

Annual Report 2003

Report to Legislature & Joint Standing Committees on Natural Resources and State and Local Government

Maine's Library for Geographic Information— The GeoLibrary

Maine Library of Geographic Information 2003 Report to Legislature & Joint Standing Committees on Natural Resources and State and Local Government

Executive Summary

What is the GeoLibrary?

The GeoLibrary is a growing collection of standardized digital maps, images and tabular data that have been produced or acquired by all levels of government in support of public programs as well as public, private and non-profit organizations. The GeoLibrary is administered by an MLGI Board appointed by the House and Senate. As a central resource and repository of GIS information which is available to all Maine residents, businesses and governmental entities the GeoLibrary is an efficient and economical means of providing GIS information to all Maine citizens.

What has the GeoLibrary Accomplished in 2003?

- Initiated a \$3.2 M project to produce full color, high resolution, digital orthophotography for 60% of the state including all organized townships. The State is contributing \$1.6M from bond funds and a federal match of \$1.6M is being used. An orthophotograph combines the image characteristics of a photograph with the geometric qualities of a map.
- Initiated a program to award \$350,000 in grants to Maine municipalities to create and upgrade municipal digital tax parcel data for inclusion in the GeoLibrary.
- Purchased for \$133,000 existing color high resolution orthophotography of Cumberland and Androscoggin counties for inclusion on the GeoLibrary
- Provided \$25,000 to match a \$25,000 Federal grant to create a web application to access data on the GeoLibrary.

How has the GeoLibrary Benefited Constituents?

- Established a web-based orthophotograph viewer for use by the general public.
- Established a GeoLibrary website.
- Established a program of grants to municipalities for digital tax parcels.
- Provided new orthophotography to municipalities and the general public.

What Does the GeoLibrary Require?

The GeoLibrary was provided \$2.3 million dollars of bond funds to invest, however; the library has no funds available to maintain its day to day operations. Operational funding for the Board, staff support, technical support, data storage, data distribution to municipalities and outreach programs must come from some other source. Annual operating fund needs are \$470,000 which will slowly grow as the library contents expand.

The GeoLibrary will commit all bond moneys to projects by December 2004. Future additional bond funds would permit greatly increased grants to municipalities and new large scale data development.

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Maine Library of Geographic Information

Report to Legislature - 2003 Activities

Legislative Background

This report serves as the annual report to the Legislature & Joint Standing Committees on Natural Resources and State and Local Government as required under Sec. 1. 5 MRSA c. 158, SUBCHAPTER II-B MAINE LIBRARY OF GEOGRAPHIC INFORMATION.

List of acronyms & selected definitions

•	MLGI	Maine Library of Geographic Information
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- BoardBoard of Directors for MLGI
- GeoLibrary..... Common name for MLGI
- GIS Geographic Information System
- Resolve 23.....Legislative committee that drafted the Plan that resulted in the MLGI.
- MeGIS
 Maine Office of GIS
- GIS EC......State GIS Executive Council

The Maine Library of Geographic Information (MLGI) or the Maine "GeoLibrary" was established in April 2002 by L.D. 2116 "An Act to Establish the Maine Library of Geographic Information (Chapter 649)." The GeoLibrary is the statewide collection of GIS maps or "geographic information" that has been produced with state dollars. The library is a growing collection of standardized digital maps and tabular data that have been produced or acquired by all levels of government in support of public programs as well as public, private and non-profit organizations. Maintained properly and made available throughout the State, the GeoLibrary is a valuable asset for the ongoing work of government, business and the public.

The GeoLibrary Board has three primary powers and duties. First, the governing Board must ensure that the GeoLibrary operates as a coordinated, cost-effective electronic gateway to public geographic information. The library is committed to use Open GIS Consortium standards. These standards provide interoperability among and between diverse geospatial data stores, services, and applications. The GeoLibrary's information should be widely available to government, business and the public. This task is vital to ensure that: (1) scarce dollars are not wasted recreating information that is already available and (2) everyone in the State has equal and fair access to these maps so that all citizens, towns and regions of the state can benefit from these investments.

Second, the GeoLibrary Board is responsible for monitoring the needs of the State and promoting innovative uses of geographic information based on the identified needs of stakeholders. The Board sets program priorities and authorizes the expenditure of state funds for new GeoLibrary map development projects and services. New, more accurate information is needed to support statewide activities related to economic development, environmental protection, public safety, regionalization of services, infrastructure development, smart growth and natural resource management. The GeoLibrary must increase GeoLibrary holdings to provide the digital maps in support of these vital programs. The diverse nature of the Board provides the

foundation of input from around the state to ensure equal and fair input and representation in the development of the GeoLibrary and related services.

Finally, the development of new geographic information and services necessitates the Board's active participation and engagement of the public in the development of standards, rules and policies for the GeoLibrary. Collaboration on strong standards for the development of new digital maps and a consensus on policies for accessing the GeoLibrary, and services provided, will ensure the library's long-term usefulness and success.

Management, Membership and Meetings

The GeoLibrary is governed by a Board of Directors appointed by the Governor, the Speaker of the House, and President of the Senate. The Board represents all major stakeholder groups identified in the Legislative Resolve 23 Study. The GeoLibrary was formed and began meeting monthly starting in November of 2002. Agendas and meeting notes can be found on the GeoLibrary website: http://www.maine.gov/geolib/

On appointment by the House and Senate, the GeoLibrary Board focused on establishing an operational structure. Leadership was selected and arrangements were made for administrative and technical staffing. A budget and work plan were generated covering the period from inception through FY04.

The Maine Office of GIS located in the Department of Administration and Finance, Bureau of Information Services provides staff to the Board and its subcommittees. MeGIS manages and operates the GeoLibrary website, GIS database and data access facilities including internet mapping services and data downloads. MeGIS works with all levels of government to document and add new GIS data to the GeoLibrary. MeGIS staff provides technical support and outreach services to Maine municipalities on behalf of the Board.

Representing Statewide Association of Regional Councils Representing Utility Interests John Holden, Chair Senior Development Specialist Eastern Maine Development Corporation

Representing Real Estate & Development Interests Ed Suslovic, Co-Chair Realtor Ed Suslovic Real estate

Representing Environmental Interests Barbara Charry Biologist/GIS Manager Maine Audubon Society

Representing GIS Vendors James Page President, CEO James W. Sewall

Representing Municipal Government Paul Mateosian Assessor City of Bath

Representing State GIS Functions Ray Halperin Director, Information Systems Dept. of Transportation

Dennis Boston Senior Analyst Central Maine Power Co.

Representing UMaine Marilyn Lutz Director, IT Planning University of Maine

Representing State Government Richard B. Thompson Chief Information Officer

Representing Municipal Government John Giles GIS Coordinator City of Portland

Representing GIS Vendors Will Mitchell President Mitchell Geographics

Representing the Commissioner of Administrative and Financial Services **Robert Doiron** Supervisor Unorganized Territory Maine Revenue Services

Representing statewide Association of Counties Robert Faunce Land Use Planner Consultant to Lincoln County Representing the Public Sean Myers Kennebunk, Maine

Representing the President of Maine Science and Technology Foundation – Vacant. Organization disbanded.

Partnerships

The GeoLibrary Board is forging partnerships to form a statewide network of government agencies (e.g., towns, state agencies, counties, regional councils, schools), to organize, catalog and provide GIS information. Development of geographic information and full implementation of GIS by public entities is a worthwhile investment but it can be expensive. It is important that library functions promote efficient use of limited public funds for the development and distribution of this valuable information. The Board announced a municipal grant program in 2003 for the digitization of municipal property maps to provide incentives for local government to begin participating in the GeoLibrary program. Towns can work together to digitize all parcels in a region.

The GeoLibrary developed and funded new GIS data development by leveraging federal funds with state approved bond funds. This resulted in three federal partnerships that have drawn additional federal dollars for Maine GIS initiatives. Both the United States Geological Survey and the Natural Resources Conservation Services have provided funds for a statewide digital orthophotography program targeted for municipal use. In addition, the Federal Geographic Data Committee awarded a grant to match GeoLibrary funds for the development of an Internet viewer/browser that will allow the general public to easily browse, view and download GIS data from the GeoLibrary.

Financial Transactions

The GeoLibrary Board was given authority to administer \$2.3M in State bond funds for GIS capital investments in November 2002. The Board entered into a cooperative agreement with the United States Geological Survey to garner the required \$1.6 million federal match for the approved bond funds. Several joint funding agreements were signed with USGS in 2003 to initiate the planned statewide digital orthophotography project which will occur in several phases over a three year period. \$306,729.50 of the bond money was spent during calendar year 2003. A contract has been signed encumbering an additional \$201,427. Additional contracts totaling an estimated \$436,000 are currently pending to complete the first phase of the orthophotography project. An estimated \$800,000 of the bond funds will be used to complete the second phase of the statewide project. The digital orthphoto program will be completed by December, 2005.

A grant program has been developed by the Board. Grants are available to towns for digitization of property tax maps. Grant sizes can vary from \$1,000 to \$10,000. \$350,000 has been budgeted for the grant program. This grant program will not fund all municipal projects nor will it fully pay for the projects. After the digital orthophoto program and the grant program is completed \$1,950,000 of the original \$2.3 million bond fund will be expended.

Financial Issues

While the GeoLibrary has \$2.3 million dollars of bond funds to invest, the library has no funds specifically to maintain its day to day operations. State law limits bond fund spending to capital projects only. Bond funds may not be spent on State employee salaries (Board staff) or day to day operational needs. On-going funding for Board staff, technical support, data storage, data distribution to municipalities and outreach programs must come from some other source such as a general fund allotment, fees for electronic copies of GeoLibrary data or revenues from part of some special fee such as a tax on real estate transactions.

The State's ISPB approved an assessment of \$144,000 per year for the first two years of the library's operation against users of the state's wide area network. These funds pay for the Board staff. These

moneys are insufficient for the annual operating needs of the library. As the amount of information contained in the library increases, and use of the library increases, funding of \$144,000 per year is significantly under the libraries operational requirements. The money may also no longer be available after July 1, 2004 unless it is re-approved by the ISPB. Annual funding needs for GeoLibrary operations are \$470,000.

GeoLibrary Data Transactions and Technical Support

The GeoLibrary initiated two large projects in 2003. A statewide digital orthophotography project and municipal grant program to support the digitization of municipal property maps were put in place. Both programs offer significant benefits for Maine towns of all sizes and location. The projects are described in detail below.

Statewide digital orthophotography

Digital orthophotography are scanned and geo-registered aerial photographs that have been processed to remove distortions in the photographs created by terrain elevation, scale and the tip and tilt of the camera caused by the airplane's motion. Digital orthophotgraphy can also be thought of as a "photomap", having the scale and the measurement characteristics of a map, with the qualities and characteristics of a photograph. Instead of lines, symbols and contours of a typical map, these images show actual ground features from an aerial perspective. The level of detail seen in the digital orthophoto is dependent on many factors including the quality of the camera or sensor and height at which the airplane or satellite captured the photo.

Digital orthophotos are widely used as a visual base map or backdrop in GIS on which other layers of mapped information can be viewed or analyzed. Because of the "bird's eye view", orthophotos make it easy to view, recognize and understand the relationship of objects on the ground. The digital orthophotos are also used as the source for digitizing ground features to create GIS data layers for specific business functions including road centerlines, building footprints, farm fields, forest types, eelgrass beds and utility & road corridors. Change analysis can be conducted using orthophotos from different years. Digital orhtophotos are used by all levels of government and the private sector in demanding technical operations. The public uses the orthophotos to view or gather general information to better understand their property, their town and for recreational purposes.



Figure 2. Example of the type of statewide color high-resolution digital orthophotos being produced by the GeoLibrary. E911 roads and names are "layered" on this map

Digital property maps

Also know as Cadastral Maps, digital property maps show the boundaries of the subdivisions of land for purposes of describing and recording ownership and taxation. Property Maps are one of the most important local government information assets. Parcel maps are a fundamental base for many municipal activities. Although GIS parcel data cannot replace detailed ground surveys, the data does assist municipal officials with functions such as accurate property tax assessment, planning and zoning. Towns can link their maps to their assessor's databases and display local information. Officials can show tax-payers how proposed development or changes in municipal services and regulations will affect them and their neighbors. In many towns, parcel data also helps to provide public notices, plan bus routes, and carry out other municipal services.



Figure 3. View of digital property map with individual properties color coded for the number of dwelling units on that lot.

The GeoLibrary created a CD product for municipalities and for schools and began distribution in 2003. The CDs contain the entire contents of the GeoLibrary for a given town and all adjacent towns. Many of the municipal CDs that were generated were distributed by the State Planning Office through regional government in support of comprehensive planning grants to municipalities. The following municipalities received the GeoLibrary GIS CD product:

Abbot Acton Addison Alexander Allagash Alna Appleton Baileyville Bath Beals Belfast Bethel Bingham Blue Hill Bowdoin Bradley Brewer Bridgton (2) Brooks Brooksville Brownfield Brunswick Calais Canaan Casco Castle Hill Chapman Chelsea Chester China Columbia Corinna Cumberland Detroit Dexter (2) Dover-Foxcroft Eastport Ellsworth Eustis Farmingdale Fort Fairfield Franklin Freeport (2) Fryeburg Gardiner Gouldsboro Gray Greenwood Harpswell (3) Harrison (2) Hartford Hermon Hersey Howland Jackman Jonesboro Jonesport (2) Kittery Lebanon Lee Lewiston

Lincolnville Livermore Ludlow Lyman Machiasport Mapleton Mariaville (2) Merrill Millinocket Milo Montville Mount Desert (2) Naples (2) New Canada New Portland Newcastle Newport Nobleboro (2) North Yarmouth (3) Northfield (2) Northport Norway Oakland Orient Paris Parlin Pond Twp. Patten Penobscot Peru Phillips Poland Portage Lake Presque Isle Rangeley Raymond (2) Readfield (3) Rockland Rockport (2) Sabattus Sandy Bay twp. Sanford Scarborough (2)

Searsport (2) Sebago Sebec Sidney Smyrna Solon South Berwick South Bristol South Portland Southport Stacyville Standish (2) Sumner Swanville The Forks Plt. Thomaston (2) Thornton Topsham (2) Tremont Troy (2) Union (2) Veazie Verona (2) Vinalhaven Waldoboro Wallagrass Washington (2) Weld Wells West Bath (3) Westfield Westmanland Whitefield (2) Whiting (2) Windham (2) Windsor Wiscasset Woodstock (2) Woolwich (2) Yarmouth (4)

The following schools received the GeoLibrary GIS CD product:

Auburn	Dresden	Lisbon
Augusta (6)	Ellsworth	Milford
Bangor	Fairfield	Mount Desert
Bar Harbor	Fairfield	Naples (2)
Biddeford	Farmingdale	Newcastle
Bingham (2)	Farmington (5)	Northport
Blue Hill	Gardiner (3)	Old Town
Buckfield	Gilead	Portland (2)
Camden	Greenville (2)	Pownal
Castine	Guilford (2)	Readfield (3)
China	Hartford	Richmond
Cumberland	Hope	Sanford
Damariscotta	Lincoln	Scarborough (2)
Dover-Foxcroft	Lincolnville	Solon

Standish Stonington Stratton Sumner Swan Island Union (2) Warren (2) Washington (2) Waterboro Waterville (2) Weld West Paris Whitefield Winthrop Wiscasset Woolwich York

Standards and Specifications Adopted

In November of 2002, a subcommittee was formed to study and recommend specifications for a statewide orthophotography project that would benefit all Maine municipalities and State of Maine agencies. Membership consisted or representatives from the following organizations: Maine Department of Environment Protection, City of Portland, Maine Emergency Management Agency, Maine Forest Service, Maine Office of GIS, Greater Portland Council of Governments, Maine Department of Transportation, Island Institute, Maine Drinking Water Program, and United States Geological Survey. The Subcommittee worked out the basic specifications for the new statewide orthophotography project. These specifications are available as *Summary Report of the State Remote Sensing Subcommittee* at this website: http://www.maine.gov/geolib/subcommittees.htm

The GeoLibrary Board also authorized a Digital Parcel Standards Subcommittee to develop published standards for digital tax parcel data in anticipation of a grant program for the digitization of municipal property maps. The committee was composed of representatives from the following public and private sector organizations: Bureau Information Services, Central Maine Power Company, City of Bath, City of Portland, Department of Conservation, Department of Transportation, Greater Portland Council of Governments, Hancock County Planning Commission, Island Institute, James W. Sewall Company, Maine Revenue Services, Maine State Archives, Northern Maine Development Commission and the State Planning Office. The Subcommittee, through meetings and electronic review, developed standards for the acceptance of parcel (cadastral) spatial and tabular data into the GeoLibrary. These specifications and standards were formalized into publications which were then presented along with certain recommendations to the GeoLibrary Board in 2003. These are available as *Standards for Digital Parcel Files* at this website: http://www.maine.gov/geolib/subcommittees.htm

Disputes

To complete the digital orthophotography project, which costs approximately \$3.2 million including federal matching funds, in a more economical manner staff of the GeoLibrary recommended that recently produced photography covering Cumberland County and part of Androscoggin County be purchased versus being updated and recreated as part of the plan to develop orthophotography for the entire state. Given the purchase, new orthophotography would not be developed for this area and cost savings would be realized extending the Board's funds for this project further. In addition, the GeoLibrary could bring the previously proprietary data into the public domain and make orthophotography for this area available sooner than later to many stakeholders.

The recommendation made to the Board was two-fold: a \$137,104 purchase of the imagery directly from a company called GlobeXplorer and a payment of \$53,000 to the Greater Portland Council of Governments (GPCOG) to cover what GPCOG estimated as a loss of revenue from lost future sales of these products (because the information would be made available for free over the internet). The Board voted on April 16, 2003 to authorize Board staff to purchase the orthophotography product from GlobeXplorer up to the amount of \$137,000 (the final purchase price was \$133,104.); i.e., not paying the 'lost revenue' value.

GPCOG had signed a contract with Altaphoto Inc. in 2000 to produce the digital aerial imagery that forms the basis for digital orthophotography. GPCOG claimed that Altaphoto gave them "a bundle of product rights" for the aerial photography and all byproducts which entitled them to some percentage of all future revenue. A copy of the contract has not been presented to the Board. Subsequently, Altaphoto was purchased by Kodak in 2001. Kodak produced area wide orthophotography from the aerial photography on speculation of future sales of which, according to GPCOG, GPCOG would also get a percentage. This division of Kodak went bankrupt in 2003 and the orthophotography products were acquired by GlobeXplorer.

GlobeXplorer has stated that they have clear title to the information which was purchased. The digital orthophotos purchased from GlobeXplorer are derived from the same base information that the Greater Portland Council of Governments created but the data has been processed further by GlobeXplorer creating a different product. The Greater Portland Council of Governments does not agree with this interpretation.

The Board recognizes that it may encounter a variety of situations whereby parties feel that they are impacted negatively by making data available for free over the internet. The GeoLibrary Board has seriously considered and discussed this action numerous times. The Board is conducting a formal appeal process, but the matter has not been resolved yet.

Legislation

Legislation creating the Maine Library of Geographic Information designated a Board seat to be appointed by the President of the Maine Science and Technology Foundation. The Foundation no longer exists. Legislation is required selecting another individual representing a different stakeholder group.