

[NOAA OR&R Home](#) / [Oil Spill Aids](#) / ESI Maps

## ESI Maps

A main objective of spill response in the United States, after protecting human life, is to reduce the environmental consequences of both spills and cleanup efforts. To do this, it's necessary to identify vulnerable coastal locations before a spill happens, so that protection priorities can be established and cleanup strategies identified.

To meet this need, NOAA OR&R researchers, working with colleagues in State and Federal governments, have produced Environmental Sensitivity Index (ESI) maps. An example section from an ESI map appears below.



ESI maps serve as quick references for oil and chemical spill responders and coastal zone managers. They contain [three kinds of information](#):

**Shorelines** are color-coded to indicate their sensitivity to oiling.

Sensitive **biological resources**, such as seabird colonies and marine mammal hauling grounds, are depicted by special symbols on the maps.

ESI maps also show sensitive **human-use resources**, such as water intakes, marinas, and swimming beaches.

Project scientists have created collections of ESI maps, called ESI atlases, for most coastal areas in the US, including Alaska, Hawaii, the Great Lakes, and the US Territories. Each atlas includes

- a set of [maps](#).
- [pages of additional information](#) about the biological resources and other features shown on the maps.

To learn more about ESI maps and the information they contain, [view a sample map and other products](#), try an [online exercise](#), or view more technical [ESI references](#), including the [metadata](#) for many ESI atlases.

ESI maps are available in print and electronic formats. Our [Product Ordering](#) page and [list of available ESI atlases](#) show which atlases are available, in which formats.

## Project Status

Starting in 1995 with the outer coast of California, ESI project members began using a Geographic Information System (GIS) to produce updated ESI maps that are higher in quality and can be more readily reproduced. Using a GIS also has made it possible to distribute ESI information in [a variety of digital formats](#), as well as paper maps. Each of NOAA's ESI mapping efforts is a cooperative effort with the primary State response agency, other State and Federal agencies, and industry.

For more information about ESI mapping, contact [our ESI Specialist](#) or review our [ESI factsheet](#) (87K [PDF](#) file).

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[ESI Intro](#) | [Map Anatomy](#) | [ESI Exercise](#) | [Samples and References](#) | [Atlas Status](#)

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Revised: January 14, 2005

Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

[Email Our Webmaster](#)

[ESI Maps](#) / ESI Samples and References

## ESI Samples and References

ESI maps are available in [six different format types](#). The samples below are from an ESI atlas in PDF format, one of the six types. Some of the other documents below also are PDF files. Check our [PDF Page](#) to learn how to work with PDF files.

### Sample ESI Products

The sample files below are all part of the Southern California ESI Atlas, which has been converted to PDF format for distribution on a CD-ROM (check our [Product Ordering](#) page to learn how to order the California ESI atlas, and other ESI atlases).

- [Southern California ESI Atlas Page - San Diego](#) (558K PDF file) An example ESI map of San Diego Bay and vicinity. (webposted 10/19/97)
- [Southern California ESI Atlas - Introduction](#) (394K PDF file) The introduction to the ESI Atlas for Southern California. It contains background information about shoreline habitat ranking and sensitive biological resources, species lists, and a description of Southern California shoreline habitat types. (webposted 10/19/97)
- [Southern California ESI Atlas Legend](#) (225K PDF file) Legend showing the symbols and colors used on ESI maps to designate shoreline habitat rankings, human-use resources, and sensitive biological resources. (webposted 10/19/97)
- [Metadata for the Southern California ESI Atlas](#) Identifying information (termed metadata) describing the Southern California ESI Atlas. (updated 7/3/01)

### ESI References

- [ESI Guidelines](#) Report describing the ESI mapping standards and how to implement them, as well as the rationale for developing data presentation standards.
- [Status of Our ESI Atlases](#) Which ESI atlases are available, in which print and electronic formats.
- [ESI Metadata Files](#) Metadata files describing ESI atlases (first webposted 7/31/01).
- [ESI Format Types](#) Brief descriptions of each of the six formats for ESI documents.
- [Biological Resources Table](#) Biological resources shown on ESI maps.
- [Complete ESI Species List](#) (124K PDF file) List of sensitive species shown on ESI maps (new version webposted 3/1/02).
- [Human-Use Resources Table](#) Human-use resources shown on ESI maps.
- [Biological Resource Symbols](#) ESI symbols for sensitive biological resources.
- [Human-Use Resource Symbols](#) ESI symbols for sensitive human-use resources.
- [Desktop GIS Mapping](#) (56K PDF file) Report describing how and why an ESI dataset for desktop GIS users was developed. (webposted 10/30/97)
- [Characteristic Coastal Habitats: Choosing Spill Response Alternatives](#) A job aid for shoreline cleanup decision-making; includes sketches of ESI shoreline types. (webposted 3/15/01)
- [ESI factsheet](#) (87K PDF file) Basic information and list of available atlases. (webposted 8/6/01)

### Ordering Information

[Ordering Products](#) An explanation of how to order print and electronic ESI maps, atlases, and data, and order forms to print out and use.

## Related Sites

[National Ocean Service \(NOS\) MapFinder](#) Low-resolution ESI maps in GIF format are available for some U.S. locations through this online map archive. **To search for an ESI map image:** (1) on the MapFinder home page, click "Search for Maps." (2) On the MapFinder Search Page, click the "ESI Maps" checkbox, choose an island or state, then press Go. (3) On the next page, click the List Products button, then click the map. You'll see a list of ESI maps for the state you selected. Click the "GIF" button next to any map name to view that map image ([which you can download](#)). **To obtain information about sensitive species** associated with an ESI map or atlas, go to Mapfinder's [Atlas Descriptive Files](#) section, then click the "Seasonal Table of Living Resources" link for the map atlas containing the map(s) you're interested in.

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[ESI Intro](#) | [Map Anatomy](#) | [ESI Exercise](#) | [Samples and References](#) | [Atlas Status](#)

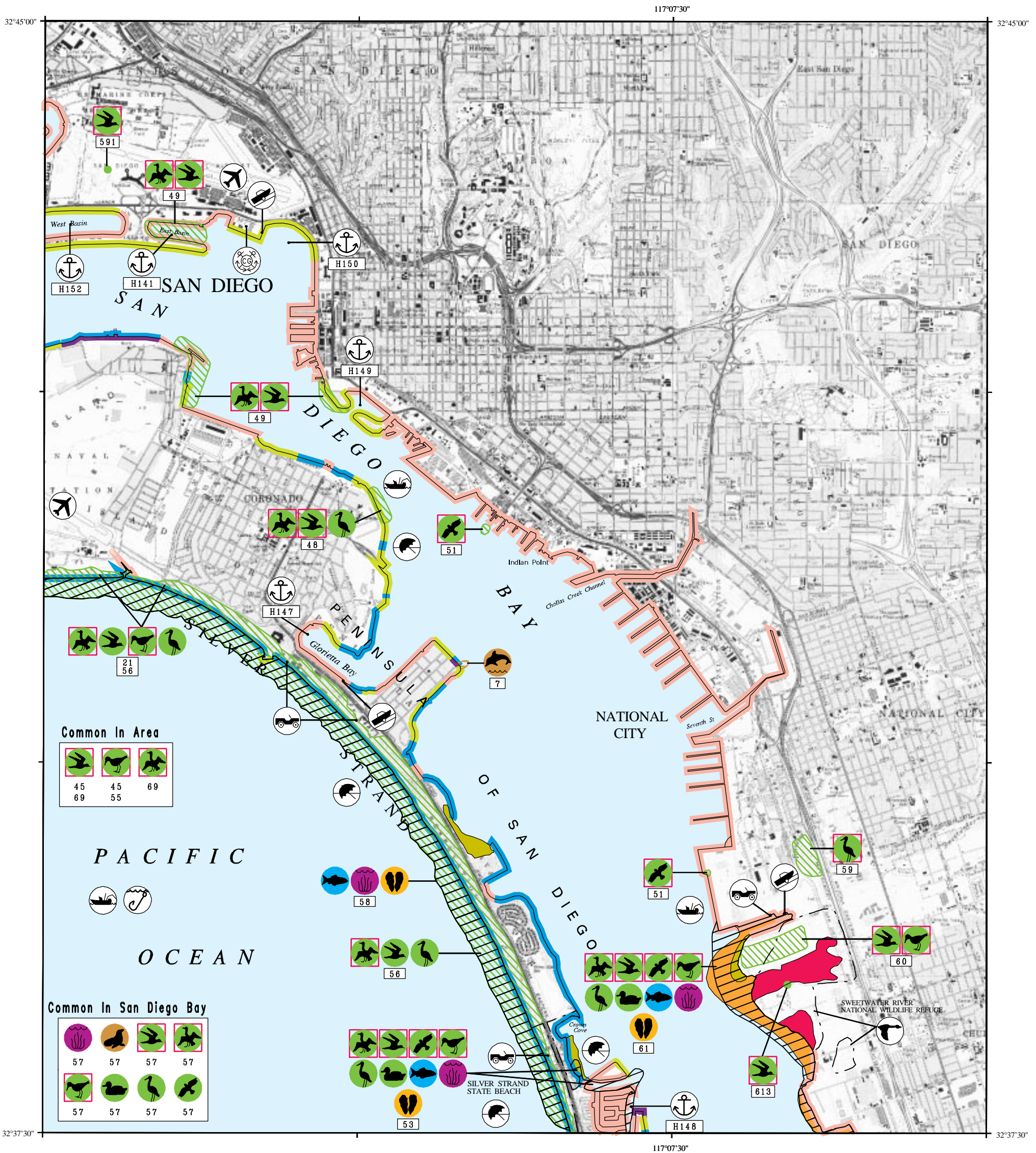
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Office of Response and Restoration, National Ocean Service, National Oceanic and Atmospheric Administration

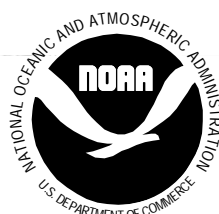
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# ENVIRONMENTAL SENSITIVITY INDEX MAP



Office of  
OIL SPILL PREVENTION and RESPONSE  
California Department of Fish and Game

Prepared for



HAZARDOUS MATERIALS RESPONSE  
and ASSESSMENT DIVISION  
National Oceanic and Atmospheric Administration



SCALE 1:48000

1 5 0 1 KILOMETER

1 5 0 1 MILE

PUBLISHED: MARCH 1995

NATIONAL CITY, CALIF. (1975)  
POINT LOMA, CALIF. (1975)

SC-2

# Southern California - ESIMAP 2

## BIOLOGICAL RESOURCES:

**BIRD:**

RAR#	Species	S/F	T/E	Concen	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Laying	Hatching	Fledging
21	Western snowy plover	F	T		X	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP
45	California least tern	F	E	HIGH				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Western snowy plover	F	T	LOW	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
48	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	California least tern	F	E					X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
49	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	California least tern	F	E					X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
51	Peregrine falcon	F	E	LOW	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
53	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	California least tern	F	E	HIGH				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Peregrine falcon	F	E	LOW	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Raptors			LOW	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Shorebirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Waterfowl			HIGH	X	X						X	X	X	X	-	-	-	-	
	Western snowy plover	F	T	HIGH	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
55	Western snowy plover	F	T	HIGH	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
56	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
57	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	California least tern	F	E	HIGH				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Raptors			MED	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Shorebirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Waterfowl			HIGH	X	X						X	X	X	X	-	-	-	-	
	Western snowy plover	F	T	HIGH	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
59	Light-footed clapper rail	F	E	LOW	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
60	California least tern	F	E	HIGH				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Western snowy plover	F	T	HIGH	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
61	Brown pelican	F	E	HIGH	X	X	X	X	X	X	X	X	X	X	X	FEB-NOV	FEB-JUL	MAR-AUG	JUN-NOV	
	California least tern	F	E	HIGH				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Diving birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Peregrine falcon	F	E	LOW	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Raptors			MED	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Shorebirds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Wading birds			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Waterfowl			HIGH	X	X						X	X	X	X	-	-	-	-	
	Western snowy plover	F	T	HIGH	X	X	X	X	X	X	X	X	X	X	X	APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
69	Brown pelican	F	E		X	X	X	X	X	X	X	X	X	X	X	FEB-NOV	FEB-JUL	MAR-AUG	JUN-NOV	
	Diving birds				X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
	Gulls				X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
591	California least tern	F	E	342				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	
	Western gull			20	X	X	X	X	X	X	X	X	X	X	X	MAR-SEP	APR-JUN	MAY-JUL	JUL-SEP	
613	California least tern	F	E	26				X	X	X	X	X	X			APR-SEP	MAY-JUL	MAY-JUL	AUG-SEP	

**FISH:**

RAR#	Species	S/F	T/E	Concen	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Outmig.	Larvae/Juv
53	California halibut			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	
58	California grunion			MED			X	X	X	X	X	X	X			FEB-SEP	-	-	
61	California halibut			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	-	

**M\_MAMMAL:**

RAR#	Species	S/F	T/E	Concen	J	F	M	A	M	J	J	A	S	O	N	D	Mating	Calving	Pupping	Molting
7	Bottlenose dolphin			LOW											X	X	-	-	-	-
57	California sea lion			LOW	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-

**PLANT:**

RAR#	Species	S/F	T/E	Concen	J	F	M	A	M	J	J	A	S	O	N	D
53	Eelgrass			HIGH	X	X	X	X	X	X	X	X	X	X	X	
57	Eelgrass			HIGH	X	X	X	X	X	X	X	X	X	X	X	
58	Giant kelp			HIGH	X	X	X	X	X	X	X	X	X	X	X	
61	Eelgrass			HIGH	X	X	X	X	X	X	X	X	X	X	X	

**SHELLFISH:**

RAR#	Species	S/F	T/E	Concen	J	F	M	A	M	J	J	A	S	O	N	D	Spawning	Larvae
53	California jackknife clam			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	
	Gaper clam			LOW	X	X	X	X	X	X	X	X	X	X	X	-	FEB-APR	
	Pacific razor clam			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	
58	Pismo clam			LOW	X	X	X	X	X	X	X	X	X	X	X	-	JUN-SEP	
61	California jackknife clam			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	
	Gaper clam			MED	X	X	X	X	X	X	X	X	X	X	X	-	FEB-APR	
	Pacific razor clam			HIGH	X	X	X	X	X	X	X	X	X	X	X	-	-	

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## HUMAN USE RESOURCES:

**MARINA:**

RAR#	Name	Owner	Contact	Phone
H141	EAST BASIN MARINA			
H147	GLORIETTA BAY MARINA			619-435-5203
H148	CORONADA CAYS MARINA			619-557-5860
H149	MARINA			619-686-6340
H150	MARINA			619-291-3900
H152	MARINA			619-557-5860