
April 1995

Analysis of the Collections
And Collection-Based Activities of the
Natural History Museum of Los Angeles County

A Report by

The Los Angeles County Citizen's Economy and Efficiency Commission

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Citizens' Economy and
Efficiency Commission**

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The Mission of the Economy and Efficiency Commission is to examine any function of County government at the request of the Board of Supervisors, on its own initiative, or as suggested by others and adopted, and to submit recommendations to the Board directed toward improving local government economy and efficiency, and effectiveness.

Insert Letter to the Board of Supervisors

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AUTHORITY

On July 12, 1994 the Board of Supervisors took the following action:

"Requested the Los Angeles County Citizens' Economy and Efficiency Commission and the County Counsel to study the requirements and make recommendations for public policy resulting in donating to and/or contracting with education institutions to maintain and conduct basic research regarding the surplus collections of the Museum of Natural History that are stored or not being currently exhibited . . . "

It is in response to this direction, the Economy and Efficiency Commission has conducted the following review of the collections policy and collection-based activities of the Natural History Museum of Los Angeles County (NHMLAC).

PROJECT SCOPE

This assignment required that the Commission examine the feasibility of having educational institutions accept "surplus collections"¹ of the Natural History Museum or of having these institutions enter into a contract with the museum to help defray the cost of maintaining collections that are necessary for the research.

The Board's direction appears to make the following assumptions:

1. There are collections that can be considered "surplus" within the museum.
2. If collections are out of public view, the public is not being well served and thus, they are of marginal use or value to the County and the public.
3. Educational institutions have an interest in possessing surplus collections currently housed by the museum.

¹The term "surplus collections" is defined in this document as an expression of the possibility that some materials may be of limited value to the museum. Assuming that a limited value could be established, a collection could be more appropriately used in other ways or by other institutions. This transfer of material could thus, result in a savings in the costs of its storage.

4. Educational institutions have funds and research programs that would enable them to maintain these collections and the ability to conduct basic research.

The level of review necessary to complete the assignment required the Commission cover a wide range of museum activities that might, at first, be considered beyond the project's scope. This approach enabled more accurately and appropriately developed recommendations concerning the museum's collections. The intent was to assure that the Board's assignment was completed and to confirm that the Board was being provided a complete picture of the museum's situation.

A number of recommendations made in the report suggest that implementation be planned for the year 2000. The Commission feels that this five-year period allows a reasonable time for the museum to make the major directional shifts that will be necessary. Shifts of significant magnitude will be required to place the Natural History Museum of Los Angeles County in the position of establishing itself as an increasingly effective and internationally recognized institution.

This report examines the following areas of the museum's policy, operations, structure and management:

- a. the mission and role of the museum;
- b. the relationship of the Natural History Museum of Los Angeles County within the network of other like national museums having a long history of collection-based research on species diversity;
- c. the collections and collection policy;
- d. the collections-based research;
- e. other relevant policies;
- f. the operations of the museum;
- g. the efficiency of current storage and management practices;
- h. the role of staff in managing and maintaining collections;
- i. the administration of museum functions as they relate to collections and collections-based research; and
- j. funding, revenue enhancement, and endowment issues.

FINDINGS AND SUMMARY OF RECOMMENDATIONS

FINDINGS

The following are the major findings developed from the analysis of the material presented within the context of this report:

- I. The collections of NHMLAC are central to its mission and role within the community.
- II. The NHMLAC's collections, and programs based on these collections, rank fourth in size and prominence in the United States after the National Museum of Natural History (Smithsonian) in Washington, the American Museum of Natural History in New York, and the Field Museum of Natural History in Chicago.
- III. The 16 major collections housed by NHMLAC are not, for the most part, surplus or redundant. Each represents a valuable resource and is used often for a variety of purposes. Even so, some portions of the collections maintained by the museum can, and should be, transferred to institutions that can more effectively utilize them. It is important to note that the intrinsic value of these collections of the NHMLAC has gained significant recognition, as demonstrated by the National Science Foundation (NSF) providing over \$5.4 million dollars for the improvement and care of the museum's biological collections.
- IV. Approximately 32,000 sq. ft. of storage or approximately 38% of the museum's current off-site space requirements have been determined to be eligible for elimination. Collections involved in this reduction have been moved or are planned for removal consistent with ongoing museum programs. By consolidating the four current warehouse facilities the county can achieve savings on its current storage costs. Additionally, revenue can be generated by either leasing or selling the county warehouse located on North Grand Street.
- V. Educational institutions, such as the University of Southern California (USC) and the University of California at Los Angeles (UCLA), are specializing in areas of biology not requiring maintenance of collections. They are currently divesting themselves of collections they possess. Institutions now specializing in collections and collection-based research are museums such as NHMLAC and a few universities, such as, Cornell University and the University of Kansas.
- VI. Collections housed by NHMLAC, as a result of significant funding by NSF, are among the best curated and cared for in the world.

- VII. The collections not on display are:
- loaned to other institutions for extensive research;
 - used by scholars and researchers;
 - used as a basis for solving a wide range of problem within society;
 - used as the basis for numerous scientific publications;
 - used by governments, businesses, and educational institutions; and
 - used as a basis for NSF funded high school internships and graduate studies.
- VIII. Collections growth at NHMLAC is very low, currently 0.4% of holdings per year. This rate demonstrates that collections growth is controlled and following responsible collections policies.
- IX. Major efforts will be required to assist in the development of the current staff at the museum in achieving the worldwide recognition that is required by an institution of this stature.
- X. Increased attention is required to improve the governance of the museum to insure that it can effectively respond to the requirements being placed upon it in today's environment.
- XI. Collection-based activity generates, on average, over \$2 million a year in grants and contracts.
- XII. Immediate attention is required to insure that an effective investment policy be put into place by the museum foundation. The objective of this policy should be to maximize return on investment within the constraints of an acceptable level of risk.

SUMMARY OF RECOMMENDATIONS:

Botany (Fungi and Algae)/Molecular Genetics

1. NHMLAC should transfer current collection of cryptograms to appropriate institutions able to utilize their potential. (Implementation: within 1 year)
2. The NHMLAC should retain botany, and develop within it a focus on fungi. (Implementation: Strategic)
3. The NHMLAC should maintain its molecular genetics laboratory, since it is essential in today's modern natural history museums that have collection-based programs. (Implementation: Immediate)

4. The director of the molecular genetics laboratory should develop highly funded programs, both academic and commercial, to support the laboratory. (Implementation: Immediately after long range planning process completed)

5. All biological collection-oriented staff should be encouraged to build cooperative programs with the molecular genetics laboratory. (Implementation: Immediate)

History

6. The History Section should be retained and rebuilt, but with a focus on a limited set of priorities and an increased concern for addressing the needs of the collection. (Implementation: Strategic)

7. The museum should expand the space devoted to the Seaver Collection, add its own 1000 ln. ft. of archives to the collection, and assign to it a trained archivist-curator. (Implementation: Within 6 months)

8. The museum should place an increased emphasis on reestablishing the reputation of the history collection with the objective of developing national funding sources. (Implementation: Immediate)

Utilization of Collections

9. The Director of the museum should initiate a strategic long-range plan to cover all of the elements of the museum, including all aspects of its collections. (Implementation: by June, 1995; process has already been initiated)

Growth of Collections

10. Within the Strategic Planning process, the NHMLAC should develop a mechanism to periodically review policies to insure that they continue to reflect the needs of NHMLAC and are consistent with nationwide practices. (Implementation: Strategic)

11. NHMLAC should focus and specialize in collections and collection-based research that capitalize on the unique and competitive strengths of the NHMLAC collections identified in this report. One of the factors to be used in evaluating the acquisition of a new collection should be, to the extent possible, to fund both its acquisition and maintenance with revenues other than the county contribution under the master agreement. (Implementation: Strategic)

12. NHMLAC should maintain the current rate of collections growth as it is responsible and under the rate of growth in peer museums. (Implementation: Currently in Effect)

Policy for Collections

13. The museum should review the Collections Policy for the museum and the Collection Centers and revise them to reflect the issues identified in this report. (Implementation: Within 6 months)

Warehouses and Collections

14. NHMLAC should consolidate the collections and supplies spread throughout four warehouses into one storage facility. (Implementation: Within 2 years)

15. The facilities at the Seville Ave. Warehouse, or a comparable consolidated facility, should develop an exhibit around whales and large mammals to capitalize on the public's interest in these types of creatures. (Implementation: Within 1 year)

Curatorial Staffing

16. The museum should develop an effective policy to improve the communication between curatorial staff, exhibits staff and other museum departments. (Implementation: Immediate)

17. NHMLAC should implement policies for staff evaluation and promotion to include peer review. Staff must be expected to be more productive in obtaining research grants and contracts. (Implementation: Within 6 months)

18. As part of NHMLAC policy, full job descriptions for all curator-level positions should be developed (assistant to full curator), making clear what the duties and expectations are relative to the five points for the evaluation of staff presented in this report. (Implementation: Within 6 months)

19. NHMLAC should review the duties of the position of Deputy Director for Research and Collections and revise them to reflect the suggestions put forth in this report. (Implementation: Within the next 6 months)

20. The Director of Personnel should be directed to undertake a review of the salaries paid to the curatorial staff to insure that they are consistent with the recruitment of a staff of the highest quality. (Implementation: Within 6 months)

Governance and Structure

21. The Board of Governors of NHMLAC and the Board of Trustees of the Foundation should review their policies and procedures to assess their effectiveness in governing the museum. The objective of this review is to merge the two boards, resulting in a downsizing of the governance of the museum in accordance with the considerations presented in this report. (Implementation: Strategic)

22. NHMLAC should prepare, prior to the year 2000, to undertake a 20-year transition from County Museum to a Private Museum, with the County providing and maintaining grounds, buildings, utilities and security. (Implementation: Strategic)

Inventory Computerization

23. NHMLAC should hire a computer professional to coordinate data processing and networking throughout the organization. (Implementation: Within 6 months)

Security

24. NHMLAC should conduct a security review and take those actions necessary to insure that facilities and their contents are protected to the maximum extent possible. (Implementation: Within 6 months)

Budget

25. The NHMLAC should create and implement a uniform museum-wide policy to charge all nonmembers of the museum for the use of collection resources. (Implementation: Immediate)

26. Funds raised by charging for the use of the collection resources in the preceding recommendation, should be allocated to the collecting department for the maintenance and improvement of that collection. (Implementation: Immediate)

27. NHMLAC should expand the practice of licensing reproductions to include all other replicable holdings in the museum collections, especially highly valued objects. (Implementation: Within 1 year)

28. NHMLAC should institute higher cost, "specialized" tours of the collections that would include "behind the scenes" access to parts of the collections and presentations by collection managers conveying the mission and the uniqueness of the collections. (Implementation: Immediate)

29. NHMLAC, in consultation with the County Superintendent of Schools, should, by the year 2000, contract with educational institutions using the facilities to assist in the funding of educational programs provided by the museum. (Implementation: Strategic)

30. NHMLAC should institute a method for the retrieval of information within the museum collection resources that is available to the public, and especially the public schools. (Implementation: Immediate)

31. The business aspects of the Petersen Museum should be developed to the point that this portion of the institution is able to cover its operations, and ideally, generate additional funds to cover other museum expenses. It is important that the Petersen Museum not be operated at a loss since such a course of action would cut into the mission of an already financially stressed Natural History Museum. (Implementation: Immediate)

32. The NHMLAC, over the next five years, should develop its budget to increase spending for collections and collection-based activities from 14% of the budget to approximately 20% of the budget. Private funding should be encouraged to accomplish this recommendation. (Implementation: Strategic)

Endowment Management

33. The museum foundation should implement a prudent and well-defined endowment policy that reduces its investment risk as a result of holding the majority of its endowment in one stock and which will provide the museum with levels of revenue consistent with those of comparable institutions. (Implementation: Immediate)

34. The County should review the provisions of its agreement with the Museum Foundation with the objective of insuring that the Foundation is supporting the museum operations adequately from endowment earnings. (Implementation: Immediate)

35. The museum foundation should place greater emphasis on increasing its endowment. (Implementation: Within 1 year)

36. The NHMLAC management should put into place effective policies within which curators are able to increase the endowment. (Implementation: Immediate)

Conclusion

37. Direct that the Economy and Efficiency Commission conduct an implementation review of the NHMLAC within one year of the acceptance of this report and provide the Board of Supervisors an assessment of its progress. (Implementation: within one year)

THE MUSEUM: ITS MISSION AND ROLE

THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY (NHMLAC)

Creation Authority

Chapter 2.94 of the County Code creates the Department of Museum of Natural History. (Appendix I) Section 2.94.010 states:

"There is created a department of the county, which department shall be known and designated as 'department of museum of natural history.' The functions of the department shall consist of and include administrative charge and control over all county matters relating to history and science, and shall also include the administration of Hancock Park (except that area of said park devoted to the Los Angeles County Museum of Art), and the care, safeguarding and maintenance of all exhibits, equipment and structural improvements directly relating to exhibits, the administration and maintenance of Los Angeles County Museum, and other property hereafter acquired for or devoted to history and science. This does not apply to William S. Hart Park."

Mission

The mission of the NHMLAC presented in the 1993 revised museum collection policy provides that the museum:

"...acquires, conserves, and interprets for the present and future generations, collections of objects pertaining to natural history and human history that document our planet from its origin to the present day.

"...serves both the local and international community through a variety of public and academic programs that include exhibitions, education, research, and publications.

"...resources are made available so that society may learn from the past, better understand the present, and plan for the future."

The preceding mission statement for NHMLAC is a variation of mission statements of peer institutions throughout the United States. Since the beginning of the museum it has been collecting, preserving, describing, and interpreting natural history specimens as an activity for the advancement of science, growth of knowledge, and the good of society. Effective management of each aspect of the museum's operation is essential to the successful accomplishment of the museum's mission.

Organization

The Natural History Museum of Los Angeles County is organized as illustrated in Chart I.

View Chart I in the Report File

Subject to the supervision of the Board of Supervisors, the museum is under the direction of the Board of Governors, with participation from the Foundation. In addition to these two organizations, the museum is further supported by the Museum Alliance. The duties of each of these organizations are as follows:

Board of Governors - Chapter 2.94 of the County Code designates the duties of this board. (Appendix I) Section 2.94.030 states:

"A. ...develop and establish museum policies in conjunction with the director, determine museum goals and programs, and provide general governance and review of museum operations under the management of the director;

B. Serve as advisors to the board of supervisors with respect to all facets of museum operation including, in particular, future goals and programs;

C. In conjunction with the director, promote the image to the public of the museum and its cultural and educational activities;

D. Contribute regionally, nationally and internationally to coordinated efforts from which the museum may eventually be a direct or indirect beneficiary."

The Los Angeles County Museum of Natural History Museum Foundation - The Foundation exercises the main oversight role over foundation funding relative to the operations and finances of the museum; works with the museum director on establishing long-term goals and objectives; and contributes to planning and executing, with help from the museum staff, the annual operating and capital funding of the museum.

The Natural History Museum Alliance - The Natural History Museum Alliance is an unincorporated unit of the Los Angeles County Museum of Natural History Foundation. The principal purpose of the Alliance is to strengthen the public involvement in, understanding of, and support for the Natural History Museum of Los Angeles County. Its activities and affairs are governed by a Board of Directors. The Alliance has the primary responsibility for membership development, planning services for members, coordinating fund raising events and programs and facilitating interest councils.

Museum Management - The Director of the museum and his staff have responsibility for operating the museum on a day-to-day basis, for taking initiatives in the scientific, collections and public program areas to fulfill the museum's purposes, and for working with Governors/Trustees on setting the long-term direction of the museum. The museum management is involved directly or indirectly in all activities related to the museum.

Los Angeles County, through its Department of Museum of Natural History, operates and maintains the Natural History Museum of Los Angeles County in Exposition Park and the four affiliate museums:

The George G. Page Museum of the La Brea Discoveries - Located in Hancock Park, in one of the city's major cultural complexes, it provides a view of the life in Southern California during the waning days of the last Ice Age.

The William S. Hart Museum - Located in Newhall, on the silent screen star's ranch in Santa Clarita Valley, it interprets an important collection of Western and Native American art and film-making materials.

The Petersen Automotive Museum - Located midway between the downtown business district and Beverly Hills, it is the largest automotive museum of its type in the United States.

The Museum of Natural History - Located in Burbank, it offers activities and changing exhibitions to service families in the San Fernando Valley.

NHMLAC is one of the largest natural history and American history museums in the United States and the largest in the western United States. As such, it has become an active cultural institution within the Los Angeles area. It annually attracts over 1 million visitors, representing the culturally diverse demographics of Southern California. Additionally, it houses an internationally recognized research library consisting of 98,000 volumes, 2,500 current periodical subscriptions, 20,000 maps and charts, and an array of special collections.

Exhibits

A number of permanent exhibits are on display within the Museum, including the following:

The **Times Mirror Hall of Native American Cultures** opened in late 1992, places the Museum's world-renowned Native American collections in their cultural, historical, technological and environmental contexts, emphasizing the continuing vitality of these traditions.

Ralph M. Parsons Discovery Center, visited each year by over 200,000 children and their families, is the largest children's interactive learning center in any natural history museum.

The Gem and Mineral Hall, with over 2,000 specimens, including the Hixon ruby and the largest native gold collection in the world, stands among the finest gem and mineralogical exhibitions to be found anywhere.

The Ancient Latin American Hall is one of the most important collections of pre-Columbian artifacts in the western United States.

Curators and Collections

The museum staff is comprised of 245 personnel, including over 16 curators with earned doctorates who conduct research all over the world.

The collections within the museum include:

A major Ichthyology collection with over 4.5 million specimens representing 10,000 species.

The world's largest collection of southwestern United States moths and butterflies and North America's largest collection of ants.

One of the world's two largest collections of whales and fossil marine mammals.

One of the two largest Invertebrate Zoology collections in North America, including the Alan Hancock Collection formerly housed at the University of Southern California.

Extensive anthropological collections, including the important Hearst Textile Collection and a collection of Latin American artifacts.

The largest Vertebrate Fossil collection in the United States, including more than 3 million fossils from the La Brea Tar Pits.

The country's third largest gem and mineral collection.

More than 150,000 photographic images covering the history of the American Southwest.

Major collections of dolls, armor and weapons, medals and decoration, housewares and decorative arts representing United States and world history.

Education

Over 700,000 people, both adults and children, participate in the museum's educational programs each year. One hundred thirty thousand students benefit annually from the Natural History Museum's School Tour Program. An additional 55,000 to 60,000 students participate in school tours at the Page and Hart Museums. Each year 25 outstanding high school science students are introduced to scientific research in the year-long Museum Research Apprentice Program conducted by the museum's curators and education staff. Teachers may participate in workshops for salary or university point credit.

Special education programs within the museum include:

The Special Education Outreach Program brings hands-on science presentations to physically, emotionally or mentally challenged children in hospitals and educational institutions.

The Classroom Collections Program lends science specimens and historical objects to teachers for use by over 160,000 children a year.

The Earthmobile, a mobile museum housed in a semi-trailer, provides challenging opportunities for scientific enrichment to 15,000 third through sixth grade students in the Los Angeles Unified School District.

Through the **Senior Outreach Program**, the immobile elderly in nursing homes, board and care facilities, and retirement homes in the greater Los Angeles area can participate in on-site presentation by museum volunteers.

THE NHMLAC COLLECTIONS

The biological collections of the NHMLAC rank fourth in prominence in the United States. The size of these collections, as illustrated in Chart II, is important in the establishment of this prominence. Chart II also makes estimates of collection area required by each collection department².

□

² Space allocations in this chart include all space collection requirements, including warehouse space allocations discussed further on in this report.

Chart II
Collections of LA County Natural History Museum

Department	Specimens	Collection Area (sq. ft.)
Invertebrates		
<i>Annelids</i>	1,300,000	4,300
<i>Crustacea</i>	2,500,000	1,970
<i>Echinoderms</i>	160,000	3,600
<i>Mollusks</i>	8,000,000	3,605
<i>Invert. Paleo</i>	3,500,000	5,000
TOTAL	15,460,000	18,475
Vertebrates		
<i>Fishes</i>	7,500,000	10,735
<i>Vertebrate Paleo</i>	400,000	12,455
<i>La Brea Vert Paleo</i>	3,000,000	9,700
<i>Reptiles and amphibia</i>	141,000	1,310
<i>Birds</i>	108,300	2,580
<i>Mammals</i>	95,000	12,365
TOTAL	11,244,300	49,145
Entomology - All Taxa	6,000,000	1,660
Botany	326,500	2,110
History	1,525,000	29,645
Anthropology/Archaeology	64,000	10,540
Mineralogy	40,000	3,500
GRAND TOTAL	34,659,800	115,075

THE NATIONAL STANDING OF NHMLAC

There are two types of science museums in the United States:

1. Science museums without collections or research facilities, with a mandate to cover all the sciences emphasizing public education and entertainment.
2. Natural history museums, which may have history and anthropology departments, created for research. This research requires the growth of both collections and the necessary library facilities, including archives.

The primary mission of the second category of museums continues to be the exploration of the natural world, the description of the unknown myriad species of plants, animals, and minerals and the communication of these activities to the world of science and the general public.

NHMLAC has created exhibits and presented lectures and educational programs to interpret what its scientists were doing and to encourage public support of these scientific activities. A major form of education was, and still is, the publication of scientific papers and scientific journals through which man's knowledge of the natural world grows. The Natural History Museum of Los Angeles County has, since its founding 85 years ago, functioned as a research institution, while providing a source of education for the public.

The NHMLAC is unique in its status as a "county" museum. Museums of comparable status would be:

1. The Milwaukee Museum, which has recently switched from being a city museum to being a private museum.
2. The American Museum in New York, where the city owns and maintains the land and buildings.

The Natural History Museum of Los Angeles County ranks in the top four of the 15 most significant natural history museums in the country. This peer group (e.g. American Museum of Natural History, Field Museum of Chicago, Academy of Natural Sciences of Philadelphia, etc.) includes "research" museums with large collections and libraries/archives. Of the top 15 museums, only 5 are university museums and these rank below the large free standing or county/public museums, the National Museum (Smithsonian) being unique in this grouping.

The domestic ranking of museums presented in Chart III has been established using the following criteria: the number and size of collections, and the number of employees, with emphasis on curators and curatorial staff. The ranking on this chart begins with the largest, and includes both the type of governance, as well as collection size. Chart IV, which follows immediately, uses budget size as a basis of the ranking. It is interesting to note that the NHMLAC is the only institution of the top five to have its budget reduced over this two fiscal year comparison period.

Chart III
Selected American Museums Ranked by Collection Size

Institution	Founded	Governance	Specimens (in mil.)
National Museum of Natural History [Smithsonian]	1868	government and private	>40
American Museum of Natural History (New York, NY)	1869	city government for bldg... and maint... private for operations	>16
Field Museum of Natural History (Chicago, IL)	1893	private	>11
Natural History Museum of Los Angeles County	1910	public and private	> 9*
Illinois State Natural History Survey	1858	state	> 9
Bernice P. Bishop Museum (Hawaii)	1889	private	> 8
Academy of Natural Sciences of Philadelphia	1812	private	> 7
California Academy of Sciences	1853	private	> 7
University of California Berkeley	1901	state	> 7
Carnegie Museum (Pittsburgh, PA)	1895	private	> 6
University of Michigan Museums	1838	state	> 6
New York Botanical Garden	1891	private	> 5
Cornell University	1865	private	> 4
University of Kansas	1866	state	> 4
Missouri Botanical Garden (St. Louis, MO)	1859	private	> 3

SOURCE: THE STEERE REPORT, 1971: The Steere Report lists data for 27 natural history museums; ASC includes some 80 institutions with collections. Although this report is dated, it is the best source available for establishing relative rankings among museums

* The difference between the number of specimens noted on this chart and that listed in Chart II results from a mix of actual number of individual specimen and number of lots. A "lot" is all the specimens of a single species collected at one place and at one point in time. It may contain hundreds of specimens. Disciplines such as Ichthyology, Malacology, etc. number lots. Botany and entomology number individual specimens. Accordingly, the numbers in this chart are a considerable underestimate of the actual number of specimens housed in the collections of these institutions.

Chart IV
Top Five Museums Ranked by Budget

MUSEUM	1991-92	1992-93
1. American Museum of Natural History	\$49,572,376	\$52,740,330
2. National Museum of Natural History	41,962,000	46,734,000
3. Field Museum of Natural History	29,106,000	29,963,000
4. Natural History Museum of Los Angeles County	25,739,000	*22,382,000
5. New York Botanical Garden	22,213,000	23,921,000

* drops to 5th place

Mankind is dependent on species diversity throughout the world for survival, with a million species of life having been described. Yet, it has been estimated by the scientific community that there are tens of millions of species that are yet unknown to science and society³. These are biological resources of major importance to mankind.

The only means by which science can know for certain whether a given species of life exists and in what particular locality it exists, is from a specimen of that species in a museum collection. Because species are variable, collections of specimens of a species include a sampling of a population. Thus, several specimens can be collected from one location at one point in time. Because a species may have a wide distribution, often country or continent wide, a collection will have a sampling of populations of that species from throughout its range. This wide spectrum sampling is critical to any scientific analysis of a species.

Specimens are constantly being used by a vast number of user communities for various reasons. As with a book in a library, one never knows just when some or all of the specimens of a species may be needed to provide the answer to questions from vastly diverse users. The numerous samples then, rather than being redundant, are critical to the understanding of the natural history of our world.

BOTANY (FUNGI AND ALGAE) /MOLECULAR GENETICS

Some years ago the NHMLAC traded its vascular⁴ plants to Rancho Santa Ana Botanical Garden for the garden's collections of cryptograms⁵, algae and fungi. These lower plants were to be the focus of a new thrust in the field of botany. This happened in a period of enforced reductions. It was subsequently decided that botany was to be eliminated (circa 1992-1993). As a result of this action, this category of activity does not appear in the museum's current reports. Yet, there is a curator of botany, who happens to be an expert on fungi and who also serves as head of the molecular genetics laboratory. In addition, a Cryptogramic collection is stored in the North Grand Warehouse. It is apparent that this decision made in the 1992-93 time frame has yet to be fully implemented.

³ Systematic Agenda 2000, 1994.

⁴ A designation based upon the presence of ducts for conveying sap.

⁵ Cryptogram is a plant that bears no flowers or seeds but propagates by means of special cells called spores, as mosses, ferns, etc.

The fungi and algae collections, stored in the main museum, are good and provide a strong link to the museum's marine theme. They also represent fields involving organisms that are little known and where virtually no museum is in competition.⁶ What is unique about fungi is that they are extremely species diverse, with less than 30% currently known. Since these organisms have unusual biochemical and genetic properties they are of major interest to drug companies and genetic engineers.

The museum administration, following a strategic planning process, must determine what action to take relative to botany. The following course of action appears to be the most beneficial to the institution:

1. The cryptograms should be given to appropriate institutions that are able to utilize their potential.
2. The NHMLAC should keep the algae and fungi collections for the following reasons:
 - a. There is an acknowledged need by society⁷ to develop knowledge concerning groups of organisms that are species diverse, and considerably underdescribed.
 - b. The fungi, in particular, are important since hundreds of thousands of species have yet to be described. The museum can capitalize on the significant potential of the fungi in the discovery of new drugs and other chemicals that will prove to be of benefit to mankind. Since no peer group museum has a specialist in fungi, the NHMLAC could become dominate in an open field. As a result of this domination, considerable funding would most likely be available from a variety of sources.
 - c. Fungi require molecular genetic studies to uncover unique species attributes. The curator of botany should become an entrepreneur in developing both the molecular genetics lab and the study of fungi. He should be given full status as a botanist, and should continue to be expected, as is other staff, to be a highly productive scientist, bringing in grants and contracts to support the collections and research. If this effort fails within a five year period, the administration should review the fungi/algae collection and determine further action.

⁶ US Department of Agriculture, Beltsville, MD, has the national fungal collection and is the strongest institution in this field, but it is the only institution with this emphasis.

⁷ Refer to Systematic Agenda 2000; statements of the National Biological Survey, Environmental Protection Agency, and many others.

- d. The Molecular Genetics⁸ laboratory at NHMLAC is state-of-the-art and fully equipped to do allozyme population genetics⁹ and DNA/RNA gene sequencing¹⁰ using PCR technology¹¹. It is geared up to do cloning of gene segments. All this facility lacks is an automated sequencer. It is under-utilized at present, but a number of curators have taken a course in that lab and are anxious to do collaborative studies in order to obtain gene sequence data for their organisms. This is an important and essential facility in a research museum. All peer-group museums have put in place such labs, as molecular data are now essential to complement the more traditional anatomical data for systematic studies. The total start-up costs for the lab construction, the last phase ending in 1993, were \$603,000.
- e. The lab has potential to bring in funds from a variety of sources, including contracting out gene sequencing to a variety of users. The head of the laboratory is charged with the responsibility of developing such programs to make the laboratory fully active and revenue producing.

RECOMMENDATIONS

- 1. NHMLAC should transfer current collection of cryptograms to appropriate institutions able to utilize their potential. (Implementation: within 1 year)**
- 2. The NHMLAC should retain botany and within it develop a focus on fungi. (Implementation: Strategic)**
- 3. The NHMLAC should maintain its molecular genetics laboratory, since it is essential in today's modern natural history museums that have collection-based programs. (Implementation: Immediate)**

⁸ Molecular genetics is the study of molecules to assess similarity or differences among organisms.

⁹ Allozymes refer to multimolecular forms of enzymes, catalysts in the body. These enzymes can be separated electronically in a gel.

¹⁰ DNA - Deoxyribosennucleic acid is the fundamental molecule governing heredity found in the nucleus of all cells. RNA is related. The DNA of different organisms can be compared to assess differences. Since no two individuals have precisely the same DNA "Fingerprints" can be used to identify individuals and species.

¹¹ PCR - Polymerase Chain Reaction is a reaction that vastly multiplies a minute quantity of DNA so that it can be used for research.

4. The director of the molecular genetics laboratory should develop highly funded programs, both academic and commercial, to support the laboratory. (Implementation: Immediately after long range planning process completed)

5. All biological collection-oriented staff should be encouraged to build cooperative programs with the molecular genetics laboratory. (Implementation: Immediate)

HISTORY

The NHMLAC was founded as a museum of history, arts and science. While the arts component became an independent museum, the remaining history component is not adequately reflected in the institution's name.

In the decade of the 80's, there were 15 persons assigned to History, 9 of them curators. Problems with museum staff reductions occurred in the early 90's. In July 1993 there was a museum-wide reorganization with a considerable reduction in the size of the staff. The history collection was ultimately reduced to 3 persons. With the creation of the Petersen Automobile Museum, the transportation section of history, by default, went to that museum.

The current history section includes two major areas:

1. The historical collection including Americana, especially California, Hollywood, and Los Angeles materials.
2. The Seaver Collection¹².

There are two curators trained to care for the holdings of life in Southern California with emphasis on the Hispanic influence, California daily life through time, the Entertainment Industry, Hollywood, the Gold Rush, and Los Angeles City history.

The current history section faces significant difficulty as a result of the museum failing to take advantage of past opportunities to organize and curate the stored off-site history collections. Good long range strategic plans would enable the section to begin to address these problems. This approach would also provide a blueprint for the future that would enable NHMLAC to effectively capitalize on future opportunities in this area.

¹² The Seaver Collection is one of over a million manuscripts, photographs, diaries, letters, tapes, books, etc. that provide valuable information on the history and development of California

The challenges now faced in history are to:

1. Rebuild the staff in history to effectively respond to the needs of the section. The history collection should be reduced to match both its limited priorities that are identified by the museum and by the museum's ability to store the collection properly.
2. Address the needs of the collection that have resulted from a forced move and the resulting scattering of the collection. The section is currently without manpower to match specimens with registration data and to properly house the collection.
3. Increased attention should be placed on developing an outstanding reputation in specific areas of history. The objective of this effort should be to improve national confidence in the collection, and as a result, confidence from the national funding sources.

The history section must deal with the less than effective storage of their material in the North Grand Warehouse. The problems of space, classification, retrieval, etc. cannot be easily dismissed by claiming these items to be excess collections, collections without value, or collections neglected by staff. To take any of these approaches or to consider any decision before a long range plan is in place would not be prudent.

It is unfortunate that the Seaver Collection is without the professional archivist it desperately needs. The Association of Systematic Collections has addressed the issue of maintaining archives in natural history museums and can give advice on the management of this collection.

RECOMMENDATIONS

6. **The history section should be retained and rebuilt, but with a focus on a limited set of priorities and an increased concern for addressing the needs of the collection. (Implementation: Strategic)**
7. **The museum should expand the space devoted to the Seaver Collection, add its own 1000 ln. ft. of archives to the collection, and assign to it a trained archivist-curator. (Implementation: Within 6 months)**
8. **The museum should place an increased emphasis on reestablishing the reputation of the history collection with the objective of developing national funding sources. (Implementation: Immediate)**

MINERALOGY

This section appears to be in good shape, although it does require additional endowment or grants. The curator should be encouraged to pursue other sources of funds. The potential for access to private funding from individuals who are interested in the field of minerals is significant.

ANTHROPOLOGY/ARCHAEOLOGY

The museum collections and its chief curator are excellent. The collections are beautifully and lovingly cared for and are exceptional for exhibiting. The museum should retain a small, but viable, program in these areas.

ORNITHOLOGY/HERPETOLOGY

In this period of economic hard times this institution cannot be all things to all people. It must focus on its strengths. Thus, to place emphasis on ornithology or herpetology at this point in time is probably not the best use of its resources. Every museum has an ornithologist; this museum cannot compete in researching this area. A good collection manager, one who can identify birds, help the public, and engage in contract work that may involve ornithology, however, is essential.

Herpetology is in the same position as ornithology. When the museum can securely fund programs in the priority areas identified by the museum, then it should consider putting greater effort into both of these fields.

PALEONTOLOGY

Planning difficulties for a major hall of paleontology resulted in the removal of major dinosaurs from exhibit. As a consequence, the museum failed to produce a first rate exhibit which could have capitalized on the movie "Jurassic Park". An example of this neglect and its consequences is evident in the Dinosaur Hall. This area displays "cartoon" material along one wall of the hall with the other occupied by truly great dinosaurs. The impression that such a comparison makes does not reflect favorably on the exhibit's intent or upon those responsible for creating a meaningful scientific event.

Other peer group museums have taken this opportunity to produce first rate exhibits of immense success with the public. Significant opportunities to create an exhibit of excellence to bring in an interested public have been lost, along with the attendant funding opportunities. The NHMLAC currently has a less than adequate exhibit in this area as a stop-gap measure.

RESPONSIBILITY FOR COLLECTIONS

In the American Association of Museum's publication *Museum Trusteeship*, the issue of responsibility is addressed as follows:

"Although the museum director is charged with the actual care of the collections, it must be reemphasized that final responsibility for the collections rests with the board (refers, in this context, to the Board of Governors of the Museum). To translate this obligation into detailed, effective guardianship, a collection's management policy is required and should be a high priority. This statement specifies what the institution collects and its procedures for accepting gifts. It also defines policies for loaning, conserving, insuring and deaccessioning the objects it owns."¹³

To further clarify this responsibility *A Legal Primer on Managing Museum Collections* states,

"The unique feature of a museum is its collection and it is reasonable to assume that board (refers, in this context, to the Board of Governors of the Museum) members were chosen for their expertise on collection matters. Hence, policy issues regarding the collections cannot be ignored by them or delegated away."¹⁴

UTILIZATION OF COLLECTIONS

USERS OF COLLECTIONS

Collections, such as those housed in the NHMLAC, have numerous clients locally, state-wide and nationally. Specimens and specimen-related data are used by diverse groups, a number of which are illustrated in Chart V.

¹³ ULLBERG, ALAN with ULLBERG, PATRICIA. *Museum Trusteeship*, American Association of Museums, Washington, D.C., 1981.

¹⁴ MALAROA, Marie C. *Legal Primer on Managing Museum Collections*, Smithsonian Institute Press, Washington, D.C., 1985.

Chart V
Clientele for Biological Collections

<u>Government Agencies and Authorities</u>	
Army Corps of Engineers Department of Agriculture Extension Service, beneficial insects and pest control programs Center for Disease Control (CDC) (Atlanta, Georgia): <i>identification of pathogens</i> Customs enforcement Environmental Protection Agency Fish and Wildlife Service permit managers Forensics experts for law enforcement agencies Military intelligence (<i>biogeography</i>) National Institute of Health (NIH) (<i>parasitic diseases and organisms transmitting disease</i>) Nuclear Regulatory Commission (<i>thermal effluent studies</i>) Public Schools State Biological Surveys and Departments of Conservation State Heritage Programs Tennessee Valley Authority US Department of Agriculture - Animal & Plant Health Inspection Service (APHIS) (<i>identifications of accidentally imported plants and animals</i>) U.S. Navy (<i>marine resources, fouling and boring organisms; cetacean research.</i>)	
<u>Private Businesses and Non-Profit Organizations</u>	
Biotechnology firms Conservation organizations Drug companies Environmental consultants Industrial consultants Nature film makers	Nature study groups and clubs Pest control specialists Pharmaceutical researchers Seed and herbal companies Toxicologists/Poison control specialists
<u>Scientists, High School Students and Other Scholars</u>	
Archaeologists Artists Biogeographers Biomechanics and anatomists Biotechnologists Climatologists/global change Dendrochronologists Ecologists	Evolutionary Biologists Genome scientists Germplasm scientists High school apprentice programs Parasitologists Plant pathologists Standardization of biomedical research through voucher specimens Systematics

Source: Davis, et al, 1989

NATIONAL SCIENCE FOUNDATION SUPPORT

The maintenance, care and storage of the biological collections of the museum have been highly funded by grants from the National Science Foundation (NSF) since 1964, and particularly since 1972. NSF has provided NHMLAC a total of \$5,393,913. This funding has been granted after a national peer review by the nation's scientific community. Thus, since these collections are both national and international resources required for current and future research, this funding represents a national commitment to the care of the NHMLAC collections. These funds have been used for the purchase of compact storage systems, for the computerization of records, and for manpower to process into the collections backlogs of

specimens accumulating from research activities and gifts, including voucher specimens¹⁵. The National Science Foundation takes the view that biological collections exist for research purposes and for the development of socially valuable items.

The utilization of collections is a measure used by the National Science Foundation national peer review prior to providing funds to care for a collection. The three criteria used by NSF reviewers in comparing institutions are: the number of visitors making use of the collections, the number of loans to other institutions for exhibit and scholarly study, and the number of publications published based wholly or in part on the collections. Each of these criteria is discussed below.

Visitations: The number of visitations per year to NHMLAC average 73 per collection, which is approximately 6 per month. This number is deceptive because users of a collection resource may use it for an hour or may stay months in residence. The lowest visitations are in the smallest sections, in programs that have had significant staff reductions, or where much of the material is not accessible because of the condition of the warehousing space (e.g. History). In active collections where staff reductions have been minimal, the average annual visitation is 87.

The visitors using these collections are from the international community. The level of activity demonstrated by NHMLAC is consistent with that of peer institutions during these economically stressed times, when limited funds are available for travel.

Loans: The average number of specimens loaned out in a year is 1,077 for all 14 collection centers. The number of transactions involved is approximately 22 per active collection center. The history collections have not been in a position to make loans. The largest number of transactions involves insects, crustacea, mollusks (snails and clam species), fishes, reptilia, mammals, and vertebrate fossils. This level of activity is also consistent with that of peer institutions.

Publications: In 1993 there were, based only on staff publications, 5 publications per 15 collection centers, or 75 publications. In addition, an estimation of the number of publications by users outside the museum, can be made by adding from the preceding paragraph's 1/4 the annual average number of visitors (73) to 1/4 of the annual average number of loan transactions per year (22). This calculation equals 23.75 or 24 publications. Thus, the museum contributes a total of approximately 100 scholarly publications per year world-wide.

¹⁵ "Voucher Specimens" are used for research and are the basis for scientific publications. These specimens are housed in museums in order to verify the identifications that are published, should any person question the accuracy of the identifications.

As with the other criteria, the number of scholarly works based on the collection resources are consistent with peer institutions nation-wide.

RECOMMENDATION

9. The Director of the Museum should initiate a strategic long-range plan to cover all of the elements, including all aspects of its collections. (Implementation: by June, 1995; process has already been initiated)

GROWTH OF COLLECTIONS

Collections of research museums, such as NHMLAC, grow as a result of the following activities:

1. Research exploration that is conducted locally and globally to discover new plants and animals, and to understand the distribution patterns of these organisms during these explorations. Emphasis is on studies to discover the relationships among species and groups of species in order to classify them and determine the patterns of their evolution. These activities organize information about genetically related groups of organisms. With this information predictions can be made about their properties, such as which line of evolution involves chemicals useful to a certain medicine or drug, which do not; which line of evolution has the genetic code for transmitting a lethal disease, which do not, and so forth.
2. Gifts of collections and specimens from scientists and knowledgeable amateur naturalists who affiliate with collection centers and their associated libraries.
3. Acceptance of valuable orphaned collections. Examples of these include:
 - a) those collections coming from individuals with no further need of them,
 - b) from universities and colleges where a professor has retired and the school has no program to keep collections, or
 - c) from universities where changes in emphasis make the collection-based research no longer a part of the curriculum, such as at USC.

NHMLAC should focus and specialize in collection areas of great strength to the institution and where the museum can compete for funds effectively. Specialization should be done with the following in mind:

1. The development of a competitive edge relative to other institutions.
2. Emphasis on the national mandate to work on the systematization of little known groups of organisms, where as much as 80% species diversity is unknown to science.
3. Focus on organismic work with great relevance to Los Angeles, California, the eastern Pacific and the Rim of Asia.

Using the above criteria the NHMLAC should invest its resources in the following three areas:

BIOLOGICAL COLLECTIONS¹⁶

- I. Marine Invertebrates: Marine environment
 - Annelids
 - Crustacea
 - Echinoderms
 - Mollusks
 - Invertebrate Paleontology [Links to Vertebrate Paleontology]
 - Entomology¹⁷
- II: Marine Environment Theme
 - Ichthyology
 - Marine mammals [whales, cetaceans]
 - Vertebrate Paleontology [Note: Fossil marine mammals link into the third dimension below. This has immense importance for exhibits.]

¹⁶ These resource recommendations were developed by Dr. George Davis, Academy of Natural Sciences.

¹⁷ While not marine, entomology complements the invertebrate strengths of the collections.

III. Vertebrate Paleontology

- Main museum...marine fossils; fossil birds
- La Brea effort...mammals and birds [Note: This dimension is a great traditional strength of the museum. The La Brea experience links a view of life in the waning days of the last Ice Age to a more modern world of fossil exploration with great lessons to be taught about evolution and ecological change.]

TRANSFER OF COLLECTIONS TO ACADEMIC INSTITUTIONS

To consider relocating the NHMLAC collections to institutions of higher learning does not appear to be a viable alternative at this time. The reality today is that, throughout the country, most colleges and universities are transferring their natural history collections to natural history museums. The reasons for these transfers are as follows:

- With the discovery of the genetic basis of inheritance, DNA, in the 1970's, the science of biology, as taught in colleges, diversified rapidly from systematic studies of all groups of organisms with resident ornithologist, mammalogist, botanist, etc. to studies emphasizing laboratories of cellular biology, genetics, physiology, ecology, developmental biology, and others.

- Since no college or university can afford to maintain courses of study in all biological subdisciplines, specialization has occurred. Some faculties have moved entirely to molecular and cellular biology; others to ecology and physiology; yet others to neurobiology, molecular biology and marine biology (e.g. USC). There have been those universities with strong programs in systematic and evolutionary biology, with museums or collection centers, that have specialized in collection-based studies. The major ones among them are Harvard University, University of Michigan, U.C. Berkeley, Cornell University, University of Kansas, University of Florida, University of Nebraska.

All major collection centers have received NSF supported collection improvement grants to help make these essential resources available to a growing user community (See Chart V). Administrators of these collections must have strict collection policies in order to receive NSF funding. No collection center is anxious to take on a major collection involving 200,000 or more specimens because of the cost of transfer and storage. Such a major move would, in most cases, require the application to NSF for support. NSF is reluctant to see a collection moved if it has already provided major funding for its support, i.e. the collections at NHMLAC.

With the move of biological collections to museum centers, whether university, free standing, state, or county/city, these collection centers are assuming the responsibility for teaching

and training students in organismic biology. Museums with a tradition of collection-based exploration and research are the modern centers of systematic biology. The world of collection-based information users now must turn to museums with collection resources to gain the information needed by society.

As a result of universities and colleges divesting their collections, they are not now accepting additional collections, nor are collections being supported unless they are also among the few universities specializing in collection-based activities. University museums are under financial stress in the support of their collections and have instituted strict policies as to what they will or will not accept. University collections are not in a position to take on mega collections from a major museum. As has been previously indicated, university use of collections for research is highly specialized and only one of the now major uses of collection resources.

COLLECTION POLICY

MUSEUM COLLECTION POLICY

A collection management policy is important since it establishes why a museum is in operation and how it goes about its business. This statement of policy serves as a guide to the museum staff and is used as a means of effectively communicating these issues to the public. The publication *A Legal Primer on Managing Museum Collections* states that a good collection management policy covers a broad range of topics including the following:

- "1. the purpose of the museum and its collection goals;
2. the method of acquiring objects for the collections;
3. the method of disposing of objects from the collections;
4. incoming and outgoing loan policies;
5. the handling of objects left in the custody of the museum;
6. the care and control of collection objects generally;
7. access to collection objects;
8. insurance procedures relating to collection objects; and
9. the records that are to be kept of collection activities, when these records are to be made, and where they are to be maintained."¹⁸

¹⁸ MALAROA, MARIE C. *Legal Primer on Managing Museum Collections*, Smithsonian Institute Press, Washington, D.C., 1985, page 43.

Today the NHMLAC and peer group museums have collection policies as to what is accepted into their collections, how collections are managed, and when and how specimens can be deaccessioned. The following are standards used in collections acquisitions for peer group institutions, in order of priority:

1. Specimens related to the research activities of the curators.
2. Specimens that are types¹⁹ or historically important.
3. Specimens that complement the strengths of the collection based on geographic and taxonomic (the laws and principles covering the classification of objects) priorities. Specimens to be of value to science must have good to excellent locality data.

These collection policies have been mandated by the National Science Foundation as a condition for funding collection support, collection curation, and improvements in long-term storage. Museum directors and the NSF do not want to see uncontrolled growth of collections for the obvious reasons: the limited space and considerable overhead costs associated with collection storage space. Today, the growth at NHMLAC is approximately 0.4% of collection holdings (34.7 million specimens in 16 collections); or 0 to 30,000 specimens per collection depending on the collection or an average of 8,675 specimens per year, per collection. It is estimated that among peer institutions this average is low; peer group institutions are, based on their research activities, probably adding close to 0.8% of their overall holdings each year.

The current collection policy for the institution and the policies for the individual collections are generally good.²⁰ They could be strengthened following an effective process of long range planning. The weaknesses at present are:

1. The overall museum collection policy is now too vague. Strategic long range planning should focus on the priorities of the museum with respect to collections and exclude other areas more effectively accomplished in other institutions.
2. The departmental collection policies should follow the same focus as that of the general museum policy, making it specific to their area. According to policies seen in peer group institutions, NHMLAC policies should be adjusted to accept collections as follows:

¹⁹ "Type" specimens are those specimens actually used by the author of the species when he/she described the species. They are international standards for comparing species and being assured that an identification of a species is correct.

²⁰ It has been stated by the museum that a revised collections policy is pending approval of the museum's governance, but was not available at the time of this review.

1st. Accept type specimens and historically important material.

2nd. Accept materials with excellent locality data of specimens central to the research interests of the curator in charge.

3rd. Restrict acceptance to materials with excellent locality data to specimens that strengthen the focus of the collections. [For example; if the collection of fish focuses on the eastern Pacific and inshore waters and related rivers, then collections of fish from the Atlantic Ocean, Indian Ocean, etc. should not be accepted.]

4th. Accept endangered species, very rare species, or specimens of a species that enhance the reference collection relative to upgrading the process of identification of species.

The current collection policies of the NHMLAC range in compliance with the 4 points presented above, from being focused, to being so vague as to indicate a willingness to accept any collection from any part of the world, as long as the specimens are well conserved and have good data.

DEACCESSIONING POLICY

The California Public Resources Code, Section 5123, setting forth the County's powers with respect to museums provides that, "The Board may purchase, collect, trade, exchange, or otherwise acquire exhibition or study material proper or necessary for the use of the museum, and may sell, lend, or exchange material, according to the established custom of museums."

This Code Section which discusses the issue of divestiture, addresses a complex problem. By examining peer institutions such as, the American Museum of Natural History, the Field Museum, the Academy of Natural Sciences, etc., an understanding of policies for selling or divesting collections can be gained. Such an investigation confirms the exceeding complexity of the issue for the following reasons:

1. The central purpose of the museum is to house collections in perpetuity.
2. Collections may have been donated to the museum as gifts, often with provisions that assure their proper care in perpetuity by the museum.
3. The National Science Foundation has provided over \$5 million to support the collections of the NHMLAC. These funds were provided to the museum based, in part, on its

stable environment that assures the care of the collections in perpetuity. This determination was based on the mission of the museum and the international and societal importance of the collections.

4. Often laws of a state carefully regulate the sale from collections in the public trust to assure that the public is not defrauded.

The "established custom of museums" addresses these issues and has arrived at a number of options that are considered to be acceptable:

1. If the curator-in-charge and the Board of Governors consider it to be in the best interest of the collection and the institution, an item may be sold with the proceeds returned to the same collection to further its upkeep.
2. An entire collection may be exchanged for a different collection of another museum, thereby strengthening the collection holdings of both institutions in a manner consistent with the stated policy of the museum to specialize in certain types of collections.
3. A collection left without a curator may be given to another museum in order to preserve the collection if the long-range plans of the institution have found that the collection does not represent an area of collection strength.

More specifically, there are museum collection policies with strict rules about deaccessioning and disposal of objects from the collections. It is useful to revisit these here:

1. Accessioned objects in the collections will be retained permanently if they continue to be relevant and useful to the purposes and activities of the museum and if they can be properly stored, preserved and used. Deaccessioning of objects may be considered when these conditions no longer prevail.
2. Accessioned objects in the collections may be deaccessioned only with the approval of the appropriate curator and deputy director for research and collections. Subsequent approval of the Director is required. In addition, the deaccessioning must be done in accordance with approved policies.
3. When disposing of deaccessioned objects, the museum shall ensure that the manner of disposition is in the best interests of the museum, the public it serves, the public trust it represents in maintaining the collections, and the scholarly or cultural communities of which it forms a part. It must comply with the following:

- ▶ No exchanges will be made with private individuals.
 - ▶ No gifts shall be made of property held in the public trust.
 - ▶ No private sales shall be made to individuals. All sales of objects from the collections must be at advertised public auction or in the public market place in a manner that will best protect the interests, objectives, and legal status of the museum.
4. Before disposing of any objects from the collections, reasonable efforts will be made to ascertain that the museum is free to do so. Where restrictions as to use or disposition of the objects under question are found to apply, the museum shall act as follows:

mandatory restrictions shall be observed strictly, unless deviation from their items is authorized by a court of competent jurisdiction; and

if there is any question as to the intent of restrictions, the museum shall seek advice of legal counsel.

Any of the above actions would require agreement by the governance of the museum. After our examination of virtually all of the collections of the museum, it does not appear that it would be in the interest of Los Angeles County, the nation, or the world for the museum to divest itself of those collections not on exhibit, except for those identified in this report. These collections, along with the research based on those collections, serve as an irreplaceable resource to society and to the world community.

RECOMMENDATIONS

10. Within the Strategic Planning process, the NHMLAC should develop a mechanism to periodically review policies to insure that they continue to reflect the needs of NHMLAC and are consistent with nationwide practices. (Implementation: Strategic)

11. NHMLAC should focus and specialize in collections and collection-based research that capitalize on the unique and competitive strengths of the NHMLAC collections identified in this report. One of the factors to be used in evaluating the acquisition of a new collection should be, to the extent possible, to fund both its acquisition and maintenance with revenues other than the county contribution under the master agreement. (Implementation: Strategic)

12. NHMLAC should maintain the current rate of collections growth as it is responsible and under the rate of growth in peer museums. (Implementation: Currently in effect)

13. The museum should review the Collections Policy for the museum and the Collection Centers and revise it to reflect the issues identified in this report. (Implementation: Within 6 months)

COLLECTIONS OPERATIONS AND PERSONNEL

WAREHOUSES AND COLLECTIONS

The NHMLAC has four off site storage locations as indicated in Chart VI below.

**Chart VI
Annual Warehouses Lease Costs**

LOCATION	SQUARE FEET	1994 ANNUAL COST	COST PER SQUARE FEET	1995 ANNUAL COST	COST PER SQUARE FOOT
South Grand	10,000 sq. ft.	\$ 80,655	\$8.07	\$80,655	\$8.07
North Grand	32,000 sq. ft.	County	County	County	County
27th St	27,000 sq. ft.	170,000	6.29	*124,692	4.62
Seville Ave	16,000 sq. ft.	78,300	4.89	78,300	4.89
TOTAL	85,000 sq. ft.	\$ 328,955	Average \$6.42	**\$283,647	average \$5.86

SOURCE: Los Angeles County Data

* 1995 renegotiated cost

** The total annual lease cost for 1995 will be reduced by \$45,308 over 1994 costs. Assuming that the cost for County storage is the average of the other costs for 1995, costs for storage to the County would be approximately \$187,520. Combining the total storage costs budgeted by the museum and the costs to the county of the North Grand Warehouse the total cost for 1995 would then be approximately \$471,000.

SOUTH GRAND WAREHOUSE:

This facility houses a complete department of invertebrate paleontology with its collections, offices and laboratories, workrooms, etc. It is a clean, modern and well done location meeting modern standards for such a facility. It is an important, well used asset and should not be moved unless sufficient funds can be raised to redo the laboratory benchwork, plumbing, and cabinets to the standard now in place.

The collection occupies approximately 5,000 square feet and consists of invertebrate fossils that represent an excellent regional resource with emphasis on California and the West.

This facility is part of the comprehensive Invertebrate Zoology Collections that are the modern focal point of the NHMLAC collections.

NORTH GRAND WAREHOUSE:

This facility houses a number of collections of diverse kinds and can be described as an all purpose dumping ground. The building/facility is of poor quality and the space is dirty. If all objects in this facility were either worked with as planned or relocated and stored in an efficient manner, it is estimated that the actual space needed would be approximately 16,000 sq ft. This space estimation is presented in Chart VII below.

**Chart VII
Future Space Requirements for Material Stored in North
Grand Warehouse**

Space Not Required in the Future (Square Feet)	
6,000	\$90,000 available to sort out larval fishes for which there is space in the main collection.
1,000	Fish samples to be sorted in Costa Rica with final material going into main collection
5,000	Automobile storage area, Remaining automobiles to go to Petersen Museum
2,000	Botany collection to be considered for placing in appropriate museum
2,000	Malacology collection redundant or without sufficient data to catalog into collections
16,000	Total at a cost of \$93,760/year if leased at the 1995 average cost of \$5.86/sq. ft.
Space Required for the Future (Square Feet)	
600	Oversized Fishes
3,000	Supplies, 300 Earth Sciences Boxes, 200 Malacology, 2000 Bottles/boxes, 500 History supplies
2,500	Anthropology for objects on and off exhibits and loans
3,000	Jacketed Vertebrate Paleontology specimens
7,000	History
16,100	Total at a cost of \$94,346/year if leased at an average cost of \$5.86/sq. ft..

The history collections scattered about the floor in large areas of this warehouse are not cataloged nor do they have registrar numbers, at least for the most part. However, many of the items have not been registered and, therefore have different provisions as the basis for the gift to the museum. Parts of the collections located in this facility contain many extremely important and valuable items. The disarray is due, in part, to the lack of staff following severe cuts in recent past. Items at this location include:

aircraft engines
 telephones/typewriters
 dental office
 electric equipment
 telegraphs

motion picture projectors
 drug store
 picture frame collection
 printing press
 artillery piece

Based upon these estimates, a consolidation into an appropriate space would significantly reduce the square foot requirements for these items. It should be clear that the estimated savings of 16,000 sq. ft. at the North Grand Warehouse would not result in any reduction to the rent expense in the museum's budget. Although this is a county facility and no rent is currently being charged to that budget, it would impact the efficient usage of a county warehouse. Thus, the county would save by either making the space available for other uses, assumedly by reducing costs at another facility, leasing the facility to another organization, or by declaring the property surplus and disposing of it in an appropriate manner. If the property is sold it would not only provide the county with additional capital, but would also potentially become part of the tax rolls, thereby generating small, but additional, ongoing revenue.

27TH STREET WAREHOUSE:

This is a clean warehouse facility of 27,000 sq. ft. of space that is poorly used. The usage and the estimated square foot utilization of this facility is presented in Chart VIII below.

**Chart VIII
 Usage of 27th Street Warehouse Space**

Sq. Ft.	Usage
5,000	Holding area for Changing Exhibits Moving Crates
8,000	Empty Cases
400	Education Lending Library
4,000	Publications, Including Unusable Brochures
7,000	History Furniture
1,000	Space for Dr. Ed Mitchell
2,000	Office Furniture
900	Museum Archives
1,000	Misc. Museum Exhibit Material
29,300	Total Estimated Space Usage

* The 2,300 sq. ft. difference in the total square foot usage identified in Chart 7 and the square foot area identified in Chart 5 is accounted for by the a mezzanine of approximately this area within the building.

The lack of organization of the contents, the lack of planning high rise storage on pallets, the lack of an appropriate fork lift and the lack of proper aisles for high rise storage make this warehouse poorly used and organized. The air space can accommodate 50 ft vertical stacking (this stacking level would be determined by a level consistent with appropriate earthquake, fire other standards and with the costs involved in meeting these standards.). Such vertical stacking requires an appropriate forklift and careful structural stacking design to retrieve from 40 to 50 ft. It is estimated that 70% of the space in this facility is wasted.

The following specific reduction possibilities were noted:

- When the education department quarters in the main museum are completed, the furniture draw-down and assessment of what is really wanted of the lending materials should reduce the current 2,000 sq. ft. usage to none. This reflects an expense of approximately \$9,240 per year.
- Dr. Mitchell²¹ will be leaving NHMLAC in the near future. The 1000 sq. ft. utilized by him is reflected in an expense of approximately \$4,620 per year.
- If empty cases were stored in an orderly fashion and stacked vertically there would be an estimated savings of 8,000 sq. ft., reflecting an expense of approximately \$36,960 per year.
- If all publications and brochures were carefully screened for usefulness for the future, it is estimated that 1,500-sq. ft. could be saved, at a cost of approximately \$6,930. (There is no reason to keep thousands of brochures about a traveling exhibit, stamped with the name of NHMLAC, which has moved on to another museum, not to return to LA. Housekeeping is in order and much needs to be recycled.)
- In summary in this facility, approximately \$58,000 worth of space is wasted or will become available once the education facility is completed in the main museum.

SEVILLE AVENUE WAREHOUSE (WHALE MUSEUM AND LARGE MAMMAL STORAGE):

This facility is one of the two largest cetacean [whale and porpoise] dissecting, processing and storage facilities in the country. It has in storage the skeletons of elephants and other large mammals. In addition, about 1,000 sq. ft. is devoted to storage of oversized fish and 1,000-sq. ft. of jacketed vertebrate fossils. There is no wasted space at this facility.

²¹ Dr. Mitchell is a visiting scholar doing research at the museum. He is mentioned in this report because he takes up a quantity of space that will soon be vacated.

The Whale/Cetacean dissecting and storage facility, including big mammals and all whale skeletons, occupy 16,000-sq. ft. of this facility. By using the air space to hang an undersea exhibit of model whales and porpoises, including fully mounted skeletons, and by having large-scale videos of living whales and porpoises, the public's interest in this facility and its function should be markedly increased. Opening this area as a working exhibit can result in the development of a major exhibit for the paying public.

It is fascinating for the public to see how a museum works, as the annual open house has demonstrated over the years. Bones or working areas as the real thing has tremendous appeal. The exhibit should have a clear walkway through the work and storage areas for the public so that storage and activities are in a "giant fish bowl," such as at the La Brea Tar Pits. The public would walk through the center of the collections, storage and past dissecting areas. There is no data available with which to make an accurate estimation of the revenue resulting from such an approach. For purposes of example, assuming 1,000 persons a month passed through the exhibit at \$4.00 per person, the revenue generated would be \$48,000 annually. This would significantly reduce the current lease costs.

There is difficulty in implementing this concept at the present location because the warehouse is in an unattractive area, but at a consolidated location it becomes increasingly possible. This is particularly true if such an approach is considered in the Museum's strategic planning process. There is also a significant possibility that foundations would be interested in participating in the development and operation of such an exhibit and videos.

POSSIBLE CONSOLIDATED STORAGE FACILITY:

The storage facilities identified above offer a significant possibility for consolidation. Chart IX below provides an estimate of the storage requirements by collection. This estimate indicates that the museum can save approximately 32,000 sq. ft or 38% over their current space requirements. If the museum can find a structurally sound building/warehouse, ideally with temperature and humidity controls, all four warehouse activities could be accommodated in that building at a potential cost savings and increased efficiencies in the management of the stored collections.

Chart IX
Recommended Storage Requirements By Collection

Sq. FT.	USAGE
16,000	Whale/Cetacean Dissecting and Storage Facility
10,000	Invertebrate Paleontology as an exact replacement for South Grand*
4,000	Vertebrate Paleontology, vertical storage with pallets and fork lifts upward to 50 ft. to consolidate jacketed fossils
2,000	Oversized Fishes, vertical storage with pallets and fork lifts
3,000	Anthropology, for canoes and other large objects
10,000	History, vertical storage fork lifts and pallets**
2,000	Changing Exhibits, empty cases
3,000	Museum supplies, boxes, bottles, etc.
1,000	Archives for the Museum
2,000	Public Museum Materials
53,000	TOTAL Space Requirements (Savings of 38% of space or 32,000 sq. ft.)

* The cost of moving and replacing the benchwork for the Invertebrate Paleontology collection/labs/offices must be considered, factored in, and amortized. In the long run there would be savings.

** Moving History from North Grand into this new facility would require the sorting and the confirmation of registered material for the move. In the process staff can set aside objects not conforming to the specific objectives of the History Strategic Plan for deaccessioning. Using this opportunity for review of the current pieces, the collections would be reduced significantly. Well planned vertical storage would reduce need for excessive sq. ft space.

The total recommended storage requirement presented in Chart IX is approximately 53,000 square feet. Although the average lease cost presented in Chart VI is \$5.86 per sq. ft., the space required for the consolidated facility is more accurately reflected by that of the 27th Street Warehouse. Thus, an estimation of per sq. ft. costs for a consolidated facility would more accurately reflect these by lease costs. As a result, 53,000 sq. ft. at \$4.62 per sq. ft. results in a potential annual total lease cost of approximately \$245,000. From this will have to be deducted the costs of consolidating these facilities. Thus, the savings would not show itself for a number of years, depending on the level of costs involved in the move. Even so, with the potential for future savings, the advantages accruing from the increased efficiency in the storage of museum collections and the potential for additional negotiated savings on leasing such a facility, on a long term basis, meaningfully outweighs the disadvantages.

Another significant advantage of a consolidated facility is that it can be made more attractive in response to the recommendation to develop a tour of the storage facilities, particularly one focused around whales and large mammals. With the improvement of the surroundings, the option becomes more desirable and the potential for individuals to be interested increases. A recent article in the Los Angeles Times indicates that there may be significant interest in seeing what isn't on display, as demonstrated in the recent Los Angeles Times article, "The Vaults of the Natural History Museum Prove What

Isn't on Display Is as Interesting as What Is."²² Lacking any data on what the participation would be, a speculative assumption that 1,500 individuals per month²³ would take this tour, at \$4.00 per person, the resulting revenue would be approximately \$72,000 per year.

The major impact of the proposed consolidation will be in making the North Grand Warehouse available for other uses or for sale. Without an accurate appraisal, the value of this property to the county is not clear. Using the assumption that the space were rentable at \$4.00 sq. ft., which appears to be low compared to other rents shown on Chart VI, would result in an additional \$128,000 in annual lease income to the county. Some greater one time amount would result if the property were sold. If sold the county would have the additional advantage of putting this property back on the tax rolls, generating a small amount of additional annual tax income.

RECOMMENDATIONS

14. NHMLAC should consolidate the collections and supplies spread throughout four warehouses into one storage facility. (Implementation: Within 2 years)

15. The facilities at the Seville Ave Warehouse, or a comparable consolidated facility, should develop an exhibit around whales and large mammals capitalizing on the public's interest in these types of creatures. (Implementation: Within 1 year)

CURATORIAL STAFFING

The internationally recognized collections of NHMLAC require Ph.D. curators to work on and care for them. This resource, uniquely poised for research and service, requires nothing less than scientists who not only are world authorities in their field, but who are also highly productive. He/she should be in the top 10% of all scientists of his/her field of study. Such a person is essential in identifying and working with complex problems of species recognition and relationships.

As species and species groups do not recognize political boundaries, the curator must have a global expertise in the knowledge of organisms in his/her area of concern. This enables this person to deal with species-level problems in California, the eastern Pacific, or the Pacific basin. An

²² "Cool and Collected," by Roy Rivenburg, Los Angeles Times, Wednesday, February 22, 1995, pg. E1/2.

²³ The increase from 1000 patrons at the Seville Ave Warehouse to 1500 is based upon the assumption that a more attractive facility would draw more patrons.

expert on dinosaurs must have global knowledge to identify new species found in the Western Hemisphere.

In addition to assuring that its curatorial staff is of the highest quality, museum management must make sure that communication between this staff and the exhibits department staff on how to represent real science to the public is effective and continuing. Less than optimal communication creates a difficult and dangerous situation. In the field of research museums, the greatest museums have exhibits and educational programs that project the collections, their curators, and their research programs of exploration and findings to the interested public. It is through this effort that the museum finds its basic support.

Exhibits should be created in consultation with curators from its inception on the issues of development, content, display, communication and education, and their relationship to the public. News releases should feature curators and their programs.²⁴ The exhibits department of NHMLAC appears to be highly involved in creating and installing traveling exhibits. This is an activity that should be evaluated for true cost effectiveness, including the price paid by isolating the exhibit staff from curators.

In recent years, due to dire financial problems, there has been a considerable reduction in the number of curators and curatorial assistants. Future reductions will make the museum increasingly inviable relative to its mandates and responsibilities. In the areas of history, minerals, anthropology, and life sciences, 19 curator-level staff curriculum vitae have been reviewed. Since that review, one curator has voluntarily retired, one has chosen to pursue other opportunities, and one is not now funded, leaving 16 individuals. Excluding the Chief of Collections and Research, there are 11 curators for the biological collections. Some collections, such as the bird resource, are in the care of a collection manager.

Excluding the Petersen Museum, an appropriate staffing level for an institution of this nature and size would be approximately 23. Hiring these additional Ph.D. level individuals would require about \$325,000 in annual salaries and fringe benefits (at 30%). It would also require approximately \$150,000 to \$200,000 in start up money (equipment, renovations, etc.) to provide them with adequate support. The Commission recognizes the difficulties in raising this issue in the current financial environment, but feels that the museum should try to establish personnel staffing goals to effectively respond to its organizational goals and objectives.

²⁴ See the New York Times for coverage of curators of the American Museum of Natural History and their programs in far flung corners of the world; the public finds this interesting and comes to the museum to see exhibits involving their research.

The qualifications of the current curatorial staff were reviewed using the following criteria:

1. Quality and quantity of publications, with special attention to publications in peer reviewed journals and in high quality generic journals such as Science, Nature, Systematic Biology, Evolution, Linnean Society publications, etc.
2. Research programs with funding from grants and contracts. Funding at levels exceeding \$60,000 to \$80,000 per year was considered.
3. Involvement as a leader in his/her field in national and international programs, societies, biopolitical and strategy efforts.
4. Outreach in public affairs through teaching and training graduate students, teaching continuing education classes for the public, working to create new exhibits and helping to fund exhibits.
5. Collection support activities, including collection support grants from NSF, departmental program building, and grants from other organizations supporting these activities.

Based upon these criteria, it is evident that the staff will require a significant amount of additional support to reach the quality that is to be expected of them. Although some individuals are currently operating at significant levels, others must be made aware of these expectations and given adequate time to meet the new standards. The administration must also realize that expectations differ as one evaluates history, anthropology, minerals, and the biological sciences.

An indication that additional emphasis needs to be placed on the requirements of the staff is demonstrated, in part, by the income generated from grants and contracts. The NHMLAC finance office reports a total of \$2.7 million was generated in 1993/94 and projects \$2.07 million in 1994/95. As illustrated in Appendix II, the staff has raised \$10,524,681 over a 5-year period, with one individual being responsible for approximately $\frac{1}{2}$ that amount. With improved staff qualification and with an addition of at least 3 more world class curators, the anticipated income from grants and contracts should more than double. Overhead income from grants and contracts at NHMLAC based upon standard performance at other type museums would normally be projected at \$1.4 to \$1.5 million (based on modified indirect cost rate for overhead; the NSF standard is 37 percent).

The reader should be aware that two major collections, the echinoderm and the crustacean collections, are being moved, with National Science Foundation support, into newly renovated space. Such moves in the past 2 to 3 years have been labor intensive, taking considerable time from the ability of the curator in charge to raise funds to support research. However, within a year these curators should be expected to be fully operational and to be collecting considerable funds to support research. It is clear that NSF curatorial grants are not enough.

Research grants and contracts based on collection resources should parallel the intensity of NSF funding for the care of the collections. NSF has funded collection support based upon the concept that collections are to be used for research. Research support should be sought to make use of the NSF funded care of the collections. NHMLAC's excellence in this area is particularly evident in the ichthyology, crustacea, and entomology (insects) collections.

Four actions, if approved, will considerably increase the quality and productivity level of the staff. These elements, which do not exist today, involve:

1. Establishing a policy of peer review for promotion or dismissal. There is no written policy for review, promotion or dismissal of curator-level staff. This is a major fault and omission in the set of museum policies. The museum must institute such a policy if it is to have an exceptional staff. (See Appendix III for a preliminary outline of this policy). There needs to be a strong policy to protect staff from any capricious actions of the administration and to insure due process for all. To accomplish this, a peer review process would address each of these problems and would provide an effective feedback for the staff in the development of their full potential. Such a process should include all professional staff within the museum, whether Foundation or County employees.

To investigate whether this course of action would be possible, County Counsel was requested to advise the Commission whether it would be legally feasible in the context of the County civil service employment. County Counsel responded, ". . .we believe it would be possible to construct civil service classifications for museum curatorial positions generally along the lines suggested by the Commission's consultant which are consistent with the requirements of the County Charter. However, such a classification, to accomplish the purposes envisioned, would have to be carefully considered and drafted and would require amendments to the current Civil Service Rules and County Code."²⁵

²⁵ Memo from County Counsel to the Economy and Efficiency Commission, RE: Personnel System for Museum Curatorial Staff, March 3, 1995

2. Providing, as part of the Policy Book, full job descriptions for all curator-level (assistant to full curator) positions. These job descriptions should make clear what the duties and expectations are relative to the five points concerning the evaluation of staff presented in this report. These descriptions should detail collection management duties, as well as expectations for research and funding research, and the expectations of those hired onto the ladder of promotion to curator. These descriptions must be carefully considered and drafted and adopted into museum policy by the governance of the museum, civil service rules and County Code.
3. Making the position of Deputy Director of Research and Collections one with a heightened mission. The traditional source of funding for systematic research, the National Science Foundation, is not keeping pace with inflation, let alone significantly increasing its funding platform in real dollar advances (especially for systematic biology). In this rapidly changing environment the search for diverse funding opportunities has become a mandate. Today a large museum needs a vigorous and systematic knowledgeable individual to fill this function. This position should be a full time, non-research position that has the mandate to track all sources of funding opportunities and to track all relevant programs and political activities in Washington D.C. This position should also:
 - a) Determine the impact on collections and research (making maximum use of the Association of Systematics Collections (ASC) Washington networks now in place).
 - b) Aid curatorial-level staff to implement funded programs, including participation in contracted work, team research, research that makes use of the molecular lab, major national-level and international programs, and seeking out contractual possibilities for government and industry to make use of collection resources.
 - c) Build open and strong bridges between staff and the administration to initiate new programs and maximize new ideas. This person could work with the Director to implement a systematic curriculum with USC through which curators are paid for teaching collection-related courses of use to the programs at USC, particularly in marine biology and molecular genetics.
4. Opening wide communications between curatorial staff and the higher administration. A successful institution requires a fully involved interactive team. The administration must effectively communicate with the curatorial-level staff. This involves opening itself to work with and encourage staff, addressing real problems,

and helping staff raise funds, especially endowment. This opening of communications is critical to the museum's progress in funding support for its collections-based activities.

If all of the four concerns above were addressed and policies based on these concerns implemented, the museum would take a significant step in the development of staff and its qualifications. With this improved administrative guidance they can be helped to achieve their potential. Good administration is the key.

CURATORS TEACHING

The collections are constantly used for teaching students at all levels, through high school and university. NHMLAC currently has a number of graduate students from different universities using collection resources for their studies. In addition, the staff from different collection resources has joined in a program funded by the National Science Foundation. This program enables apprentice high school students from throughout Los Angeles to work with the scientists in systematic biology. It involves the development of collection-based research and the conduct of experimental work to solve problems. These scientists volunteer their time to conduct field research with these students, as well as working with them in the museum.

Nearly all curators are adjunct professors at local universities such as USC and UCLA. Such a relationship is healthy as it brings into the museum bright young minds to carry the torch of knowledge about organismic biology to the next generation. At the same time this relationship provides volunteer manpower to help curate the collections or work-study students at a considerable savings.

Curators have continually conducted outreach activities to reach all levels of students within Los Angeles County through diverse programs such as exhibits, high school internship programs, work-study programs, and volunteer programs. The removal of collections would result in the elimination of these positive activities together with the resulting loss of unique and important educational programs.

CURATOR SALARIES

The curator's salaries should be competitive for the Los Angeles area. It is counter productive to build a program and raise funds through grants and contracts if the required staff cannot be maintained. The competition to hire these individuals is not only with other museums, but also with academic institutions, which are employing some of the best minds in systematics and collection-based research.

Two types of academic institutions are seeking the individuals:

1. Universities that have collections, such as Harvard University, U.C. Berkeley, University of Michigan, etc.
2. Universities with a strong program in systematics and evolutionary biology where collections are not all that critical.

In these instances, systematics are wanted to conduct molecular biology, theoretical work or monographic work where large collections are not needed, but where a researcher's own collection, likely a limited one, is used. Such universities may have small collection resources. In both instances, these institutions are not interested in absorbing or funding huge collections in addition to those that they may have. Institutions with huge collections have received NSF funding to help support collections.

By insuring adequate salaries and by mandating a peer reviewed staff, the grant and contract flow would increase significantly, most likely offsetting any additional costs that may be incurred.

RECOMMENDATIONS

16. **The museum should develop an effective policy to improve the communication between curatorial staff, exhibits staff and other museum departments. (Implementation: Immediate)**
17. **NHMLAC should implement policies for staff evaluation and promotion to include peer review. Staff must be expected to be more productive in obtaining research grants and contracts. (Implementation: Within 6 months) [See Appendix I]**
18. **As part of NHMLAC policy, full job descriptions for all curator-level positions should be developed (assistant to full curator), making clear what the duties and expectations are relative to the five points for the evaluation of staff presented in this report. (Implementation: Within 6 months)**
19. **NHMLAC should review the duties of the position of Deputy Director for Research and Collections and revise them to reflect the suggestions put forth in this report. (Implementation: Within the next 6 months)**
20. **The Director of Personnel should be directed to undertake a review of the salaries paid to the curatorial staff to insure that they are consistent with the recruitment of a staff of the highest quality. (Implementation: Within 6 months)**

GOVERNANCE AND STRUCTURE

OVERVIEW

The Museum of Natural History is a department of Los Angeles County which is governed by the Board of Supervisors and the organization which has been presented in Chart I. The Board of Supervisors appoints a Board of Governors for the Museum of Natural History Department. County Code 2.94.010 states, "Subject to the supervision of the board of supervisors, the department of museum of natural history shall be under the direction of a board of governors...the board of governors shall consist of 15 positions. A member of the board of governors shall be appointed by, and serve at the pleasure of, the board of supervisors for a period of four years." The administration and operation of the department is, subject to the general supervision of the board of governors, under the direction and management of the Director who is appointed by the Board of Governors.

The Director of the Museum is the department head for the Museum of Natural History Department and supervises county employees of the department pursuant to civil service regulations. The Board of Governors also approves deaccession of County owned collection material and has other broad oversight responsibility for the department.

The Los Angeles County Museum of Natural History Foundation is a private 501(c)(3) organization whose sole function is to support the Natural History Museum. It acquires and manages collections, operates educational, exhibit and membership programs and raises funds for the Museum, pursuant to various agreements with Los Angeles County. The Foundation is governed by its Board of Trustees. Under the Foundation's bylaws, each member of the County's Board of Governors automatically serves on the Foundation's Board of Trustees; other members of the Foundation's Board of Trustees are selected by the Board of Trustees itself. The Board of Trustees appoints the President of the Foundation who always has been the Director of the Museum. The President of the Foundation, in turn, hires various Foundation employees who work under his/her direction together with County employees of the Museum of Natural History Department to accomplish the mission of the museum.

DISCUSSION

The governance of the museum, as described above, is cumbersome. Such an organization of governance can easily lead to confusion in the development of effective policies both at the board level and within the administration of the museum.

It appears that a merger and restructuring of the two boards of directors would result in a more practical and productive organization. The review of governance policies and board restructuring should consider the following:

1. A requirement that each board member of the current or future consolidated museum boards sign a conflict of interest statement. Such a policy, which is standard in other institutions, requires careful study and drafting.
2. The compliance with County Code Section 2.94.020. A. ". . . No member shall serve for a period of more than eight consecutive years; provided, however, that the board may, by order, extend this length of service or waive this limit for individuals or the board of governors as a whole." This section should be reviewed to determine how well it serves the organization in the creation of an effective governing body.
3. A means by which each board member can be helped in the development of a fuller and continuing understanding of the complex nature of the museum's finances and of their responsibilities in managing the fiscal aspects of the organization.
4. The implementation of County Code Section 2.94.020. D. stating "The board shall appoint to the board of governors only persons who have the time, interest, ability and willingness to serve the museum." It is important to ensure that this section of the code be applied in order to ensure that the members of the board of governors be able to ". . . develop and establish museum policies in conjunction with the director, determine museum goals and programs, and provide general guidance and review of museum operations under the management of the director; . . ." in addition to their other duties.
5. It is essential that appointees to a consolidated board governing the museum possess the skills and background necessary to effectively manage this department. It has been found in other similar organizations to be more effective and to provide better balance to have a board composed of individuals selected by a board development committee. Individuals are needed with the capability to address questions of:
 - a) fundraising,
 - b) insurance/liability,
 - c) investments and other matters of finance,
 - d) science,
 - e) public outreach and advertising,
 - f) liaison to the city, county, etc.

Bringing the right person to the board to fill a much needed vacancy in one of the required areas cannot be over emphasized.

6. The organization should continue to develop a structure with strong board committees. In addition to committees dealing with finances and investment, other committees should be established to address collections and research matters, exhibits, education and outreach.
7. The responsibilities, procedures and processes used in the annual performance review of the Director by the Board of Supervisors should be reviewed and revised as appropriate.

The governing authority of the museum is now facing a major undertaking: to organize itself to effectively address the focus on and impacts to at least three museum programs (History, Vertebrate Paleontology (relative to exhibits), and Invertebrate Paleontology); to maximize revenue and funding opportunities; and to improve the confidence of the peer reviewers within the National Science Foundation and National Endowment for the Humanities (NEH) relative to funding collection support for the museum.

Combined with the restructuring issue, the governance of the museum is facing the realities of the current fiscal environment and the possibility of finding major inconsistencies within its financial operations. The environment has forced a number of institutions to revise their approach to funding with a corresponding reduction of their reliance on governmental funding. This approach, an example of which is presented in Addendum I, can take a number of forms. It appears that privatization, perhaps using the model used by New York's American Museum of Natural History model, currently offers the most reasonable approach available to the NHMLAC. As demonstrated in Appendix III, there is a current trend toward privatization. This is illustrated by a reduction in the number of county employees at the museum from 140 in FY 1987-88 to 71 in FY 1994-95, while the number of Foundation employees grew from 100 to 174 over the same period.

It is reasonable to expect that NHMLAC would be able to resolve the issue of privatization by the year 2000. This lead-time allows for an effective and orderly transition within the museum's strategic planning process. The reality is that, with a fixed platform of funding until 2019 by the County at \$9.1 million, annually adjusted, the annual costs of running the museum must increasingly be met by the private side, the Foundation. The average growth of peer institution budgets is 6.5% per year (range of 3% to 10%). The NHMLAC has a flat growth projection, yet must grow if it is to remain viable.

RECOMMENDATIONS

21. The Board of Governors of NHMLAC and the Board of Trustees of the Foundation should review their policies and procedures to assess their effectiveness in governing the museum. The objective of this review is to merge the two boards, resulting in a downsizing the governance of the museum in accordance with the considerations presented in this report. (Implementation: Strategic)

22. NHMLAC should prepare, prior to the year 2000, to undertake a 20-year transition from County Museum to a Private Museum, with the County providing and maintaining grounds, buildings, utilities and security. (Implementation: Strategic)

INVENTORY COMPUTERIZATION

With the exception of the problems with sections of the history collection, the collections are registered and, for the most part, being computerized. The curators have a good understanding of the size of their collections and the locations of all species. However, computerization of millions of specimens is both time consuming and labor intensive.

To accomplish computerization will require that the museum hire a computer professional to assist the curators in the development of systems. This action will eliminate the ad hoc process now in place, avoid problems encountered in similar situations within the county, and preclude problems of design, development, implementation, and operation, resulting from having individuals designing systems who are not professionals in this very complex area.

The costs of a computerized system are significant. Given the current financial situation in the museum and the reductions in staffing, the prospects of making significant progress in the next few years are slight. However, the National Science Foundation has been funding computerization of type specimens at NHMLAC. The National Science Foundation will continue to fund significant programs in collection computerization. It is a matter of time, more than a decade for some collections.

In Museum Ethics,²⁶ the following statement is made:

"An ethical duty of museums is to transfer to our successors, when possible in enhanced form, the material record of human culture and the natural world. They must be in control of their collections and know the location . . . of the objects they hold."

²⁶ American Association of Museums, Museum Ethics: A Report to the American Association of Museums by its Committee on Ethics (1978).

Although the Commission realizes the resource constraints and the time requirements to accomplish a complete inventory, it also feels that it is important that effective management require that a continuing inventory be in place to insure that intelligent decisions are being made regarding collection use, growth, storage and security. The experience of the Smithsonian Institution's National Museum of American History demonstrates some practical problems encountered in initiating an effective inventory.²⁷

RECOMMENDATION

23. NHMLAC should hire a computer professional to coordinate data processing and networking throughout the organization. (Implementation: Within 6 months)

SECURITY

Some chief curators have expressed deep concern that the recent budget cuts have caused a reduction in the security force and that security might be compromised. The general aspects of this concern are expressed in *A Legal Primer on Managing Museum Collections*:

"The museum has the responsibility to provide reasonable care for the objects entrusted to it. With regard to objects owned by the museum, this responsibility springs from the museum's charitable trust status . . . Trustees have a responsibility to use the care and skill of persons of ordinary prudence in preserving trust property, and they are under a similar duty to use care in preventing theft of trust property and damage to it by the unlawful acts of third parties. With regard to objects on loan to a museum, the responsibility to provide care is governed by the bailment relationship created by the loan agreement. With regard to objects other than loans placed in the custody of the museum, the degree of responsibility assumed by the museum should be set forth in the temporary receipt . . ."²⁸

As a practical matter the previous statement emphasizes the responsibility of the museum's governing body to be able to assure itself that policies and procedures are in effect that afford museum objects prudent care and protection in light of existing circumstances.²⁹

²⁷ EVELYN, DOUGLAS E. *Taking Stock in the Nation's Attic*, Museum News 39 (July-Aug 1981).

²⁸ MALAROA, MARIE C. *Legal Primer on Managing Museum Collections*, Smithsonian Institute Press, Washington, D.C., 1985, page 43.

²⁹ *Harris v. Attorney General*, 31 Conn. Sup. 93, 324 A.2d 279 (1974).

Since the concern for the security of the objects within the museum has been drawn into question, it would be advisable for the museum's management and governance to evaluate the security status of the institution to insure that specimens are being adequately protected and that policies and procedures exist that will insure that any risk of future loss is minimized.

RECOMMENDATION

24. NHMLAC should conduct a security review and take those actions necessary to insure that facilities, and their contents are protected, to the maximum extent possible. (Implementation: Within 6 months)

MUSEUM FINANCES

The NHMLAC has recently uncovered some apparent irregularities in the financial records of the Museum Foundation. The museum administration has reported these concerns to County Counsel and subsequently to the Los Angeles County District Attorney. The District Attorney, at this point, has assumed full responsibility for the continued investigation, to include serving search warrants at the museum.

The Board of Supervisor's direction to the Economy and Efficiency Commission did not include a request to review the financial records of the museum and thus, this report would not have discovered the irregularities identified by the museum's administration. The following information results from a review of the museum's budget and was conducted with the objective of identifying opportunities within the museum for increased efficiencies and organizational improvements.

BUDGET

REVENUE

The funding for the museum has generally increased from FY 1987-88 to FY 1991-92 (Appendix III). From FY 91-92 to present funding amounts have been steadily declining. Graph 1 presents a comparison of revenue sources from FY 1991-92 to FY 1994-95. This graph, illustrating the data presented in Appendix IV, demonstrates that the prime source of revenue is the contribution of the county, but, if taken as a whole, the remaining categories, which represents the total foundation revenue, are and have been, consistently higher over an 8 year period. Both County and Foundation revenue have shown a general decline in the recent years, due in part to the economic downturn. This decline is particularly significant, in light of the fact that budgets of some peer group institutions have been growing by approximately 7% per year.

If it were possible for NHMLAC to grow at this 7% rate its FY 1993-94 budget would have been approximately \$25 million, with an increase to approximately \$26 million in FY 1994-95.

Graph 1 indicates a significant revenue decline from the peak in FY 1991-92. The major areas of loss have been in contributions, i.e., Capital Campaign Gifts, Endowment, and a loss in the line item Los Angeles County support, less admission revenues, which dropped from \$1.6 million to 0 in three years.

Graph 1



A number of actions are possible to address the current revenue situation within the museum. Each of the suggestions made below should be developed to maximize its potential to expand revenue opportunities.

1. The museum should develop a policy to charge for the use of its collections, library and laboratory facilities. Such a policy should include charges to cover the following costs: manpower, including costs for mandatory supervision, record access charges, plus mailing or transfer charges, a charge to work on-site with a database to select records, and charges to select records by phone. In addition to these, other charges may be

determined by the museum to be applicable. (Appendix V illustrates a Contractual Agreement used by the Academy of Natural Sciences of Philadelphia to establish appropriate charges, identify exemptions and to clarify the appropriate uses of the facilities/data.) Having such a policy in place will effectively communicate the charges to be applied and eliminate those instances where donations are being requested. One peer-group institution has a department with a contract with APHIS that brings in approximately \$35,000 per year.

Dr. Jerry Lipps, Director of the Museum of Paleontology at U.C. Berkeley, has been successful in expanding the use of, and participation in, the museum by using an informational approach to advertising. Increased usage would improve the revenue opportunities identified above. Adopting this approach would further support the recommendation to hire a computer professional for bioinformatics (computer networking, databases, Internet use, and special information products) which has already been called for in this report.

2. Currently, the museum licenses vertebrate paleontology reproductions. This policy can be expanded to other areas of the museum operations, particularly in the History Section. These items represent a possible base for increased revenues by licensing to vendors, who in turn advertise these items using catalogs. Institutions such as U.C. Berkeley Museum of Paleontology, the American Museum of Natural History, the Museum of Fine Arts, Boston, and the Metropolitan Museum of Art in New York, utilize this catalog marketing approach to sell reproductions and similar items to the public.
3. The museum has the ability to conduct expanded tours of its "working areas." The public is interested not only in the exhibits, but also in how they are developed and the materials that are used in their support. This approach has a number of advantages:
 - a) It can be seen as an additional revenue source,
 - b) The material that is currently in storage or that is being worked on, can be, in part, displayed to the public, and,
 - c) The public can be educated on the mission and purpose of the museum.

These tours should be regularly scheduled and available to the general public. They can be advertised by methods instituted to retrieve information and all other usual means. Currently, the Seville Avenue Warehouse offers the museum the best opportunity to undertake this option. With a greater understanding of the museum, it should be better positioned to further develop its endowments.

4. The museum has, in the past, undertaken activities for educational institutions. In keeping with the concept

that those receiving the benefit should contribute to the cost, the museum should begin negotiations with benefiting educational institutions to provide support of activities, particularly for those children and young adults that are uniquely interested in science.

RECOMMENDATIONS

25. The NHMLAC should create and implement a uniform museum-wide policy to charge all non-members of the museum for the use of collection resources. (Implementation: Immediate)

26. Funds raised by charging for the use of the collection resources in the preceding recommendation, should be allocated to the collecting department for the maintenance and improvement of that collection. (Implementation: Immediate)

27. NHMLAC should expand the practice of licensing reproductions to include all other replicable holdings in the museum collections, especially highly valued objects. (Implementation: Within 1 year)

28. NHMLAC should institute higher cost, "specialized" tours of the collections that would include "behind the scenes" access to parts of the collections and presentations by collection managers conveying the mission and the uniqueness of the collections. (Implementation: Immediate)

29. NHMLAC in consultation with the County Superintendent of Schools, should, by the year 2000, contract with educational institutions using the facilities to assist in the funding of educational programs provided by the museum. (Implementation: Strategic)

30. NHMLAC should institute a method for the retrieval of information within the museum collection resources that is available to the public, especially the public schools. (Implementation: Immediate)

EXPENSES

Graph 2, using data from Appendix IV, illustrates expenses by category. As would be expected, payroll account for the vast majority of the expenses over the period rose at a relatively constant rate. The categories that show an unusual variation over the period are depreciation, public relations, exhibit expense and lease payments. In part, these categories have resulted in a loss of \$786,000 in FY 1993-94 and a projected loss of \$4,335,000 in FY 1994-95. This is the first time over

the 8 years reviewed that there have been 2 consecutive years of loss. In addition, the loss trend has increased significantly.

With constant county funding the variance between revenue and expenses will be reflected in the foundation expenses incurred by the museum. These expenses have increased over the 8 year period considered, most dramatically in the past three fiscal years. Increased revenue will help in reducing the anticipated deficit, but control over expense items will be critical in arriving at an efficient organization.

Graph 2



RECOMMENDATIONS

31. The business aspects of the Petersen Museum should be developed so that this portion of the institution is able to cover its operations, and ideally, generate additional funds to cover other Museum expenses. It is important that the Petersen Museum not be operated at a loss since such a course of action would cut into the mission of an already financially stressed Natural History Museum. (Implementation: Immediate).

32. The NHMLAC, over the next five years, should develop its budget to increase spending for collections and collection-based activities from 14% of the budget to approximately 20% of the budget. Private funding should be encouraged to accomplish this recommendation. (Implementation: Strategic)

ENDOWMENT MANAGEMENT

The museum foundation currently has an endowment exceeding \$35 million. As illustrated in Chart X, \$33 million of the endowment is committed to a single stock that does not yield dividends, but rather, relies on capital growth for its continued performance. The current investment strategy of the museum has resulted in an excellent return in the past, but, as has been shown time and again in the field of investment finance, there is no guarantee that such performance will continue into the future.

Chart X
Natural History Museum Foundation
Restricted Endowment - Pool B and Page Endowment (as of 10/31/94)

DONORS	MARKET VALUE	RESTRICTION
General Endowment (Pool A)*	33,935,090	General
Hydril Company	75,000	General
Hearst Education	317,695	Education Outreach
Seaver Institute/D. Call Harrison/Onderdonk & Others Onderdonk (Add'l)	135,020	Exhibit Maintenance
Hearst Foundation	150,905	Anthropology Native American Artifacts Acquisition
Cheney Memorial	142,963	MMA
Bandy Trust	47,654	Gem & Mineral
Page Endowment	644,594	Page Museum
TOTAL - OCTOBER 31, 1994	<u>35,448,921</u>	

*Pool "A" is comprised totally of stock in Berkshire Hathaway.

Although a written investment policy for the museum was not available for review by the Commission, it would appear that such a policy anticipates the continued growth of the stock in question. This approach is extremely risky and is not indicative of a prudent and responsible investment management strategy. It is generally accepted by the financial community that a prudent investment strategy should rely on diversification to limit risk. It would normally be anticipated that the NHMLAC endowment investment policy should be consistent with this approach. It would also be expected that NHMLAC would have a written and approved investment policy to insure an understanding of responsibilities and the

safeguarding of the endowment fund. To insure that the museum's governance fulfills its fiduciary responsibility in the management of endowment funds, it should critically evaluate its current investment policy.

The museum is facing a financial crisis, which requires the infusion of funds. A prudent course of action for the museum to follow would be to generate and allow the spending of earnings of the endowment, generally for well-managed portfolios 4.5% to 6.0%. The policy should provide that any amount earned above the level of earnings determined to be appropriate by the governance of the museum, would be returned to the endowment. This is a conservative approach to the management of endowment funds. The strategy, while not overly invading the principle, would yield the museum approximately \$600,000 per year that can be used to offset the current deficit.

A survey of four local (LA Area) institutions, Occidental College, Pomona College, UCLA and USC, shows that three have endowment spending rates between 5 and 6 percent; with one reporting 7-10 percent rate. These institutions generally apply this percentage to the average earnings of the previous three years endowment principal. The accepted rule of thumb across the country is 5 percent of the 12 trailing quarters. Chart XI illustrates institutional spending from endowment in six major institutions across the country.

The Commission feels that the Foundation has the responsibility in managing its endowment to expend an appropriate level of endowment earnings to support the operations of the museum. This obligation, which should be consistent with similar institutions, should be held by the County to be a condition of continued funding. Provisions of Section 8, paragraph H of the "Agreement between County of Los Angeles and the Los Angeles County Museum of Natural History Museum" provides a "Re-Opener for Substantial Budget Crisis." Since the County is currently facing such a crisis and may well meet the definition of a "substantial crisis,"³⁰ it may well want to review the funding of this agreement if the endowment expenditures do not meet that which would be considered to be normal for museums of comparable size and stature.

³⁰ The definition of a "substantial crisis" in the Agreement is ". . .shall be evidenced and measured by a reduction for budgetary reasons of the number of budgeted positions of permanent positions of permanent employees of the County by two percent (2%) from the preceding year."

Chart XI
Institutional Spending from Endowment - 1994

Museum	% Spending from Endowment
American Museum of Natural History (New York, NY)	5% of market value as averaged over three years plus net expenses of maintaining the portfolio.
American Type Culture Collection (Rockville, MD)	0% budget of 18 million dollars (institution runs in the black without need of invading endowment at this point).
Academy of Natural Sciences (Philadelphia, PA)	7% of market value; average for 14 years (market return averages 14% not including 1994).
Metropolitan Museum of Art (New York, NY)	5% of market value of past 1 year.
New York Botanical Garden (New York, NY)	5% of market value averaged over past 3 years plus net expenses of maintaining the portfolio.
Field Museum of Natural History (Chicago, IL)	6% of market value averaged over three years. (They are re-evaluating this strategy because of the flat market in 1964 and low yield projections for 1995. They will probably go with 5% of the market value averaged over the past three years.)
Bishop Museum (Honolulu, Hawaii)	Spends 100 % of the earnings from endowment each year. Growth of Endowment is based on Board-approved additions to endowment.

NOTE: If inflation is 3%, spending from the average of the last three years should be \$0.00 if interest yields 3% or less; spending should keep pace with interest earned up to 5% of the market value averaged over three years. All funds earned in excess of 5% should be added to endowment. Spending of 6 to 7% occurs in some institutions where there are chronic year-end short-falls, but where the market return has been in excess of 10%. In 1994 the market was essentially flat forcing all institutions to re-evaluate spending from endowment. The prudent action in 1995 is 5% of market value averaged over three years.

Based upon other comparable institutions, the NHMLAC needs, or should now have, an endowment in excess of \$120 million. The Finance Committee (of a Consolidated Board) should oversee the investment policy and the actual investments of the museum and assist in the development of a conservative, yet profitable, portfolio.

Increasing the endowment must become a high priority for the personnel of NHMLAC. The objective is to put additional funds into the endowment within 9 months. It is desirable to raise \$25 million in restricted endowment for collections, Seaver archives, and curators. These core functions cannot return more than, at best, 15% to 16% of overhead to maintain them (collections and collection space). Collections are essential core functions and the major resource of the institution. An adequate restricted endowment assists the museum in its annual budget development. In an effort to increase the endowment the museum should provide curators with a list of foundations and industries that are off limits without administration approval. This approach avoids multiple contacts within an organization. It should be made clear that all others (companies, foundations, individuals) are open to approach.

RECOMMENDATIONS

33. The museum foundation must implement a prudent and well defined endowment policy that reduces its investment risk as a result of holding the majority of its endowment in one stock and which will provide the museum with levels of revenue consistent with those of comparable institutions. (Implementation: Immediate)

34. The County should review the provisions of its agreement with the Museum Foundation with the objective of insuring that the Foundation is supporting the museum operations adequately from endowment earnings. (Implementation: Immediate)

35. The museum foundation should place increased emphasis on increasing its endowment. (Implementation: Within 1 year)

36. The NHMLAC management should put into place effective policies within which curators are able to increase the endowment. (Implementation: Immediate)

CONCLUSION

This report indicates target dates for the implementation of the Commission's recommendations. It should be noted that in one area, not dealt with in detail in this analysis, outreach to interest the public and engender support, NHMLAC is already undertaking new efforts. TERRA, the museum's bimonthly publication, has been revived, communication with members has been increased and a membership recruitment competition has been launched. News of special events and exhibits has appeared in the media. Such efforts should continue and perhaps be extended to promote the museum's shops and expand their selection of museum-related items. Another area for future consideration could be cooperation with the Los Angeles County Museum of Art, which is also partially county-funded, in joint projects where their interests overlap. (Currently, NHMLAC features "The New Face of African Art" and LACMA is showcasing "Three Centuries of American Furniture.")

The Economy and Efficiency Commission has found a number of areas within the operations and management of the NHMLAC that can be significantly improved as a result of increased managerial and staff attention. The Commission desires to assist the NHMLAC in accomplishing the tasks that lie before them in implementing the recommendations made in this report. To accomplish this the Commission requests that it be directed to conduct a follow-up on the recommendations made in this report with the objectives of:

1. Further assisting the museum in the development of their operational and strategic approach to the opportunities identified.

2. Identifying additional efforts that can be made toward improving the operations and management of the museum.

3. Assuring the Board of Supervisors that every possible action is being taken to insure that this department is provided every opportunity to succeed.

RECOMMENDATION

37. Direct that the Economy and Efficiency Commission conduct an implementation review of the NHMLAC within one year of the acceptance of this report and provide the Board of Supervisors an assessment of its progress. (Implementation: within one year)

REFERENCES FOR THE REPORT

- Davis, George M., Duckworth, D., Raven, P., Wilson, E., Hoagland, K., and Chernoff, B., *Systematic Collections for the 1990's*. A Report to the National Science Foundation. Produced by: Association of Systematics Collections and Co-sponsored by the National Museum of Natural History, Smithsonian Institution, 1989.
- Irwin, H., Payne, W., Bates, D., and Humphrey, P., *America's Systematic Collections: A National Plan*. A report to the Association of Systematic Collections, 1973.
- Lee, W., Bell, B. and Sutton, J., *Guidelines for Acquisition and Management of Biological Collections*. Association of Systematics Collections. Wash., D.C., 1982.
- Miller, E.H., *Museum Collections: Their Roles and Future in Biological Research*. No.25, Occasional Papers Series; British Columbia Provincial Museum, 1985.
- Steere, W., *The Systematic Biology Collections of the United States: An Essential Resource*. Part I: *The Great Collections: Their Nature, Importance, Condition and Future*. Part II: *The Great Collections: Statistical Information*. A report to the National Science Foundation, 1971.
- Stuessy, T. and Thompson, K., *Trends, Priorities, and Needs in Systematic Biology*. A report to the National Science Foundation. Association of Systematics Collections. Wash. D.C., 1981.
- Systematics Agenda 2000: Charting the Biosphere*. Technical Report: 1994. [attainable from the Association of Systematics Collections, Wash. D.C.].

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APPENDIX I
Chapter 2.94 DEPARTMENT OF MUSEUM OF NATURAL HISTORY

2.94.010 Created - Name and functions.

2.94.020 Board of governors - Continued - Members - Museum direction authority.

2.94.030 Board of governors - Duties designated.

2.94.040 Board of governors - Compensation and expenses.

2.94.050 Board of governors - Executive committee.

2.94.060 Director - Appointment and authority.

2.94.070 Director - Duties designated

2.94.010 Created - Name and functions.

There is created a department of the county, which department shall be known and designated as "department of museum of natural history." The functions of the department shall consist of and include administrative charge and control over all county matters relating to history and science, and shall also include the administration of Hancock Park (except that area of said park devoted to the Los Angeles County Museum of Art), and the care, safeguarding and maintenance of all exhibits, equipment and structural improvements directly relating to exhibits, the administration and maintenance of Los Angeles County Museum, and other property hereafter acquired for or devoted to history and science. This section does not apply to William S. Hart Park. (Ord. 9061 § 2 (part), 1966: Ord. 8212 § 1, 1962; Ord. 8110 § 1 (part), 1961: Ord. 7224 § 1, 1957: Ord. 6967 § 1 (part), 1956: Ord. 6227 § 1 (part), 1953: Ord. 4903 § 1, 1947: Ord. 4846 § 1, 1947: Ord. 4099 Art. 13 § 193, 1942.)

2.94.020 Board of governors - Continued - Members - Museum direction authority.

A. Subject to the supervision of the board of supervisors, the department of museum of natural history shall be under the direction of a board of governors, which board is continued. Said board of governors shall consist of 16 positions; provided, however, that upon retirement of the president of the board of governors serving at the time the amendment codified in this section becomes effective, the board of governors shall consist of 15 positions. A member of the board of governors shall be appointed by, and serve at the pleasure of, the board of supervisors for a period of four years. No member shall serve for a period of more than eight consecutive years; provided, however, that the board may, by order, extend this length of service or waive this limit for individuals or the board of governors as a whole. Each member of the board of supervisors may nominate candidates for three of the positions on the board of governors.

B. A member's position on the board of governors shall become vacant upon his or her death, resignation or removal by the board. In the case of such a vacancy, the board shall appoint a successor to serve for the remainder of the unexpired period of service for such vacant position.

C. The board of governors shall annually, or at such other times as may be convenient, and by majority vote, elect from the members thereof a president of the board.

D. The board shall appoint to the board of governors only persons who have the time, interest, ability and willingness to serve the museum. (Ord. 90-0086 § 5, 1990: Ord. 12008 § 1, 1979: Ord. 11050 § 1, 1974: Ord. 9061 § 2 (part), 1966: Ord. 8110 § 1 (part), 1961: Ord. 4846 § 2, 1947: Ord. 4099 Art. 13 § 194, 1942.)

2.94.030 Board of governors - Duties designated.

The board of governors shall perform the following duties:

A. Under the general supervision of the board of supervisors, develop and establish museum policies in conjunction with the director, determine museum goals and programs, and provide general governance and review of museum operations under the management of the director;

B. Serve as advisors to the board of supervisors with respect to all facets of museum operation including, in particular, future goals and programs;

C. In conjunction with the director, promote the image to the public of the museum and its cultural and educational activities;

D. Contribute regionally, nationally or internationally to coordinated efforts from which the museum may eventually be a direct or indirect beneficiary. (Ord. 11050 § 2 (part), 1974: Ord. 4099 Art. 13 § 198, 1942.)

2.94.040 Board of governors - Compensation and expenses.

The compensation of members of the board of governors shall be as provided from time to time in the current salary ordinance of the county of Los Angeles. In the absence of any provision therefor in the current salary ordinance, the members of the board shall serve without compensation, except that, when required to travel in the performance of their duties, they shall be reimbursed for their necessary travel expenses, including

transportation, meals and lodging, in accordance with the provisions of ordinance 4099. (Ord. 8118 § 2, 1961: Ord. 4099 Art. 13 § 197, 1942.)

2.94.050 Board of governors - Executive committee.

A. There is created in the board of governors an executive committee consisting of seven members to be appointed by the president of the board from the members thereof, and approved by the board.

B. The executive committee shall meet at such times between meetings of the board as shall be necessary or expedient, and shall have the power and duty to handle, during such times and consistent with the policies of the board, general or specific matters involving the administration of the department, and to that end, shall have power to act.

C. The executive committee shall keep a minute record of all of its proceedings and all actions taken by it, and shall file with the board at each regular meeting a copy of such minutes involving all matters acted upon since its preceding report. (Ord. 9027 § 1, 1966; Ord. 4846 § 3, 1947: Ord. 4099 Art. 13 § 195, 1942.)

2.94.060 Director - Appointment and authority.

Pursuant to the civil service provisions of the County Charter, the board of governors shall appoint and supervise a director of history and science, which office is created. Subject to the general supervision of the board of governors, the administration and operation of the department shall be under the direction and management of the director. The director shall, subject to the confirmation of the board of governors, appoint all subordinate employees of the department. (Ord. 8110 § 1 (part), 1961: Ord. 4846 § 4, 1947: Ord. 4099 Art. 13 § 196, 1942.)

2.94.070 Director - Duties designated.

The director shall be assigned the following duties:

A. Under the general direction of the board of governors, develop and administer the operation of an integrated museum program that includes all county, private, contractual, grant-supported or other activity that is part of, or impinges on, the Museum of Natural History;

B. Inform the board of governors, the board of trustees of the Museum Foundation, the board of supervisors, and the chief administrative officer on the status of, or significant changes in, museum programs, and of opportunities and problems of concern in, museum management;

C. Prepare a proposed annual budget for the museum, with the review and concurrence of the board of governors, for submittal to the chief administrative officer for review and final submittal to the board of supervisors;

D. Maintain a current analysis of all revenues and expenditures of the museum; this responsibility includes a periodic review and free and continuous access to the operating statements of the nonprofit supporting organizations to enable the director to coordinate their fiscal and operational programs with the overall operation of the museum;

E. Request a financial audit of the supporting organizations at least once a year to verify conformity to accepted accounting principles concerning the collection, maintenance and disbursement of funds; at the request of the supporting organization, this audit may be conducted either by the county auditor-controller, or a private firm;

F. Promote a positive image to the public of the museum and its cultural and educational efforts;

G. In conjunction with the board of governors and the supporting organizations, maintain a program of investigating possible sources of non-county museum support, be it financial, in-kind, or in-time, and coordinate the activities involved in such a program;

H. Contribute regionally, nationally or internationally to coordinated efforts from which the museum may eventually be a direct or indirect beneficiary. (Ord. 11050 § 2 (part), 1974: Ord. 4099 Art. 13 § 199, 1942.)

GRANTS AND CONTRACTS 1989 - 1994

Staff Members/Section	Amount	Source
1. FIREMAN, J. History		History had a \$1 million give-back
2. BEZY, R. Vertebrates/Herpetology	\$76,767	NSF Apprenticeship program Service/non research with Lafferty Foundation support/research
Total	<u>12,600</u> \$89,367	
3. BROWN, B. Entomology	\$180,000	NSF research grant Weiler Foundation/research
Total	<u>25,000</u> \$205,000	
4. CAMPBELL, K. Vertebrate/Paleontology	\$8,706	Erathem Grant
5. FITZHUGH, K. Invertebrates/Polychaetes	\$179,890	NSF collection improvement grant/ non research NSF support collection
Total	<u>250,000</u> \$429,890	
6. HARDIN, M. Anthropology	\$450,000	Natl. End. Humanities/exhibit
7. HENDLER, G. Invertebrates/Eichonoderms	\$149,000	NSF collection improvement/ non research Amer. Philosophical Soc./Research NSF collection improvement/non-research
Total	3,000 <u>209,951</u> \$ 361,951	
8. HEYNING, J. Vertebrates/Mammalogy	\$5,000	National Marine Fisheries Service Contracts " " " " " " " " NSF collection improvement grant/ non research
	5,000	
	9,775	
	5,000	
	8,000	
	331,008	
Total	<u>5,000</u> \$368,783	
9. KAMPF, A. Mineralogy		

10. LAVENBERG, R. Vertebrates/Ichthyology	\$980,000 92,211 607,499 144,700 173,700 399,365 93,496 91,988 880,000 165,025 307,383 18,810 49,035 199,025 92,660 173,488	Contract Contract Contract SCE contract Contracts "
10. LAVENBERG, R. (continued) Vertebrates/Ichthyology	98,450	" "
Total	74,800	" "
	97,425	" "
	62,150	" "
	30,300	" "
	<u>284,000</u>	
	\$5,115,810	
11. MARTIN, J. Invertebrates/Crustacea	\$26,000 93,843 10,000 103,992 54,000 180,000 88,843 <u>55,000</u> \$611,678	Foundation: equip molecular lab/service/ non research NSF/research grant Foundation/research NSF equip molecular lab service/non research NSF equip molecular lab NSF collection support grant NSF/research
Total		
12. MCLEAN, J. Invertebrates Malacology	\$192,597	NSF collection improvement non research
13. REYNOLDS, D. Molecular Lab	\$23,368	NSF Internet Connection Service/non research NSF Holomorph Conference Service/non research
Total	<u>35,000</u> \$58,368	

14. ROTH, M. History		
15. SITTON, T. History	\$81,162	Haynes Foundation grant
16. STEINER, C. Anthropology		
17. STEWART, J. Vertebrate Paleontology		
18. WILSON, E. Invertebrate Paleontology	\$99,929	NSF computerize collection data/non research
19. WISE, K. Anthropology	\$7,800	Heinz Foundation grant
20. GARRETT, K. Vertebrates/Birds	\$63,750	California Fish and Game research/contract
GRAND TOTAL	<u>\$8,144,791</u>	

Other grant support; raised by individuals not listed above: \$2,379,890
Grand total = \$10,524,681 = \$2,104,936 per year
NSF Collection and Infrastructure support: \$ 1,834,735



APPENDIX III

Issues to be considered in the development of a Draft Policy on review and promotion of curatorial-level staff.

1. There is no guarantee that an individual will be able to occupy a particular position.
2. An individual hired as an assistant curator will be provided with a job description stating expectations for collection management, research with peer reviewed publications, funding research through grants and contracts, outreach to the public through a variety of mechanisms including training students and continuing education, involvement as a leader in national and international science, and assistance in the development of exhibits.
 - A. There will be an annual evaluation by the Deputy Director of Collections and Science. As part of this evaluation the curatorial staff will be evaluated on how effectively they have communicated their work to the exhibit/outreach departments. The main criteria should be how their work has been manifested in exhibits and other vehicles that expose their work to the public.
 - B. At the end of three years there will be an in-house review by a committee of three members of the senior staff. The purpose is to provide advice and counsel on progress and direction and level of activities looking ahead to the major 5th year review.
 - C. Formal 5th year review: Outside peer review. Candidate provides list of persons to write letters evaluating his/her performance. A review committee of curator-level staff selects three persons from the list to write letters. The committee seeks three additional letters of evaluation. Persons chosen to write letters of evaluation must be in the same research field as the candidate and must feel comfortable to evaluate the candidate. The outside reviewers are sent the up-to-date CV, reprints, and statement of research goals and professional goals of the candidate. The committee reviews all credentials and evaluates accomplishments in curation, publications, grants and contracts, as well as other pertinent factors.
 - D. In the 10th year the process is repeated to evaluate whether an individual is to be retained in his/her position or promoted to full curator.
 - E. Full curators are evaluated every 5 years for productivity. This is an outside peer review as well as an administrative review.
 - F. Any grievance with procedure or finding will be turned over to a special committee of the Board of Directors. The administration may not sit on this committee but may be asked to make comment as appropriate by the chair of the committee.
 - G. All individuals must be assured of due and fair process.

ADDENDUM I

THE RELATIONSHIP OF THE CITY OF NEW YORK TO THE AMERICAN MUSEUM OF NATURAL HISTORY

From the very beginning of New York's American Museum of Natural History, the City has owned the buildings and the Department of Parks has maintained the land and property. The current site of the American Museum of Natural History is a part of Central Park.

Originally, the City maintained the buildings. Some 20 years ago, the City began to decrease its provision of funds for the maintenance of the building. Currently, the City gives \$6 million for the museum which is a little less than 10% of its current operating budget. Additionally, when it comes to maintenance, the City is, at least in 1994, providing one half of the \$60 million needed for maintenance, restoration, and other facets related to maintenance. In addition, the City provides all power and other utilities. The total input from the City exceeds \$36 million.

From the very beginning, the collections and the programs of the museum belonged to the private side, to the Board of Trustees.

