

# MAINE STATE LEGISLATURE

The following document is provided by the  
**LAW AND LEGISLATIVE DIGITAL LIBRARY**  
at the Maine State Law and Legislative Reference Library  
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied  
(searchable text may contain some errors and/or omissions)

- 2009 REPORT -

# Scientific Research Support Capability of the Maine State Museum

Methods for properly maintaining State-owned  
Natural Science Collections



Maine State Museum Commission  
Report in response to  
Resolve 220 of the 123rd Maine Legislature

## CHAPTER 220

### **'Resolve, To Study the Scientific Research Support Capability of the Maine State Museum**

**'Sec. 1 Maine State Museum Commission to study methods for properly maintaining natural science collections. Resolved:** That the Maine State Museum Commission, as established by the Maine Revised Statutes, Title 5, section 12004-G, subsection 7-C, shall conduct a study with the assistance of representatives from departments, agencies and institutions responsible for state-owned natural science collections concerning economical methods for properly maintaining such state-owned collections in the future; and be it further

**Sec. 2 Reporting date established. Resolved:** That the Maine State Museum Commission shall report the results of the study conducted pursuant to section 1 to the joint standing committee of the Legislature having jurisdiction over education and cultural affairs by March 1, 2009. The joint standing committee is authorized to introduce legislation to the First Regular Session of the 124th Legislature.'

## Executive Summary

- Maine's scientific collections, like those throughout the nation, have cost millions of dollars, and centuries of effort to amass. They have been valuable to Maine's economic development and have traditionally helped state agencies and university departments to fulfill their legislative, scientific, and educational mandates. These collections include pelts; study skins; pressed plants; skeletons; butterflies and other insects; alcohol-preserved reptiles, amphibians and fish; taxidermy mounts of mammals and birds; and gems; rocks; minerals; and archaeological specimens. They remain an invaluable and irreplaceable resource for understanding Maine's environments and history. They are also a critical tool for addressing resource management, economic opportunities, biodiversity conservation, and many other societal benefits.
- Although invaluable and irreplaceable, these collections are IN CRISIS. In some cases they are actively deteriorating. In other cases, they have been neglected, stored inappropriately, and are now in disarray.
- Maine State law (27 MRSA Sections 371-373A) designates the Maine State Museum to hold title to all scientific specimens found on, in or under state controlled lands and waters, regardless of where these specimens are housed. Law also requires the Maine State Museum, "as the best-qualified state agency with appropriate collections care facilities, to receive specimens transferred from state departments" and care for those specimens in perpetuity.
- As resources for care of scientific collections at state agencies and university departments diminish and or/as faculty and staff members retire, these collections-holding institutions often turn to the Maine State Museum as the state's safety net for these often imperilled collections.
- The Maine State Museum faces the imminent possibility that it will be asked to take over the care of a deluge of collections. To help prepare for this possibility the Maine State Museum proactively applied for and received a \$150,000 federal grant that has enabled it to survey the status of science collections throughout the state. In addition the museum staff has begun to build a broad-based support network for these collections.
- Proper management of these important collections can take many forms: 1) Allocate more state funds to collections-holding institutions; 2) increase funding to the Maine State Museum in order to allow the transfer of imperiled collection; 3) Create a dynamic coordinated science collection care facility or facilities, with 24/7 access by collaborating scientists and institutions at the Maine State Museum or appropriate university campus; 4) relocate targeted collections to appropriate facilities out of state; or 5) a blend of these ideas.
- The survey is still underway but clearly shows that for most institutions and agencies the situation is dire. Inaction is resulting in the loss of these collections, a fate which should not even be contemplated, as it will be years before the true costs of this loss can be fully understood.



# Maine's Science Collections Assessment 2006-2009



## Protecting Maine's Natural Heritage

### Assessment Partners

University of Maine  
Climate Change  
Institute

University of Maine  
School of Biology  
and Ecology

Department of  
Inland Fisheries  
and Wildlife

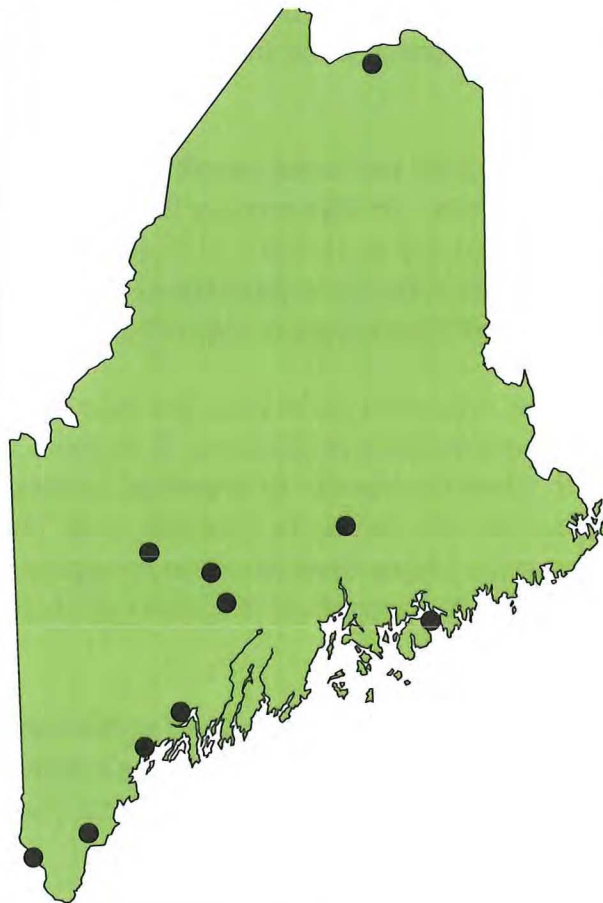
Department of  
Conservation  
Maine Forest  
Service

Department of  
Conservation  
Maine Geological  
Survey

Center for Ecological  
Research

### INTRODUCTION

In November 2003, the science staff of the Maine State Museum (MSM) participated in a National Science Foundation sponsored "Workshop to Produce a Decadal Vision for Taxonomy and Natural History Collections," held at the University of Florida Museum of Natural History, Gainesville. This meeting underscored the numerous societal benefits of natural science collections, but also exposed the crisis facing those collections throughout the United States because of dwindling resources available for their care. That same year, the American Association of Museums (AAM) recognized this situation, expressing "deep concern that a significant number of America's natural science museums and collections . . . are currently threatened with severe financial cutbacks, dispersal of collections, and outright closure." This statement certainly reflects the situation in Maine, where valuable science collections suffer from widespread systematic neglect.



*Scientific collections are held by numerous agencies and departments throughout the state. These collections contain vast amounts of useful information that exists in no other place or form. A large number of these scientific specimens were obtained in the 19th and 20th centuries. They constitute an irreplaceable record of Maine's natural heritage. They also allow a window in time, a way to examine past baseline data when dealing with issues such as emerging disease or environmental toxins.*

To address this problem, in 2006 the MSM science staff successfully applied for a \$150,000 federal grant from the Institute for Museum and Library Studies (IMLS) for a statewide assessment of the status of science collections. Taking note of this initiative, the IMLS invited the science staff of MSM to join in a new national initiative, still in development, called "Connecting to Collections," which was launched in Washington D.C. in 2006.

The museum's IMLS-funded survey achieved three goals. First, it established that Maine possesses very important scientific collections, which were assembled at a cost of millions of dollars, and incalculable amounts of human endeavor over two centuries. These collections have played an essential role in Maine's economic development and enabled state agencies and universities to fulfill their legislative, scientific, and educational mandates. They remain an invaluable and irreplaceable resource for understanding Maine's environment and history and should become a critical tool for addressing important issues such as resource management, economic opportunities, and biodiversity conservation.

Second, the IMLS survey allowed us to assess the mandates and organizational capabilities for managing natural scientific collections held by state-supported institutions throughout the United States. The major finding of this assessment was that the MSM is very significantly under resourced to carry out its legislative mandates.

Finally, the IMLS survey led to the creation of a Science Advisory Board, which is composed of state employees and university faculty dedicated to the development of solutions for resolving the statewide collections crisis.

## HISTORICAL PERSPECTIVE

Both the Maine Geological Survey and the Maine State Museum trace their roots to 1836-37 when an historic State-funded expedition by Dr. Charles T. Jackson gathered mineral specimens from throughout Maine. His efforts induced the Legislature to establish a "cabinet or museum of mineral specimens... at the State House in Augusta." This pioneering collection was created to address both the economic and scientific concerns of the newly independent State of Maine. For lack of proper support, however, this col-

## Collection Holding Institutions assessed to date

DOC - Maine Forest Service  
Insect and Disease Lab  
DOC - Maine Geological Survey  
Inland Fish and Wildlife  
Bangor location  
Maine Audubon - Falmouth  
Administration building  
Administration building attic  
Education Building  
Maine Conservation School-  
Bryant Pond  
University of Maine - Machias  
Front Entrance  
Science Building Room 8  
Science Building Room 13  
Science Building Room 114  
Science Building Room 119  
Science Building Room 120A

University of Maine - Presque Isle  
Norton Building  
Normal Hall attic  
South Bldg 1st room  
South Bldg Rooms A and Room B  
Herbarium  
Folsom Hall 307  
University of Maine - Farmington  
University of Maine - Orono  
Climate Change Institute  
School of Biology and Ecology  
Herbarium and Fungi  
Insects  
Birds  
Fish  
Numerous Historical Societies,  
private colleges, and museums

lection was later lost, forcing the legislature to fund a second costly survey less than 30 years later. A similar unfortunate scenario was repeated in 1971 when the century old Portland Society of Natural History, which held State collections, was disbanded and the building raised for a parking lot. In the process, significant specimens and collection data were lost because no record was kept of where they went. Ironically it was just at this time (1971) that the newly reconstituted Maine State Museum opened its doors, but the course of events prevented the museum from interceding. It was not until 2002 that the museum finally added professional natural scientists to its staff. Only since then has the museum been capable of beginning to fulfill the it's legislative mandates regarding natural history.

### ***Maine State Museum Responsibilities to State-held Collections***

State law (27 MRSA Sections 371-373A) requires that the Maine State Museum hold title to all specimens (geological and biological) found on state-controlled lands. This law also designates the MSM, as the best-qualified State agency with appropriate collections care facilities, to accept and care for specimens transferred from state departments.

To date, the Museum's progress in these areas has been modest because of a lack of scientific staff, financial resources and collections care space. Recently, its sci-

entific collections have begun to develop at a moderate pace through museum-sponsored fieldwork and donations from private individuals, as well as occasional purchases of extraordinary specimens. In addition, however, there are presently many ongoing field research projects across the state sponsored by other State agencies and university departments whose resulting collections for which the MSM is technically responsible, but for which no mechanism exists for it to undertake that responsibility. It is this crisis that the MSM needs to resolve.

### ***The crisis in Maine's scientific collections***

Many important scientific collections held by Maine institutions suffer from institutional neglect. The photographs on the following pages illustrate this point. [Please note: specific institutions are not identified because many represent well-intended efforts to save these collections from permanent loss]. Most of these institutions build collections to address specific research issues. As institutional research priorities shift over time, however, older collections, despite their ultimate scientific importance, compete unsuccessfully for limited storage and curatorial resources. In time, such collections usually become marginalized, are moved to unsuitable storage, experience a lack of competent supervision, and often are disposed of in inappropriate ways. These are predictable outcomes for any institution not constituted to undertake long-term collection management.

## **Biological Collections Contain Unique Information**

The vast amount of information in collections exists in no other form or place. Much of the information was obtained before modern development changed the landscape and constitutes an irreplaceable record of our natural heritage.

## **Biological Collections are Integral to Scientific Research and Education**

Most collections are maintained at universities and museums and constitute an important component of research and education. The collections are necessary for a variety of scientific research — especially the study of biological diversity — and training of biologists.

## **Biological Collections Represent a Universal Investment**

Biological collections are found in every state and have cost the nation billions of dollars and centuries of effort to amass. With a large number of biological collections, the U.S. enjoys a clear advantage in research and education requiring collection-based data.

# Why are scientific collections important?

## SOCIETAL BENEFITS

**Education:** Collections act as source materials for classroom instruction and outreach programs, including images and published information.

**Natural resource management:** Collections improve information on biodiversity that impact our ability to identify areas to be protected or harvested.

**Biosecurity:** Collections act as the library scientists use to identify species that could be used to disrupt the economy and health systems of the United States. Collections allow scientist to identify and learn the distribution of these species.

**Our natural heritage:** Biological collections contain a unique record of the natural and cultural history of our nation. They are the most informative data source on changing landscapes and patterns of species distributions. Often used to determine environmental baselines for remediation purposes.

**Invasive species:** Collections allow researchers to identify and pinpoint invasive species as well as determine effective deterrents. Facilitating interception of potential agricultural, forest or medical pest species at U.S. or State borders.

**Agriculture and medicine:** Management of pests, use of organisms as biological control agents, and control of vectors of diseases are all dependent upon accurate and timely species identifications and the information contained in biological collections.

**Bioprospecting:** Successful identification of new pharmaceuticals, foods, and other as yet-undiscovered uses for organisms requires taxonomic research and distributional information from biological collections.

**Forensic Science:** Scientific police work is based on protocols that require accurate identifications of organisms and distributional information from biological collections.

**History of science:** Early and modern explorers, from Lewis and Clark to molecular phylogeneticists, deposit voucher specimens in biological collections. These specimens provide a unique and irreplaceable source of historical data and make science repeatable.

**International collaboration:** Good access to collections, and an investment in cyberinfrastructure will allow taxonomists to instantaneously share resources.

Modified from [www.flmnh.ufl.edu/linne/](http://www.flmnh.ufl.edu/linne/)

For example, in 2004, the University of Maine's Wildlife Ecology Department held a fine collection of over 16 cabinets of study skins, skeletons, herbarium specimens, mounts and other scientific specimens. Because this important collection was no longer a priority for the department, however, it had long been quarantined because of concerns over arsenic used as a preservative. This unacceptable situation was causing the collection to slowly degrade, but the situation became critical when the department decided to use the storage space for a new laboratory and sought to dispose of the collection through a range of unacceptable options, including dumping it. Fortunately, the story had a happy ending because the MSM was informed of the crisis and was able to intervene. It should be noted that this collection included some of

the specimens originally dispersed by the Portland Society of Natural History.

The arrival of the collection at the MSM prompted a flurry of activity in the Museum's own collections, culminating in a new exhibit titled "Cabinet of Curiosities, the Museum Science, Collections, and YOU," which opened to the public in April 2007. This family-focused display exhibits the multi-layered benefits derived from science collection materials.

In summary, many State agencies and university departments hold reference collections that they are unable to care for and for which the MSM is responsible. It is long past time to address this situation. The State of Maine needs to commit to a culture of collections care. The alternative is to abdicate this responsibility and allow these collections to be destroyed or relocated to



institutions outside of Maine which may be willing to commit to their upkeep.

Scientists and administrators responsible for State-supported natural science collections are increasingly aware that the value of data contained in well-documented scientific specimens is too great a resource to waste. If properly maintained these collections will serve the needs of future policy makers, educators, regulators, and researchers. A modest well-planned investment now will provide great societal benefits to Maine's residents for decades to come.

#### SCIENCE COLLECTIONS – A SIGNIFICANT STATE AND NATIONAL RESOURCE

Nationally, science collections, especially those held by colleges and universities, are endangered. Many have been destroyed or dispersed in the face of shifting priorities and diminishing finances. At the same time, the importance of these collections has increased. The

data they hold is critically important to the development of strategies for natural resource management, environmental remediation, biodiversity conservation as well as resources for tracking new diseases and environmental toxins. As a result, a national dialogue is currently underway to increase funding sources for preservation and research use of natural science collections. The Maine State Museum, through its science staff, is actively working to position itself as the logical recipient of these monies in Maine and is actively working with other State agencies to address this crisis now before it becomes overwhelming.

As people directly involved will attest, significant science collections in Maine's university departments and State agencies are already in trouble. These collections need professional care and management assistance, either by, or in cooperation with the Maine State Museum, in order to maintain their research and subsequent economic value to the State.

**These science collections are a public trust in crisis – at minimum collections need clean, secure storage, with some form of climate control.**

**Without access these collections lose their value.**



*Some of the state-of-the-art cabinetry purchased with grant money by the Maine State Museum. This cabinetry results in decreased handling of specimens as the observer is allowed a view of the specimen without opening the cabinet. This accomplishes two things. The internal environment in the cabinet is kept more stable, and people are not exposed to the arsenic used to preserve these turn-of-the-century mounts.*



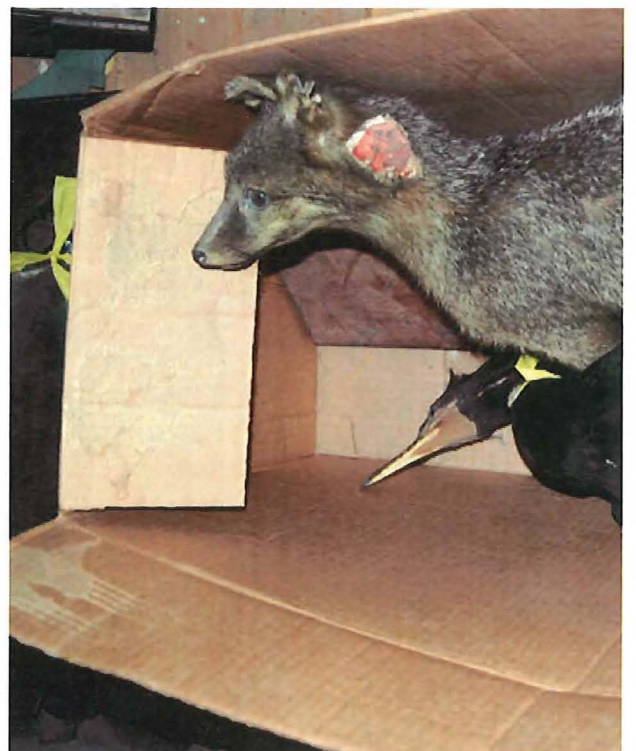
**These science collections are a public trust  
in crisis –  
at minimum collections need  
clean, secure storage, with some form of climate control.  
Without safe access by researchers these collections lose  
their value.**















During these trying economic times, the State of Maine must work to keep this issue alive, otherwise these invaluable collections are sure to be lost.





***How big is this problem and how can Maine create a culture of collections care to ensure the on-going stewardship of scientific collections within the state?***

Statewide survey results show that a large numbers of scientific collections in Maine are in crisis, and the problem is big enough that without a sizable increase in both collections storage space and staff, that despite its mandate, the Maine State Museum CANNOT resolve it on its own. In consideration of this problem, our Science Advisory Board suggested the following solutions:

- Allocate more funds to extant collections-holding institutions.
- Transfer all inactive collections to one or more designated collection based facilities, like the Maine State Museum.
- Create a dynamic coordinated science collection care facility or facilities to be housed either in Augusta or on an appropriate university campus or campuses.
- Create a consortium of collection care institutions (funded by a recent IMLS Connecting to Collections statewide planning grant spearheaded by the MSM to be implemented in 2009-2010).
- Relocate targeted science collections to appropriate facilities out of state.
- Or a blend of the above ideas

***Coordinated Science Collections Care: Three issues in one:***

In truth there are three issues in one; A) there are institutions that feel scientific collections are just problems which they would prefer to go away. Here collections are seen as liabilities – not assets and these institutions are past wanting to be associated with collection materials. B) there are institutions that hold collections, but knowledge of these collections or commitment to them is at a lower administrative level (faculty member vs. a department; or a department versus university administration), and C) there are institutions across the state committed to their collections but with inadequate resources to meet their collection needs.

***A three-tiered response***

A) Triage – for institutions that just want collections problems to go away.

First - try to re-establish the collections relevancy to institutional goals and identify stakeholders.

ii) or create a system for assessment of and distribution of these materials to appropriate collections hold-

ing institutions (either in-state or out-of-state – to be determined).

Even triage however needs a funding route:

- Some museums/institutions will help pay for orphaned collections (significance dependent)
- Some granting institutions will help pay for transfer of orphaned collections (significance dependent)
- Some institutions will help pay to make the problem go away
- or all of the above.

B) Collections only known at lower administrative levels – possible solutions

i) Policy level solution – when collections are unknown to policy making administrators, create a mechanism to implement higher-level oversight. Collections do not belong to individual faculty or department heads. Supported by state property law – summarized as follows - the “fruits” of state employees labor is owned by the state.

ii) Investigate the creation of a university natural science/archaeology museum – perhaps in Orono and/or Presque Isle?

iii) Expand the Maine State Museum Collection Care Facility to accommodate transfer of science collections? [Would require capital investment in collections storage space and staff].

iv) Redefine the institutional status of these collections for either triage or partnering initiatives as discussed below.

C) Creating institutional partnerships to coordinate funding efforts.

i) Create the values assessment tool for articulating collections needs and institutional relevance.

ii) Partnership initiatives – implement the \$40,000 two-year IMLS for Connecting to Collections Partnership initiative grant received in March, 2009.

iii) Authorize the Maine State Museum’s Cultural Resource Information Center (CRIC) to establish a clearinghouse of available grants and application criteria, tied into the values assessment tool.

iv) Add a grant writer to CRIC office to help to meet our stakeholder’s needs.

**A small investment now  
means a  
lifetime of difference  
for these collections -  
held in the public trust,  
for the  
benefit of society.**



## **SUMMARY**

The urgent need to invest in the State's science collections is a vital statewide priority with widespread economic, environmental, and human health and safety components. The simplest solution is to equip the Maine State Museum to fulfill its longstanding legislative mandates by adding one natural science position and increasing its scientific collections care storage and capabilities. However without adequate funding the Maine State Museum cannot be thought of as the only solution, or even a stopgap for the crisis at hand. Rather this crisis will require input and action at the highest administrative levels within the state in order to continue the dialogue that the Maine State Museum has begun.

