified research.
3. Inflation: skyrocketing costs on top of a static income base, leading to a merciless financial crunch, with salaries now gobbling up to 92% of operating income.

Without immediate aid the inevitable end-product will be deterioration of specimens, tragic and irreparable damage for which we would all pay. America's museums, botanical gardens, and herbaria have simply not received the substantial aid that has nurtured universities, hospitals and public libraries.

In the last three years operating expenses of these institutions have shot up from \$25.6 million to \$40 million. Endowment returns and contributions once provided 85% of their income, but the current 40% is now simply outstripped by costs. Budgets have been balanced in the past two decades not because income came close to supporting necessities, but because museums have traditionally made every attempt to live within means. But this policy of basic fiscal responsibility has led to:

1. Substandard salaries--20-25% below comparable professional schedules.
2. Deteriorating personnel strength--unchanging staff size in the face of swelling collections and increased demands.

3. Reduced activities.
4. Deferred expansion.

Thus, deficits have been reflected more in deterioration than in dollar figures. Dollar deficits can no longer be avoided: 1969 was a deficit year, and 1970 will be worse. With half the cost of scientific activity of the major collections going for national service outside these institutions, help must soon come from national sources.

The major systematic collections are man's treasuries of information about his fellow creatures on earth. Today man is beginning to realize that his population and technological needs must be accommodated in a finite world. The challenge of the hour is for man to find ways to respond to this truth. The great systematic collections of the United States are the key to that understanding. If they are to fulfill their vital rôle, they urgently require the active support of the federal government.

Another perspective on the same group of institutions came in the same year with the issuance of The Life Sciences¹ by the National Academy of Sciences. That report stated, in part:

The natural history museums of the United States constitute an invaluable and long-neglected resource for public education and research We recommend a vigorous program for upgrading the key museums of natural history across the country. . . . A specific program funded in the amount of about \$10 million a year would be appropriate to that end (Page 30)

. . . Their systematic collections of plants and animals are the only permanent record of the earth's biota, and the specialized libraries attached to these collections are the written record of the earth's natural history. . . . The financial needs of the systematics collections are relatively small compared to the sums currently spent for facilities in other branches of science. . . . The major systematic biological collections are national assets and should be treated as such; many of them desperately need help now. (Pages 354-356)

The National Academy report recommended that management of a specific natural history museum program be vested in the Smithsonian Institution or the National Science Foundation and it is probably suitable that such a disciplinary oriented support program be located in the National Science Foundation. I cite the report today simply to emphasize the national importance of these collections and the need for the kind of aid

¹The Life Sciences, National Academy of Sciences, Washington, D. C., 1970. Library of Congress Catalog Card Number 71-606918.

contemplated through the Museum Services Act by the institutional members of the Association of Systematics Collections.

Mr. Chairman, the museums of the United States are one of our nation's most precious resources. They have been generously supported by private philanthropy and by local tax sources. We feel that it is now time for the federal government to begin to assume a modest portion of the operating costs of these institutions that serve a constituency far beyond local and state boundaries. To that end we solicit your support of S. 796.

INSTITUTIONAL MEMBERSHIP OF THE ASSOCIATION OF SYSTEMATICS COLLECTIONS

July 1973

Academy of Natural Sciences
Philadelphia, Pennsylvania

Agriculture Canada - Research
Branch

Ottawa, Canada
Entomology Research Institute
Plant Research Institute

Allyn Museum of Entomology
Sarasota, Florida

American Museum of Natural History
New York, New York

American Type Culture Collection
Rockville, Maryland

Bernice P. Bishop Museum
Honolulu, Hawaii

California Academy of Sciences
San Francisco, California

Carnegie Museum
Pittsburgh, Pennsylvania

The Charleston Museum
Charleston, South Carolina

Cornell University
Ithaca, New York
L. H. Bailey Hortorium

Field Museum of Natural History
Chicago, Illinois

Fort Hays Kansas State College
Hays, Kansas
Museum of the High Plains
(including the Elam Bartholomew
Herbarium)
Sternberg Memorial Museum

Harvard University
Cambridge, Massachusetts
Arnold Arboretum
Gray Herbarium
Museum of Comparative Zoology

Illinois Natural History Survey
Urbana, Illinois
Illinois Natural History Survey
Herbarium
Section of Faunistic Surveys and
Insect Identification

Los Angeles County Museum of Natural
History
Los Angeles, California

Louisiana State University
Baton Rouge, Louisiana
Entomological Collections
Herbarium
Museum of Geoscience
Museum of Natural Science

Michigan State University
East Lansing, Michigan
Entomology Collection
Geology Collections
University Herbarium
University Museum

Missouri Botanical Garden
St. Louis, Missouri

National Museum of Natural History
Smithsonian Institution
Washington, D. C.

National Museum of Natural Sciences -
Canada
Ottawa, Canada

New York Botanical Garden
Bronx, New York

New York State Museum and Science
Service
Albany, New York

North Carolina State University
Raleigh, North Carolina
Insect Museum
Mycological Herbarium
Vascular Plant Herbarium
Zoological Collections

Pennsylvania State University
University Park, Pennsylvania
Forest Resources Collections
The Frost Entomological Museum
The Herbarium
Paleontological Collections
Zoological Collections

Purdue University
Lafayette, Indiana
Arthur Herbarium
Kriebel Herbarium
Purdue Collection of Vertebrate
Animals
Purdue Insect Collection
Purdue Nematode Collection

Royal Ontario Museum
Toronto, Ontario, Canada

San Diego Natural History Museum
San Diego, California

Texas Tech. University
Lubbock, Texas
Museum of Texas Tech.
University

University of California at Berkeley
Berkeley, California
Museum of Vertebrate Zoology

University of California at Davis
Davis, California
Arboretum
Bee Genetic Stock Center
Herbarium
International Collection
of Phytopathogenic Bacteria
National Registry of Primate
Parasites
Nematoda Collection
Museum of Wildlife and Fisheries
Biology
Zoology Collections
Avian Mutant Stocks and
Specialty Lines Collection
Entomology Collections
Varietal Breeding and
Consolidation Collections

University of Colorado
Boulder, Colorado
University Museum
(Herbarium, Zoological
Collections, Anthropology
Section, Geology Section)

University of Florida
Gainesville, Florida
Florida State Museum
(University of Florida Herbarium,
Division of Plant Industries)

University of Illinois at Urbana-
Champaign
Urbana-Champaign, Illinois
Herbarium
Museum of Natural History
Mycological Collections
Paleobotanical Herbarium

University of Kansas
Lawrence, Kansas
Herbarium
Museum of Invertebrate
Paleontology
Museum of Natural History
Snow Entomological Museum

University of Louisville
Louisville, Kentucky
Davies Herbarium
Department of Biology
Museum
Lovell Insect Museum

University of Michigan
Ann Arbor, Michigan
Museum of Zoology

University of Minnesota
Minneapolis, Minnesota
Entomology Collection
Herbarium
James Ford Bell Museum of
Natural History
Landscape Arboretum
Paleontological Collections

University of Missouri at Columbia
Columbia, Missouri
Chara Collection
Entomology Museum
Herbarium
Herpetology Collection
Ichthyology Collection
Invertebrate Collection
Mammalogy Collection
Ornithology Collection
Paleobotanical Collection
Paleontological Collection

University of Nebraska
Lincoln, Nebraska
University of Nebraska State Museum

University of Southern California
Los Angeles, California
Allan Hancock Foundation
Herbarium of Robert B. Setzer
University of Southern California
Herbarium

University of Texas at Austin
Austin, Texas
Texas Memorial Museum
University of Texas Herbarium

Virginia Polytechnic Institute and
State University
Blacksburg, Virginia
Biology
Entomology
Geology
School of Forestry and Wildlife

Yale University
New Haven, Connecticut
Peabody Museum of Natural
History