PROGRAM & ABSTRACTS

The 16th Annual Meeting of the

Society for the Preservation of Natural History Collections

June 21 - 26, 2001

at the

California Academy of Sciences

Golden Gate Park

San Francisco, California

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WELCOME to San Francisco and the California Academy of Sciences.

The California Academy of Sciences is a private, non-profit scientific institution, the oldest in the Western United States. It was founded in 1853, at the height of the California Gold Rush. The Academy's first real home was a 6-story building built on Market Street in 1891. There was a large public museum, as well as space for the Academy's growing scientific collections and library. This building was destroyed in the earthquake and fire of April 1906, and the Academy was once again homeless.

The citizens of San Francisco voted to allow the Academy to rebuild in city-owned Golden Gate Park. The first building was open in the Park in 1916. Steinhart Aquarium was built in 1923, Simpson African Hall in 1934, and the Morrison Planetarium in 1952. Other buildings were added gradually, to create the museum complex of today. The Academy is currently planning a large-scale renovation and construction project that will change its appearance and will provide much-needed space for collections and research.

Today's California Academy of Sciences is one of the ten largest natural history museums in the world. The public museum is visited by over a million visitors a year. Supported by skilled professionals in the Academy's cabinet, instrument, and electronics shops, the Exhibits Department prepares and maintains a variety of traditional and interactive exhibits in all areas of natural history.

The collections are held in eight research departments and the library. The Education Department provides classes and field trips for people of all ages. The Academy is also active in teacher education and outreach.

The Morrison Planetarium offers a variety of programs on celestial events, cosmic phenomena, and space exploration.

Steinhart Aquarium is a classic European-style aquarium, inhabited by over 1,000 species of fish and other animals from around the world. Exhibits include the largest living tropical coral reef in the U.S., a touchable tidepool, and the Fish Roundabout, where the visitor is surrounded by fast-swimming deep ocean fish.

The California Academy of Sciences is located in Golden Gate Park on the west side of San Francisco. This huge park is also home to the Strybing Arboretum, the Japanese Tea Garden, the Asian Art Museum, and a varied collection of trees and other plants from around the world.

ACKNOWLEDGMENTS

Organizing Committee	Chair	Jean F. DeMouthe	California Academy of Sciences Department of Invertebrate Zoology & Geology
	Logistics & assorted tasks	Amanda Grimes	California Academy of Sciences Department of Invertebrate Zoology & Geology
		Dinah Crawford	California Academy of Sciences Department of Anthropology
		Elizabeth Kools	California Academy of Sciences Department of Invertebrate Zoology & Geology
		Anne Rianda	California Academy of Sciences Special Events
	Workshops	Roberta Brett	California Academy of Sciences Department of Entomology
		Laura Abraczinskas	Michigan State Univ. Museum
		Lori Benson	Science Museum of Minnesota
	Field trips	David Catania	California Academy of Sciences Department of Ichthyology
	Vendors	Ann Pinzl	Nevada State Museum
	Treasurer	Marilyn Eversole	California Academy of Sciences Department of Invertebrate Zoology & Geology

The organizing committee would like to acknowledge the support of the administration of the California Academy of Sciences, the SPNHC Education and Training Committee, and all the members of SPNHC who have offered advice, encouragement, and comfort during the last year.

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DATE	*TIMES*	*PROGRAM ITEM*	*LOCATION*
Thursday, 21 June	7:45 am – 6:00 pm	Pre-conference field trips	Monterey Bay Aquarium San Andreas fault & redwoods
Friday, 22 June	7:30 am – 6:00 pm	Registration	Cowell Hall (by the dinosaur)
	8:30 am – 6:00 pm	Committee meetings	various places
	12:00 pm – 1:30 pm	Council luncheon	Drown Room
	3:00 pm – 6:00 pm	First Council meeting	Trustees Room
	1:00 pm – 5:00 pm	Specify software workshops	Goethe Room
	1:30 pm – 5:00 pm	Department tours	various places
	6:30 pm – 8:30 pm	Ice-Breaker reception	Aquarium swamp
Saturday, 23 June	7:30 am – 5:00 pm	Registration	Cowell Hall
	7:30 am – 10:00 am	Vendor & poster set up	Gary Larsen & Goethe room
	8:30 am – 9:00 am	Opening remarks & Introduction	Auditorium
	9:00 am – 10:00 am	Keynote speaker	Auditorium
	10:00 am – 5:00 pm	Vendor displays	Goethe Room
	10:30 am – 12:00 pm	Technical papers & posters	Auditorium
	2:00 pm – 5:00 pm	Technical papers & discussion	Auditorium
Sunday, 24 June	8:00 am – 3:30 pm	Vendor displays	Goethe Room
	8:30 am – 12:00 pm	Technical papers & posters	Auditorium
	2:00 pm – 3:30 pm	Technical papers & posters	Auditorium
	3:30 pm – 6:00 pm	vendor & poster take-down	Gary Larsen & Goethe room
	4:00 pm – 5:00 pm	planetarium presentation	Morrison Planetarium
	6:30 pm - ???	Annual banquet & dance	African & Earth/Space Halls
Monday, 25 June	8:30 am – 10:30 am	Special interest group meetings	scattered around the building
	11:00 am – 12:30 pm	General Annual Business Meeting	Auditorium
	2:30 pm – 3:30 pm	Technical session III	Auditorium
	3:30 pm – 3:45 pm	Closing remarks	Auditorium
	4:00 pm – 7:00 pm	Second council meeting	Goethe room
Tuesday, 26 June	8:30 am – 12:00 pm	Workshop: Living collections	Goethe room
	1:30 pm – 5:00 pm	Workshop: Risks to collections	Auditorium

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Thursday, June 21

7:45 – 6:00 Pre-Conference Field Trip to Monterey Bay Aquarium

This state-of-the-art regional aquarium is located in Monterey, a 2+ hour bus trip south of San Francisco. Our route will take us down the scenic coastal highway, along the Pacific Ocean. The first top will be at MBARI, the aquarium's research facility in Moss Landing. Dave Catania, of the Academy's Ichthyology Department, will provide information about the local marine environment and fauna, and will be your host for the day. Lunch is on your own.

The trip leaves from and returns to the front of the Academy.

7:45 – 6:00 Pre-Conference Field Trip to San Andreas Fault & Redwoods

The San Andreas fault is a large, active fault that marks part of the boundary between the Pacific and North American crustal plates. We will travel northward to Point Reyes National Recreation Area, where we will walk the Earthquake Trail and visit a reconstructed Miwok Indian village. After a picnic lunch, we will travel south to Samuel P. Taylor State Park, where you will have the opportunity to walk among the ancient giant redwoods. Academy geologist Jean DeMouthe will be the leader for the day.

The trip leaves from and returns to the front of the Academy.

Friday, June 22

7:30 – 6:00 **Registration, Cowell Hall (by the *Tyrannosaurus*)**

8:30 – 10:30 **Conservation Committee, Goethe Room**

9:00 – 10:00 **Finance Committee, Herpetology library**

10:00 – 11:00 **Education Committee, Entomology conference room**

10:00 – 12:00 **Publications Committee, Trustees room**

12:00 – 1:30 **Council luncheon, Drown room**

1:00 – 3:00 **Specify database workshop (first), Goethe room**

3:00 – 5:00 **Specify database workshop (second), Goethe room**

1:00 – 5:00 **Collection tours (see registration desk for times & directions)**

- **Anthropology**
- **Aquarium**
- **Archives & Library**
- **Birds & Mammals**
- **Botany**
- **Entomology**
- **Geology (with diatoms)**
- **Ichthyology & Herpetology**
- **Invertebrate Zoology**
- **Planetarium**

1:00 – 2:00 **Documentation Committee, Entomology conference room**

1:00 – 2:00 **Conference Committee, Aquarium library**

2:00 – 3:00 **Executive Committee, Aquarium library**

2:00 – 3:00 **Membership Committee, Invertebrate Zoology & Geology library**

3:00 – 6:00 **First Council meeting, Trustees' room**

6:30 – 8:30 **Ice-breaker reception, Aquarium swamp**

Join us in the beautiful atrium of the historic Steinhart Aquarium (also known as the Swamp; you will see why when you get there). The classic architecture of this room, combined with the presence of live alligators, snakes, & other friendly animals, makes this a wonderful venue for our welcome-to-the-Academy party.

Meet some of the Academy's research and aquarium staff and visit with old friends. Your registration packet will have a map showing local restaurants close to the Academy, so you can walk to dinner in the neighborhood, or find your way to another part of San Francisco for food and fun before the Real Meeting begins on Saturday morning.

Saturday, June 23

7:30 – 5:00 **Registration, Cowell Hall (by the *Tyrannosaurus*)**

7:30 - 10:00 **Vendor & poster set up, Gary Larsen Hall & Goethe room**

9:00 – 9:20 **Introduction & opening remarks, Auditorium**

9:20 – 10:20 **Keynote speaker: Dr. Robert Jenkins, Director Steinhart Aquarium**

Dr. Robert Jenkins has been the head of Steinhart Aquarium for seven years, having come to the Academy from the National Aquarium in Baltimore, Maryland. An aquarium professional with thirty-two years of experience, Dr. Jenkins has a unique perspective on the changes that have occurred in the technology and ethics involved in keeping live collections, and strong views on the importance of such collections.

10:20 – 11:00 **coffee break, Gary Larsen hall & Goethe room**

Technical Session I, Rob Huxley moderator

11:00 – 11:20 **Tests on the use of a commercial degreaser to clean skeletal material**
David Von Endt, Walter Hopwood, & Chris Milensky

11:20 – 11:40 **Evolution of Computer Catalogue at the Redpath Museum, McGill University**
Marie LaRicca

11:40 – 12:00 **GIS interpretation of historic occurrences of native plant species in the San Jacinto Mountains, Riverside County, California**
James M. Bryant & Monica Ballon

12:00 – 2:00 **lunch**

Technical Session I (continued)

2:00 – 2:20 **Collecting in National Parks, taking risks to make parks a "Good Place for Science"**
Jonathan Bayless

2:20 – 2:40 **What Kwaday Dan Ts'inchi (long ago person found) has told us**
James A. Cosgrove (Kelly Sendall presenting)

2:40 – 3:00 **The integrity of DNA in fluid preserved invertebrate material**
Julian Carter

3:00 – 3:30 **soda & cookie break, Gary Larsen hall & Goethe room**

3:30 – 5:00 **open discussion: moving collections, Tim White moderator**

Sunday, June 24

8:00 – 5:00 **Registration, Cowell Hall (by the *Tyrannosaurus*)**

Technical Session II, Paisley Cato moderator

9:00 – 9:20 **Setting Priorities: Integrated pest management in an anthropology collection**
Paul Beelitz

9:20 – 9:40 **Practical techniques for accessible storage of fragile specimens**
Ann Molineux

9:40 – 10:00 **Development & evaluation of a pilot program for advanced-level training in preventive conservation**
Maria Esteva & Carolyn Rose

10:00 – 10:30 **coffee break, Gary Larsen hall & Goethe room**

10:30 – 12:00 **Panel discussion: Student participation in SPNHC**
Panelists: Catharine Hawks, chair
Jean DeMouthe, Richard Monk, Lisa Palmer,
Jude Southward, Stephen Williams

12:00 – 2:00 **lunch**

Technical Session II (continued)

2:00 – 2:20 **Weight changes over time in drying and semi-drying oils**
David Von Endt

2:20 – 2:40 **DMDM-Hydantoin: The promising result of a search for a non-hazardous alternative in fluid preservation of biological specimens**
Andries Van Dam

2:40 – 3:00 **What Do You Know About Butterflies? The Role of Objects Conservators in Mounting a Living Butterfly Exhibition**
Rachael Perkins Arenstein

3:00 – 3:30 **soda & cookie break, Gary Larsen hall & Goethe room**

3:30 – 6:00 **vendor & poster take-down**

4:00 – 5:00 **Planetarium presentation, Morrison Planetarium**

6:30 – ??? **Banquet & dancing, Earth & Space and African Halls**

Monday, June 25

8:30 – 10:30	**Special interest groups:**	**Anthropology**	**Anthropology preparation room** *Russ Hartman, moderator*
		Botany	**Drown room** *Rob Huxley, moderator*
		Conservation	**Goethe room** *Michelle Wellck, moderator*
		Geology	**Entomology conference room** *Peter Roopnarine, moderator*
		Living Collections	**Aquarium library** *Roberta. Brett, moderator*
		Zoology	**Auditorium** *David Catania, moderator*

10:30 – 11:00 **coffee break, Goethe room**

11:00 – 12:30 **General annual meeting, Society for the Preservation of Natural History Collections**

12:30 – 2:30 **lunch**

Technical Session III, Iris Hardy moderator

2:30 – 2:50 **Digitizing botanical collections: a case study in content, rationale & methodology**
Robert Huxley

2:50 – 3:10 **Symposium on contaminated collections: Preservation, access & use: Report from the organizing committee**
Organizing Committee Members: Judith Bischoff, Scott Carroll, Catharine Hawks, Jim Pepper Henry, Jessica Johnson, Stephen Williams

3:10 – 3:30 **A proposed rationale for developing professional standards for the care and exhibition of small vertebrate and insect species**
James M. Bryant

3:30 – 3:50 **Shipwreck: The contents of apothecary jars found in the La Belle**
David Von Endt, David Erhardt, Walter Hopwood & Charles Tumosa

3:30 – 3:45 **Closing remarks**

4:00 – 7:00 **Second council meeting, Goethe room**

Tuesday, June 26

8:30 – 12:00 **Workshop: Living collections, Goethe room**
Roberta Brett, moderator

1:30 – 5:00 **Workshop: Identifying risks to collections, Auditorium**
Laura Abraczinskas & Lori Benson, moderators

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Aluminum Pallets for the Storage of Oversized Collections

Chagnon, Chris
Smithsonian Institution

Mapping museum collections: Practical applications of a geographic information system (GIS)

Crawford, Dinah
California Academy of Sciences

Training the trainers? A collaboration in the conservation of fluid preserved specimens between the Grant Museum of Zoology, University College London and the Royal College of Surgeons of England.

Hatton, Jo & Chatterjee, Helen
University College London
Cooke, Martyn
Royal College of Surgeons of England

Dead plants tell limited tales

Hollenberg, Linda A.
Smithsonian Institution

Beyond pest trapping: Developing a system for mapping and analyzing the invertebrate fauna of collections spaces

Duncan, Neil, Kronthal, Lisa, Norris, Chris, & Ramos, George
American Museum of Natural History, New York, New York

Natural History Office as an Exhibit

Pinzl, Ann and Baumgardner, George D.
Nevada State Museum

Removable Retaining Bars for Open Shelving Units

Woodward, Susan M.
Royal Ontario Museum

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ABSTRACTS for oral presentations, posters & panel discussion

in order alphabetically by first author's last name
presenter is underlined

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What Do You Know About Butterflies? The Role of Objects Conservators in Mounting a Living Butterfly Exhibition

Arenstein, Rachael Perkins
Peabody Museum of Archaeology and Ethnology, Harvard University, 11 Divinity Avenue, Cambridge, MA 02138

In October 1998 the American Museum of Natural History constructed a purpose built vivarium to house an exhibition of living tropical butterfly species. Initially the role of the Conservation Lab in this exhibition was limited. However, when the first group of butterflies released in the structure died quickly, with symptoms that suggested an environmental contaminant, the role of conservation greatly increased.

Without being experts in butterflies, museum conservators performed three important functions in helping to get the exhibition back on track:

- Providing information on sources of environmental contaminants and their potential hazards,
- Helping formulate a controlled process for pinpointing the contaminant and modifying the environment, and
- Acting as an interpreter to facilitate communication between the exhibition and scientific staff.

This talk will first examine some of the problems the museum encountered in establishing this living exhibition. The focus will be on the transferable skills and adaptable knowledge that conservators brought to bear as part of the exhibition team. The recommended processes that became standard operating procedure for erecting the vivarium in following years will be outlined.

oral presentation

Collecting in National Parks, taking risks to make parks a "Good Place for Science"

Bayless, Jonathan
National Park Service, 600 Harrison Street, Suite 600, San Francisco, CA 94107

In January 2001, the National Park Service put its research and collecting permit process on the world wide web. The site, *http://science.nature.nps.gov/servlet/Prmt_PubIndex*, covers all National Parks in the United States. The site has been designed to be a comprehensive location for researchers to have the opportunity to review procedures, previous research efforts, policies, and conditional requirements before submitting a new proposal. It also allows users to search NPS-identified research preferences, to complete and submit an application for collecting and/or research, and to file the required Annual Investigator's Report. Being the first agency in the Department of the Interior to go fully online with permits hasn't been easy, a full five years went into its completion.

This opportunity to further the mandate of the National Park Service as a "good place for science" also presents many potential obstacles. Issues involving bioprospecting, copyright, specimen ownership, and collecting impacts are being, as a result, centrally compiled and highlighted in many ways. Most repositories contain numerous specimens collected from federal lands, and their benefit to society is immense. But without a unified approach to marketing the benefit of collecting from public lands, researchers risk an increasingly hostile regulatory oversight and the loss of public acceptance. By using a partnership model to conduct research and collecting, agencies and museums can demonstrate the importance of documenting the nation's geological and biodiversity.

oral presentation

Setting Priorities: Integrated Pest Management in an Anthropology Collection.

Beelitz, Paul
American Museum of Natural History, Central Park West and 79th Street, New York, NY 10024-5192

Anthropology collections are especially vulnerable to damage from insect activity because artifacts are made of almost every conceivable organic material. Over the decades, old storerooms at the American Museum of Natural History were treated with different insecticides, but with poor results, for the rooms were so densely packed with artifacts that gases could not penetrate every interstice. New storage areas have been designed and built with integrated pest management as the pre-eminent theme. Collections with the highest risk factor (e.g., high protein content) were prioritized for installation in the new areas, for these have historically been the most damaged and threatened by insects.

oral presentation

Symposium on contaminated collections: Preservation, access, and use-report from the organizing committee

Organizing Committee Members
Judith Bischoff, Conservation Scientist, National Park Service
Scott Carroll, Conservator, Alaska State Museum
Catharine Hawks, Private Conservator, Falls Church, VA
Jim Pepper Henry, Repatriation Program Manager, National Museum of the American Indian
Jessica Johnson, Senior Objects Conservator, National Museum of the American Indian
Stephen Williams, Assistant Professor, Dept. of Museum Studies, Baylor University

The 6-9 April 2001 Symposium was sponsored by the Society for the Preservation of Natural History Collections (SPNHC), the United States National Park Service (NPS), and the National Museum of the American Indian (NMAI). It was funded by a grant to SPNHC from the National Center for Preservation Technology and Training (NCPTT), with additional funding from the American Institute for Conservation and from the Department of Anthropology, National Museum of Natural History. The Symposium brought together conservation scientists, conservators, curators, epidemiologists, industrial hygienists, medical professionals, representatives of various Native American tribal organizations, legal specialists, microbiologists, policy manager/administrators, and students for facilitated presentations and working groups.

Presentations and discussion focused on development of appropriate conservation strategies for the safe handling, storage and treatment of contaminated objects; identification of current scholarship regarding testing methods, risk assessment, and treatment of contaminated collections; training on safe use of historic natural history collections and repatriated Native American objects; methods to foster communication among the various stakeholders and disseminate information over the Internet and through publications; and creation of working groups to implement the work.

The proceedings of the Symposium will be published as a dedicated issue of *Collection Forum* by the end of 2001. An electronic version of the proceedings will be prepared by NCPTT for release after the publication. A Web site will open in summer 2001 to allow those with an interest in the issues to join various working groups, and access the proceedings and other pertinent information over time.

oral presentation

GIS interpretation of historic occurrences of native plant species in the San Jacinto Mountains, Riverside County, California

Bryant, James M. & Monica Ballon
Riverside Municipal Museum, 3580 Mission Inn Avenue, Riverside, California 92501;
Russell, Rusty
National Museum of Natural History, Smithsonian Institution, Washington, DC 20560

Herbarium collections can be used to create effective outreach and public programs, which in turn should help generate support for core herbarium activities. The challenge in such projects is to take advantage of the benefits of providing increased access to herbarium specimens while not submitting them to the environmental stresses of exhibition.

This collaboration between the Municipal Museum's Clark Herbarium and the Smithsonian's National Herbarium brings together the techniques of Geographic Information Systems (GIS) and traditional botanical specimen data to create an enriching experience for the broadest possible audience. Since the significance of an existing flora is best interpreted against the backdrop of the historic flora, computer data sets and digital images of specimens employed in the GIS are based on historic San Jacinto Mountains collections housed at both herbaria. Classic collecting locality descriptions are converted into proper form for entry into ArcView 3.2 GIS software. Employing a base map provided by the University of California - Riverside, plant localities are plotted, with botanical data further embellished with images of specimens and photographs of historic collecting localities. Further interpretative aspects of the GIS will include overlays showing collecting routes used by famous botanists and trail blazers in the area, important archeological areas and seasonal plant collecting routes used by native peoples.

oral presentation

A proposed rationale for developing professional standards for the care and exhibition of small vertebrate and insect species

Bryant, James M.
Riverside Municipal Museum, 3580 Mission Inn Avenue, Riverside, California 92501

Living collections of small animals have become a standard feature of most museums, almost regardless of discipline (e.g. children's museums, youth museums and science centers). With the expansion of international trade, many species of reptiles, amphibians and invertebrates - formerly seen only in the most specialized zoological displays - can now be purchased "over the counter" by families and classroom teachers, as well as by museum educators and exhibits staff. Nevertheless, living collections of such creatures are arguably the most powerful "visitor magnets" any museum can provide to its audience, often as much for their entertainment value as for the substance these collections may lend to a museum's overall interpretive message.

To prevent such entertainment functions from taking precedent over educational goals, professional standards for the care and interpretation of living collections should promote practices that apply the following priorities: 1) do everything possible to ensure that museum visitors have access to information explaining what educational or scientific objectives are realized by maintaining these creatures in captivity; 2) illustrate for the audience what methods (based on current knowledge) must be used to promote the health and longevity of captive species; and 3) actively discourage popular tendencies to regard these species as "pets."

oral presentation

The Integrity of DNA in fluid preserved invertebrate material.

Carter, Julian
National Museums and Galleries of Wales, Cathays Park, Cardiff, UK. CF10 3NP.

This paper will present some preliminary results from a study looking at the integrity of the DNA in fluid preserved invertebrate specimens. The study looked at the effects of a number of treatments used to preserve invertebrate collection material, primarily the use of ethanol solutions, Industrial Methylated Spirits, and formaldehyde solutions. In addition consideration was given to 'additives' such as propylene glycol and 2 ethoxy ethanol, which are often used to protect and enhance preservation. Consideration was also given to some subsequent conservation and preservation treatment such as specimen rehydration and specialist drying methods.

The study considered the effects on the DNA content of the invertebrate material used in the study by adopting a standard method of extraction, and then comparing the quantity and quality of the extracted DNA. A number of methods were employed to consider DNA quality; denaturing electrophoresis, RE enzyme digestion and PCR with both mitochondrial and nuclear DNA primers.

The preliminary results of this study suggest that although ethanol preservation will preserve good qualities of high molecular weight DNA there can be a significant reduction in the quality of the DNA. However the DNA has to become significantly degraded before it becomes unusable in modern PCR based studies.

oral presentation

Aluminum Pallets for the Storage of Oversized Collections

Chagnon, Chris
Smithsonian Institution, National Museum of Natural History, MSC Move Office, Washington DC, 20560-0117 USA

The Museum Support Center (MSC) Move Office of the Smithsonian Institution's National Museum of Natural History specialized in the preparation, packaging, transport, unpacking and long term storage of natural history collections. Pod 4 at the Museum Support Center in Suitland, Maryland was designed specifically for the storage of oversized specimens.

Oversize specimens present a special challenge for moving, storage and access due to size, weight and often very unusual shapes. Ease of access to specimens for research was one of the main goals in the design of long term storage systems. Aluminum pallets with supportive framework were customized for each object providing safe long term storage as well as study access to extremely large objects.

poster

What Kwaday Dän Ts'inchi (Long Ago Person Found) Has Told Us

Cosgrove, James A. (presented by **Kelly Sendall**)
Royal British Columbia Museum, 675 Belleville Street, Victoria, British Columbia, CANADA V8W 9W2

The chance discovery of a clothed and fully fleshed human body, frozen in a glacier in British Columbia, provided a unique opportunity for an international team of researchers to examine the remains and associated artifacts. Initial investigations, dating associated artifacts, revealed the remains to be about 500 years old. With the approval and support of the Champagne and Aishihik First Nations a number of initiatives were undertaken.

The physical remains were examined to determine age, sex, height, ethnic background, health at the time of death, stomach contents, parasites and any previous traumas. Tissue samples and hair will tell stories of the environment in which this person lived. The skin was examined for tattoos, insects, parasites, pollens and any evidence of trauma.

In some cases the research continues but we now know this was a young man in his late teens or early 20's years who stood about 5' 5" (165 cm) tall and wore his straight black hair evenly cut just below ear length. His bones showed no new or previously healed fractures and his skin showed no evidence of trauma. Stomach contents along with the contents of a leather pouch showed fish to be a part of his diet. The pouch contained a portion of a dried 4-year old Chum Salmon (*Oncorhynchus keta*) that had been in fresh water for a short time before it died. A second leather pouch made of Beaver skin (*Castor canadiensis*) contained lichen, the purpose for which is still under discussion.

The young man wore a leather robe made of split Arctic Ground Squirrel (*Spermophilus parryii*). The skins were sewn together by more than one person using either a single strand or two strands of sinew twisted together. The robe was decorated with two types of fur fringe and had some red ocher applied.

The presence of many different types of pollen tells of his live in the highlands and his travels to the coast.

oral presentation

Mapping museum collections: Practical applications of a geographic information system (GIS)

Crawford, Dinah
Anthropology Department, California Academy of Sciences, San Francisco, CA 94118

With the growth of technology, there is a wealth of tolls available that can easily be applied to a museum setting. Geographic Information Systems (GIS), a data and mapping integration software, is one tool that can assist museum workers in all aspects of their organization, including collections management and research. Three examples of GIS analysis are given using collection data from the California Academy of Sciences Anthropology Department. additional museum applications and current projects at the California Academy of Sciences are discussed. This presentation introduces GIS concepts in relation to collections management in the hopes of inspiring new applications.

poster

Training the trainers? A collaboration in the conservation of fluid preserved specimens between the Grant Museum of Zoology, University College London and the Royal College of Surgeons of England.

Hatton, Jo & Chatterjee, Helen
Grant Museum of Zoology, Darwin Building, Dept. of Zoology, University College London, Gower Street, WC1E 6BT
Cooke, Martyn
Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London, WC2A 3PN.

Funding was obtained from PRISM (Preservation of Industrial & Scientific Material) to set up a collaborative project between the Grant Museum of Zoology, University College London and the Royal College of Surgeons of England to conserve anatomical and zoological fluid preserved specimens from both collections. The collections contain specimens of historical and scientific importance, pertaining to some of the key figures in nineteenth century science, such as T.H. Huxley and John Hunter. A trainee conservator was employed and under the auspices of the Head of the Conservation Unit at the Royal College of Surgeons was trained to carry out a range of conservation procedures over a twelve-month period. This initial work has since lead to the formation of a five year, part-time, conservation post for the Grant Museum of Zoology, and two full-time, temporary conservation posts for the Royal College of Surgeons.

The project has highlighted the difficulty in recruiting conservators previously trained in fluid specimen preservation techniques. This has implications for the future preservation of fluid preserved collections and has occurred as a result of the decline in the UK skill's base. The diminishing UK skill's base is largely due to the generalization of many conservator work roles and a general reduction in the number of technicians, preparators, and conservators who are formerly trained in biological conservation techniques. The latter is a result of the limited availability in the UK of dedicated natural sciences conservation courses.

poster

Panel discussion: Student Participation in SPNHC

Panelists: Catharine Hawks, chair
Jean DeMouthe
Richard Monk
Lisa Palmer
Jude Southward
Stephen Williams

The SPNHC Sessional Committee on Student Participation, established in early 2001 by the SPNHC president, Sue McLaren, investigates the education and training of individuals that may have career interests involving natural history collections. as part of this study, representatives of various museum training programs join in an interactive panel to discuss aspects of their respective programs, as well as any special interests in accommodating education and training that would be supportive of natural history collections.

The programs represented across the United States include those at San Francisco State University, University of Colorado at Boulder, Texas Tech University, Baylor University, and George Washington University. The information shared and compared among the panel members includes, but is not restricted to, historical perspectives, entrance requirements, curricula, faculty, special strengths, thesis-project-internship requirements, degree/certificate offered upon completion, job placement patterns, and demographic profiling of students enrolling and completing the program.

The discussion will lead to new perceptions of the challenges facing training and education, as well as student participation in SPNHC.

panel discussion

Dead Plants Tell Limited Tales

Hollenberg, Linda A.
United States National Herbarium, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560

In 1976, the original Botany Research Greenhouse (1000 sq. ft.) was opened at the National Museum of Natural History. The current greenhouse, in use since 1994, houses over 3200 living plants representing approximately 1100 species. Located adjacent to the Smithsonian's Museum Support Center (satellite facility) in Suitland, MD, the greenhouse has 7000 sq. ft. of growing space inside, divided into 5 separate climate controlled rooms . Three covered outdoor areas provide an additional 5160 sq. ft. of outside (shaded) growing space, for warm season use.

The plants maintained by the Botany Research Greenhouse are primarily tropical, and are used by research staff and visiting scientists to conduct research that is difficult or impossible with dried specimens. These studies include phenology, chromosome counts, and molecular systematics and genetics (using techniques such as protein electrophoresis and DNA sequencing). Living plants assist in the production of more complete and accurate botanical illustrations, and descriptions. The Botany Research Greenhouse collections are also used to create wet and dried vouchers, including types, for the United States National Herbarium (USNH). Through the years, over 1500 greenhouse specimens have been pressed, dried and added to the collections of the USNH (currently listed as 4.5 million specimens). The Botany Research Greenhouse's collections are fully inventoried, and flowering plants are currently being documented by photographs and digital images.

poster

Digitizing botanical collections; a case study in content, rationale and methodology.

Huxley, Robert; Cafferty, Steve; Hume, Anne; and **Jarvis, Charlie**.
Department of Botany, The Natural History Museum, London, SW7 5BD, UK

The Natural History Museum in London, UK has been carrying out a programme of digitizing its botanical collections. The aims are 1) to make priority collections available to a wider audience, in particular those collections not available for loan and at risk from excessive handling, and 2) to produce a dataset that is more than a collection of images, but a well-researched and informative database. The pros and cons of a number of methods were considered in respect to cost and the nature of the material.

Scanning with a high-resolution digital camera was the preferred option. Contract staff were employed to carry out scanning and data entry, and expert advice provided by staff and associates. Four major historical collections (>7000 specimens) can now be viewed on the WWW; those of Sir Hans Sloane (1660-1753) from Jamaica, Paul Hermann (1646-1695) from Sri Lanka, John Clayton (1694-1773) from Virginia and the herbarium of George Clifford (1685-1760). These historically-important and type-rich (for many Linnaean names) can be viewed at http://www.nhm.ac.uk/botany/databases. The sites are currently receiving up to 400 hits/week. The equipment chosen and the overall methodology having proved successful, further collections will be digitized as funding allows.

oral presentation

Evolution of Computer Catalogue at Redpath Museum, McGill University

LaRicca Marie
Redpath Museum, McGill University 859 Shebrooke St. West, Montreal, Quebec, Canada H3A 2K6

More than a decade after the databases of the Redpath Museum merged with a Canadian wide databank, they were repatriated. This government agency known as the "Canadian Heritage Information Network" (CHIN) had a mandate to build, safeguard and maintain a databank of Canadian Museum collections. In addition, this agency assisted Museums with set-up of network communications. They also provided the training to operate this inter-active system to the Museum community across Canada. However, in 1995 their mandate was revised. They now began focusing on the world wide web and virtual Museums. At this time all contributing Museums across Canada were informed that their data would be repatriated. Museums became responsible for managing, storing and safeguarding their data. In order to facilitate this process, a national committee was formed with Museum representatives from across Canada. The mandate of this committee was to evaluate and recommend commercial software packages to the community.

After extensive consultation with computer professionals within McGill University, the Redpath made its choice based on the following criteria: 1) budget 2) reliability of product 3) import, export capabilities 4) modules 5) web- tool 6) graphic capabilities. The Redpath committee unanimously voted for the software MS-Access based on the product reliability and import, export capabilities. We have been using this system for three years and are very satisfied with how this software fulfilled our requirements. Considering the export capabilities, we feel confident going into the new millennium with this product.

oral presentation

Practical techniques for accessible storage of fragile specimens.

Molineux, Ann
Texas Memorial Museum of Science and History, The University of Texas at Austin, Texas 78712

The non-vertebrate collections at TMMSH are housed under conditions ranging from unsuitable to near ideal. Although our ultimate aim is to upgrade all storage environments, moving all fragile specimens into the most appropriate storage environment is untenable given current space and funding. We have approached the problem by developing simple conservation methods that will improve current micro-environments that can be incorporated into new macro-environment as improvements are made in the future.

Two such systems are described here. The first concerns fragile specimens stored amid more robust material; the second pertains to collections entirely composed of fragile specimens. The primary objective in both systems is to retain accessibility to both the specimen and related information without affecting the specimen's stability.

The methods are simple, inexpensive, and space conserving. They mitigate the effects of humidity changes and insect damage. They allow for visual inspection of the specimen without removal of cumbersome cotton wool packing, and provide storage that would allow dust removal without damage to the individual specimens. In addition, an online database integrates all specimens, their physical locations, catalogue data, and original labels.

oral presentation

Beyond pest trapping: Developing a system for mapping and analyzing the invertebrate fauna of collections spaces

Duncan, Neil
Department of Mammalogy, Division of Vertebrate Zoology, American Museum of Natural History, New York, New York
Kronthal, Lisa
Object Conservation Laboratory, Division of Anthropology, AMNH
Norris, Chris
Department of Mammalogy, Division of Vertebrate Zoology, AMNH
Ramos, George
Division of Construction & Facilities, AMNH

Traditionally, trapping of invertebrates in museum collection buildings has focused on detection of pest outbreaks, pinpointing sources of infestation, and identifying seasonal patterns. We present the results of a pilot program using wider sampling of invertebrate species not only for pest management purposes, but also as a source of information about the environment of collection spaces. We describe a simple protocol for the collection of trapping data, and a prototype database for the storage, analysis, mapping, and display of these data. We demonstrate how trapping data can be used to support results obtained through more conventional environmental monitoring.

poster

Department website:	http://research.amnh.org/mammalogy/index.html
Personal web page:	http://research.amnh.org/mammalogy/norris/index.html
Possum page:	http://research.amnh.org/mammalogy/possum/
Visiting the collections:	http://research.amnh.org/mammalogy/visit.html
Destructive sampling:	http://research.amnh.org/mammalogy/destructive_sampling.html

Natural History Office as an Exhibit

Pinzl, Ann and **Baumgardner, George D.**
Nevada State Museum, 600 North Carson Street, Carson City, Nevada 89701 USA

The opening of a new exhibit facility provided the opportunity to present curatorial activity to the general public. The selected format was that of a generalized "curator's office" in natural history, which would explain the why and how of our activities. Through individual exploration of the office, the visitor encounters the physical evidence of our varied activities.

poster

Development and Evaluation of a Pilot Program for Advanced-Level Training in Preventive Conservation

Esteva, Maria
Fundación Antorchas, 300 Chile, Buenos Aires, Argentina
Rose, Carolyn L.
Department of Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560

A pilot course in preventive conservation for conservators was held in Argentina in 1998 and 1999. The program was developed to address the needs of museum practitioners who had conservation training and experience, but had not attended a formal, conservation-training program. The focus of the program was on preventive conservation, and included materials and collections related to fine arts, history, ethnography, archaeology and natural history.

The program consisted of two, five-month training sessions, separated by a five- month break. Each of the two training sessions began with an intensive one-month course in chemistry, organic before the first session and inorganic before the second. The first session emphasized preventive conservation approaches and goals, methodology, ethics and documentation standards. This session also focused on the organic materials found in museum collections, such as plant materials, including botanical specimens, paper and textiles, and animal materials, including skins and fluid-preserved specimens. The second session covered inorganic materials and multi-component objects, as well as archaeological collections, architecture, exhibition, and storage. Throughout the session the focus was on planning, problem solving, management, and risk assessment and analysis.

The instructors taught in teams composed of local and foreign specialists from Argentina, Brazil, Canada, Spain, and the US. Important goals of the program were to create an exchange of information and experience among those who would be instructing, and to encourage Argentine professors and other professionals who were not familiar with the conservation profession to become part of the conservation training teams, both for the program and in the future.

The program serves as a model for mid-career training for conservators who have not trained in academic programs, as well as for those who would like to enhance their knowledge and skills in preventive conservation. Such a program also helps to build a corps of instructors who could participate in future preventive conservation training programs.

oral presentation

Weight Changes Over Time In Drying and Semi-Drying Oils

Tumosa, Charles and **Mecklenburg, Marion** (presented by **David Von Endt)**
SCMRE, Smithsonian Institution, 4210 Silver Hill Road, Suitland, MD 20746)

A simple way to monitor the reaction of oils and oil-pigment combinations is to follow the change in weight over time. These plots, originally called Weger curves, show increases in weight with the addition of oxygen and decreases in weight with the loss of volatile oxidation products. Such plots of oils alone show oxidation effects without the complexity of pigment interactions and especially diffusion effects. Plots of oil-pigment combinations, of course, show the effects of pigment interactions and diffusion effects. Data shows that for oils alone considerable changes occur within two years while in oil-pigment combinations chemical processes are active for much longer times, mechanical properties changing over decades to hundreds of years.

oral presentation

DMDM-Hydantoin: The promising result of a search for a non-hazardous alternative in fluid preservation of biological specimens

Van Dam, Andries J.
Leiden Museum of Anatomy, Leiden University Medical Center, P.O. Box 9602, 2300RC Leiden, The Netherlands

Since occupational health and safety authorities throughout the world have put stricter regulations to the use of formalin and storage of ethanol, and the natural history community is more aware of the occupational risks involved, the interest for non-hazardous alternatives grows. For this reason, the Leiden Museum of Anatomy initiated a study of the properties of "modern" biocides, which are used for preservation in food, cosmetic, and pharmaceutical products. In order to determine their suitability for long-term preservation of biological specimens, a set of parameters was defined that could be weighed against the properties of the biocides.

Of the 22 biocides that were reviewed in this way, only DMDM-hydantoin was considered to be a suitable alternative in fluid preservation of biological specimens. This biocide is a so-called formaldehyde-releasing agent, that is primary used as a preservative in cosmetic and personal care products.

oral presentation

Tests on the Use of a Commercial Degreaser to Clean Skeletal Material

Von Endt, David, and **Hopwood, Walter**
SCMRE, Smithsonian Institution, 4210 Silver Hill Road, Suitland, MD 20746
Milensky, Chris
Division of Birds, NMNH, Smithsonian Institution, Washington, D.C. 20560)

A sample of Epo-Grip Blood Out Degreaser, a cleaning agent manufactured for the commercial taxidermy industry by Newton Supply Company, was submitted to the SCMRE to test its acceptability for use as a remover of fats from bird skeletons scheduled for accessioning by NMNH. The contents of the solution were stated by the manufacturer as being: 17 - 19% solids (in contrast, the household cleaning agent 409 is about 3% solids), pyrophosphates, silicates, a small amount of water soluble solvent, and small amounts of surfactants. FTIR analysis at SCMRE revealed that the reported components were present. In addition, these components were all judged to be benign toward the specimens. Complex commercial solutions or mixtures can, at times, be useful for museum specimen preparation, provided they are composed of benign materials, and the manufacturer does not change the original formulation. The results of tests of cleaning efficacy on oily bird and whale bones, and the results of amino acid analysis of the bones before and after cleaning will be presented.

oral presentation

Shipwreck: The Contents of Apothecary Jars Found in the La Belle

Von Endt, David, Erhardt, David, Hopwood, Walter & Tumosa, Charles
SCMRE, Smithsonian Institution, 4210 Silver Hill Road, Suitland, MD 20746)

In 1685 the La Belle, the ship used by the great French explorer de la Salle, foundered in what is now Galveston Bay, Texas. Archeological investigation of this underwater site uncovered 12 sealed intact ceramic apothecary jars and their contents. The archeologists who made the find are eager that these contents be identified. The organic contents from eight of these jars were sent to SCMRE for identification * after 315 years of resting in salt water. These samples were subjected to analysis by FTIR, GC-MS, light microscopy and SEM. We identified the contents of six of the apothecary jars. The results of the analyses and description of these contents are compared to the pharmaceuticals available in France during this time period, and constitute our presentation. For example, the contents of one jar (Sample # 12-45) consisted of an undifferentiated dark organic mass whose FTIR spectrum indicated that it was a balsamic resin, probably used as a balm or rubbing compound. Another (Sample 12-49) produced an FTIR spectrum indicating that it was composed of calcium stearate, of use as a lubricant on sutures. Further confirming analyses, as well as the analysis of further specimens, also will be presented.

oral presentation

Removable Retaining Bars for Open Shelving Units

Woodward, Susan M.
Royal Ontario Museum, Centre for Biodiversity and Conservation Biology - Mammalogy, 100 Queen's Park, Toronto, ON, Canada M4C 3X8

Heavy-duty, bolted shelving systems are used to house the ROM's Mammal wet collection. Retaining bars are required to minimize the risk of jars and pails "creeping off" shelves as a result of vibrations caused by the subway, a garbage compactor, and repeated earthquake activity. The author designed a removable retaining system for the face of each shelf consisting of a zinc-coated, steel bar, with a slot at each end of the bar. The bar rests on a machine screw attached to each angle post. A pair of nuts and internal tooth lockwashers attach the machine screw to the angle post on either side of each shelf. This hardware creates a groove into which the retaining bar is seated and secured in place horizontally by the hardware and vertically by gravity. The bars are placed above the shelf surface at a height that retains containers of various heights. The zinc coating has prevented the development of rust over the past 6 years. The retaining bars may be readily removed permitting easy access to collection material.

poster

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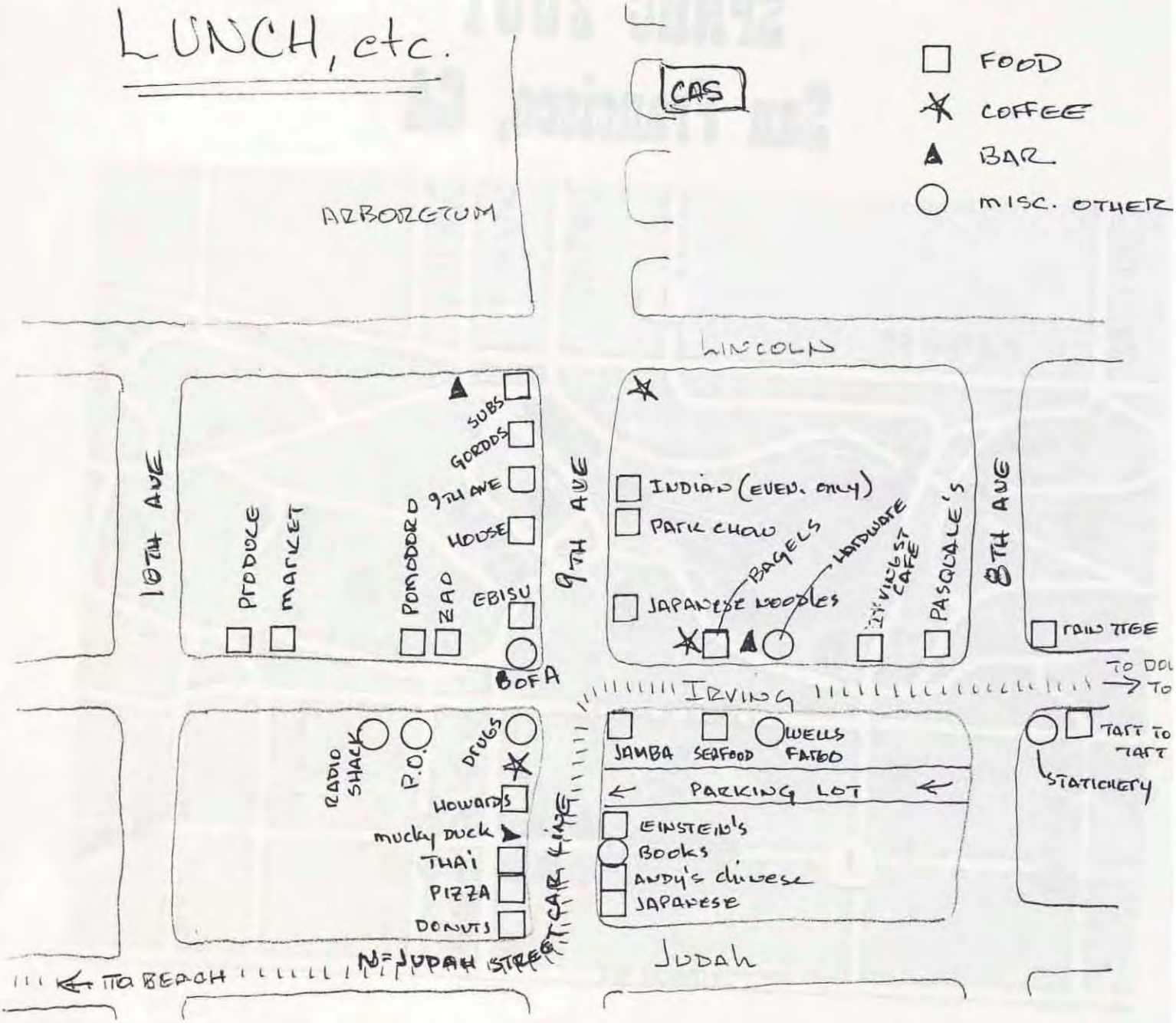
1. Picnic Area	10. California Academy of Sciences	19. Hardware Store
2. Boathouse & BoatRental	11. Shakespeare Garden	20. Radio Shack
3. Stowe Lake	12. Baseball Field	21. Post Office
4. Playground	13. AIDS Memorial	22. Rexall Drug Store
5. Strybing Arboretum	14. Canvas Cafe	23. Jamba Juice
6. Japanese Tea Garden	15. Park Chow	24. Wells Fargo Bank
7. Asian Art Museum	16. ZAO's Noodle House	25. Art Supply Store
8. M.H. de Young Memorial Museum	17. Bank of America	26. Milano's Pizza
9. Music Concourse	18. Starbuck's	27. Arizmehndi Bakery
		28. Einstein's Sandwich Shop


LUNCH, etc.
FOOD
COFFEE
BAR
MISC. OTHER
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ARBORETUM
LINCOLN
10TH AVE
PRODUCE
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ZAO
EBISU
9TH AVE
SUBS
GORDOS
9TH AVE
HOUSE
BOFA
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BAGELS
HARDWARE
JAPANESE NOODLES
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PASQUALE'S
8TH AVE
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SPNHC 2001
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Suggestions for a Safe and Simple Ride on Muni:

1. Have your fare or pass ready
2. Front seats must be made available for disabled or elderly riders. Attempt to move to the back of the bus.
3. DO NOT smoke, eat, drink, or play radios or other sound-reproduction devices without headphones
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5. Bikes are allowed on the following lines: 17, 35, 36, 37, 39, 53, 56, 66, 76, 91, and 108
6. Any number of working dogs for the disabled—guide dogs, signal dogs, or service dogs—may ride free at anytime. Persons boarding with an animal that is not a service dog for the disabled must pay the same fare for the animal that they do for themselves. These animals are allowed to ride on Muni vehicles from 9am-3pm and from 7pm-5am on weekdays and all day on Saturdays, Sundays, and holidays. Dogs must be muzzled and on a short leash, or in a closed container, and other animals must be carried in closed containers.
7. Almost all Muni buses have disabled access. To confirm please call 415-923-6142. Various printed materials are available in alternative formats.

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Exact fare is required (both dollar bills and coinage are accepted). Drivers do not carry change. If your destination requires a bus transfer be sure to grab a transfer ticket from the driver. RIDERS WITHOUT PROOF OF PAYMENT ARE SUBJECT TO A FINE UP TO $250.

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All ages: (5 yrs. & older) = $2.00
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Cable car fares are one-way fares; transfers are neither issued nor accepted.

Weekly Pass:
All ages: (5 yrs. & older) = $9.00 (does not include cable cars)

Muni Passports:
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1-day = $6.00 3-day = $10.00 7-day = $15

* Discount fares for seniors (65 and over), persons with a valid Regional Transit Connection Discount Card (available for disabled persons with doctor's certificate, qualified veterans and holders of a valid Medicare card or California Dept. of Motor Vehicles placard identification card. Call 415-923-6070 for more information on Discount Cards), and youth fares ages 5-17.

SPNHC 2001
BART INFORMATION

BART operates Monday through Friday 4:00 a.m. – Midnight, Saturday 6:00 a.m. – Midnight, and Sunday 8:00 a.m. – Midnight.

The closest BART Station to the Academy of Sciences, is the Civic Center Station. To get to the Civic Center Station, walk up to the corner of 9th and Irving and take the "Inbound" N-Judah Streetcar. Get off at the Civic Center Station. Additional MUNI buses go to the Civic Center Station (Fulton 5 and Hayes 21). BART tickets are like debit cards, each with a specific stored value. When you take a BART trip, your fare is deducted from the ticket automatically until the stored value is used up. All BART stations sell tickets through automatic ticket machines that accept nickels, dimes and quarters as well as $1, $5, $10 and $20 bills. Credit cards can also be used at Charge-A-Ticket (CAT) machines in selected stations. BART's fare structure is built on a mileage-based formula, therefore weekly or monthly passes for BART fare are not available. However, BART offers discounts ranging from 6.25% to 75% as described below. The following discount tickets may be purchased online, through the mail and at selected retail vendors throughout the San Francisco Bay Area:

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6.25% Discount on Two Ticket Denominations:
$32 Ticket Costs Only $30!
$48 Ticket Costs Only $45!

BART Red* Tickets
75% Discount for Persons with Disabilities and Children 5 to 12 Years Old: $16 Ticket Costs Only $4!
Note: Children 4 and under are FREE!

BART Green* Tickets
75% Discount for Senior Citizens 65 Years & Older:
$16 Ticket Costs Only $4!

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BART Orange Tickets provide discounts for middle and secondary school students.

*Please note: When using BART Green Discount Tickets, seniors are required to carry proof of age. Persons with disabilities using Red Discount Tickets are required to carry an RTC Discount ID Card, a MediCare Card, a DMV Identification Card, or a discount card from another California transit operator.