Dataset Description	
Dataset Title	Estuarine Living Marine Resources: West Coast Regional Distribution and Abundance
Short Title	ELMR West Coast
Abstract	This is the West Coast regional component of NOAA's Estuarine Living Marine Resources (ELMR) Project, a national database of ecologically and economically important fishes and invertebrates in the Nation's estuaries. The distribution and relative abundance are depicted in a consistent format for 47 species of fishes and invertebrates, in 32 estuaries in coastal California, Oregon, and Washington State. Species were selected according to a set of criteria, which consider their commercial, recreational, and ecological value, as well as their utility as an indicator of environmental stress. For each species, five life stages are considered - adults, juveniles, larvae, spawning, and eggs - with some exceptions based on individual species life history. Each estuary is subdivided into one to three salinity zones (Tidal Fresh, Mixing, and Seawater). Relative abundance was ranked on a five-tier scale by month for each life stage of each species, in each salinity zone of each estuary. Details of the methods and resulting life history summaries for the West Coast ELMR component can be found in Monaco et al. (1990) and Emmett et al. (1991).
Purpose	Estuaries are among the most productive natural systems and are important nursery areas that provide food, refuge from predation, and valuable habitat for many species. In spite of the well documented importance of estuaries to fishes and invertebrates, few consistent and comprehensive data bases exist that allow examinations of relationships between estuarine species found in or among groups of estuaries. In 1985, NOAA launched the Estuarine Living Marine Resources (ELMR) Project to develop a consistent database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the Nation's estuaries. The project applied consistent data development methods to enable comparisons among species, specific life stages, and times of year within estuarine systems. The database is divided into five study regions - West Coast, Gulf of Mexico, Southeast, Mid-Atlantic, and North Atlantic. The Nationwide ELMR database now includes information for 153 species found in 122 estuaries and coastal bays. A series of reports have been published which summarize the methods and results of the ELMR Program. These include a National report (2000), regional data summary reports for the North Atlantic (1994), Mid-Atlantic (1994), Southeast (1991), Gulf of Mexico (1992), and West Coast (1990), and regional life history summary reports for the West Coast (1991) and Gulf of Mexico (1997). Copies of these reports are available free upon request, and some are available as pdf.
Methods	32 estuaries were selected for the ELMR West Coast Region from the National Estuarine Inventory (NEI) Data Atlas-Volume I (NOAA 1985). Data on the spatial and temporal distributions of species were compiled for each estuary, using salinity zones as a spatial framework. 47 species were selected based on the commercial value, recreational value, indicator of environmental stress, and ecological value. A data sheet was developed for each species in each estuary to facilitate the review and presentation of the information. Data compiled for each species/life stage included: (1) the salinity zone it occupies, (2) its monthly distribution in those zones, and (3) its relative abundance in those zones. The integrated quantitative and qualitative relative abundance estimates were then verified through an extensive review process utilizing expert knowledge and field experiences of fisheries scientists, managers, and field biologists. Process Date Range is 1985 - 2000. For a complete description of the methods and results see Monaco et al. 1990, Emmett et al. 1991, and Nelson et al. 2000.
Cited Publications	Monaco, M.E., D.M. Nelson, R.L. Emmett, and S.A. Hinton. 1990. Distribution and abundance of fishes and invertebrates in West Coast estuaries, Vol. I: Data summaries. ELMR Rep. No. 4. NOAA/NOS Strategic Assessment Branch, Rockville, MD. 232 p. https://repository.library.noaa.gov/view/noaa/2860 Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in West Coast estuaries, Vol. II: Species life history summaries. ELMR Rep. No. 8. NOAA/NOS SEA Division, Rockville, MD. 329 p. https://repository.library.noaa.gov/view/noaa/2871 Nelson, D.M., and M.E. Monaco. 2000. National overview and evolution of NOAA's Estuarine Living Marine Resources (ELMR) Program. NOAA Tech. Memo. NOS NCCOS CCMA-144. 60 p. https://repository.library.noaa.gov/view/noaa/1701 NOAA. 1985. National Estuarine Inventory - Data Atlas, Vol. I: Physical and Hydrologic Characteristics. NOAA/NOS Strategic Assessment Branch, Rockville MD, 103 p. https://www.greateratlantic.fisheries.noaa.gov/habitat/publications/national_estuarine_inventory_-_ne_region1.pdf

	Nelson, D. M. and US DOC; NOAA; National Ocean Service (2015). Estuarine Salinity Zones in US East Coast, Gulf of Mexico, and US West Coast from 1999-01-01 to 1999-12-31 (NCEI Accession 0127396). Version 1.1. NOAA National Centers for Environmental Information. Dataset. https://data.nodc.noaa.gov/cgi-bin/iso?id=gov.noaa.nodc:0127396
Webpage	Estuarine Species Database for the NOAA Estuarine Living Marine Resources Program https://coastalscience.noaa.gov/projects/detail?key=107
Web Services	Estuarine Living Marine Resources Database (ELMR) https://products.coastalscience.noaa.gov/elmr/

People & Projects	
Principal Investigator	David Moe Nelson david.moe.nelson@noaa.gov US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
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Primary Point of Contact	David Moe nelson david.moe.nelson@noaa.gov US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
Collaborators	Robert Emmett - US DOC; NOAA; NMFS; Northwest Fisheries Science Center Susan Hinton - US DOC; NOAA; NMFS; Northwest Fisheries Science Center The success of the ELMR Project West Coast Component is due to several years of work by Robert L. Emmett and Susan Hinton at the NOAA/NMFS NWFSC Lab in Hammond, OR, together with the team at NOAA Headquarters. Credit is also due to the 91 individuals at 26 organizations who helped compile and review the species distribution, relative abundance, and life history information.
Author List	Nelson, David Moe; Monaco, Mark; Emmett, Robert; Hinton, Susan
Funding Agency	US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
Partner Entity	[none]
Projects	NCCOS Project #107, "Estuarine Species Database for the NOAA Estuarine Living Marine Resources Program"

Dates, Locations, and Keywords	
Start Date	1985-01-01
End Date	1990-01-01
Northern Boundary	49.0000
Southern Boundary	32.0000
Western Boundary	-125.0000
Eastern Boundary	-117.0000
Sea Areas or Regions	West Coast
Marine Protected Areas	South Slough National Estuarine Research Reserve (Oregon) San Francisco Bay National Estuarine Research Reserve (California) Elkhorn Slough National Estuarine Research Reserve (California) Tijuana River National Estuarine Research Reserve (California) Point Reyes National Seashore (California)
NOAA Ships	[none]
Other Ships or Platforms	[none]
NCCOS Research Priorities	Marine Spatial Ecology (MSE)
NCCOS Research Topics	Ecological/Biological Characterization
NCCOS Regions	West Coast
U.S. States and Territories	California, Oregon, Washington
NCCOS Geographic Areas	Estuaries
NCCOS Research Data Types	Derived Data Product
ISO Topic Categories	Oceans, inlandWaters, biota

Dataset Documentation:
ELMR West Coast

Data File Description	
File Name *(Required)*	ELMR_West-Coast_3-zone.csv
File Format *(Required)*	CSV
File Size *(Required)*	1.8 MB
Parameters or Variables	Relative Abundance
Property Type	Calculated
Units	Relative abundance ranking on a scale of 0 to 5
Observation Category	model output
Sampling Instrument	documentation only – no instrument type
Sampling and Analyzing Method	A data sheet was developed for each species in each estuary to facilitate the review and presentation of the information. Data compiled for each species/life stage included: (1) the salinity zone(s) it occupies (Tidal Fresh, Mixing, Seawater), (2) its temporal distribution in those zones by month (Jan-Dec), and (3) its relative abundance in those zones. Relative abundance values are ranked as 0 = not present, n = no information available, 2 = rare, 3 = common, 4 = abundant, and 5 = highly abundant. The abundance of a species life stage was considered relative to that of the same life stage of other "similar" species within a "guild", i.e. with similar life modes and sampling susceptibilities. These guilds are: Sessile Invertebrates, Shrimps and Squids, Large Crustaceans, Shallow Water Fishes, Pelagic Fishes, and Demersal Fishes. The draft relative abundance ranking were then verified through an extensive review process utilizing expert knowledge and field experiences of fisheries scientists, managers, and field biologists. The West Coast ELMR project was launched in 1985, and results published in 1990. For a complete description of the methods and results see Monaco et al. 1990 or Nelson et al. 2000.
Data Quality Method	The quality and quantity of available data vary by species, life stage, and estuary. In general, data quality is best for well-studied, commercially- and recreationally-harvested species. Data quality regarding salinity zone boundaries may be affected by factors such as variations in freshwater inflow, wind, and tides. The qualitative nature of distributional data precludes statistical comparisons of species abundances. Data reliability was ranked using the following categories and criteria: (1) Highly certain: Substantial sampling data are available, and distribution, behavior, and preferred habitats are well documented within an estuary. (2) Moderately certain: Some sampling data are available for an estuary, and distribution, preferred habitat, and behavior are well documented in similar estuaries. 3) Reasonable inference: Little or no site sampling data are available, but information on distributions, ecology, and preferred habitats are documented in similar estuaries. These rankings of data reliability for each species and estuary are reported in the DATA_RELIABILITY column, and in Table 4 of the ELMR West Coast Report (Monaco et al. 1990)

Data Dictionary				
Variable Name	**Variable Label**	**Required**	**Format**	**Description**
ESTUARY_NAME	ESTUARY_NAME	yes	Char (30)	Commonly used name of each of the 32 West Coast estuaries in this data set (e.g. PUGET SOUND).
SPECIES_COMMON_NAME	SPECIES_COMMON_NAME	yes	Char (90)	Commonly used name of each of the 47 species in this data set (e.g. COHO SALMON)
LIFE_STAGE	LIFE_STAGE	yes	Char (90)	One of the five typical life stages: ADULT, SPAWNING, JUVENILE, LARVAE, and EGGS. There are a few exceptions to these defined life stages for certain species (e.g. MATING for DUNGENESS CRAB, PARTURITION for LEOPARD SHARK and SHINER PERCH)
SALINITY_ZONE	SALINITY_ZONE	yes	Char (90)	Waters within each estuary are subdivided as a three-zone salinity scheme, based on annual-averaged salinity from head-of-tide to the mouth of the estuary. The three salinity zones are Tidal Fresh (0-0.5 ppt),Mixing (0.5-25 ppt), and Seawater (>25 ppt). Note that some estuaries do not contain all three zones, e.g. Southern California estuaries lack Tidal Fresh and Mixing Zones because of low freshwater inflow.
JANUARY	JAN	yes	Char (1)	Relative abundance ranking (0-5)in the month of January
FEBRUARY	FEB	yes	Char (1)	Relative abundance ranking (0-5)in the month of February
MARCH	MAR	yes	Char (1)	Relative abundance ranking (0-5)in the month of March
APRIL	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of April
MAY	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of May
JUNE	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of June
JULY	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of July
AUGUST	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of August
SEPTEMBER	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of September
OCTOBER	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of October
NOVEMBER	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of November
DECEMBER	APR	yes	Char (1)	Relative abundance ranking (0-5)in the month of December
MAXIMUM	MAX	yes	Char (1)	Maximum relative abundance value 0-5)across all twelve months (JAN-DEC)
DATA_RELIABILITY	DATA_RELIABILITY	yes	Char (90)	Data Reliability Ranking (Highly Certain, Moderately Certain, or Reasonable Inference)
NOTES	NOTES	no	Char (90)	Explanatory notes for some species