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# Golfo de Fonseca ESI; Honduras and Nicaragua: HYDRO (Hydrology)

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: HYDRO (Hydrology)

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains hydrology data.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Hydrology

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

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*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological and human-use layers. All layers use the shoreline as the geographic reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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(r) to ARC/INFO(r) consistencies. A final review is made by the GIS manager, where data are written to tape and metadata are written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

*Completeness\_Report:*

The intertidal coastal habitats of Golfo de Fonseca were mapped during overflights and ground surveys conducted 20-25 February, 2000. Overflights were conducted using fixed-wing Cessna 152 and 172s. Surveys of the entire study area were conducted at flying altitudes of 400-600 feet (120-185 meters) and at a slow air speed. During this work, an experienced coastal geologist delineated the intertidal shoreline habitats directly onto 1:50,000-scale topographic maps. Where appropriate, multiple habitats were described for each shoreline segment. Prior to the overflights, high resolution, black and white vertical aerial photographs (obtained in December, 1998 under the USGS Open Skies Program) were examined to produce an initial classification. The overflights and ground surveys were particularly important in updating the location and extent of recent aquaculture sites, as well as delineating changes resulting from Hurricane Mitch (October, 1998). Polygonal features such as mangroves and salt flats were initially mapped from the existing topographic maps, updated through the aerial photography, and finalized during the overflights.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The HYDRO data use 1:50,000 topographic quadrangles as the basemap. It is estimated that the ESI shoreline classification has a minimum mapping unit of 100 feet.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* Unpublished Material

*Title:* Overflight ESI and Socioeconomic information

*Geospatial\_Data\_Presentation\_Form:* Hard maps

*Source\_Scale\_Denominator:* 50000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Field Work Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Shorelines

*Process\_Step:*

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*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 232

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 232

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 1611

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link

*Point\_and\_Vector\_Object\_Count:* 514508

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type*: Node, planar graph  
*Point\_and\_Vector\_Object\_Count*: 1610

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*Spatial\_Reference\_Information*:

*Horizontal\_Coordinate\_System\_Definition*:

*Geographic*:

*Latitude\_Resolution*: 0.00005

*Longitude\_Resolution*: 0.00005

*Geographic\_Coordinate\_Units*: Decimal degrees

*Geodetic\_Model*:

*Horizontal\_Datum\_Name*: North American Datum of 1927

*Ellipsoid\_Name*: Clarke 1866

*Semi-major\_Axis*: 6378206.4

*Denominator\_of\_Flattening\_Ratio*: 294.98

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*Entity\_and\_Attribute\_Information*:

*Detailed\_Description*:

*Entity\_Type*:

*Entity\_Type\_Label*: Complete chain

*Entity\_Type\_Definition*:

The data layer HYDRO contains polygonal water and land features, as well as linear features for rivers and streams. The HYDRO data layer contains all annotation used in producing the atlas. The annotation features are categorized into three subclasses in order to simplify the mapping and quality control procedures: geog or geographic features, soc or socioeconomic features, and hydro or water features.

*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: LINE

*Attribute\_Definition*: Type of geographic feature

*Attribute\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: B

*Enumerated\_Domain\_Value\_Definition*: Breakwater

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

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*Enumerated\_Domain:**Enumerated\_Domain\_Value:* H*Enumerated\_Domain\_Value\_Definition:* Hydrography*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* I*Enumerated\_Domain\_Value\_Definition:* Index*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* P*Enumerated\_Domain\_Value\_Definition:* Pier*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* S*Enumerated\_Domain\_Value\_Definition:* Shoreline*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Beginning\_Date\_of\_Attribute\_Values:* 200001*Ending\_Date\_of\_Attribute\_Values:* 200011*Attribute:**Attribute\_Label:* SOURCE\_ID*Attribute\_Definition:* Data source for the ESI*Attribute\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* 2*Enumerated\_Domain\_Value\_Definition:* Overflight*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* 3*Enumerated\_Domain\_Value\_Definition:* Aerial Photography*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* 5*Enumerated\_Domain\_Value\_Definition:* Digitized from scanned NIMA maps*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 7

*Enumerated\_Domain\_Value\_Definition:* Digital (Generated by Research Planning, Inc.)

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-Polygons

*Entity\_Type\_Definition:*

The data layer HYDRO contains polygonal water and land features, as well as linear features for rivers and streams. The HYDRO data layer contains all annotation used in producing the atlas. The annotation features are categorized into three subclasses in order to simplify the mapping and quality control procedures: geog or geographic features, soc or socioeconomic features, and hydro or water features.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* WATER\_CODE

*Attribute\_Definition:* Specifies a polygon as either water or land

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* L

*Enumerated\_Domain\_Value\_Definition:* Land

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* U

*Enumerated\_Domain\_Value\_Definition:* Unranked

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* W

*Enumerated\_Domain\_Value\_Definition:* Water

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

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*Distribution\_Information:*

*Distributor:*



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*Contact\_Information:**Contact\_Person\_Primary:**Contact\_Person:* John Kaperick*Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Address:**Address\_Type:* Physical Address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6400*Contact\_Facsimile\_Telephone:* (206) 526-6329*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:**Metadata\_Date:* 200102*Metadata\_Review\_Date:* 200102*Metadata\_Contact:**Contact\_Information:**Contact\_Person\_Primary:**Contact\_Person:* Jill Petersen*Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Position:* GIS Manager*Contact\_Address:**Address\_Type:* Physical Address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: ESI (Environmental Sensitivity Index Shoreline Types)

## Metadata:

- [Identification Information](#)
  - [Data Quality Information](#)
  - [Spatial Data Organization Information](#)
  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification\_Information:*

#### *Citation:*

#### *Citation\_Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Publication\_Date:* 200102

#### *Title:*

Golfo de Fonseca ESI; Honduras and Nicaragua: ESI (Environmental Sensitivity Index Shoreline Types)

*Edition:* First

*Geospatial\_Data\_Presentation\_Form:* Atlas

#### *Series\_Information:*

*Series\_Name:* None

*Issue\_Identification:* Golfo de Fonseca

#### *Publication\_Information:*

*Publication\_Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other\_Citation\_Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International

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Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains the Environmental Sensitivity Index shoreline data.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Shoreline

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

---

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological and human-use layers. All layers use the shoreline as the geographic reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series

of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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(r) to ARC/INFO(r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

*Completeness\_Report:*

The intertidal coastal habitats of Golfo de Fonseca were mapped during overflights and ground surveys conducted 20-25 February, 2000. Overflights were conducted using fixed-wing Cessna 152 and 172s. Surveys of the entire study area were conducted at flying altitudes of 400-600 feet (120-185 meters) and at a slow air speed. During this work, an experienced coastal geologist delineated the intertidal shoreline habitats directly onto 1:50,000-scale topographic maps. Where appropriate, multiple habitats were described for each shoreline segment. Prior to the overflights, high resolution, black and white vertical aerial photographs (obtained in December, 1998 under the USGS Open Skies Program) were examined to produce an initial classification. The overflights and ground surveys were particularly important in updating the location and extent of recent aquaculture sites, as well as delineating changes resulting from Hurricane Mitch (October, 1998). Polygonal features, such as mangroves and salt flats, were initially mapped from the existing topographic maps, updated through the aerial photography, and finalized during the overflights.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The ESI data use 1:50,000 topographic quadrangles as the basemap. It is estimated that the ESI shoreline classification has a minimum mapping unit of 100 feet.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* Unpublished Material

*Title:* Overflight ESI and Socioeconomic information

*Geospatial\_Data\_Presentation\_Form:* Hard maps

*Source\_Scale\_Denominator:* 50000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Field Work Date

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*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* ESI information  
*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 1314

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 1314

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 6551

*SDTS\_Terms\_Description:*

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*SDTS\_Point\_and\_Vector\_Object\_Type*: Link  
*Point\_and\_Vector\_Object\_Count*: 1633294  
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*SDTS\_Point\_and\_Vector\_Object\_Type*: Node, planar graph  
*Point\_and\_Vector\_Object\_Count*: 5692

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*Spatial\_Reference\_Information*:

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*Longitude\_Resolution*: 0.00005  
*Geographic\_Coordinate\_Units*: Decimal degrees

*Geodetic\_Model*:

*Horizontal\_Datum\_Name*: North American Datum of 1927  
*Ellipsoid\_Name*: Clarke 1866  
*Semi-major\_Axis*: 6378206.4  
*Denominator\_of\_Flattening\_Ratio*: 294.98

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*Entity\_and\_Attribute\_Information*:

*Detailed\_Description*:

*Entity\_Type*:

*Entity\_Type\_Label*: Complete Chain

*Entity\_Type\_Definition*:

The data layer ESI contains arc (Complete Chain) features for the ESI shoreline classification and is based on Environmental Sensitivity Index Guidelines, Version 2.0 (Halls, J., J. Michel, S. Zengel, J. Dahlin, and J. Petersen, 1997, Hazardous Materials Response and Assessment Division, NOAA). The ESI classification was performed in February 1997.

*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: ESI

*Attribute\_Definition*:

The intertidal coastal habitats of Golfo de Fonseca were mapped during overflights and ground surveys conducted in February, 2000. Overflights were conducted using fixed-wing Cessna 152 and 172s. Surveys of the entire study area were conducted at flying altitudes of 400-600 feet (120-185 meters) and at a slow air speed. During this work, an experienced coastal geologist delineated the intertidal shoreline habitats directly onto 1:50,000-scale topographic maps. Where appropriate, multiple habitats

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were described for each shoreline segment. Prior to the overflights, high resolution, black and white vertical aerial photographs (obtained in December, 1998 under the USGS Open Skies Program) were examined to produce an initial classification. The overflights and ground surveys were particularly important in updating the location and extent of recent aquaculture sites, as well as delineating changes resulting from Hurricane Mitch (October, 1998). Polygonal features, such as mangroves and salt flats, were initially mapped from the existing topographic maps, updated through the aerial photography, and finalized during the overflights. To identify and classify the various coastal habitats, the following factors were integrated: 1) Shoreline type (substrate, grain size, tidal elevation, origin); 2) Exposure to wave and tidal energy; 3) Biological communities. The resulting coastal classification groups a complex series of coastal habitats into ten generalized habitat categories (some with more than one sub-type). The physical characterization of the generalized categories is based on geomorphology and the division of the coastal habitats according to their physical stability, dynamic character, or sheltered nature. From the physical standpoint, the more stable habitats include the rocky headlands and wave-cut platforms; the dynamic or continuously evolving habitats include the full range of beach types (sand to gravel) and exposed tidal flats; and the sheltered habitats include mangrove stands, sheltered flats, and salt marshes. Biological characterization of the generalized habitat categories incorporates the different ecological communities that are associated with them. Examples of these include encrusting fauna and flora on rocky headlands, and coastal birds, burrowing bivalves, and annelids associated with tidal flats. The combination of the physical and biological features results in the definition of the final generalized habitat category. Human use and potential development of these coastal habitats must take into account the physical and biological characteristics of these categories. The categories are: 1A) Exposed Rocky Cliffs; 1B) Exposed, Solid Man-made Structures; 2A) Exposed Wave-cut Platforms in Bedrock; 3A) Fine- to Medium-grained Sand Beaches; 4) Coarse-grained Sand Beaches; 5) Mixed Sand and Gravel Beaches; 6A) Gravel Beaches; 6B) Riprap; 7) Exposed Tidal Flats; 8A) Sheltered Rocky Shores; 8B) Sheltered, Solid Man-made Structures; 8C) Sheltered Riprap; 9A) Sheltered Tidal Flats; 9C) Hypersaline Tidal Flats; 10A) Salt and Brackish Water Marsh; 10C) Tall Mangroves; 10D) Short Mangroves. In many cases, the shorelines are also ranked with multiple codes, such as 6A/7. The first number is the most landward shoreline type (6A=gravel beach), with exposed tidal flats (7) being the shoreline type closest to the water.

*Attribute\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value:* 1A/2A

*Enumerated\_Domain\_Value\_Definition:* Exposed Rocky Cliffs/ Exposed, Solid Man-made Structures

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 1A/2A/7

*Enumerated\_Domain\_Value\_Definition:*



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Exposed Rocky Cliffs/ Exposed, Solid Man-made Structures/ Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 1A/3A/7

*Enumerated\_Domain\_Value\_Definition:*

Exposed Rocky Cliffs/ Fine- to Medium-grained Sand Beaches/  
Exposed Tidal Flats

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*Enumerated\_Domain\_Value:* 1A/4

*Enumerated\_Domain\_Value\_Definition:* Exposed Rocky Cliffs/ Coarse-grained Sand Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
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*Enumerated\_Domain\_Value:* 1A/4/7

*Enumerated\_Domain\_Value\_Definition:*

Exposed Rocky Cliffs/ Coarse-grained Sand Beaches/ Exposed Tidal Flats

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*Enumerated\_Domain\_Value:* 1A/5

*Enumerated\_Domain\_Value\_Definition:* Exposed Rocky Cliffs/ Mixed Sand and Gravel Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 1A/5/7

*Enumerated\_Domain\_Value\_Definition:*

Exposed Rocky Cliffs/ Mixed Sand and Gravel Beaches/ Exposed Tidal Flats

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*Enumerated\_Domain\_Value:* 1A/6A

*Enumerated\_Domain\_Value\_Definition:* Exposed Rocky Cliffs/ Gravel Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

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*Enumerated\_Domain\_Value:* 1A/6A/2A

*Enumerated\_Domain\_Value\_Definition:*

Exposed Rocky Cliffs/ Gravel Beaches/ Exposed Wave-cut Platforms  
in Bedrock

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 1A/6A/7

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Beaches/ Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 1A/7

*Enumerated\_Domain\_Value\_Definition:* Exposed Rocky Cliffs/ Exposed Tidal  
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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:*

Exposed, Solid Man-made Structures/ Fine- to Medium-grained Sand  
Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 1B/4

*Enumerated\_Domain\_Value\_Definition:* Exposed, Solid Man-made Structures/  
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*Enumerated\_Domain\_Value\_Definition:*

Exposed, Solid Man-made Structures/ Coarse-grained Sand Beaches/  
Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 1B/5

*Enumerated\_Domain\_Value\_Definition:*

Exposed, Solid Man-made Structures/ Mixed Sand and Gravel  
Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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Gravel Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 1B/7

*Enumerated\_Domain\_Value\_Definition:* Exposed, Solid Man-made Structures/  
Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 2A

*Enumerated\_Domain\_Value\_Definition:* Exposed Wave-cut Platforms in  
Bedrock

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 3A

*Enumerated\_Domain\_Value\_Definition:* Fine- to Medium-grained Sand  
Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 3A/7

*Enumerated\_Domain\_Value\_Definition:* Fine- to Medium-grained Sand  
Beaches/ Exposed Tidal Flats

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*Attribute\_Domain\_Values:*

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Beaches/ Sheltered Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value:* 6B/4/7  
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Beaches/ Exposed Tidal Flats  
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Beaches  
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*Enumerated\_Domain\_Value\_Definition:* Riprap/ Gravel Beaches  
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*Enumerated\_Domain\_Value\_Definition:* Riprap/ Sheltered Tidal Flats  
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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 8A/9A  
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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
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*Enumerated\_Domain\_Value\_Definition:* Sheltered, Solid Man-made Structures  
*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
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Sheltered, Solid Man-made Structures/ Fine- to Medium-grained Sand Beaches  
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*Attribute\_Domain\_Values:*

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Sheltered, Solid Man-made Structures/ Mixed Sand and Gravel Beaches  
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*Enumerated\_Domain\_Value:* 8B/9A  
*Enumerated\_Domain\_Value\_Definition:* Sheltered, Solid Man-made Structures/ Sheltered Tidal Flats  
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*Enumerated\_Domain\_Value\_Definition:* Sheltered Riprap  
*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 8C/9A  
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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.  
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*Enumerated\_Domain\_Value\_Definition:* Sheltered Tidal Flats/ Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:* Salt and Brackish Water Marsh

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 10A/9A

*Enumerated\_Domain\_Value\_Definition:* Salt and Brackish Water Marsh/ Sheltered Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 10C

*Enumerated\_Domain\_Value\_Definition:* Tall Mangroves

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 10C/3A

*Enumerated\_Domain\_Value\_Definition:* Tall Mangroves/ Fine- to Medium-grained Sand Beaches

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:*

Tall Mangroves/ Fine- to Medium-grained Sand Beaches/ Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value:* 10C/3A/9A

*Enumerated\_Domain\_Value\_Definition:*

Tall Mangroves/ Fine- to Medium-grained Sand Beaches/ Sheltered Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value:* 10C/4/7

*Enumerated\_Domain\_Value\_Definition:*

Tall Mangroves/ Coarse-grained Sand Beaches/ Exposed Tidal Flats

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*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Exposed Tidal Flats

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*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Rocky Shores

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

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*Enumerated\_Domain\_Value*: 10C/8A/9A

*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Rocky Shores/ Sheltered Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition*:

Tall Mangroves/ Sheltered, Solid Man-made Structures/ Fine- to Medium-grained Sand Beaches

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*Enumerated\_Domain\_Value\_Definition*:

Tall Mangroves/ Sheltered, Solid Man-made Structures/ Sheltered Tidal Flats

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*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Riprap

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Riprap/ Sheltered Tidal Flats



*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.  
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*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

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*Enumerated\_Domain\_Value*: 10C/9A/7

*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves/ Sheltered Tidal Flats/  
Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

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*Enumerated\_Domain\_Value*: 10D/7

*Enumerated\_Domain\_Value\_Definition*: Short Mangroves/ Exposed Tidal  
Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

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*Enumerated\_Domain\_Value*: 10D/9A

*Enumerated\_Domain\_Value\_Definition*: Short Mangroves/ Sheltered Tidal  
Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

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*Enumerated\_Domain\_Value\_Definition*: Unranked

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values*: 200001

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*Attribute\_Label*: LINE

*Attribute\_Definition*: Type of geographic feature

*Attribute\_Definition\_Source*: Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:* Index  
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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:* Digital (Generated by Research Planning, Inc.)

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain\_Value\_Definition:*

Digital data from El Salvador ESI Atlas, Research Planning, Inc.,  
Columbia, SC

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Attribute\_Definition:* Regional environment

*Attribute\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:* Estuarine

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Enumerated\_Domain\_Value\_Definition:* Unranked

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-Polygon

*Entity\_Type\_Definition:*

The data layer ESI contains polygonal (GT-Polygon) features for the ESI shoreline classification and is based on Environmental Sensitivity Index Guidelines, Version

2.0 (Halls, J., J. Michel, S. Zengel, J. Dahlin, and J. Petersen, 1997, Hazardous Materials Response and Assessment Division, NOAA). The ESI classification was performed in February, 1997.

*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: ESI

*Attribute\_Definition*:

The character item ESI contains values according to the ESI ranking of the polygons. The ESI rankings progress from low to high susceptibility to oil spills. The ESI rankings of polygons are similar to the ESI rankings of shorelines (see line attribute ESI).

*Attribute\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 7

*Enumerated\_Domain\_Value\_Definition*: Exposed Tidal Flats

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 9A

*Enumerated\_Domain\_Value\_Definition*: Sheltered Tidal Flat

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 9C

*Enumerated\_Domain\_Value\_Definition*: Hypersaline Tidal Flat

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 10A

*Enumerated\_Domain\_Value\_Definition*: Salt and Brackish Water Marsh

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 10C

*Enumerated\_Domain\_Value\_Definition*: Tall Mangroves

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: 10D

*Enumerated\_Domain\_Value\_Definition*: Short Mangroves

*Enumerated\_Domain\_Value\_Definition\_Source*: Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values*: 200001

*Ending\_Date\_of\_Attribute\_Values*: 200011

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*Attribute:*

*Attribute\_Label:* WATER\_CODE

*Attribute\_Definition:* Specifies a polygon as either water or land

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* L

*Enumerated\_Domain\_Value\_Definition:* Land

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* W

*Enumerated\_Domain\_Value\_Definition:* Water

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

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*Distribution\_Information:**Distributor:**Contact\_Information:**Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102  
*Metadata\_Review\_Date:* 200102  
*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen  
*Contact\_Organization:* NOAA, Office of Response and Restoration  
*Contact\_Position:* GIS Manager  
*Contact\_Address:*

*Address\_Type:* Physical Address  
*Address:* 7600 Sand Point Way N.E.  
*City:* Seattle  
*State\_or\_Province:* Washington  
*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944  
*Contact\_Facsimile\_Telephone:* (206) 526-6329  
*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata  
*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: INDEX

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: INDEX

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains the study area index.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Index

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*



*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The INDEX map data layer is generated at Research Planning, Inc. (RPI) based on the corner coordinates of the desired map areas. The hardcopy maps are then digitized and checked using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological and human-use layers. All layers use the shoreline as the geographic reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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(r) to ARC/INFO(r) consistencies. A final review is made by the GIS manager, where data are written to tape and metadata are written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export,

MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

*Completeness\_Report:*

The INDEX map data layer was generated based on 1:50,000 scale topographic maps. Names of the original topographic maps are included in the attribute information for each INDEX polygon.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The INDEX data use 1:50,000 topographic quadrangles as the basemap. It is estimated that the ESI shoreline classification has a minimum mapping unit of 100 feet.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* Unpublished Material

*Title:* Overflight ESI and Socioeconomic information

*Geospatial\_Data\_Presentation\_Form:* Hard maps

*Source\_Scale\_Denominator:* 50000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Field Work Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Map boundary

*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:**Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Person:* Jill Petersen*Contact\_Address:**Address\_Type:* Physical address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Vector*Point\_and\_Vector\_Object\_Information:**SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings*Point\_and\_Vector\_Object\_Count:* 31*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Area point*Point\_and\_Vector\_Object\_Count:* 31*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain*Point\_and\_Vector\_Object\_Count:* 86*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Link*Point\_and\_Vector\_Object\_Count:* 90*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph*Point\_and\_Vector\_Object\_Count:* 56

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*Spatial\_Reference\_Information:**Horizontal\_Coordinate\_System\_Definition:**Geographic:*

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*Latitude\_Resolution:* 0.00005  
*Longitude\_Resolution:* 0.00005  
*Geographic\_Coordinate\_Units:* Decimal degrees  
*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927  
*Ellipsoid\_Name:* Clarke 1866  
*Semi-major\_Axis:* 6378206.4  
*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-Polygon

*Entity\_Type\_Definition:*

The data layer INDEX contains the map or polygon boundaries for each map in the atlas.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* TILE-NAME

*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 31.

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 1

*Range\_Domain\_Maximum:* 31

*Attribute\_Units\_of\_Measure:* Nominal

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* TOPO-NAME

*Attribute\_Definition:* 1:50,000 topographic map name.

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* AMAPALA, HONDURAS

*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

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*Enumerated\_Domain:**Enumerated\_Domain\_Value:* BAHIA CHISMUYO, HONDURAS*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* COSIGÜINA, NICARAGUA*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* ESTERO REAL, NICARAGUA; HONDURAS*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* LA UNION, EL SALVADOR; HONDURAS*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* MARCOVIA, HONDURAS*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* POTOSI, NICARAGUA*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* PUERTO MORAZAN, NICARAGUA;  
HONDURAS*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.*Attribute\_Domain\_Values:**Enumerated\_Domain:**Enumerated\_Domain\_Value:* PUNTA CONDEGA, HONDURAS;  
NICARAGUA*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

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*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* SAN LORENZO, HONDURAS

*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* SANTA MARIA, HONDURAS; NICARAGUA

*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* TONALA, NICARAGUA

*Enumerated\_Domain\_Value\_Definition:* 1:50,000 Topographic map name

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* SCALE

*Attribute\_Definition:*

SCALE contains the value of the denominator of the scale at which the map is plotted in the final map product

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 50000

*Enumerated\_Domain\_Value\_Definition:* Scale = 1:50,000

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* MAPANGLE

*Attribute\_Definition:*

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

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 0.000

*Range\_Domain\_Maximum:* 0.000

*Attribute\_Units\_of\_Measure:* Degree

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* PAGESIZE

*Attribute\_Definition:*

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

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* 17,11

*Enumerated\_Domain\_Value\_Definition:* Page size = 17' by 11'

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

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*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: BIRDS

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: BIRDS

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for birds.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Bird

*Theme\_Keyword:* Diving bird

*Theme\_Keyword:* Gull

*Theme\_Keyword:* Tern

*Theme\_Keyword:* Pelagic

*Theme\_Keyword:* Passerine

*Theme\_Keyword:* Raptor

*Theme\_Keyword:* Shorebird

*Theme\_Keyword:* Wading bird

*Theme\_Keyword:* Waterfowl

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported,

projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMs are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

#### *Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles/amphibians. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (BIRDS) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program

(NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): BIRDS: diving bird, gull/tern, pelagic, passerine, raptor, shorebird, wading bird, waterfowl. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID, STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Bird information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Merio Rodriguez, V. (SERNA)

*Publication\_Date:* Unpublished Material

*Title:* Diagnóstico de las Areas Protegidas de la Zona Sur de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard table

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Field Work Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Bird information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Howell, S. and S. Webb

*Publication\_Date:* 1999

*Title:* A Guide to the Birds of Mexico and Northern Central America

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Publication\_Information:*

*Publication\_Place:* New York

*Publisher:* Oxford University Press

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

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*Calendar\_Date:* 1999  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Bird information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Olivas, L. and R. H. Paz López (COHDEFOR)  
*Publication\_Date:* Unpublished Material  
*Title:* Expert knowledge of various resources in the Golfo de Fonseca  
*Geospatial\_Data\_Presentation\_Form:* Expert knowledge  
*Type\_of\_Source\_Media:* Personal communication  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Interview Date  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Bird information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Secretaria de Recursos Naturales y Ambiente (SERNA)  
*Publication\_Date:* 1999  
*Title:*  
Propuesta de Declaratoria Corredor Biológico Mesoamericano Pacifico de Honduras  
*Geospatial\_Data\_Presentation\_Form:* Hard text, Digital polygons  
*Publication\_Information:*

*Publication\_Place:* Tegucigalpa, M.D.C.  
*Publisher:* SERNA  
*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Bird information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:**Originator:* Research Planning, Inc.*Publication\_Date:* 1998*Title:*

Levantamiento y Mapeo de Indices de Sensibilidad Ambiental de El Salvador: Vol 2

*Geospatial\_Data\_Presentation\_Form:* Hard maps, Hard text, Hard tables, Digital polygons*Publication\_Information:**Publication\_Place:* Columbia, SC.*Publisher:* Research Planning, Inc.*Source\_Scale\_Denominator:* 50000*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 1998*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Bird information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* CATIE*Publication\_Date:* 2000*Title:*

Estrategia para el Desarrollo y la Conservación del Estero Real, Nicaragua

*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps*Publication\_Information:**Publication\_Place:* Turrialba, C. R.*Publisher:* CATIE/IDR*Source\_Scale\_Denominator:* 400000*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Bird information*Source\_Information:**Source\_Citation:*



*Citation\_Information:*

*Originator:* MARENA  
*Publication\_Date:* 1999  
*Title:* Biodiversidad en Nicaragua: Un Estudio de País  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* Managua, Nicaragua  
*Publisher:* MARENA-PANIF

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Bird information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Moralei, J.V. (CITIES-MARENA)  
*Publication\_Date:* Unpublished Material  
*Title:* Expert knowledge Cosigüina peninsula  
*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Bird information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Cajina, O.  
*Publication\_Date:* Unpublished Material  
*Title:* Proyecto Danida Manglares, Estero Real: Fauna  
*Geospatial\_Data\_Presentation\_Form:* Hard text

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:**Calendar\_Date:* 1996*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Bird information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Gonzales, L., M. Molina, M. Lacayo*Publication\_Date:* Unpublished Material*Title:* Expert knowledge of Estero Real Area*Geospatial\_Data\_Presentation\_Form:* Expert knowledge*Type\_of\_Source\_Media:* Personal communication*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Interview Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Bird information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Lezama, M (Univ. de Centroamerica)*Publication\_Date:* Unpublished Material*Title:* Expert knowledge of Estero Real Area*Geospatial\_Data\_Presentation\_Form:* Expert knowledge*Type\_of\_Source\_Media:* Personal communication*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Interview Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Bird information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* AOU*Publication\_Date:* 1998*Title:* Check-list of North American Birds: 7th edition

*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* Washington, D.C.  
*Publisher:* American Ornithologists Union

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1998

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Bird information

*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 862

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 862

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 3862

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link

*Point\_and\_Vector\_Object\_Count:* 1156677

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph

*Point\_and\_Vector\_Object\_Count:* 3359

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*Spatial\_Reference\_Information:**Horizontal\_Coordinate\_System\_Definition:**Geographic:*

*Latitude\_Resolution:* 0.00005

*Longitude\_Resolution:* 0.00005

*Geographic\_Coordinate\_Units:* Decimal degrees

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927

*Ellipsoid\_Name:* Clarke 1866

*Semi-major\_Axis:* 6378206.4

*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:**Detailed\_Description:**Entity\_Type:*

*Entity\_Type\_Label:* GT-polygon

*Entity\_Type\_Definition:*

Birds in this atlas are divided into several species subgroups based on taxonomy, morphology, behavior, etc. The SPECIES table lists all the birds included on the

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maps, sorted by subgroup. Species presented in this atlas include species of special concern (because of their general rarity or imperilment, or their special protection status as threatened or endangered), species of social or cultural significance, etc. Marine, wetland, and aquatic species; nesting sites and colonies; and protected species are especially emphasized.

*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: ID

*Attribute\_Definition*:

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (1), and record number. ID values of 9999 are holes in polygons and do not contain information. The following BIRDS species are found in the Golfo de Fonseca ESI data set (SPECIES ID, GEN\_SPEC): 16, *Anas platyrhynchos*; 17, *Anas acuta*; 54, *Ardea herodias*; 55, *Numenius phaeopus*; 56, *Actitis macularia*; 58, *Tringa melanoleuca*; 62, *Calidris minutilla*; 66, *Calidris mauri*; 67, *Calidris alba*; 69, *Charadrius semipalmatus*; 71, *Pluvialis squatarola*; 77, *Pandion haliaetus*; 87, *Egretta caerulea*; 88, *Ardea alba*; 89, *Egretta thula*; 91, *Plegadis falcinellus*; 94, *Egretta tricolor*; 97, *Butorides virescens*; 98, *Larus atricilla*; 107, *Falco peregrinus*; 115, *Eudocimus albus*; 116, *Ajaia ajaja*; 118, *Pelecanus occidentalis*; 119, *Fregata magnificens*; 120, *Nyctanassa violacea*; 121, *Anhinga anhinga*; 131, *Elanus leucurus*; 132, *Mycteria americana*; 133, *Rynchops niger*; 139, *Charadrius alexandrinus*; 141, *Recurvirostra americana*; 142, *Himantopus mexicanus*; 145, *Sterna elegans*; 155, *Catoptrophorus semipalmatus*; 173, *Pelecanus erythrorhynchos*; 182, *Falco sparverius*; 190, *Anas discors*; 209, *Numenius americanus*; 210, *Limosa fedoa*; 212, *Porphyryla martinica*; 221, *Accipiter cooperii*; 230, *Buteo jamaicensis*; 231, *Buteo platypterus*; 266, *Dendrocygna autumnalis*; 269, *Tachybaptus dominicus*; 290, *Calidris* spp.; 321, *Ceryle torquata*; 323, *Chloroceryle amazona*; 325, *Phalacrocorax brasilianus*; 327, *Amazona albifrons*; 328, *Amazona auropalliata*; 329, *Ara macao*; 330, *Aratinga canicularis*; 331, *Aratinga holochlora*; 333, *Brotogeris jugularis*; 334, *Dendroica petechia*; 336, *Tachycineta albilinea*; 337, *Vireo pallens*; 353, *Buteo albonotatus*; 354, *Buteo brachyurus*; 355, *Buteo magnirostris*; 356, *Buteo nitidus*; 359, *Buteogallus urubitinga*; 374, *Herpetotheres cachinnans*; 379, *Otus cooperi*; 380, *Parabuteo unicinctus*; 381, *Caracara plancus*; 382, *Pulsatrix perspicillata*; 385, *Tyto alba*; 390, *Burhinus bistriatus*; 400, *Cochlearius cochlearius*; 401, *Jabiru mycteria*; 405, *Tigrisoma mexicanum*; 407, *Cairina moschata*; 414, *Numenius borealis*; 429, *Trogon melanocephalus*; 431, *Chordeiles acutipennis*; 432, *Nyctidromus albigollis*; 441, *Picoides scalaris*; 448, *Zenaida asiatica*; 452, *Zenaida macroura*; 497, *Tigrisoma limeatum*; 516, *Buteogallus anthracinus*; 564, *Columbina passerina*; 565, *Cyanocorax morio*; 566, *Calocitta formosa*; 567, *Columbina talpacoti*; 568, *Aratinga astec*; 569, *Crotophaga sulcirostris*; 570, *Melanerpes aurifrons*; 571, *Campephilus guatemalensis*; 572, *Pitangus sulphuratus*; 573, *Tyrannus melancholicus*; 574, *Icterus pustulatus sclateri*; 575, *Icterus gularis*; 576, *Todirostrum cinereum*; 577, *Turdus grayi*; 578, *Dives dives*; 579, *Tyrannus forficatus*; 580, *Columbina inca*; 581, *Veniliornis* sp.; 582, *Hirundo rustica*; 583, *Icterus galbula galbula*; 584, *Setophaga ruticilla*; 585, *Cyclarhis gujanensis*; 586, *Amazona ochrocephala*; 587, *Myiozetetes similis*; 588, *Thryothorus pleurostictus*; 589, *Polioptila plumbea*; 590, *Mniotilta varia*; 591, *Aimophila ruficauda*; 592, *Amazilia rutila*; 593, *Otus* sp.; 611, *Quiscalus mexicanus*; 612, *Campylorhynchus rufinucha*; 1001, Gulls; 1004, Wading birds; 1008, Terns; 1022, Seabirds.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 1040100002

*Range\_Domain\_Maximum*: 1040100863

*Attribute\_Units\_of\_Measure:* Ordered  
*Beginning\_Date\_of\_Attribute\_Values:* 200102  
*Ending\_Date\_of\_Attribute\_Values:* 200102  
*Attribute:*

*Attribute\_Label:* RARNUM

*Attribute\_Definition:*

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 1

*Range\_Domain\_Maximum:* 63

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:**Metadata\_Date:* 200102*Metadata\_Review\_Date:* 200102*Metadata\_Contact:**Contact\_Information:**Contact\_Person\_Primary:**Contact\_Person:* Jill Petersen*Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Position:* GIS Manager*Contact\_Address:**Address\_Type:* Physical Address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: FISH

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: FISH

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*



*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for fish.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Fish

*Theme\_Keyword:* Nursery

*Theme\_Keyword:* Resident

*Theme\_Keyword:* Benthic

*Theme\_Keyword:* Pelagic

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the

study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMS are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

#### *Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (FISH) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program (NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): FISH: nursery, resident, benthic, pelagic. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID,

STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo deFonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Fish Information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Secretaria de Recursos Naturales y Ambiente (SERNA)

*Publication\_Date:* 1999

*Title:*

Propuesta de Declaratoria Corredor Biológico Mesoamericano Pacifico de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard text, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Tegucigalpa, M.D.C.

*Publisher:* SERNA

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Fish Information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* 1998

*Title:*

Levantamiento y Mapeo de Indices de Sensibilidad Ambiental de El Salvador: Vol 2

*Geospatial\_Data\_Presentation\_Form:* Hard maps, Hard text, Hard tables, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Columbia, SC.

*Publisher:* Research Planning, Inc.

*Source\_Scale\_Denominator:* 50,000

*Type\_of\_Source\_Media:* Paper

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*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1998

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Fish information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Espinoza, J. and X. Rodriguez

*Publication\_Date:* Unpublished Material

*Title:*

Expert knowledge of Turtle Nesting Sites and Artesanal Fishing and Invertebrates

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Fish information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Com. Cent. de Ambiente y Desarrollo

*Publication\_Date:* 1999

*Title:*

Diag. de los recursos naturales, socio. institucional de la zona costera

*Geospatial\_Data\_Presentation\_Form:* Digital text

*Publication\_Information:*

*Publication\_Place:* San José, C. R.

*Publisher:* UICN/CCAD

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Fish information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* CATIE  
*Publication\_Date:* 2000  
*Title:*  
Estrategia para el Desarrollo y la Conservación del Estero Real,  
Nicaragua  
*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps  
*Publication\_Information:*

*Publication\_Place:* Turrialba, C. R.  
*Publisher:* CATIE/IDR

*Source\_Scale\_Denominator:* 400000  
*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Fish information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* MARENA  
*Publication\_Date:* 1999  
*Title:* Biodiversidad en Nicaragua: Un Estudio de País  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* Managua, Nicaragua  
*Publisher:* MARENA-PANIF

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Fish information  
*Source\_Information:*

*Source\_Citation:**Citation\_Information:**Originator:* Cajina , O.*Publication\_Date:* Unpublished Material*Title:* Proyecto Danida Manglares, Estero Real: Fauna*Geospatial\_Data\_Presentation\_Form:* Hard text*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 1996*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Fish information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Estrada, N., C. Sorta, J. Antonio*Publication\_Date:* Unpublished Material*Title:* Expert knowledge of Estero Real Area*Geospatial\_Data\_Presentation\_Form:* Expert knowledge*Type\_of\_Source\_Media:* Personal communication*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Interview Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Fish information*Process\_Step:**Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102*Process\_Contact:**Contact\_Information:*



*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 219

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 219

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 1486

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link

*Point\_and\_Vector\_Object\_Count:* 519538

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph

*Point\_and\_Vector\_Object\_Count:* 1471

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005

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*Longitude\_Resolution:* 0.00005  
*Geographic\_Coordinate\_Units:* Decimal degrees  
*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927  
*Ellipsoid\_Name:* Clarke 1866  
*Semi-major\_Axis:* 6378206.4  
*Denominator\_of\_Flattening\_Ratio:* 294.98

---

*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-polygon

*Entity\_Type\_Definition:*

The available literature on fish of the gulf is limited, and as a rule does not differentiate between locations or make habitat associations as to where different fish species are found. Finfish depicted in this atlas include selected species that were mapped based on habitat type. Two major categories were developed: open water gulf species, and estuarine and/or nearshore and/or mangrove associated species. This division considers three basic parameters: depth, salinity, and temperature. The estuarine and/or nearshore and/or mangrove associated species are usually subjected to greater temperature and salinity fluctuations (often due to the fact that the waters are shallower closer to shore, and due to freshwater runoff influence). Species of commercial, artesanal/subsistence, ecological, and/or conservation interest are emphasized.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* ID

*Attribute\_Definition:*

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (2), and record number. ID values of 9999 are holes in polygons and do not contain information. The following FISH species are found in the Golfo de Fonseca ESI data set (SPECIES ID, GEN\_SPEC): 116, Mugil cephalus; 119, Bairdiella chrysoura; 173, Mugil curema; 295, Hyporhamphus unifasciatus; 317, Carcharhinus leucas; 326, Sphyrna tiburo; 332, Galeocerdo cuvier; 384, Aetobatus narinari; 387, Diodon hystrix; 405, Opisthonema libertate; 411, Centropomus robalito; 413, Anableps dovii; 414, Arius sp.; 415, Bagre sp.; 431, Epinephelus analogus; 434, Cynoscion stolozmanni; 437, Bagre panamensis; 499, Scomberomorus spp.; 508, Centropomus spp.; 513, Hippocampus ingens; 518, Epinephelus itajara; 525, Albula vulpes; 545, Rhizoprionodon longurio; 568, Urotrygon asterias; 569, Dasyatis spp.; 570, Elops affinis; 571, Lile piquitinga; 572, Odontognathus compressus; 573, Pellona harroweri; 574, Chanos chanos; 575, Ariopsis sp.; 576, Tylosurus raphidoma; 577, Strongylura timuca; 578, Sphyrna guachancho; 579, Polydactylus approximans; 580, Centropomus pectinatus; 581, Centropomus poeyi; 582, Mycteroperca citi; 583, Pseudobalistes sp.; 584, Batrachoides surinamensis; 585, Hemicaranx sp.; 586, Caranx vinctus; 587, Dormitator maculatus; 588, Chaetodipeterus zonatus; 589, Diapterus brevimanus; 590, Lutjanus colorado; 591, Lutjanus novemfasciatus; 592, Lobotes pacificus; 593, Anisotremus sp.; 594, Genuatremus sp.; 595, Pomadasys macracanthus; 596, Haemulon scuderi; 597,

Stellifer sp.; 598, Anchoa sp.; 599, Paralanchurus sp.; 600, Menticirrhus nasus; 601, Sphyræna ensis; 602, Sphoeroides sp.; 603, Carcharhinus porosus; 604, Cynoscion squamipinnis; 605, Cynoscion phoxocephalus; 606, Cynoscion albus; 608, Pareques viola; 609, Bagre pinnimaculatus; 610, Parapsetus panamensis.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 1040200002

*Range\_Domain\_Maximum*: 1040200220

*Attribute\_Units\_of\_Measure*: Ordered

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values*: 200102

*Attribute*:

*Attribute\_Label*: RARNUM

*Attribute\_Definition*:

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 66

*Range\_Domain\_Maximum*: 75

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values*: 200102

---

*Distribution\_Information*:

*Distributor*:

*Contact\_Information*:

*Contact\_Person\_Primary*:

*Contact\_Person*: John Kaperick

*Contact\_Organization*: NOAA, Office of Response and Restoration

*Contact\_Address*:

*Address\_Type*: Physical Address

*Address*: 7600 Sand Point Way N.E.

*City*: Seattle

*State\_or\_Province*: Washington

*Postal\_Code*: 98115-6349

*Contact\_Voice\_Telephone*: (206) 526-6400

*Contact\_Facsimile\_Telephone*: (206) 526-6329

*Resource\_Description*: ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability*:

Although these data have been processed successfully on a computer system at the National Oceanic and Atmospheric Administration, no warranty, expressed or implied, is made by NOAA regarding

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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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* [jill\\_petersen@hazmat.noaa.gov.us](mailto:jill_petersen@hazmat.noaa.gov.us)

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: INVERT (Invertebrates)

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: INVERT (Invertebrates)

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for invertebrates.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Invertebrate

*Theme\_Keyword:* Shellfish

*Theme\_Keyword:* Bivalve

*Theme\_Keyword:* Cephalopod

*Theme\_Keyword:* Crab

*Theme\_Keyword:* Gastropod

*Theme\_Keyword:* Lobster

*Theme\_Keyword:* Shrimp

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

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*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted,

and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMS are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

#### *Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles/amphibians. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (INVERT) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program (NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and



STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): INVERT: bivalve, cephalopod, crab, gastropod, lobster, shrimp. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID, STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Crab information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* 1998

*Title:*

Levantamiento y Mapeo de Indices de Sensibilidad Ambiental de El Salvador: Vol 2

*Geospatial\_Data\_Presentation\_Form:* Hard maps, Hard text, Hard tables, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Columbia, SC.

*Publisher:* Research Planning, Inc.

*Source\_Scale\_Denominator:* 50,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1998

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Crab information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Espinoza, J. and X. Rodriguez

*Publication\_Date:* Unpublished Material

*Title:*

Expert knowledge of Turtle Nesting Sites and Artesanal Fishing and Invertebrates

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Crab information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* CATIE

*Publication\_Date:* 2000

*Title:*

Estrategia para el Desarrollo y la Conservación del Estero Real,  
Nicaragua

*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps

*Publication\_Information:*

*Publication\_Place:* Turrialba, C. R.

*Publisher:* CATIE/IDR

*Source\_Scale\_Denominator:* 400,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Crab information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* MARENA

*Publication\_Date:* 1999

*Title:* Biodiversidad en Nicaragua: Un Estudio de País

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Publication\_Information:*

*Publication\_Place:* Managua, Nicaragua

*Publisher:* MARENA-PANIF

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Crab information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Cajina , O.  
*Publication\_Date:* Unpublished Material  
*Title:* Proyecto Danida Manglares, Estero Real: Fauna  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1996  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Crab information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Gonzales, L., M. Molina, M. Lacayo  
*Publication\_Date:* Unpublished Material  
*Title:* Expert knowledge of Estero Real Area  
*Geospatial\_Data\_Presentation\_Form:* Expert knowledge  
*Type\_of\_Source\_Media:* Personal communication  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Interview Date  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Invertebrate information  
*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for

---

geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

---

*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 1059

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 1059

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 4375

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link

*Point\_and\_Vector\_Object\_Count:* 1220440

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph

*Point\_and\_Vector\_Object\_Count:* 3661

*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005

*Longitude\_Resolution:* 0.00005

*Geographic\_Coordinate\_Units:* Decimal degrees

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927

*Ellipsoid\_Name:* Clarke 1866

*Semi-major\_Axis:* 6378206.4

*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-polygon

*Entity\_Type\_Definition:*

Invertebrate species of artesanal, subsistence, commercial, ecological, and/or conservation interest are emphasized. The available literature on invertebrates of the gulf is limited, and as a rule does not differentiate between locations or describe habitat associations. Invertebrates depicted in this atlas include selected species that were mapped based on habitat type. Invertebrate areas depicted in this atlas were divided into four major categories: selected marine/open water gulf species, nearshore species, mud flat species, and mangrove/estuarine species.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* ID

*Attribute\_Definition:*

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (7), and record number. ID values of 9999 are holes in polygons and do not contain information. The following INVERT species are found in the Golfo de Fonseca ESI data set (SPECIES ID, GEN\_SPEC): 92, *Penaeus* spp.; 124, *Octopus vulgaris*; 125, *Donax* spp.; 126, *Callinectes* spp.; 131, *Ostrea* spp.; 132, *Pinctada mazatlanica*; 133, *Penaeus stylirostris*; 134, *Anadara grandis*; 135, *Anadara similis*; 136, *Anadara tuberculosa*; 139, *Mytella* sp.; 142, *Ostrea corteziensis*; 143, *Ostrea iridescens*; 144, *Ostrea palmula*; 147, *Cardisoma crassum*; 148, *Menippe frontalis*; 149, *Ucides occidentalis*; 166, *Panulirus gracilis*; 168, *Macrobrachium tenellum*; 169, *Penaeus vannamei*; 218, *Pagurus* spp.; 279, *Xiphopenaeus riveti*; 280, *Trachypenaeus similis pacificus*; 281, *Loliolopsis diomedea*; 323, *Panulirus inflatus*; 325, *Penaeus brevisrostris*; 326, *Penaeus californiensis*; 327, *Penaeus occidentalis*; 328, *Trachypenaeus byrdi*; 329, *Trachypenaeus faoe*; 330, *Trachypenaeus fuscina*; 331, *Haliporoides diomedea*; 332, *Calappa convexa*; 333, *Mursia gaudichaudii*; 334, *Arenaeus mexicanus*; 335, *Enphylax dovii*; 336, *Eurytium affine*; 337, *Gecarcinus*

quadratus; 338, Clibanarius panamensis; 339, Anadara multicostata; 340, Anadara nux; 341, Strombus galeatus; 342, Strombus glacilior; 343, Strombus peruvianus; 344, Panulirus spp.; 345, Callinectes arcuatus; 346, Callinectes toxotes; 347, Portunus panamensis; 348, Panopeus herbstedii; 349, Melongena patula; 350, Lithodes panamensis; 351, Macrobrachium americanum; 352, Cancer johngarthi; 353, Coenobita compressa; 354, Emerita analoga; 355, Chama frondosa; 356, Munida sp.; 357, Emerita rathbunae; 358, Ostrea angelica; 359, Ostrea columbiensis; 360, Ostrea conchaphila; 361, Ostrea fisheri; 362, Ostrea megodon; 363, Chama echinata; 364, Chama buddiana; 365, Munidopsis sp.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 1040700002

*Range\_Domain\_Maximum*: 1040701068

*Attribute\_Units\_of\_Measure*: Ordered

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values*: 200102

*Attribute*:

*Attribute\_Label*: RARNUM

*Attribute\_Definition*:

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 76

*Range\_Domain\_Maximum*: 142

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values*: 200102

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*Distribution\_Information*:

*Distributor*:

*Contact\_Information*:

*Contact\_Person\_Primary*:

*Contact\_Person*: John Kaperick

*Contact\_Organization*: NOAA, Office of Response and Restoration

*Contact\_Address*:

*Address\_Type*: Physical Address

*Address*: 7600 Sand Point Way N.E.

*City*: Seattle

*State\_or\_Province*: Washington

*Postal\_Code*: 98115-6349

*Contact\_Voice\_Telephone*: (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: M\_MAMMAL (Marine Mammals)

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: M\_MAMMAL (Marine Mammals)

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for marine mammals.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Marine mammal

*Theme\_Keyword:* Dolphin

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMs are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

*Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from the SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles/amphibians. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (M\_MAMMAL) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program (NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): M\_MAMMAL: dolphin. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID, STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data

table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Marine mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Beletsky, L.

*Publication\_Date:* 1999

*Title:* Tropical Mexico: The Ecotraveller's Wildlife guide

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Publication\_Information:*

*Publication\_Place:* San Francisco, CA

*Publisher:* Academic Press

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Marine mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* 1998

*Title:*

Levantamiento y Mapeo de Indices de Sensibilidad Ambiental de El

Salvador: Vol 2

*Geospatial\_Data\_Presentation\_Form:* Hard maps, Hard text, Hard tables,  
Digital polygons

*Publication\_Information:*

*Publication\_Place:* Columbia, SC.

*Publisher:* Research Planning, Inc.

*Source\_Scale\_Denominator:* 50000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

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*Calendar\_Date:* 1998  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Marine mammal information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Espinoza, J. and X. Rodriguez  
*Publication\_Date:* Unpublished Material  
*Title:*  
Expert knowledge of Turtle Nesting Sites and Artesanal Fishing and Invertebrates  
*Geospatial\_Data\_Presentation\_Form:* Expert knowledge  
*Type\_of\_Source\_Media:* Personal communication  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Interview Date  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Marine mammal information  
*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration  
*Contact\_Person:* Jill Petersen  
*Contact\_Address:*

*Address\_Type:* Physical address  
*Address:* 7600 Sand Point Way N.E  
*City:* Seattle  
*State\_or\_Province:* Washington  
*Postal\_Code:* 98115-6349  
*Contact\_Voice\_Telephone:* (206) 526-6944

Contact\_Facsimile\_Telephone: (206) 526-6329

Contact\_Electronic\_Mail\_Address: jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 25

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point

*Point\_and\_Vector\_Object\_Count:* 25

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain

*Point\_and\_Vector\_Object\_Count:* 116

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link

*Point\_and\_Vector\_Object\_Count:* 43480

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph

*Point\_and\_Vector\_Object\_Count:* 116

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005

*Longitude\_Resolution:* 0.00005

*Geographic\_Coordinate\_Units:* Decimal degrees

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927

*Ellipsoid\_Name:* Clarke 1866

*Semi-major\_Axis:* 6378206.4

*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:**Detailed\_Description:**Entity\_Type:**Entity\_Type\_Label:* GT-polygon*Entity\_Type\_Definition:*

Marine mammals depicted in the Golfo de Fonseca are limited to three species of dolphins, *Stenella attenuata* (spotted dolphin - delfín machado), *Stenella longirostris* (spinner dolphin - bufeo), and *Tursiops truncatus* (bottlenose dolphin - delfín gris o nariz de botella) which are widespread in the gulf. *T. truncatus* is probably the most common of the three species. These can occur year-round throughout the Golfo de Fonseca but are, as a rule, more abundant in the open waters of the gulf and near the general entrances to the small bays. Both *S. attenuata* and *S. longirostris* are on Nicaragua's threatened (anemazadas) list. Though there is a lack of information, it is recognized that whales may be present in the Golfo de Fonseca, but their distribution is often limited to the open water areas near the entrance of the gulf.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.*Attribute:**Attribute\_Label:* ID*Attribute\_Definition:*

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (4), and record number. ID values of 9999 are holes in polygons and do not contain information. The following MARINE MAMMAL species are found in the Golfo de Fonseca ESI data set (SPECIES ID, GEN\_SPEC): 17, *Tursiops truncatus*; 49, *Stenella attenuata*; 50, *Stenella longirostris*.

*Attribute\_Definition\_Source:* NOAA*Attribute\_Domain\_Values:**Range\_Domain:**Range\_Domain\_Minimum:* 1040400002*Range\_Domain\_Maximum:* 1040400006*Attribute\_Units\_of\_Measure:* Ordered*Beginning\_Date\_of\_Attribute\_Values:* 200102*Ending\_Date\_of\_Attribute\_Values:* 200102*Attribute:**Attribute\_Label:* RARNUM*Attribute\_Definition:*

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source:* NOAA*Attribute\_Domain\_Values:**Range\_Domain:**Range\_Domain\_Minimum:* 1*Range\_Domain\_Maximum:* 143*Beginning\_Date\_of\_Attribute\_Values:* 200102*Ending\_Date\_of\_Attribute\_Values:* 200102

*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

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*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: REPTILES (Reptiles and Amphibians)

## Metadata:

- [Identification Information](#)
  - [Data Quality Information](#)
  - [Spatial Data Organization Information](#)
  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification\_Information:*

#### *Citation:*

#### *Citation\_Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Publication\_Date:* 200102

#### *Title:*

Golfo de Fonseca ESI; Honduras and Nicaragua: REPTILES (Reptiles and Amphibians)

*Edition:* First

*Geospatial\_Data\_Presentation\_Form:* Atlas

#### *Series\_Information:*

*Series\_Name:* None

*Issue\_Identification:* Golfo de Fonseca

#### *Publication\_Information:*

*Publication\_Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other\_Citation\_Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International

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Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for reptiles and amphibians.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Reptile

*Theme\_Keyword:* Amphibian

*Theme\_Keyword:* Alligator

*Theme\_Keyword:* Lizard

*Theme\_Keyword:* Snake

*Theme\_Keyword:* Turtle

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported,

projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted, and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMS are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

#### *Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles/amphibians. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (REPTILES) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program

(NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): REPTILES: alligator, amphibian, lizard, snake, turtle. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID, STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*



*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Olivas, L. and R. H. Paz López (COHDEFOR)

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Secretaria de Recursos Naturales y Ambiente (SERNA)

*Publication\_Date:* 1999

*Title:*

Propuesta de Declaratoria Corredor Biológico Mesoamericano Pacifico de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard text, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Tegucigalpa, M.D.C.

*Publisher:* SERNA

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Beletsky, L.

*Publication\_Date:* 1999

*Title:* Tropical Mexico: The Ecotraveller's Wildlife guide

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Publication\_Information:*

*Publication\_Place:* San Francisco, CA

*Publisher:* Academic Press

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* 1998

*Title:*

Levantamiento y Mapeo de Indices de Sensibilidad Ambiental de El Salvador: Vol 2

*Geospatial\_Data\_Presentation\_Form:* Hard maps, Hard text, Hard tables, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Columbia, SC.

*Publisher:* Research Planning, Inc.

*Source\_Scale\_Denominator:* 50,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1998  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Reptile information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Espinoza, J. and X. Rodriguez  
*Publication\_Date:* Unpublished Material  
*Title:*  
Expert knowledge of Turtle Nesting Sites and Artesanal Fishing and Invertebrates  
*Geospatial\_Data\_Presentation\_Form:* Expert knowledge  
*Type\_of\_Source\_Media:* Personal communication  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Interview Date  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Reptile information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* CATIE  
*Publication\_Date:* 2000  
*Title:*  
Estrategia para el Desarrollo y la Conservación del Estero Real, Nicaragua  
*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps  
*Publication\_Information:*

*Publication\_Place:* Turrialba, C. R.

*Publisher:* CATIE/IDR

*Source\_Scale\_Denominator:* 400,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Reptile information  
*Source\_Information:*

*Source\_Citation:**Citation\_Information:*

*Originator:* MARENA  
*Publication\_Date:* 1999  
*Title:* Biodiversidad en Nicaragua: Un Estudio de País  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* Managua, Nicaragua  
*Publisher:* MARENA-PANIF

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Davila, P. (UNAN)  
*Publication\_Date:* Unpublished Material  
*Title:*

Expert knowledge of Turtle Nesting, Reptiles, and T\_mammals in  
Cosigüina

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Reptile information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Cajina , O.  
*Publication\_Date:* Unpublished Material  
*Title:* Proyecto Danida Manglares, Estero Real: Fauna  
*Geospatial\_Data\_Presentation\_Form:* Hard text

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 1996*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Reptile information*Process\_Step:**Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102*Process\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:**Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Person:* Jill Petersen*Contact\_Address:**Address\_Type:* Physical address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Vector*Point\_and\_Vector\_Object\_Information:**SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings*Point\_and\_Vector\_Object\_Count:* 977*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point  
*Point\_and\_Vector\_Object\_Count:* 977  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain  
*Point\_and\_Vector\_Object\_Count:* 4743  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link  
*Point\_and\_Vector\_Object\_Count:* 1389090  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph  
*Point\_and\_Vector\_Object\_Count:* 4175

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005  
*Longitude\_Resolution:* 0.00005  
*Geographic\_Coordinate\_Units:* Decimal degrees

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927  
*Ellipsoid\_Name:* Clarke 1866  
*Semi-major\_Axis:* 6378206.4  
*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-polygon  
*Entity\_Type\_Definition:*

Although nesting of sea turtles does occur within the Golfo de Fonseca, it is not as widespread or as common as it is on the outer coast beaches. The most common sea turtle in the gulf is *Lepidochelys olivacea*, which nests year round, with the peak period being June-October. *L. olivacea* is likely to nest on basically all outer coast sand beaches (ESI = 3A or 4) and mixed sand and gravel beaches (ESI = 5) in this atlas. Examples of some important nesting habitats include the area from Punta Condega to Punta Raton and the sand beaches of Isla Tigre in Honduras. In Nicaragua, the principal nesting areas are the beaches around Punta San Juan, and the

pocket beaches associated with the cliffs, southwest of Punta San Juan. There may be some limited occurrences of this turtle in the larger estuaries, where they may feed. There are some reports of other marine turtles (including *Chelonia mydas agassizi* and *Eretmochelys imbricata*) in the gulf, but the numbers are relatively small, and as a rule these species are restricted to the outer-most parts of the gulf. Collection of turtle eggs is an important subsistence activity, and there are ongoing attempts to somewhat regulate the harvests. In Honduras, collection of turtle eggs is permitted all year, with the exception of a 15-day period during the "peak egg laying period," which is determined by DIGEPESCA. This closure is not strictly enforced, and it is suspected that collection continues. Locations for rare and protected amphibians and reptiles in coastal and inland areas (such as common and black iguanas, snakes, etc.) were based mainly on information provided by expert sources, wildlife biologists, and resource managers. In general, local experts agree that the abundance of the larger reptiles in this area (such as alligators and snakes) has decreased significantly over the last few decades due to loss of habitats and human exploitation.

*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: ID

*Attribute\_Definition*:

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (6), and record number. ID values of 9999 are holes in polygons and do not contain information. The following REPTILES species are found in the Golfo de Fonseca ESI data set (SPECIES\_ID, GEN\_SPEC ): 1, *Crocodylus acutus*; 5, *Dermodochelys coriacea*; 8, *Chelonia mydas agassizi*; 9, *Eretmochelys imbricata*; 43, *Caiman crocodilus*; 44, *Ctenosaura similis*; 45, *Iguana iguana*; 46, *Pelamis platurus*; 47, *Lepidochelys olivacea*; 49, *Rhinoclemmys pulcherrima*; 89, *Lepidodactylus lugubres*; 90, *Rana maculata*; 91, *Norops* sp.; 92, *Loxocemus bicolor*; 93, *Conophis lineatus*; 94, *Oxybelis aeneus*; 95, *Micrurus nigrocinctus*; 96, *Ameiva undulata*; 97, *Physalaemus pustulosus*; 98, *Drymarchon corais*; 99, *Basiliscus vittatus*; 100, *Bufo marinus*; 101, *Enulis flavitorques*; 102, *Agkistrodon bilineatus*; 103, *Cnemidophorus deppii*; 104, *Ameiva festiva*; 105, *Cnemidophorus lemniscatus*; 106, *Sceloporus variabilis*; 107, *Boa constrictor*; 110, *Crotalus durissus*.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 1040600002

*Range\_Domain\_Maximum*: 1040600979

*Attribute\_Units\_of\_Measure*: Ordered

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values*: 200102

*Attribute*:

*Attribute\_Label*: RARNUM

*Attribute\_Definition*:

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source*: NOAA

*Attribute\_Domain\_Values*:

*Range\_Domain*:

*Range\_Domain\_Minimum*: 144

*Range\_Domain\_Maximum*: 202

*Beginning\_Date\_of\_Attribute\_Values*: 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

---

*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

---



*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* [jill\\_petersen@hazmat.noaa.gov.us](mailto:jill_petersen@hazmat.noaa.gov.us)

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: T\_MAMMAL (Terrestrial Mammals)

## Metadata:

- [Identification Information](#)
  - [Data Quality Information](#)
  - [Spatial Data Organization Information](#)
  - [Spatial Reference Information](#)
  - [Entity and Attribute Information](#)
  - [Distribution Information](#)
  - [Metadata Reference Information](#)
- 

### *Identification\_Information:*

#### *Citation:*

#### *Citation\_Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Publication\_Date:* 200102

#### *Title:*

Golfo de Fonseca ESI; Honduras and Nicaragua: T\_MAMMAL (Terrestrial Mammals)

*Edition:* First

*Geospatial\_Data\_Presentation\_Form:* Atlas

#### *Series\_Information:*

*Series\_Name:* None

*Issue\_Identification:* Golfo de Fonseca

#### *Publication\_Information:*

*Publication\_Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other\_Citation\_Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International

Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains sensitive biological resource data for terrestrial mammals.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Terrestrial mammal

*Theme\_Keyword:* Bat

*Theme\_Keyword:* Canine

*Theme\_Keyword:* Feline

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The digitization of shoreline types, biological resources, and human-use resources is a complex and highly quality-controlled process. Existing digital shoreline and wetlands data are integrated into a study-wide basemap. 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 classification. The ESI habitat ranking is compiled onto 1:50,000 topographic quadrangles by a geomorphologist. The hardcopy maps are then digitized and checked, using both on-screen and hardcopy reviews. The edited maps are updated, checked once again for completeness and topological and logical consistency. Any errors in the shoreline classification are updated prior to digitization of the biological reference so that there are no slivers in the geographic coordinates. The hardcopy biological information is compiled onto 1:50,000 topographic quadrangles by a biological expert using data from regional specialists in the form of maps, tables, charts, written descriptions of wildlife distributions, and personal interviews. Concurrently, digital data sources are imported, projected, checked for quality control, and integrated into the data structure. The hardcopy data are digitized, checked using both digital and on-screen procedures, integrated with existing data, plotted,

and sent out for review by the regional specialists. The edited maps are updated, checked once again, and the final product plotted (at approximately 1:50,000 scale). A team of specialists reviews the entire series of maps, checks all data, and makes final edits. The data are then merged to form the study-wide layers. The data merging includes a final quality control check where labels, chains, and polygons are checked for attribute accuracy. 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 (r) and ARC/INFO (r) consistencies. A final review is made by the GIS manager, where the data are written to tape and the metadata are written. After the data are delivered to NOAA, they are again subjected to a number of quality and consistency checks. In the process of checking for topological and database consistencies, new IDs and RARNUMs or HUNUMs are also generated. The new IDs are a combination of atlas number, element number, and record number. In addition, the value used to represent the element is modified to reflect the type of feature being mapped. In the case of an element that is normally represented by a point or polygon, a value of 20 is added to the standard element value for mapping of linear features. In the case where an element usually mapped as a polygon is represented by a point, a value of 30 is added to the regular element value. The RARNUMs and HUNUMS are modified to be unique to each element. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

#### *Completeness\_Report:*

Biological information presented in this atlas was collected and compiled with the assistance of biologists from the SERNA (Secretaria Nacional de Recursos Naturales de Honduras) in Honduras and MARENA (Ministerio del Ambiente y Recursos Naturales de Nicaragua) in Nicaragua, and various other agencies, organizations, and groups. Information collected and depicted on the maps denotes the key biological resources that are most likely at risk in the event of an oil spill. Six major categories, or ELEMENTs, of biological resources were considered during data compilation: birds, fish, invertebrates, marine mammals, terrestrial mammals, and reptiles/amphibians. The ELEMENTs generally correspond to the coverage or geographic data layer names. There are also six attribute or data tables, BIORES, LOCALHON, LOCALNIC, SOURCES, SPECIES, and STATUS, that are used to store the complex biological data. The biological polygons (T\_MAMMAL) are linked to the Biological Resources table (BIORES) using the unique ID and the lookup table BIO\_LUT, or they can be linked directly using RARNUM. [The ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (birds are layer 1, fish are layer 2, etc.) and a unique record number. The RARNUM represents a unique combination of species, seasonalities, concentrations, and source information. For each of these groupings, a number is generated.] The items in BIORES include: RARNUM, SPECIES\_ID, CONC, SEASON\_ID, G\_SOURCE, S\_SOURCE, ELEMENT, EL\_SPE, and EL\_SPE\_SEA. 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 descriptive (BAJO = low, MEDIO = medium, ALTO = high, etc.) or an actual count of the number of individuals or nests associated with a polygon. SEASON\_ID contains a numeric identifier for the life history characteristics of each species at a given location (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). G\_SOURCE contains the SOURCE\_ID for geographic information, and S\_SOURCE contains the SOURCE\_ID for seasonality information. Both items link to the SOURCES data table. EL\_SPE is a concatenation of ELEMENT and SPECIES\_ID and links to the SPECIES and STATUS tables. EL\_SPE\_SEA is a concatenation of ELEMENT, SPECIES\_ID, and SEASON\_ID. The SPECIES data table contains the SPECIES\_ID (described above), common English name (NAME), scientific name (GEN\_SPEC), biological element (ELEMENT), biological subelement (SUBELEMENT), the Natural Heritage Program (NHP) global conservation status rank (not used in this atlas), the date the list of NHP ranks was published (DATE\_PUB) (not used in this atlas), and EL\_SPE, which links back to the BIORES and

STATUS tables. The item SUBELEMENT refers to the grouping of the species: (ELEMENT, subelement): T\_MAMMAL: bat, canine, feline, sm\_mammal. The STATUS data table contains records for each species that is threatened or endangered in either Honduras and/or Nicaragua. The items include: ELEMENT, SPECIES\_ID, STATE (two-letter state abbreviation; not populated in this atlas), S\_F (jurisdiction; N=Nicaragua, H=Honduras), T\_E (status; A=Amenazado, E=En Peligro), DATE\_PUB (the date when the given amenazado or en peligro listings were in effect), and EL\_SPE. The SOURCES data table contains metadata for each biological and human-use source listed in the ESI atlas. The items in SOURCES include: SOURCE\_ID; ORIGINATOR (author); DATE\_PUB (date of publication); TITLE (title of the data set); DATA\_FORMAT (digital type, hardcopy maps, etc.); PUBLICATION (additional citation); SCALE (source scale denominator); and TIME\_PERIOD (beginning and ending dates of original data collection). The SOURCES data table is linked to all biological data at the feature plus species-level and human-use data at the feature-level. The LOCALHON data table provides the common Honduran name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. The LOCALNIC data table provides the common Nicaraguan name (NAME) for a given species. The items in this table include: ELEMENT, SPECIES\_ID, NAME, and EL\_SPE, which links to the SPECIES table. Due to the complexity of the relational database model, the biological data items are also post-processed into a flat file format. This file is entitled BIOFILE and it may be used in place of the relational files to ease simple data queries. The items in the flat file are ELEMENT, SUBELEMENT, NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, GEN\_SPEC, S\_F, T\_E, CONC, SEASONALITY, RARNUM, G\_SOURCE, S\_SOURCE, and SEAS\_ID. These items are the same as their counterparts in the individual files described above, with the exception of NAME/HONDURAS, NAME/NICARAGUA, NAME/ENGLISH, SEASONALITY, and SEAS\_ID. NAME/HONDURAS is populated with the common Honduran name for each species, NAME/NICARAGUA is populated with the common Nicaraguan name for each species, and NAME/ENGLISH is populated with the common English name for each species. SEASONALITY identifies each species at a given location as one of the following: year-round resident population; migratory/seasonal population; resident and migratory population; or population/location of nesting/reproduction. SEAS\_ID contains the numeric identifier for the life history characteristics of each species (1 = Year round resident population; 2 = Migratory/seasonal population; 3 = Resident and migratory population; 4 = Population/location of nesting/reproduction). The link to the BIOFILE may be made through BIO\_LUT using ID, or it may be linked directly from the RARNUM in each of the biology cover's attribute files. A supporting data file is SOURCES. This is the same as the source file described above, and the link from the flat file is both G\_SOURCE and S\_SOURCE. It should be noted that although the flat file eases data query, it is not a normalized database structure, and actual updates performed by the states and other responsible agencies should be done using the relational files.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

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 vary in distribution across the landscape. Therefore, the 1:50,000 topographic quadrangles are used as a basemap in gathering the data but the data have "fuzzy" boundaries which must be understood when utilizing this information.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Olivas, L. and R. H. Paz López (COHDEFOR)

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Secretaria de Recursos Naturales y Ambiente (SERNA)

*Publication\_Date:* 1999

*Title:*

Propuesta de Declaratoria Corredor Biológico Mesoamericano Pacifico de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard text, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Tegucigalpa, M.D.C.

*Publisher:* SERNA

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

---

*Calendar\_Date:* 1999  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Terrestrial mammal information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Beletsky, L.  
*Publication\_Date:* 1999  
*Title:* Tropical Mexico: The Ecotraveller's Wildlife guide  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* San Francisco, CA  
*Publisher:* Academic Press

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None  
*Source\_Contribution:* Terrestrial mammal information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* CATIE  
*Publication\_Date:* 2000  
*Title:*  
Estrategia para el Desarrollo y la Conservación del Estero Real,  
Nicaragua  
*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps  
*Publication\_Information:*

*Publication\_Place:* Turrialba, C. R.  
*Publisher:* CATIE/IDR

*Source\_Scale\_Denominator:* 400000  
*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000  
*Source\_Currentness\_Reference:* Date of publication  
*Source\_Citation\_Abbreviation:* None



*Source\_Contribution:* Terrestrial mammal information  
*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* MARENA  
*Publication\_Date:* 1999  
*Title:* Biodiversidad en Nicaragua: Un Estudio de País  
*Geospatial\_Data\_Presentation\_Form:* Hard text  
*Publication\_Information:*

*Publication\_Place:* Managua, Nicaragua  
*Publisher:* MARENA-PANIF

*Type\_of\_Source\_Media:* Paper  
*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Davila, P. (UNAN)  
*Publication\_Date:* Unpublished Material  
*Title:*

Expert knowledge of Turtle Nesting, Reptiles, and T\_mammals in  
Cosigüina

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Cajina, O.  
*Publication\_Date:* Unpublished Material

*Title:* Proyecto Danida Manglares, Estero Real: Fauna

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1996

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Marineros, L., F. Martinez Gallegos

*Publication\_Date:* 1998

*Title:* Guía de Campos de los Mamíferos de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard text

*Publication\_Information:*

*Publication\_Place:* Tegucigalpa

*Publisher:* INADES

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1998

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Terrestrial mammal information

*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration  
*Contact\_Person:* Jill Petersen  
*Contact\_Address:*

*Address\_Type:* Physical address  
*Address:* 7600 Sand Point Way N.E.  
*City:* Seattle  
*State\_or\_Province:* Washington  
*Postal\_Code:* 98115-6349  
*Contact\_Voice\_Telephone:* (206) 526-6944  
*Contact\_Facsimile\_Telephone:* (206) 526-6329  
*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

---

*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector  
*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings  
*Point\_and\_Vector\_Object\_Count:* 371

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point  
*Point\_and\_Vector\_Object\_Count:* 371

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain  
*Point\_and\_Vector\_Object\_Count:* 2286

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link  
*Point\_and\_Vector\_Object\_Count:* 847307

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph  
*Point\_and\_Vector\_Object\_Count:* 2277

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005  
*Longitude\_Resolution:* 0.00005  
*Geographic\_Coordinate\_Units:* Decimal degrees

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*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927  
*Ellipsoid\_Name:* Clarke 1866  
*Semi-major\_Axis:* 6378206.4  
*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:**Detailed\_Description:**Entity\_Type:*

*Entity\_Type\_Label:* GT-polygon

*Entity\_Type\_Definition:*

Terrestrial mammals depicted in this atlas are sub-divided into three groups, bats, small mammals, and large mammals. Distribution of these mammals was mapped mainly using expert knowledge. In general, local experts agree that the abundance of the larger mammals in this area has decreased significantly due to loss of habitats and over-harvest. Many of the larger mammals are now primarily restricted to the few forested natural areas that still exist. For some of the large mammals presented on these maps (notably felines and canines) it is accepted that they are not particularly abundant, but local experts and resource managers wanted to include them due to concern regarding their conservation.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* ID

*Attribute\_Definition:*

A unique identifier that links to the BIO\_LUT table. ID is a concatenation of atlas number (104), element number (9), and record number. ID values of 9999 are holes in polygons and do not contain information. The following T\_MAMMAL species are found in the Golfo de Fonseca ESI data set (SPECIES ID, GEN\_SPEC): 10, Noctilio leporinus; 13, Panthera onca; 14, Tayassu tajacu; 15, Didelphis marsupialis; 16, Sylvilagus floridanus; 17, Mephitis macroura; 18, Saccopteryx leptura; 19, Balantiopteryx plicata; 20, Sciurus variegatoides; 21, Sciurus deppei; 22, Bradypus variegatus; 23, Desmodus rotundus; 31, Odocoileus virginianus; 40, Mustela frenata; 44, Procyon lotor; 63, Canis latrans; 64, Urocyon cinereoargenteus; 65, Puma concolor; 66, Leopardus pardalis; 108, Herpailurus yaguarondi; 110, Ateles geoffroyi; 111, Dasybus novemcinctus; 112, Nasua narica; 113, Tamandua mexicana; 114, Agouti paca; 116, Dasyprocta punctata; 137, Uroderma bilobatum; 138, Artibeus jamaicensis.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:**Range\_Domain:*

*Range\_Domain\_Minimum:* 1040900002

*Range\_Domain\_Maximum:* 1040900373

*Attribute\_Units\_of\_Measure:* Ordered

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

*Attribute:*

*Attribute\_Label:* RARNUM

*Attribute\_Definition:*

An identifier that links directly to the BIORES table or the flat format BIOFILE table.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 204

*Range\_Domain\_Maximum:* 214

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

---

*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

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*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: MGT (Management Areas)

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

---

### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: MGT (Management Areas)

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains polygonal data for human-use resources.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Management

*Theme\_Keyword:* Human uses

*Theme\_Keyword:* Aquaculture

*Theme\_Keyword:* Shrimp farm

*Theme\_Keyword:* Hatchery

*Theme\_Keyword:* Protected area

*Theme\_Keyword:* National park

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua



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*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The human-use resources were obtained in either digital format or in hardcopy format on 1:50,000 scale maps. Under this project, new digital data sources were imported, projected, checked for quality control, and integrated into the spatial data structure (for selected resources). The data were checked using both digital and on-screen procedures. To finalize the data checking process, each data layer was checked using a standardized form by two GIS personnel (a technician and the GIS manager), and each attribute database was 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(r) to ARC/INFO(r) consistencies. A final review was made by the GIS manager, where the data were written to tape and metadata were written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section

Spatial\_Data\_Organization\_Information refers to the source files in ARC export format only.

*Completeness\_Report:*

Several human-use, or socioeconomic, features are included in ESI atlases. Entity points and complete chains (arcs) are digitized into the data layer SOCECON, and managed area polygonal data are stored in the data layer MGT. The MGT data set is linked to the data table SOC\_DAT using the SOC\_LUT lookup table and the items HUNUM and ID. HUNUM is a unique reference number and ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (MGT=11) and a unique record number. The table SOC\_DAT contains the human-use number (HUNUM), feature type (TYPE), name of the facility (NAME), owner/manager or contact person (CONTACT), telephone number (PHONE) [Note: Some phone numbers for Honduras and Nicaragua contain only nine digits, xxx/xxx-xxx], geographic source (G\_SOURCE), and attribute source (A\_SOURCE). Detailed contact information is included for select management features, where available. Source information is included for all features.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The MGT data use 1:50,000 topographic quadrangles as the basemap.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Secretaria de Recursos Naturales y Ambiente (SERNA)

*Publication\_Date:* 1999

*Title:*

Propuesta de Declaratoria Corredor Biológico Mesoamericano Pacifico de Honduras

*Geospatial\_Data\_Presentation\_Form:* Hard text, Digital polygons

*Publication\_Information:*

*Publication\_Place:* Tegucigalpa, M.D.C.

*Publisher:* SERNA

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Com. Cent. de Ambiente y Desarrollo

*Publication\_Date:* 1999

*Title:*

Diag. de los recursos naturales, socio. institucional de la zona costera

*Geospatial\_Data\_Presentation\_Form:* Digital text

*Publication\_Information:*

*Publication\_Place:* San José, C. R.

*Publisher:* UICN/CCAD

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 1999

*Source\_Currentness\_Reference:* Date of publication

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management Information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* CATIE

*Publication\_Date:* 2000

*Title:*

Estrategia para el Desarrollo y la Conservación del Estero Real,  
Nicaragua

*Geospatial\_Data\_Presentation\_Form:* Hard text, Hard maps

*Publication\_Information:*

*Publication\_Place:* Turrialba, C. R.

*Publisher:* CATIE/IDR

*Source\_Scale\_Denominator:* 400,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Management information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* ANDAH*Publication\_Date:* 1999*Title:* Hardcopy table of Aquaculture site contact information*Geospatial\_Data\_Presentation\_Form:* Hard table*Publication\_Information:**Publication\_Place:* Choluteca, Honduras*Publisher:* ANDAH*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 1999*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Management information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Research Planning, Inc.*Publication\_Date:* Unpublished Material*Title:* Overflight ESI and Socioeconomic information*Geospatial\_Data\_Presentation\_Form:* Hard maps*Source\_Scale\_Denominator:* 50,000*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Field Work Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Management information*Source\_Information:*

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*Source\_Citation:**Citation\_Information:**Originator:* Perez Zelaya, D. O.(MARENA)*Publication\_Date:* Unpublished Material*Title:* Expert knowledge of Shrimp Farm Information*Geospatial\_Data\_Presentation\_Form:* Expert knowledge*Type\_of\_Source\_Media:* Personal communication*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Interview Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Management information*Process\_Step:**Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102*Process\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:**Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Person:* Jill Petersen*Contact\_Address:**Address\_Type:* Physical address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Vector*Point\_and\_Vector\_Object\_Information:**SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings*Point\_and\_Vector\_Object\_Count:* 405*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Area point*Point\_and\_Vector\_Object\_Count:* 405*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain*Point\_and\_Vector\_Object\_Count:* 745*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Link*Point\_and\_Vector\_Object\_Count:* 26637*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph*Point\_and\_Vector\_Object\_Count:* 484

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*Spatial\_Reference\_Information:**Horizontal\_Coordinate\_System\_Definition:**Geographic:**Latitude\_Resolution:* 0.00005*Longitude\_Resolution:* 0.00005*Geographic\_Coordinate\_Units:* Decimal degrees*Geodetic\_Model:**Horizontal\_Datum\_Name:* North American Datum of 1927*Ellipsoid\_Name:* Clarke 1866*Semi-major\_Axis:* 6378206.4*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:**Detailed\_Description:**Entity\_Type:*

*Entity\_Type\_Label:* GT-Polygon

*Entity\_Type\_Definition:*

The human-use features depicted on the maps are those that could be impacted by an oil spill or could provide access for response operations. Aquaculture (Acuacultura) - Location of aquaculture sites and facilities (mostly shrimp farms). Location of surface water intakes associated with marine shrimp hatcheries. When known, the site name, owner/manager, and telephone number are provided on the data tables for each map. Areas Protegidas - All protected areas, including national parks, are included in this category. In Honduras, they are administered by DAPVS (Departamento de Areas Protegidas y Vida Silvestre) of AFECOHDEFOR (Administración Forestal del Estado). In Nicaragua, protected areas are administered by Dirección de Biodiversidad de MARENA.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* TYPE

*Attribute\_Definition:*

Identifies a polygon 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\_DAT table.

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* AQ

*Enumerated\_Domain\_Value\_Definition:* Aquaculture

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* WR

*Enumerated\_Domain\_Value\_Definition:* Area Protegidas

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* ID

*Attribute\_Definition:*

A unique identifier that links to the SOC\_LUT table. ID is a concatenation of atlas number (104), element number (11), and record number. ID values of 9999 are holes in polygons and do not contain information.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 1041100002

*Range\_Domain\_Maximum:* 1041100419

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

*Attribute:*

*Attribute\_Label:* HUNUM

*Attribute\_Definition:* An identifier that links directly to the SOC\_DAT table.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Maximum:* 4

*Range\_Domain\_Minimum:* 403

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

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*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: SOCECON (Socioeconomic Lines and Points)

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification\_Information:*

#### *Citation:*

#### *Citation\_Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication\_Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: SOCECON (Socioeconomic Lines and Points)

*Edition:* First

*Geospatial\_Data\_Presentation\_Form:* Atlas

#### *Series\_Information:*

*Series\_Name:* None

*Issue\_Identification:* Golfo de Fonseca

#### *Publication\_Information:*

*Publication\_Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other\_Citation\_Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro

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America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains line and point data for human-use resources.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Socioeconomic uses

*Theme\_Keyword:* Human uses

*Theme\_Keyword:* Road

*Theme\_Keyword:* Archaeological site

*Theme\_Keyword:* Historic site

*Theme\_Keyword:* Artisanal fishing

*Theme\_Keyword:* Subsistence fishing

*Theme\_Keyword:* Fishing association

*Theme\_Keyword:* Fishing cooperative

*Theme\_Keyword:* Boat ramp

*Theme\_Keyword:* Coast Guard

*Theme\_Keyword:* Commercial fishing

*Theme\_Keyword:* Harbor

*Theme\_Keyword:* Marina  
*Theme\_Keyword:* Recreational beach

*Place:*

*Place\_Keyword\_Thesaurus:* None  
*Place\_Keyword:* Gulf of Fonseca  
*Place\_Keyword:* Golfo de Fonseca  
*Place\_Keyword:* Pacific coast of Honduras  
*Place\_Keyword:* Pacific coast of Nicaragua  
*Place\_Keyword:* Honduras  
*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in *Data\_Set\_Credit* (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

---

*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The human-use resources were obtained in either digital format or in hardcopy format on 1:50,000 scale maps or from expert knowledge. Under this project, new digital data sources were imported, projected, checked for quality control, and integrated into the spatial data structure (for selected resources). The data were checked using both digital and on-screen procedures. To finalize the data

checking process, each data layer was checked using a standardized form by two GIS personnel (a technician and the GIS manager), and each attribute database was 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(r) to ARC/INFO(r) consistencies. A final review was made by the GIS manager, where the data were written to tape and metadata were written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section Spatial\_Data\_Organization\_Information refers to the source files in ARC export format only.

*Completeness\_Report:*

Several human-use, or socioeconomic, features are included in ESI atlases. Entity points and complete chains (arcs) are digitized into the data layer SOCECON, and managed area polygonal data are stored in the data layer MGT . The SOCECON data set is linked to the data table SOC\_DAT using the SOC\_LUT lookup table and the items HUNUM and ID. HUNUM is a unique reference number and ID is a unique combination of the atlas number (for Golfo de Fonseca this is 104), an element specific number (SOCECON = 10) and a unique record number. The table SOC\_DAT contains the human-use number (HUNUM), feature type (TYPE), name of the facility (NAME), owner/manager or contact person (CONTACT), telephone number (PHONE) [Note: Some phone numbers for Honduras and Nicaragua contain only nine digits, xxx/xxx-xxx], geographic source (G\_SOURCE), and attribute source (A\_SOURCE). Detailed contact information is included for select management features, where available. Source information is included for all features.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The SOCECON data use 1:50,000 topographic quadrangles as the basemap.

*Lineage:*

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Socioeconomic information

*Source\_Information:*

*Source\_Citation:*

*Citation\_Information:**Originator:* Espinoza, J. and X. Rodriguez*Publication\_Date:* Unpublished Material*Title:*

Expert knowledge of Turtle Nesting Sites and Artesanal Fishing and Invertebrates

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge*Type\_of\_Source\_Media:* Personal communication*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Interview Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Socioeconomic information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Research Planning, Inc.*Publication\_Date:* Unpublished Material*Title:* Overflight ESI and Socioeconomic information*Geospatial\_Data\_Presentation\_Form:* Hard maps*Source\_Scale\_Denominator:* 50000*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:**Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 2000*Source\_Currentness\_Reference:* Field Work Date*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Socioeconomic information*Source\_Information:**Source\_Citation:**Citation\_Information:**Originator:* Palacios, N. and B. Brenes*Publication\_Date:* Unpublished Material*Title:*

Informe de Registro de las Embarcaciones Artesanales en el Pacifico Nicaraguense

*Geospatial\_Data\_Presentation\_Form:* Hard table*Type\_of\_Source\_Media:* Paper*Source\_Time\_Period\_of\_Content:*

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*Time\_Period\_Information:**Single\_Date/Time:**Calendar\_Date:* 1999*Source\_Currentness\_Reference:* Date of publication*Source\_Citation\_Abbreviation:* None*Source\_Contribution:* Socioeconomic information*Process\_Step:**Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102*Process\_Contact:**Contact\_Information:**Contact\_Organization\_Primary:**Contact\_Organization:* NOAA, Office of Response and Restoration*Contact\_Person:* Jill Petersen*Contact\_Address:**Address\_Type:* Physical address*Address:* 7600 Sand Point Way N.E.*City:* Seattle*State\_or\_Province:* Washington*Postal\_Code:* 98115-6349*Contact\_Voice\_Telephone:* (206) 526-6944*Contact\_Facsimile\_Telephone:* (206) 526-6329*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:**Direct\_Spatial\_Reference\_Method:* Vector*Point\_and\_Vector\_Object\_Information:**SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain*Point\_and\_Vector\_Object\_Count:* 1*SDTS\_Terms\_Description:**SDTS\_Point\_and\_Vector\_Object\_Type:* Link

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*Point\_and\_Vector\_Object\_Count*: 13  
*SDTS\_Terms\_Description*:

*SDTS\_Point\_and\_Vector\_Object\_Type*: Entity Point  
*Point\_and\_Vector\_Object\_Count*: 59  
*SDTS\_Terms\_Description*:

*SDTS\_Point\_and\_Vector\_Object\_Type*: Node, planar graph  
*Point\_and\_Vector\_Object\_Count*: 3

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*Spatial\_Reference\_Information*:

*Horizontal\_Coordinate\_System\_Definition*:

*Geographic*:

*Latitude\_Resolution*: 0.00005  
*Longitude\_Resolution*: 0.00005  
*Geographic\_Coordinate\_Units*: Decimal degrees

*Geodetic\_Model*:

*Horizontal\_Datum\_Name*: North American Datum of 1927  
*Ellipsoid\_Name*: Clarke 1866  
*Semi-major\_Axis*: 6378206.4  
*Denominator\_of\_Flattening\_Ratio*: 294.98

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*Entity\_and\_Attribute\_Information*:

*Detailed\_Description*:

*Entity\_Type*:

*Entity\_Type\_Label*: Complete Chain  
*Entity\_Type\_Definition*: Roads  
*Entity\_Type\_Definition\_Source*: Research Planning, Inc.

*Attribute*:

*Attribute\_Label*: TYPE

*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\_DAT table.

*Attribute\_Definition\_Source*: Research Planning, Inc.

*Attribute\_Domain\_Values*:

*Enumerated\_Domain*:

*Enumerated\_Domain\_Value*: R

---



*Enumerated\_Domain\_Value\_Definition:* Road

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* Entity point

*Entity\_Type\_Definition:*

Aquaculture (Acuacultura) - Location of aquaculture sites and facilities (mostly shrimp farms). Location of surface water intakes associated with marine shrimp hatcheries. When known, the site name, owner/manager, and telephone number are provided on the data tables for each map. Archaeological/Historical Site (Sitio Arqueológico/Histórico) - Location of archaeological and historic sites for coastal areas. This information was provided by expert sources. Artisanal Fishing (Pesca Artesanal) - General areas where artisanal/subsistence fishing take place. Fishing activities for shrimp, bivalves, other shellfish, fish, etc. may take place throughout the study area. This information was provided by the expert sources. Fishing Association (Asociaciones de Pesca) - Locations of fishing associations and fisheries cooperatives in coastal areas. Boat Ramp (Atracadero) - Location of boat ramps. This information was gathered from overflight observations, aerial photographs, and expert sources. Coast Guard (Guarda Costa) - Location of Coast Guard facilities. Commercial Fishing (Pesca Comercial) - General areas where commercial fishing take place. Fishing activities, especially harvest of shrimp, bivalves, and fish, may take place throughout the study area. This information was provided by the Fisheries Department and expert sources. Harbor/Marina (Puerto/Marina) - Location of harbors/marinas. This information was gathered from overflight observations, aerial photographs, and expert sources. Recreational Beach (Playa Recreacional) - Location of recreational beaches used for activities, such as swimming, sun-bathing, fishing, etc. This information was provided by expert sources.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

*Attribute:*

*Attribute\_Label:* TYPE

*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\_DAT table.

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* AQ

*Enumerated\_Domain\_Value\_Definition:* Spring Laboratories Aquaculture

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* HS

*Enumerated\_Domain\_Value\_Definition:* Archaeological/Historical site

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* S

*Enumerated\_Domain\_Value\_Definition:* Subsistence/Artisanal Fishing/Fishing Association

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* BR

*Enumerated\_Domain\_Value\_Definition:* Boat Ramp

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* CG

*Enumerated\_Domain\_Value\_Definition:* Coast Guard

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* CF

*Enumerated\_Domain\_Value\_Definition:* Commercial Fishing

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* M

*Enumerated\_Domain\_Value\_Definition:* Marina

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

*Attribute:*

*Attribute\_Label:* ID

*Attribute\_Definition:*

A unique identifier that links to the SOC\_LUT table. ID is a concatenation of atlas number (104), element number (10), and record number.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

*Range\_Domain\_Minimum:* 1041000001

*Range\_Domain\_Maximum:* 1041000059

*Beginning\_Date\_of\_Attribute\_Values:* 200102

*Ending\_Date\_of\_Attribute\_Values:* 200102

*Attribute:*

*Attribute\_Label:* HUNUM

*Attribute\_Definition:* An identifier that links directly to the SOC\_DAT table.

*Attribute\_Definition\_Source:* NOAA

*Attribute\_Domain\_Values:*

*Range\_Domain:*

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*Range\_Domain\_Minimum:* 182  
*Range\_Domain\_Maximum:* 223  
*Beginning\_Date\_of\_Attribute\_Values:* 200102  
*Ending\_Date\_of\_Attribute\_Values:* 200102

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick  
*Contact\_Organization:* NOAA, Office of Response and Restoration  
*Contact\_Address:*

*Address\_Type:* Physical Address  
*Address:* 7600 Sand Point Way N.E.  
*City:* Seattle  
*State\_or\_Province:* Washington  
*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400  
*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102  
*Metadata\_Review\_Date:* 200102  
*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen  
*Contact\_Organization:* NOAA, Office of Response and Restoration  
*Contact\_Position:* GIS Manager

---

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* [jill\\_petersen@hazmat.noaa.gov](mailto:jill_petersen@hazmat.noaa.gov)

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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# Golfo de Fonseca ESI; Honduras and Nicaragua: SALTPOND

## Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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### *Identification Information:*

#### *Citation:*

#### *Citation Information:*

#### *Originator:*

United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Publication Date:* 200102

*Title:* Golfo de Fonseca ESI; Honduras and Nicaragua: SALTPOND

*Edition:* First

*Geospatial Data Presentation Form:* Atlas

#### *Series Information:*

*Series Name:* None

*Issue Identification:* Golfo de Fonseca

#### *Publication Information:*

*Publication Place:* Seattle, Washington

#### *Publisher:*

National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, Seattle, Washington

#### *Other Citation Details:*

Prepared by Research Planning, Inc., Columbia, South Carolina for the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

#### *Description:*

*Abstract:*

This data set comprises the Environmental Sensitivity Index (ESI) data for Golfo de Fonseca. ESI data characterize estuarine 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. This data set contains data for saltpond features.

*Purpose:*

The ESI data were collected, mapped, and digitized to provide environmental data for oil spill planning and response and for coastal zone planning and management.

*Time\_Period\_of\_Content:**Time\_Period\_Information:**Range\_of\_Dates/Times:*

*Beginning\_Date:* 200001

*Ending\_Date:* 200102

*Currentness\_Reference:* Project time span

*Status:*

*Progress:* Complete

*Maintenance\_and\_Update\_Frequency:* None Scheduled

*Spatial\_Domain:**Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* -87.875

*East\_Bounding\_Coordinate:* -87.000

*North\_Bounding\_Coordinate:* 13.500

*South\_Bounding\_Coordinate:* 12.750

*Keywords:**Theme:*

*Theme\_Keyword\_Thesaurus:* None

*Theme\_Keyword:* ESI

*Theme\_Keyword:* Sensitivity maps

*Theme\_Keyword:* Coastal resources

*Theme\_Keyword:* Oil spill planning

*Theme\_Keyword:* Coastal zone management

*Theme\_Keyword:* Saltpond

*Place:*

*Place\_Keyword\_Thesaurus:* None

*Place\_Keyword:* Gulf of Fonseca

*Place\_Keyword:* Golfo de Fonseca

*Place\_Keyword:* Pacific coast of Honduras

*Place\_Keyword:* Pacific coast of Nicaragua

*Place\_Keyword:* Honduras

*Place\_Keyword:* Nicaragua

*Access\_Constraints:* None

*Use\_Constraints:*

DO NOT USE MAPS FOR NAVIGATIONAL PURPOSES. Besides the above warning, there are no use constraints on these data. Acknowledgment of the publishers and contributing sources listed in Data\_Set\_Credit (below) would be appreciated in products derived from these data.

*Browse\_Graphic:*

*Browse\_Graphic\_File\_Name:* [fonsecadatafig.jpg](#)

*Browse\_Graphic\_File\_Description:*

Relationships between spatial data layers and attribute data tables for the Golfo de Fonseca data.

*Browse\_Graphic\_File\_Type:* JPEG

*Data\_Set\_Credit:*

This project was supported by the United States Department of Commerce; National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division; USAID, The U.S. Agency for International Development; PROARCA/Costas, Programa Ambiental Regional para Centro America; SERNA, Secretaria Nacional de Recursos Naturales de Honduras; and MARENA, Ministerio del Ambiente y Recursos Naturales de Nicaragua.

*Native\_Data\_Set\_Environment:*

The software packages used to develop the atlas are Environmental Systems Research Institute's ARC/INFO(r) (version 8.0.2) and ORACLE(r) RDBMS (version 8.0.5.0.0). The hardware configuration is Hewlett Packard workstations (models 715/50 and 712/80i with 4 X-terminals) with UNIX operating system (HP-UX Release A.10.20). The following files are included in the data set: bio\_lut.e00, biofile.e00, biores.e00, birds.e00, esi.e00, fish.e00, hydro.e00, index.e00, invert.e00, mgt.e00, m\_mammal.e00, reptiles.e00, saltpond.e00, soc\_dat.e00, soc\_lut.e00, socecon.e00, sources.e00, species.e00, status.e00, t\_mammal.e00.

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*Data\_Quality\_Information:*

*Attribute\_Accuracy:*

*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.

*Logical\_Consistency\_Report:*

The human-use resources were obtained in either digital format or in hardcopy format on 1:50,000 scale maps. Under this project, new digital data sources were imported, projected, checked for quality control, and integrated into the spatial data structure (for selected resources). The data were checked using both digital and on-screen procedures. To finalize the data checking process, each data layer was checked using a standardized form by two GIS personnel (a technician and the GIS manager), and each attribute database was 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(r) to ARC/INFO(r) consistencies. A final review was made by the GIS manager, where the data were written to tape and the metadata were written. ESI data are processed into multiple formats to make them useful to a wider community of GIS/mapping users. Distribution formats include ARC export, MOSS and Shape files, and MARPLOT map folders. An ArcView ESI project and ESI\_Viewer product are also included on the CDs for ease of use of the ESI data. The database files are distributed both in the NOAA standard relational database format (see NOAA Technical Memorandum NOS ORCA 115) and in a simplified desktop flat file format. This metadata document includes information on both of these database formats. The section *Spatial\_Data\_Organization\_Information* refers to the source files in ARC export format only.

*Completeness\_Report:*

GT-Polygons of saltpond/shrimp farm features are digitized into the data layer SALTPOND.

*Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy:*

*Horizontal\_Positional\_Accuracy\_Report:*

The SALTPOND data use 1:50,000 topographic quadrangles as the basemap.

*Lineage:**Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Wainwright, F.

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of various resources in the Golfo de Fonseca

*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Research Planning, Inc.

*Publication\_Date:* Unpublished Material

*Title:* Overflight ESI and Socioeconomic information

*Geospatial\_Data\_Presentation\_Form:* Hard maps

*Source\_Scale\_Denominator:* 50,000

*Type\_of\_Source\_Media:* Paper

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:**Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Field Work Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management information

*Source\_Information:**Source\_Citation:**Citation\_Information:*

*Originator:* Perez Zelaya, D. O.(MARENA)

*Publication\_Date:* Unpublished Material

*Title:* Expert knowledge of Shrimp Farm Information



*Geospatial\_Data\_Presentation\_Form:* Expert knowledge

*Type\_of\_Source\_Media:* Personal communication

*Source\_Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Single\_Date/Time:*

*Calendar\_Date:* 2000

*Source\_Currentness\_Reference:* Interview Date

*Source\_Citation\_Abbreviation:* None

*Source\_Contribution:* Management information

*Process\_Step:*

*Process\_Description:*

All the digital data were checked using both digital and on-screen procedures, plotted, checked by the biological expert, edited to remove any errors, and plotted for review by the regional specialists. The reviewed maps were updated on the computer, checked once again, and plotted at final map scale. A team of specialists reviewed the entire series of maps, checked all data, and made final edits. The data were merged to form the study-wide layers that are described in the document. The data merging included a final quality control check where topological consistency, rules for geography, and database to geography were checked and validated for all relationships.

*Process\_Date:* 200102

*Process\_Contact:*

*Contact\_Information:*

*Contact\_Organization\_Primary:*

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Person:* Jill Petersen

*Contact\_Address:*

*Address\_Type:* Physical address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Vector

*Point\_and\_Vector\_Object\_Information:*

*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* GT-polygon composed of rings

*Point\_and\_Vector\_Object\_Count:* 1141  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Area point  
*Point\_and\_Vector\_Object\_Count:* 1141  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Complete chain  
*Point\_and\_Vector\_Object\_Count:* 3127  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Link  
*Point\_and\_Vector\_Object\_Count:* 10997  
*SDTS\_Terms\_Description:*

*SDTS\_Point\_and\_Vector\_Object\_Type:* Node, planar graph  
*Point\_and\_Vector\_Object\_Count:* 2214

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*Spatial\_Reference\_Information:*

*Horizontal\_Coordinate\_System\_Definition:*

*Geographic:*

*Latitude\_Resolution:* 0.00005  
*Longitude\_Resolution:* 0.00005  
*Geographic\_Coordinate\_Units:* Decimal degrees

*Geodetic\_Model:*

*Horizontal\_Datum\_Name:* North American Datum of 1927  
*Ellipsoid\_Name:* Clarke 1866  
*Semi-major\_Axis:* 6378206.4  
*Denominator\_of\_Flattening\_Ratio:* 294.98

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*Entity\_and\_Attribute\_Information:*

*Detailed\_Description:*

*Entity\_Type:*

*Entity\_Type\_Label:* GT-Polygon

*Entity\_Type\_Definition:*

The human-use features depicted on the maps are those that could be impacted by an oil spill or could provide access for response operations. Salt ponds (camaroneras/salineras) - Location of salt ponds or shrimp farms. Many of these areas serve a dual use as salt farms or shrimp farms, depending on the season. If the polygon is also used as a shrimp farm it appears in the MGT data layer as aquaculture.

*Entity\_Type\_Definition\_Source:* Research Planning, Inc.

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*Attribute:*

*Attribute\_Label:* POND

*Attribute\_Definition:*

Identifies a polygon 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\_DAT table.

*Attribute\_Definition\_Source:* Research Planning, Inc.

*Attribute\_Domain\_Values:*

*Enumerated\_Domain:*

*Enumerated\_Domain\_Value:* Y

*Enumerated\_Domain\_Value\_Definition:* Salt pond/shrimp farm

*Enumerated\_Domain\_Value\_Definition\_Source:* Research Planning, Inc.

*Beginning\_Date\_of\_Attribute\_Values:* 200001

*Ending\_Date\_of\_Attribute\_Values:* 200011

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* John Kaperick

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6400

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Resource\_Description:* ESI Atlas for Golfo de Fonseca, Honduras and Nicaragua

*Distribution\_Liability:*

Although these data have 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.

*Custom\_Order\_Process:*

Contact NOAA for distribution options (see *Distribution\_Information*).

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 200102

*Metadata\_Review\_Date:* 200102

*Metadata\_Contact:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Jill Petersen

*Contact\_Organization:* NOAA, Office of Response and Restoration

*Contact\_Position:* GIS Manager

*Contact\_Address:*

*Address\_Type:* Physical Address

*Address:* 7600 Sand Point Way N.E.

*City:* Seattle

*State\_or\_Province:* Washington

*Postal\_Code:* 98115-6349

*Contact\_Voice\_Telephone:* (206) 526-6944

*Contact\_Facsimile\_Telephone:* (206) 526-6329

*Contact\_Electronic\_Mail\_Address:* jill\_petersen@hazmat.noaa.gov.us

*Metadata\_Standard\_Name:* Content Standards for Digital Geospatial Metadata

*Metadata\_Standard\_Version:* FGDC-STD-001-1998

# Relationships between spatial data layers and attribute data tables

