

LAKE ONTARIO  
ENVIRONMENTAL SENSITIVITY INDEX  
METADATA

*April 1997*

*Prepared By:*

National Oceanic and Atmospheric Administration  
Hazardous Materials Response and Assessment Division  
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**FILE DESCRIBES:** Digital data for 1993 Lake Ontario Environmental Sensitivity Index. Data were compiled and digitized at Research Planning, Inc., Columbia, South Carolina.

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**FILE CREATED ON:** 19970327

**COMMENTS:** Information was developed using the U.S. Federal Geographic Data Committee's Content Standards for Digital Geospatial Metadata, June 8, 1994. The numbering scheme matches the Metadata Standard in order to facilitate referencing definitions of the elements. The items in **bold** are required elements and the others are optional elements. The Spatial Data Transfer Standard (SDTS), ver. 03/92, was referenced to properly identify the geographic entities.

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**1.0. IDENTIFICATION INFORMATION****1.1. CITATION****1.1.1. ORIGINATOR:**

National Oceanic and Atmospheric Administration (NOAA), Office of Ocean Resources Conservation and Assessment, Seattle, Washington 98115; and Research Planning, Inc., 1200 Park Street, Post Office Box 328, Columbia, South Carolina 29202

**1.1.2. PUBLICATION DATE:**

199305

**1.1.4. TITLE:**

Sensitivity of Coastal Environments and Wildlife to Spilled Oil: Lake Ontario

**1.1.5. EDITION:**

First

**1.1.6. GEOSPATIAL DATA PRESENTATION FORM:**

Atlas

**1.1.7. SERIES INFORMATION****1.1.7.1. SERIES NAME:**

None

**1.1.7.2. ISSUE IDENTIFICATION:**

Lake Ontario

**1.1.8. PUBLICATION INFORMATION****1.1.8.1. PUBLICATION PLACE:**

Seattle, Washington

**1.1.8.2. PUBLISHER:**

NOAA, Office of Ocean Resources Conservation and Assessment

**1.1.9. OTHER CITATION DETAILS:**

Prepared by Research Planning, Inc., Columbia, South Carolina for the Hazardous Materials Response and Assessment Division, National Oceanic and Atmospheric Administration, Seattle, Washington and the Ninth Coast Guard District, U.S. Coast Guard, Cleveland, Ohio

**1.1.10. ONLINE LINKAGE:**

Not available

**1.1.11. LARGER WORK CITATION:**

None

**1.2. DESCRIPTION**

**1.2.1. ABSTRACT:**

This data set comprises the Environmental Sensitivity Index (ESI) maps for the shoreline of Lake Ontario. ESI data characterize coastal environments and wildlife by their sensitivity to spilled oil. The ESI data include information for three main components: shoreline habitats; sensitive biological resources; and human-use resources

**1.2.2. PURPOSE:**

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response. The Clean Water Act with amendments by the Oil Pollution Act of 1990 requires response plans for immediate and effective protection of sensitive resources

**1.3. TIME PERIOD OF CONTENT**

**1.3.1. TIME PERIOD INFORMATION**

**1.3.1.3. RANGE OF DATES/TIMES:**

The intertidal habitats were mapped during aerial and ground surveys conducted from 16-18 September 1991. The biological and human-use resources data were compiled by regional biologists in 1992. The dates for these data vary and are documented in Section 2.5.1

**1.4. STATUS**

**1.4.1. PROGRESS:**

Complete

**1.4.2. MAINTENANCE AND UPDATE FREQUENCY:**

None planned

**1.5. SPATIAL DOMAIN**

**1.5.1. BOUNDING COORDINATES**

**1.5.1.1. WEST BOUNDING COORDINATE:**

-79.125

**1.5.1.2. EAST BOUNDING COORDINATE:**

-76.000

**1.5.1.3. NORTH BOUNDING COORDINATE:**

44.125

**1.5.1.4. SOUTH BOUNDING COORDINATE:**

43.148

**1.6 KEYWORDS**

**1.6.1. THEME**

**1.6.1.1. THEME KEYWORD THESAURUS:**

None

**1.6.1.2. THEME KEYWORD:**

Sensitivity maps; ESI; coastal resources; oil spill planning; and coastal zone management

**1.6.2. PLACE**

**1.6.2.1. THESAURUS:**

None

**1.6.2.2. PLACE KEYWORD:**

Shoreline of Lake Ontario, to encompass the lakeshore for the state of New York

**1.7. ACCESS CONSTRAINTS:**

None

**1.8. USE CONSTRAINTS:**

**DO NOT USE ESI MAPS FOR NAVIGATIONAL PURPOSES.**

Besides the above warning, there are no use constraints on this data.

Acknowledgment of NOAA and other contributing sources would be appreciated in products derived from these data

**1.11. DATA SET CREDIT:**

This project was supported jointly by NOAA's Hazardous Materials Response and Assessment Division, Robert Pavia, Project Manager, and Jay Rodstein, Project Facilitator. The U.S. Coast Guard provided funding for the project and the efforts of LCDR Michael Tobbe towards securing the funds are greatly appreciated. Air support was provided by the Ninth District Air Station, Detroit.

QM1 Pat O’Keefe of the Marine Safety Office in Buffalo provided much of the human-use data.

Many state and federal resource agency personnel have contributed to the biological and human-use information shown on the maps. The efforts of John Hickey (U.S. Fish and Wildlife Service); Steve Mooredion, Carol Widmer, Dan Carroll, John Hauber, Art Kirsch, Lawrence Meyers, Ken Robley, Dennis Faulkinham, Russ McCullough (New York State Department of Environmental Conservation); Linda Harvey-Opiteck (New York State Office of Parks, Recreation, and Historic Preservation); and Captain Greg Cope (USCG) are gratefully acknowledged. We would also like to thank Roger Gauthier and Gordon Thompson (U.S. Army Corps of Engineers) for providing the aerial photography and digital shorelines.

At Research Planning, Inc., Jacqueline Michel was the project manager, and Miles O. Hayes was the coastal geologist responsible for the mapping work. Jeffrey Dahlin was the project biologist and responsible for the data structure and automation. James Olsen, Scott Johnson, William Holton, and Nilesh Shiroff worked diligently to complete the data entry and generate the final map product. Graphics support was provided by Joseph Holmes, Rebecca Cox, and Mark White. Dot Zaino prepared the text. Jack Moore was the project coordinator.

#### 1.13. NATIVE DATA SET ENVIRONMENT:

The software packages used to develop the atlas are Environmental Systems Research Institute’s PC-ARC/INFO® (3.4D plus) and ARC/INFO® (version 7.0.3) and ORACLE RDBMS (version 6.0.36.1.1). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80 with 4 X-terminals) with UNIX operating system (HP-UX Release A.09.01). The following files are included in the data set:

arc_lut.e00	birds.e00	biores.e00
breed.e00	esi.e00	fish.e00
habitats.e00	hydro.e00	index.e00
pnts_lut.e00	poly_lut.e00	seasonal.e00
soc_data.e00	soc_lut.e00	socecon.e00
species.e00	t_mammal.e00	



## 2.0. DATA QUALITY INFORMATION

### 2.1. ATTRIBUTE ACCURACY

#### 2.1.1. ATTRIBUTE ACCURACY REPORT:

The attribute accuracy is estimated to be “good” given the years of ESI experience, the data input methodology, the quality control review sessions, and the digital logical consistency checks.

### 2.2. LOGICAL CONSISTENCY REPORT:

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. In order to facilitate digitizing, the entire study area is split into individual quadrangles using the INDEX data layer. The first layer of information digitized is the ESI shoreline. Upon completion of digitization the data are checked for completeness and topological and logical consistency and then plotted and checked by the mapping geologists. Any errors in the shoreline classification are updated prior to digitization of the biological and socioeconomic layers. All layers use the shoreline as the geographic reference. The biological and human-use data are digitized, checked using both digital and on-screen procedures, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at 1:40,000 scale). A team of specialists review the entire series of maps, check all data, and make final edits. The data are then merged to form the study-wide layers.

To finalize the data checking process, each data layer is checked using a standardized form by two GIS personnel (a technician and the GIS manager), and each attribute database is checked using several programs that test the files for missing or duplicate data, rules for proper coding, GIS topological consistencies (such as dangles, unnecessary nodes, etc.), and ORACLE® to ARC/INFO® consistencies. A final review is made by the GIS manager and programs are run to generate the unique IDs and associated lookup tables.

### 2.3. COMPLETENESS REPORT:

#### Shoreline Habitat Mapping:

The shoreline habitats of Lake Ontario were mapped during overflights conducted from 16-18 September 1991. The surveys were conducted at elevations of 300-500 feet and slow air speed, using a H-65 helicopter provided

by the U.S. Coast Guard. An experienced coastal geologist delineated the coastal types directly onto 1:24,000 scale USGS topographic maps, using a standardized classification scheme. Where appropriate, multiple habitats were delineated for each shoreline segment. For complicated areas or where the shoreline had changed significantly from that shown on the base maps, color infrared aerial photographs (August 1988) provided by the U.S. Army Corps of Engineers were used to update the maps.

Prediction of the behavior and persistence of oil on intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The vulnerability of a particular intertidal habitat is an integration of the following factors:

- 1) Shoreline type (substrate, grain size, tidal elevation, origin)
- 2) Exposure to wave and tidal energy
- 3) Biological productivity and sensitivity
- 4) Ease of cleanup

All of these factors are used to determine the relative sensitivity of intertidal habitats. Key to the sensitivity ranking is an understanding of the relationships between: physical processes; substrate; shoreline type; product type; fate and effect; and sediment transport patterns. The intensity of energy expended upon a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline.

These concepts have been used in the development of the ESI, which ranks shoreline environments as to their relative sensitivity to oil spills, potential biological injury, and ease of cleanup. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, whereas sheltered areas with associated high biological activity have the highest ranking.

#### Sensitive Biological Resources:

The biological resources information was compiled by the U.S. Fish and Wildlife Service in Cortland, New York. These data denote the key biological resources that are most likely at risk in the event of an oil spill. Four major categories, or

elements, of biological resources were considered during data compilation: birds, fish, habitats, and mammals.

Each ELEMENT corresponds to a coverage or geographic theme. There are three attribute tables, BIORES, SEASONAL, and SPECIES, that are used to store the complex biological data (Fig. 1). Each biological data layer (BIRDS, FISH, HABITATS, and T\_MAMMAL) is linked to the Biological Resources table (BIORES) using the item ID and the associated lookup tables. The lookup tables contain ID and RARNUM. RARNUM is the resources at risk number and is determined for each unique combination of SPECIES\_ID, SEASON\_ID, and CONC. The items in BIORES are: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, and ELEMENT. SPECIES\_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and can be LOW, MEDIUM, or HIGH, or an actual count of the numbers of species present in the polygon. SEASON\_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced.

The SEASONAL data table stores the monthly presence of each species and the characteristics of the presence (life history information). The BIORES data table is linked to the SEASONAL table using the SPECIES\_ID, ELEMENT, and SEASON\_ID items. The categories of the variables BREED1 through BREED5 for each ELEMENT are:

ELEMENT	BREED 1	BREED 2	BREED 3	BREED 4	BREED 5
BIRD	nesting	laying	hatching	fledging	
FISH	spawning	outmigration	larvae	juvenile	adult

NOTE: There are no BREED variables for HABITATS or T\_MAMMALS.

The SPECIES data table contains the species identification number (SPECIES\_ID), common name (NAME), scientific name (GEN\_SPEC), two-letter state abbreviation for listed species (STATE), state and federal status (S\_F), threatened and/or endangered status (T\_E), date of the list for threatened or endangered species (DATE\_PUB), biology element (ELEMENT), and the biology subelement (SUBELEMENT). The item SUBELEMENT refers to the grouping of the species within each ELEMENT:

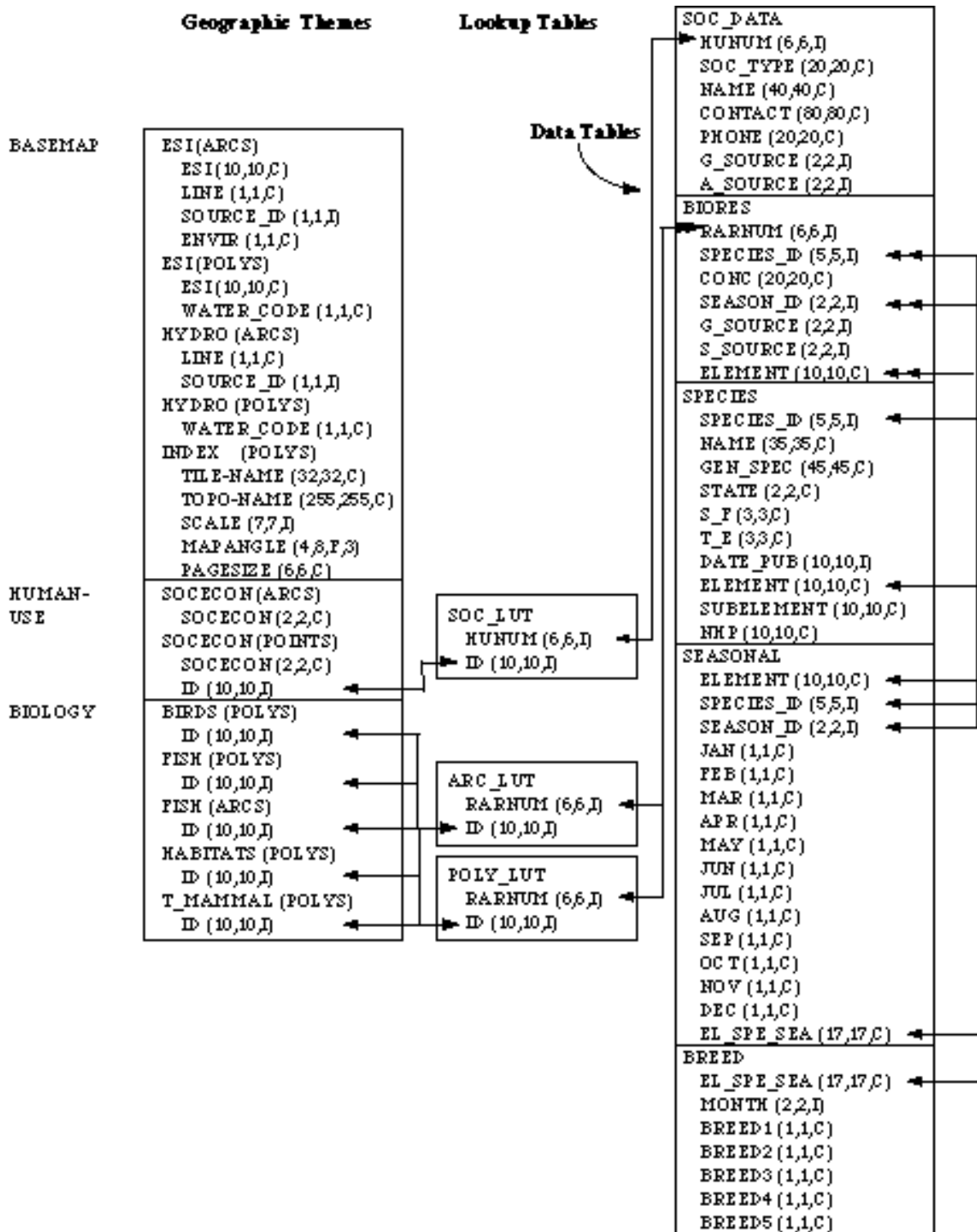


FIGURE 1. Relationships between data layers, lookup tables, and data tables.

ELEMENT	SUBELEMENT
Bird	diving
	gull_tern
	passerine
	raptor
	shorebird
	wading
	waterfowl
Fish	anadromous
	special
Habitat	submersed aquatic vegetation
T_Mammal	canine
	mustelid
	rodent

#### Human-use Resources:

Several human-use, or socioeconomic, features are included in ESI atlases. Entity points and complete chains are digitized into the coverage SOCECON. The data set is linked to the data table SOC\_DATA using the item ID found in the SOC\_LUT. ID is a concatenation of atlas number (1), element number (10), and unique record number.

ENTITY POINTS (.PAT)		COMPLETE CHAINS (.AAT)	
Item	Type	Item	Type
SOCECON	C	SOCECON	C
ID	I		

The item SOCECON may contain the following values:

Entity Points		Polygons	
Feature	SOCECON	Feature	SOCECON
Access	A2	Beach	B
Airport	A	Indian Reservation	IR
Aquaculture	AQ	International Border	IB
Archaeological Site	AS	Marine Sanctuary	MS
Boat Ramp	BR	National Park	NP
Campground	CP	Regional or State Park	P
Coast Guard	CG	Wildlife Refuge	WR
Commercial Fishing	CF		
Diving	DV		
Ferry	F		
Factory	F2		
Hoist	H		
Helipad	HP		

Entity Points		Chains	
Feature	SOCECON	Feature	SOCECON
Historical Site	HS	Beach	B
Lock and Dam	LD	Indian Reservation	IR
Log Storage	LS	International Border	IB
Marina	M	Marine Sanctuary	MS
Mining	MZ	National Park	NP
Oil Facilities	OF	Pipeline	P
Platform	PF	Regional or State Park	P
Recreational Fishing	RF	Wildlife Refuge	WR
Subsistence	S		
Well	W		
Water Intake	WI		

The table SOC\_DATA contains the human-use number (HUNUM), feature type (SOC\_TYPE), name of the facility (NAME), contact person (CONTACT), telephone number (PHONE), geographic source (G\_SOURCE), and attribute source (A\_SOURCE).

## 2.4. POSITIONAL ACCURACY

### 2.4.1. HORIZONTAL POSITIONAL ACCURACY

#### 2.4.1.1. HORIZONTAL POSITIONAL ACCURACY REPORT:

The ESI data uses USGS 1:24,000 topographic quadrangles as the base map. It is estimated that the ESI has a minimum mapping unit of 50 feet. The biological data sets are developed primarily using regional experts who estimate concentration areas. Unlike shorelines, which maintain relative spatial stability through time, the biological data by nature migrate across the landscape. Therefore, the 1:24,000 USGS quadrangles are used as a base map in gathering the data but the data have “fuzzy” boundaries that must be understood when utilizing this information.

**2.5. LINEAGE****2.5.1. SOURCE INFORMATION:**

Data layer or theme name: BIRDS

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Stegmann, E.C.	1981	Oil Spill Response Model	Text	St. Lawrence-Eastern Ontario Commission, Wodertown, NY	N/A	Unknown
Hedendorf, C.E.	1981	Fish and Wildlife Resources of the Great Lakes Coastal Wetlands within the U.S.	Text	Volume 2. U.S. Fish and Wildlife Service, Wash., DC	N/A	Unknown
Hickey, John, U.S. Fish and Wildlife Service	1992	Natural Resources	Personal knowledge	N/A	N/A	1992
New York State Department of Environmental Conservation	1992	Natural Resources	Personal knowledge	N/A	N/A	1992

**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: ESI

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
U.S. Army Corps of Engineers	1992	Shoreline	Digital chains	N/A	24000	Unknown
U.S. Army Corps of Engineers	1988	Infrared Aerial Photography	Photos	N/A	24000	1988

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Research Planning, Inc.	1991	Habitat Classification	Hard copy maps	N/A	24000	1991

### 2.5.1. SOURCE INFORMATION:

Data layer or theme name: FISH

#### 2.5.1.1. SOURCE CITATION

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Stegmann, E.C.	1981	Oil Spill Response Model	Text	St. Lawrence-Eastern Ontario Commission, Wodertown, NY	N/A	Unknown
Hedendorf, C.E.	1981	Fish and Wildlife Resources of the Great Lakes Coastal Wetlands within the U.S.	Text	Volume 2. U.S. Fish and Wildlife Service, Wash., DC	N/A	Unknown
Hickey, John, U.S. Fish and Wildlife Service	1992	Natural Resources	Personal knowledge	N/A	N/A	1992
New York State Department of Environmental Conservation	1992	Natural Resources	Personal knowledge	N/A	N/A	1992



**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: HABITATS

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Stegmann, E.C.	1981	Oil Spill Response Model	Text	St. Lawrence-Eastern Ontario Commission, Wodertown, NY	N/A	Unknown
Hedendorf, C.E.	1981	Fish and Wildlife Resources of the Great Lakes Coastal Wetlands within the U.S.	Text	Volume 2. U.S. Fish and Wildlife Service, Wash., DC	N/A	Unknown
Hickey, John, U.S. Fish and Wildlife Service	1992	Natural Resources	Personal knowledge	N/A	N/A	1992
New York State Department of Environmental Conservation	1992	Natural Resources	Personal knowledge	N/A	N/A	1992

**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: HYDRO

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
U.S. Army Corps of Engineers	1992	Shoreline	Digital chains	N/A	24000	Unknown
U.S. Army Corps of Engineers	1988	Infrared Aerial Photography	Photos	N/A	24000	1988
Research Planning, Inc.	1991	Habitat Classification	Hard copy maps	N/A	24000	1991

**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: INDEX

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Research Planning, Inc.	1993	Index for Lake Ontario ESI maps	Digital complex polygons	N/A	24000	1993

**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: SOCECON

**2.5.1.1. SOURCE CITATION**

<b>2.5.1.1.1</b>	<b>2.5.1.1.2</b>	<b>2.5.1.1.4</b>	<b>2.5.1.1.6</b>	<b>2.5.1.1.8</b>	<b>2.5.1.2</b>	<b>2.5.1.4</b>
<b>Originator</b>	<b>Publication Date</b>	<b>Title</b>	<b>Geospatial Data Presentation Form</b>	<b>Publication Information</b>	<b>Source Scale Denominator</b>	<b>Source Time Period</b>
Research Planning, Inc.	1991	Boat Ramps, Airports, and Marinas	Hardcopy maps	N/A	24000	1991
U.S. Coast Guard	1992	Access Sites, Airports, Boat Ramps, Coast Guard Locations, Hoists, Marinas, and Water Intakes	Hardcopy maps	N/A	24000	1991
U.S. Geological Survey	Varies	Airports	Hardcopy maps	U.S. Geological Survey	24000	Varies
New York State Historic Preservation Office	1990	New York State Archaeological Sensitivity Map	Hardcopy maps	New York State Museum, Archaeological Site File	Unknown	Unknown
New York State Office of Parks, Recreation, and Historic Preservation	1992	Human-use Features	Personal knowledge	N/A	N/A	1992

**2.5.1. SOURCE INFORMATION:**

Data layer or theme name: T\_MAMMAL

**2.5.1.1. SOURCE CITATION**

2.5.1.1.1 Originator	2.5.1.1.2 Publication Date	2.5.1.1.4 Title	2.5.1.1.6 Geospatial Data Presentation Form	2.5.1.1.8 Publication Information	2.5.1.2 Source Scale Denominator	2.5.1.4 Source Time Period
Stegmann, E.C.	1981	Oil Spill Response Model	Text	St. Lawrence-Eastern Ontario Commission, Wodertown, NY	N/A	Unknown
Hedendorf, C.E.	1981	Fish and Wildlife Resources of the Great Lakes Coastal Wetlands within the U.S.	Text	Volume 2. U.S. Fish and Wildlife Service, Wash., DC	N/A	Unknown
Hickey, John, U.S. Fish and Wildlife Service	1992	Natural Resources	Personal knowledge	N/A	N/A	1992
New York State Department of Environmental Conservation	1992	Natural Resources	Personal knowledge	N/A	N/A	1992

**2.5.2. PROCESS STEP****2.5.2.1. PROCESS DESCRIPTION:**

The digitization of ESI, biological resources, and human-use resources is a complex and highly quality controlled process. In order to facilitate digitizing, the entire study area was split into individual quadrangles using a map index coverage. The first layer of information digitized is the ESI. Upon completion of digitization the data is checked for completeness, topological and logical consistency and then plotted and checked by the overflight/field specialists. Any errors in the shoreline classification are updated prior to digitization of the biological and socioeconomic layers. All data use the shoreline as the geographic reference so that there are no slivers in the

geographic layers. The biological information is compiled onto 1:24,000 USGS topographic quadrangles by an in-house biological and GIS expert using the data from regional specialists in the form of maps, tables, charts, and written descriptions of wildlife distributions. The data are digitized, checked using both digital and on-screen procedures, plotted, and sent out for review by the regional specialists. The edited maps are updated on the computer, checked once again, and plotted at final map scale. A team of specialists review the entire series of maps, check all data, and make final edits. The data are merged to form the study-wide layers that are described in this document. The data merging includes a final quality control check where topological consistency, rules for geography, and database to geography are checked and reported to the GIS manager.

**2.5.2.3. PROCESS DATE:**

199305

**2.5.2.6. PROCESS CONTACT**

**2.5.2.6.1. CONTACT PERSON PRIMARY**

**2.5.2.6.1.1. CONTACT PERSON:**

Jill Petersen

**2.5.2.6.1.2. CONTACT ORGANIZATION:**

NOAA HMRAD

**2.5.2.6.3. CONTACT POSITION:**

GIS Manager

**2.5.2.6.4. CONTACT ADDRESS**

**2.5.2.6.4.1. ADDRESS TYPE:**

Physical Address

**2.5.2.6.4.2. ADDRESS:**

7600 Sand Point Way N.E.

Bin C15700

**2.5.2.6.4.3. CITY:**

Seattle

**2.5.2.6.4.4. STATE OR PROVINCE:**

WA

**2.5.2.6.4.5. POSTAL CODE:**

98115

**2.5.2.6.5. CONTACT VOICE TELEPHONE:**

(206) 526-6944

**2.5.2.6.7. CONTACT FACSIMILE TELEPHONE:**

(206) 526-6329

**2.5.2.6.8. CONTACT ELECTRONIC MAIL ADDRESS:**

Jill\_Petersen@hazmat.noaa.gov.us

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**3.0. SPATIAL DATA ORGANIZATION INFORMATION****3.2. DIRECT SPATIAL REFERENCE METHOD:**

Vector

**3.3. POINT AND VECTOR OBJECT INFORMATION****3.3.1. SDTS TERMS DESCRIPTION:****3.3.1.1. SDTS POINT AND VECTOR OBJECT TYPE, and****3.3.1.2. POINT AND VECTOR OBJECT COUNT:**

<b>Theme</b>	<b>Universe Polygon</b>	<b>GT-Polygons</b>	<b>Area Points</b>	<b>Complete Chains</b>	<b>Line Segments</b>	<b>Label Points</b>	<b>Entity Points</b>	<b>Nodes</b>
BIRDS	1	113	113	211	23,302			156
ESI	1	525	525	2,877	40,074			2,711
FISH	1	244	244	512	35,643			381
HABITATS	1	139	139	139	6,031			135
HYDRO	1	183	183	335	50,801	1,168		534
INDEX	1	34	34	91	275			58
SOCECON				4,553	14,154		339	5,667
T_MAMMAL	1	35	35	43	4,978			36

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## 4.0. SPATIAL REFERENCE INFORMATION

### 4.1. HORIZONTAL COORDINATE SYSTEM DEFINITION

#### 4.1.2. PLANAR

##### 4.1.2.1. MAP PROJECTION

###### 4.1.2.1.1. MAP PROJECTION NAME:

OBLIQUE MERCATOR

###### 4.1.2.1.2. MAP PROJECTION PARAMETERS :

###### 4.1.2.1.2.4. FALSE EASTING:

-3,950,000

###### 4.1.2.1.2.5. FALSE NORTHING:

-3,430,000

###### 4.1.2.1.2.8. LONGITUDE OF PROJECTION

CENTER:

DMS -78 0 0.00

###### 4.1.2.1.2.9. LATITUDE OF PROJECTION

CENTER:

DMS 44 0 0.00

###### 4.1.2.1.2.10. SCALE FACTOR AT CENTER LINE:

0.9999

###### 4.1.2.1.2.11. OBLIQUE LINE AZIMUTH:

###### 4.1.2.1.2.11.1. AZIMUTH ANGLE:

55.667

###### 4.1.2.1.2.11.2. AZIMUTH MEASURE

POINT LONGITUDE:

-78 0 0.00

##### 4.1.2.4. PLANAR COORDINATE INFORMATION

###### 4.1.2.4.1. PLANAR COORDINATE ENCODING METHOD:

Coordinate Pair

###### 4.1.2.4.2. COORDINATE REPRESENTATION:

###### 4.1.2.4.2.1. ABSCISSA RESOLUTION:

5 feet

###### 4.1.2.4.2.2. ORDINATE RESOLUTION:

5 feet

**4.1.4. GEODETIC MODEL**

**4.1.4.1. HORIZONTAL DATUM NAME:**

North American Datum of 1927

**4.1.4.2. ELLIPSOID NAME:**

Clarke, 1866

**4.1.4.3. SEMI-MAJOR AXIS:**

6,378,206.4

**4.1.4.4. DENOMINATOR OF FLATTENING RATIO:**

294.98

## 5.0. ENTITY AND ATTRIBUTE INFORMATION

### 5.1. DETAILED DESCRIPTION: BIRDS

The data layer BIRDS contains the polygons with bird species.

#### 5.1.1. ENTITY TYPES:

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:
<u>GT-Polygons</u>	ID integer

#### 5.1.2. ATTRIBUTES:

##### 5.1.2.1. ATTRIBUTE LABEL:

ID

##### 5.1.2.2. ATTRIBUTE DEFINITION:

A unique identifier that links to the POLY\_LUT table. The POLY\_LUT is a lookup table with two attributes: ID and RARNUM. ID is a concatenation of atlas number (1), element number (1), and record number. ID values of zero are holes in polygons and do not contain information. In the lookup table (POLY\_LUT) and biological resources table (BIORES), the value of RARNUM is determined for each unique combination of ELEMENT, SPECIES\_ID, SEASON\_ID, and CONC and links to the biology table, BIORES. The items in BIORES are: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, and ELEMENT. SPECIES\_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and can be LOW, MEDIUM, HIGH, or a numeric value representing the number of individuals. SEASON\_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced. G\_SOURCE and S\_SOURCE are used for identifying sources that were unavailable during compilation of this atlas.

The following BIRDS species are found in the Lake Ontario ESI atlas:

<b>SPECIES ID</b>	<b>NAME</b>
1	Common loon
4	Red-necked grebe
8	Double-crested cormorant
12	Canada goose
13	Brant
15	Snow goose
16	Mallard
17	Northern pintail
18	Green-winged teal
22	Greater scaup
23	Lesser scaup
24	Common goldeneye
26	Bufflehead
27	Oldsquaw
32	Common merganser
33	Red-breasted merganser
34	American coot
38	Herring gull
40	Ring-billed gull
42	Bonaparte's gull
45	Common tern
54	Great blue heron
56	Spotted sandpiper
59	Lesser yellowlegs
60	Red knot
63	Dunlin
66	Western sandpiper
67	Sanderling
69	Semipalmated plover
70	Killdeer
71	Black-bellied plover
73	Ruddy turnstone
76	Bald eagle
77	Osprey
82	Glaucous gull
90	Black-crowned night heron
92	Great black-backed gull
93	Cattle egret

<b>SPECIES ID</b>	<b>NAME</b>
97	Green-backed heron
124	Redhead
136	Caspian tern
138	Forster's tern
156	Semipalmated sandpiper
169	American wigeon
178	Least bittern
179	Pied-billed grebe
180	Ring-necked duck
181	Northern harrier
185	American bittern
186	Black duck
187	Virginia rail
188	Sora rail
190	Blue-winged teal
191	Wood duck
192	Common moorhen
193	Black tern
196	Common snipe
198	Hooded merganser
216	Belted kingfisher
217	Mute swan
221	Coopers hawk
232	Rough-legged hawk
234	Purple sandpiper
235	Long-billed marsh wren
236	Short-billed marsh wren
237	Baird's sandpiper
238	White-rumped sandpiper

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

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**5.1. DETAILED DESCRIPTION: ESI**

The data layer ESI contains arc (Complete Chains) features for the ESI shoreline classification. The classification of the features is based upon *Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Data-bases* (Michel, J. and J. Dahlin, 1993, Hazardous Materials Response and Assessment Division, NOAA). The ESI classification was performed 16-18 September 1991.

**5.1.1. ENTITY TYPES:**

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
<u>Complete Chain</u>	ESI LINE SOURCE_ID	character character integer
<u>Complex Polygons</u>	ENVIR ESI WATER_CODE	character character character

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

ESI

**5.1.2.2. ATTRIBUTE DEFINITION:**

The item ESI contains values according to the ESI ranking of the shorelines and polygons. The ESI rankings progress from low to high susceptibility to oil spills. In many cases, the shorelines are also ranked with multiple codes such as 10A/5. The first number is the most landward shoreline type, fringing wetlands, with mixed sand and gravel beaches being the shoreline type closest to the water. The Lake Ontario shoreline types are listed below.

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
1A	Exposed Rocky Cliffs
1A/2A	Exposed Rocky Cliffs/Shelving Bedrock Shores
1A/6A	Exposed Rocky Cliffs/Gravel Beaches
1B	Exposed, Hard Man-made Structures

<b>5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:</b>	<b>5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:</b>
1B/2A	Exposed, Hard Man-made Structures/Shelving Bedrock Shores
1B/4	Exposed, Hard Man-made Structures/Sand Beaches
1B/5	Exposed, Hard Man-made Structures/Mixed Sand and Gravel Beaches
1B/9B	Exposed, Hard Man-made Structures/Sheltered Sand/ Mud Flats
2A	Shelving Bedrock Shores
2A/9B	Shelving Bedrock Shores/Sheltered Sand/Mud Flats
3A	Eroding Scarps in Unconsolidated Sediments
3A/1A	Eroding Scarps in Unconsolidated Sediments/Exposed Rocky Cliffs
3A/1B	Eroding Scarps in Unconsolidated Sediments/Exposed, Hard Man-made Structures
3A/2A	Eroding Scarps in Unconsolidated Sediments/Shelving Bedrock Shores
3A/4	Eroding Scarps in Unconsolidated Sediments/Sand Beaches
3A/6A	Eroding Scarps in Unconsolidated Sediments/Gravel Beaches
3A/6B	Eroding Scarps in Unconsolidated Sediments/Riprap Revetments, Groins, and Jetties
4	Sand Beaches
5	Mixed Sand and Gravel Beaches
5/2A	Mixed Sand and Gravel Beaches/Shelving Bedrock Shores
6A	Gravel Beaches
6A/2A	Gravel Beaches/Shelving Bedrock Shores
6B	Riprap Revetments, Groins, and Jetties
6B/2A	Riprap Revetments, Groins, and Jetties/Shelving Bedrock Shores
6B/4	Riprap Revetments, Groins, and Jetties/Sand Beaches
6B/9B	Riprap Revetments, Groins, and Jetties/Sheltered Sand/Mud Flats
8A	Sheltered Scarps in Bedrock and Unconsolidated Sediments
8A/2A	Sheltered Scarps in Bedrock and Unconsolidated Sediments/Shelving Bedrock Shores
8A/6A	Sheltered Scarps in Bedrock and Unconsolidated Sediments/Gravel Beaches
8A/10A	Sheltered Scarps in Bedrock and Unconsolidated Sediments/Fringing Wetlands
8B	Sheltered Man-made Structures



<b>5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:</b>	<b>5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:</b>
8B/1B	Sheltered Man-made Structures/Exposed, Hard Man-made Structures
8B/2A	Sheltered Man-made Structures/Shelving Bedrock Shores
9A	Sheltered, Vegetated Low Banks
9A/2A	Sheltered, Vegetated Low Banks/Shelving Bedrock Shores
9B	Sheltered Sand/Mud Flats
9B/5	Sheltered Sand/Mud Flats/Mixed Sand and Gravel Beaches
10A	Fringing Wetlands
10A/2A	Fringing Wetlands/Shelving Bedrock Shores
10B	Extensive Wetlands
U	Unranked

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**  
ordered

**5.1.2.1. ATTRIBUTE LABEL:**  
LINE

**5.1.2.2. ATTRIBUTE DEFINITION:**  
Type of geographic feature

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**  
Research Planning, Inc.

<b>5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:</b>	<b>5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:</b>
--	---

S	Shoreline
---	-----------

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**  
nominal

**5.1.2.1. ATTRIBUTE LABEL:**

SOURCE\_ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

Data source for the ESI

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED  
DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN  
VALUE DEFINITION:**

---

0

Digital (Corps of Engineers)

---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

U.S. Army Corps of Engineers

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

ENVIR

**5.1.2.2. ATTRIBUTE DEFINITION:**

Type of geographic feature for classified shoreline habitats

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED  
DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN  
VALUE DEFINITION:**

---

L

Lacustrine

---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

WATER\_CODE

**5.1.2.2. ATTRIBUTE DEFINITION:**

Specifies a polygon as either water or land

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED  
DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN  
VALUE DEFINITION:**

---

L W	Land Water
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---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

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**5.1. DETAILED DESCRIPTION: FISH**

The data layer FISH contains the polygons and arcs with fish species.

**5.1.1. ENTITY TYPES:**

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE	DEFINITION:
<u>GT-Polygons</u>	ID	integer
<u>Complete Chains</u>	ID	integer

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

A unique identifier that links to either the POLY\_LUT table or the ARC\_LUT, depending on the feature topology. The POLY\_LUT and ARC\_LUT are lookup tables with two attributes: ID and RARNUM. ID is a concatenation of atlas number (1), element number (2), and record number. The value of RARNUM is determined for each unique combination of SPECIES\_ID, SEASON\_ID, and CONC. The items in BIORES are: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, and ELEMENT. SPECIES\_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and almost all are classified as UNKNOWN. SEASON\_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced. G\_SOURCE and S\_SOURCE are variables that hold metadata information. The information for these variables was unavailable during compilation of this atlas. The following FISH species are found in the Lake Ontario ESI atlas:

<b>SPECIES ID</b>	<b>NAME</b>
68	Chinook salmon (king) (P)
69	Coho salmon (silver) (P)
74	Rainbow trout (steelhead) (P) (A)
84	Rainbow smelt (P) (A)
85	Alewife (P)
100	Brown trout (P) (A)
145	White perch (P)
152	Yellow perch (P) (A)
159	Banded killifish (P)
162	Carp (P) (A)
163	Gizzard shad (P)
164	Cisco sp. (P)
166	Brook trout (P)
167	Lake trout (P)
168	Spottail shiner (P)
169	Blackchin shiner (P)
170	Blacknose shiner (P)
171	Fathead minnow (P) (A)
175	White sucker (P) (A)
176	Yellow bullhead (P)
178	Rock bass (P) (A)
179	Largemouth bass (P) (A)
180	Smallmouth bass (P)
181	Black crappie (P) (A)
182	Bluegill (P) (A)
183	Green sunfish (P)
184	Grass pickerel (P)
185	Northern pike (P) (A)
188	Walleye (P) (A)
190	White bass (P)
191	Shorthead redhorse (P)
201	Channel catfish (P)
202	White crappie (P)
211	Brown bullhead (P)
212	Pumpkinseed (P) (A)
229	River redhorse (P)
237	Burbot (P)
239	Splake (P)
240	Greater redhorse (P)
241	Striped shiner (P)
243	Longear sunfish (P)
245	Silver redhorse (P)
246	Black bullhead (P)

<b>SPECIES ID</b>	<b>NAME</b>
247	Emerald shiner (P)
248	Common shiner (P)
249	Logperch (P)

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

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**5.1. DETAILED DESCRIPTION: HABITATS**

The data layer HABITATS contains the polygons with plant species.

**5.1.1. ENTITY TYPES:**

<b>5.1.1.1. ENTITY TYPE LABEL:</b>	<b>5.1.1.2. ENTITY TYPE DEFINITION:</b>
<u>GT-Polygons</u>	ID integer

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

A unique identifier that links to the POLY\_LUT table. The POLY\_LUT is a lookup table with two attributes: ID and RARNUM. ID is a concatenation of atlas number (1), element number (3), and record number. The value of RARNUM is determined for each unique combination of SPECIES\_ID, SEASON\_ID, and CONC. The items in BIORES are: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, and ELEMENT. SPECIES\_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species are polygons and are unknown, except one, which is HIGH. SEASON\_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced. G\_SOURCE and S\_SOURCE are variables that hold metadata information. The information for these variables was unavailable during compilation of this atlas.

The following HABITATS species are found in the Lake Ontario ESI atlas:

<b>SPECIES ID</b>	<b>NAME</b>
213	Submersed aquatic vegetation

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1. DETAILED DESCRIPTION: HYDRO**

The data layer HYDRO contains polygonal water and land features as well as linear features for rivers and streams that are tidally influenced.

**5.1.1. ENTITY TYPES:**

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:
<u>GT-Polygons</u>	WATER_CODE    character
<u>Complete Chains</u>	LINE            character
	SOURCE_ID     integer

The WATER\_CODE, LINE, and SOURCE\_ID attributes are the same as in the ESI coverage. This data layer contains all annotation used in producing the atlas.

**5.1.2. ATTRIBUTES:**

**5.1.2.1. ATTRIBUTE LABEL:**

WATER\_CODE

**5.1.2.2. ATTRIBUTE DEFINITION:**

Specifies a polygon as either water or land

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:**

W	Water
L	Land
U	Unmapped

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

LINE

**5.1.2.2. ATTRIBUTE DEFINITION:**

Type of geographic feature

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED  
DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN  
VALUE DEFINITION:**

---

I S	Map Index Shoreline
--------	------------------------

---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**  
nominal

**5.1.2.1. ATTRIBUTE LABEL:**

SOURCE\_ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

Data source for the ESI

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED  
DOMAIN VALUE:**

**5.1.2.4.1.2. ENUMERATED DOMAIN  
VALUE DEFINITION:**

---

0	Digital
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**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**  
nominal

**5.1. DETAILED DESCRIPTION: INDEX**

The data layer INDEX contains the map boundaries for each quad/map in the atlas.

**5.1.1. ENTITY TYPES:****5.1.1.1. ENTITY TYPE LABEL:**GT-Polygons**5.1.1.2. ENTITY TYPE DEFINITION:**

TILE-NAME	character
TOPO-NAME	character
SCALE	integer
MAPANGLE	floating point
PAGESIZE	character

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

TILE-NAME

**5.1.2.2. ATTRIBUTE DEFINITION:**

The TILE-NAME contains the map number according to the specified layout of the atlas. During the map production process the value of TILE-NAME is plotted on the map product to order the maps in a coherent manner. The values for each polygon are unique and range from 1 through 34.

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

ordered

**5.1.2.1. ATTRIBUTE LABEL:**

TOPO-NAME

**5.1.2.2. ATTRIBUTE DEFINITION:**

USGS 1:24,000 topographic map name. Some polygons straddle two or more maps and all map names are included in this attribute. The date (latest/revised) of the USGS maps are also included in this field.

**5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:****5.1.2.4.1.3. ENUMERATED DOMAIN VALUE****DEFINITION SOURCE:**

Research Planning, Inc.

ASHWOOD, N.Y.  
BAKER, N.Y.  
BRADDOCK HEIGHTS, N.Y.  
CAPE VINCENT SOUTH, N.Y.  
CHAUMONT, N.Y.  
DEXTER, N.Y.  
ELLISBURG, N.Y.  
FAIR HAVEN-WEST NINEMILE PT., N.Y.  
FORT NIAGRA, N.Y.-ONT.  
FURNACEVILLE, N.Y.  
GALLO ISLAND, N.Y.  
HAMLIN, N.Y.  
HENDERSON BAY, N.Y.  
HENDERSON, N.Y.  
HILTON, N.Y.  
KENDALL, N.Y.  
KENT, N.Y.  
LYNDONVILLE, N.Y.  
NEWFANE, N.Y.  
NINEMILE POINT, N.Y.  
NORTH WALCOTT, N.Y.  
OSWAGO EAST-WEST OF TEXAS, N.Y.  
OSWEGO WEST, N.Y.  
POINT PENINSULA, N.Y.  
PULASKI, N.Y.  
PULTNEYVILLE, N.Y.  
ROCHESTER, N.Y.  
SACKETS HARBOR, N.Y.  
SALMON CREEK, N.Y.  
SIXMILE CREEK, N.Y.  
SODUS POINT-ROSE, N.Y.  
STONY POINT, N.Y.  
TEXAS, N.Y.  
WILSON, N.Y.

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**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**  
nominal

**5.1.2.1. ATTRIBUTE LABEL:**

SCALE

**5.1.2.2. ATTRIBUTE DEFINITION:**

SCALE contains the value of the denominator of the scale that the INDEX polygon is plotted in the final map product.

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:**

---

40,000

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**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

MAPANGLE

**5.1.2.2. ATTRIBUTE DEFINITION:**

MAPANGLE contains a value (usually negative) to rotate the final map product so that it is situated straight up and down.

**5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:**

---

-1.350  
-1.300  
-1.250  
-1.200  
-1.150  
-1.100  
-1.000  
-0.950  
-0.800  
-0.700  
-0.550  
-0.430  
-0.400  
-0.250  
-0.150  
-0.100  
0.000  
0.050

0.160  
0.250  
0.350  
0.400  
0.480  
0.600  
0.650  
0.750

---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

PAGESIZE

**5.1.2.2. ATTRIBUTE DEFINITION:**

PAGESIZE contains the value of the width and height of the map in the final map product.

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:**

---

11,17  
4.5,4  
17,11

---

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal



**5.1. DETAILED DESCRIPTION: SOCECON**

The data layer SOCECON contains the entity points and complete chains for the human-use data.

**5.1.1. ENTITY TYPES:**

5.1.1.1. ENTITY TYPE LABEL:	5.1.1.2. ENTITY TYPE DEFINITION:	
<u>Complete Chain</u>	SOCECON	character
<u>Entity Points</u>	SOCECON	character
	ID	integer

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

SOCECON

**5.1.2.2. ATTRIBUTE DEFINITION:**

Identifies a line or point with a socioeconomic, or human-use, feature. This attribute allows direct access to the type of feature instead of linking to the more detailed SOC\_DATA table.

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE****DEFINITION SOURCE:**

Research Planning, Inc.

5.1.2.4.1.1. ENUMERATED DOMAIN VALUE:	5.1.2.4.1.2. ENUMERATED DOMAIN VALUE DEFINITION:
A	Airport (P)
AS	Archaeological Site (P)
BR	Boat Ramp (P)
CB	City Border (L)
CG	Coast Guard (P)
CP	Campground (P)
H	Hoist (P)
HS	Historical Site (P)
IB	International Border (L)
M	Marina (P)
P	Park (P & L)
R	Road (L)
RR	Railroad (L)
WI	Water Intake (P)

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1.2.1. ATTRIBUTE LABEL:**

ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

A unique identifier that links to the SOC\_LUT table. SOC\_LUT is a lookup table with two attributes: ID and HUNUM. ID is a concatenation of atlas number (1), element number (10), and record number. HUNUM is the link to the socioeconomic data found in the SOC\_DATA table. The table SOC\_DATA contains the feature type (SOC\_TYPE), name of the feature (NAME), contact agency or person (CONTACT), telephone number (PHONE), geographic source number (G\_SOURCE), and attribute source number (A\_SOURCE).

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

**5.1. DETAILED DESCRIPTION: T\_MAMMAL**

The data layer T\_MAMMAL contains the polygons with terrestrial mammal species.

**5.1.1. ENTITY TYPES:****5.1.1.1. ENTITY TYPE LABEL:**GT-Polygons**5.1.1.2. ENTITY TYPE DEFINITION:**

ID

integer

**5.1.2. ATTRIBUTES:****5.1.2.1. ATTRIBUTE LABEL:**

ID

**5.1.2.2. ATTRIBUTE DEFINITION:**

A unique identifier that links to the POLY\_LUT table. The POLY\_LUT is a lookup table with two attributes: ID and RARNUM. ID is a concatenation of atlas number (1), element number (9), and record number. The value of RARNUM is determined for each unique combination of SPECIES\_ID, SEASON\_ID, and CONC. The items in BIORES are: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, and ELEMENT. SPECIES\_ID is the numeric identifier of each species and is unique within each ELEMENT. CONC is the concentration of the species and is unknown. SEASON\_ID contains a numeric value according to the monthly presence of the species. Usually, there is one seasonality per species, but occasionally the same species has different monthly presence or breeding activity. When this occurs, a new record with a different seasonality is referenced. In this atlas, all SEASON\_IDS are 1. G\_SOURCE and S\_SOURCE are variables that hold metadata information. The information for these variables was unavailable during compilation of this atlas.

The following T\_MAMMAL species are found in the Lake Ontario ESI atlas:

<b>SPECIES ID</b>	<b>NAME</b>
8	River otter
36	Beaver
37	Muskrat
38	Mink
44	Northern raccoon
53	Long tailed weasel
57	Red fox

**5.1.2.3. ATTRIBUTE DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.4.1.3. ENUMERATED DOMAIN VALUE  
DEFINITION SOURCE:**

Research Planning, Inc.

**5.1.2.5. ATTRIBUTE UNITS OF MEASUREMENT:**

nominal

## **6.0. DISTRIBUTION INFORMATION**

### **6.1. DISTRIBUTOR**

#### **6.1.1. CONTACT PERSON PRIMARY**

##### **6.1.1.1. CONTACT PERSON:**

Robert Pavia

##### **6.1.1.2. CONTACT ORGANIZATION:**

NOAA

#### **6.1.4. CONTACT ADDRESS**

##### **6.1.4.1. ADDRESS TYPE:**

Physical Address

##### **6.1.4.2. ADDRESS:**

7600 Sand Point Way N.E., Bin C15700

##### **6.1.4.3. CITY:**

Seattle

##### **6.1.4.4. STATE OR PROVINCE:**

WA

##### **6.1.4.5. POSTAL CODE:**

98115

#### **6.1.5. CONTACT VOICE TELEPHONE:**

(206) 526-6319

#### **6.1.7. CONTACT FACSIMILE TELEPHONE:**

(206) 526-6329

### **6.2. RESOURCE DESCRIPTION:**

ESI Atlas for Lake Ontario

### **6.3. DISTRIBUTION LIABILITY:**

Although this data has been processed successfully on a computer system at the National Oceanic and Atmospheric Administration, no warranty, expressed or implied, is made by NOAA regarding the utility of the data on any other system, nor shall the act of distribution constitute any such warranty. NOAA warrants the delivery of this product in computer-readable format, and will offer a replacement copy of the product when the product is determined unreadable by computer input peripherals, or when the physical medium is delivered in damaged condition.

### **6.5. CUSTOM ORDER PROCESS**

Contact NOAA for distribution options (see 6.1.1.).

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**7.0. METADATA REFERENCE INFORMATION**

**7.1. METADATA DATE:**

19970327

**7.2. METADATA REVIEW DATE:**

19941115

**7.4. METADATA CONTACT**

**7.4.1. CONTACT PERSON PRIMARY**

**7.4.1.1. CONTACT PERSON:**

Jill Petersen

**7.4.1.2. CONTACT ORGANIZATION:**

NOAA HMRAD

**7.4.3. CONTACT POSITION:**

GIS Manager

**7.4.4. CONTACT ADDRESS**

**7.4.4.1. ADDRESS TYPE:**

Physical Address

**7.4.4.2. ADDRESS:**

7600 Sand Point Way N.E., Bin C15700

**7.4.4.3. CITY:**

Seattle

**7.4.4.4. STATE OR PROVINCE:**

Washington

**7.4.4.5. POSTAL CODE:**

98115

**7.4.5. CONTACT VOICE TELEPHONE:**

(206) 526-6944

**7.4.7. CONTACT FACSIMILE TELEPHONE:**

(206) 526-6329

**7.4.8. CONTACT ELECTRONIC MAIL ADDRESS:**

Jill\_Petersen@hazmat.noaa.gov.us

**7.5. METADATA STANDARD NAME:**

Content Standards for Digital Geospatial Metadata

**7.6. METADATA STANDARD VERSION:**

19940608

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