Package: deltamapr (via r-universe)

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Title Spatial Data for the Bay-Delta

Version 1.0.1

Description Data package of useful spatial data for the Bay-Delta.

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RemoteUrl https://github.com/InteragencyEcologicalProgram/deltamapr

RemoteRef HEAD

RemoteSha fe34697b3d1aaa2945bbfc647582a19e251abf67

Contents

`deltamapr` *deltamapr: A data package for spatial data relevant to the upper San Francisco Estuary*

Description

This package contains a number of spatial datasets in sf format

Prefixes

Prefixes to data object names are used to denote the data type.

R Regions. Sets of regions, strata, or subregions.

WW Waterways. These are shapefiles of water coverage.

H Habitats. These are shapefiles with information on habitat types or environment.

P Points. These are shapefiles with information on long-term monitoring sampling locations.

Author(s)

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`H_CARI_streams` *California Aquatic Resources Inventory streams*

Description

Stream data from the California Aquatic Resources Inventory (CARI), cut to only retain feature that touch a 5km buffer around the Bay-Delta (as defined by the `WW_Delta` dataset).

Usage

```
H_CARI_streams
```

Format

a sf tibble with 55,522 rows and 16 columns.

gid a placeholder attribute for EcoAtlas.org (unused).

name The name of a particular wetland feature. (e.g. Pajaro River).

orig_class Original classification of the wetland in the source dataset. Source datasets (e.g. NWI, BAARI) use different classification systems. The 'orig_class' field preserves that information.

source_dat a description of the imagery or other primary data source from which the wetland feature was identified and mapped.

clickcode An alphanumeric code for the wetland classification. Clickcode values are undergoing revision and will be updated in a future release of CARI.

clicklabel a detailed description of a feature's wetland type. Clicklabel is the most detailed classification provided by CARI. Original classifications from component datasets (see 'orig_class" above) are translated or "crosswalked" into CARI's classification system. Clicklabel values include: "Fluvial Natural", "Fluvial Unnatural", "Tidal Natural", and "Tidal Unnatural".

legheader In EcoAtlas.org, 'legheader' is the value that appears in the legend heading. "Drainage Features" is the only value for legheader..

legcode a 1 or 2 letter code identifying whether the major stream class has tidal influence (TR) or not (R), associated with the 'leglabellevel2' field. Provides less detail than 'clickcode'.

leglabel Common terminology for a feature's wetland type. In EcoAtlas.org, Leglabel is the value that appears in the legend, when you click on a particular feature to identify it, and in analyses of wetland area generated by EcoAtlas' Landscape Profile tool. Leglabel values include:"Fluvial" and "Tidal".

dataset_org the agency or organization that originally mapped the wetland feature.

orig_datas the original dataset (and data publication date if known) that was integrated into CARI.

ReleaseDate The date that a particular feature was integrated into the CARI dataset, including updated versions of a particular feature.

lastupdate The date that a particular feature was updated.

CARI_id Unique id for that CARI feature.

Shape_Length Length of feature in internal units.

Shape Geometry column.

Credit

This dataset was created by the San Francisco Estuary Institute and is available (along with full metadata) here.

H_CARI_wetlands *California Aquatic Resources Inventory wetlands*

Description

Wetlands habitat data from the California Aquatic Resources Inventory (CARI), cut to only retain feature that touch a 5km buffer around the Bay-Delta (as defined by the WW_Delta dataset).

Usage

```
H_CARI_wetlands
```

Format

a sf tibble with 37,135 rows and 18 columns.

orig_class Original classification of the wetland in the source dataset. Source datasets (e.g. NWI, BAARI) use different classification systems. The 'orig_class' field preserves that information.

name The name of a particular wetland feature. (e.g. Alpine Lake).

globalid A placeholder attribute for EcoAtlas.org (unused).

source_data A description of the imagery or other primary data source from which the wetland feature was identified and mapped.

organization The agency or organization that originally mapped the wetland feature.

orig_dataset The original dataset (and data publication date if known) that was integrated into CARI.

lastupdate The date that a particular feature was updated.

clickcode An alphanumeric code for the wetland classification. Clickcode values are undergoing revision and will be updated in a future release of CARI.

clicklabel A detailed description of a feature's wetland type. Clicklabel is the most detailed classification provided by CARI. Original classifications from component datasets (see 'orig_class" above) are translated or "crosswalked" into CARI's classification system. While CARI's component datasets may provide more detail for certain types of wetlands, CARI provides a single statewide classification for wetland types. E.g. "Depressional Perennial Natural Emergent". Major classes within the 'clicklabel' field include: wetlands and (deep) open water. Classes and types include: depessions, playas, estuarine, lacustrine. marine, riverine, lagoon, and slope.

legcode a 1-3 letter code signifying the major wetland class, associated with the 'leglabellevel2' field. Provides less detail than 'clickcode'.

leglabellevel1 Common terminology for a feature's wetland type. In EcoAtlas.org, Leglabellevel1 is the value that appears in the legend, when you click on a particular feature to identify it, and in analyses of wetland area generated by EcoAtlas' Landscape Profile tool.

leglabellvel2 Major classification (less detailed) of the wetland classification provided by the 'clicklabel' field. E.g. "Depressional".

legend_headings In EcoAtlas.org, 'legend_headings' is the value that appears in the legend heading.

ReleaseDate the date that a particular feature was integrated into the CARI dataset, including updated versions of a particular feature.

CARI_id Unique id for that CARI feature.

Shape_Length Length of feature in internal units.

Shape_Area Area of feature in internal units squared.

Shape Geometry column.

Credit

This dataset was created by the San Francisco Estuary Institute and is available (along with full metadata) here.

`P_RKI` *P_RKI*

Description

Points showing official river kilometers as used by the CA Department of Water Resources for major bays, sloughs, and rivers in the San Francisco Estuary.

Usage

```
P_RKI
```

Format

a sf tibble with 2095 rows and 5 columns.

NAME Name of Water Body.

WaterBodyType Type of water body, either River, Canal, Slough, Cut, Island, Bay, Channel, Creek, Lake, Shore, Aqueduct, or Cuttoff.

ID ID given to each point, a concatenation of the abbreviated water body name and river kilometer.

RKI River Kilometer, as measured from mouth of the water body.

geometry Shapefile point coordinates.

P_Stations *P_Stations*

Description

Shapefile with regular sampling locations for most IEP surveys used between 2015 and 2021

Usage

```
P_Stations
```

Format

a sf tibble with 954 rows and 7 columns.

Station Code used for station.

StationName Full name of station (if applicable).

Latitude Latitude in decimal degrees, WGS84.

Longitude Longitude in decimal degrees, WGS84.

Parameter Type of data collected.

Source Name of sampling program.

geometry Shapefile point coordinates.

P_X2 *P_X2*

Description

Points showing official river kilometers as used by the CA Department of Water Resources to describe X2 - the distance from the Golden Gate where the bottom salinity is 2 PSU. This data is a subset of the P_RKI dataset, filtered to only include the Sacramenot River RKI values, which are used for X2.

Usage

```
P_X2
```

Format

a sf tibble with 2095 rows and 5 columns.

NAME Name of Water Body - Sacramento River.

WaterBodyType X2

RKI River Kilometer, as measured from the Golden Gate.

geometry Shapefile point coordinates.

R_Delta *Legal Delta Boundary*

Description

Boundary of the Legal Delta

Usage

```
R_Delta
```

Format

a sf tibble with 1 row and 9 columns.

OBJECTID OBJECTID

comments comments

Source Source

Date_Recor Date_Recor

Edited_By Edited_By

Date_Data_ Date_Data_

GlobalID GlobalID

Shape__Are Shape__Are

Shape__Len Shape__Len

geometry Shapefile polygon coordinates.

Credit

This shapefile was published by the California Department of Water Resources and can be found along with metadata in the data publication.

R_DSIBM *Subregions from the Delta Smelt Individual Based Model*

Description

Subregions from the Delta Smelt Individual Based Model

Usage

```
R_DSIBM
```

Format

a sf tibble with 41 rows and 4 columns.

TNMID TNMID

METASOURCE METASOURCE

SOURCEDATA SOURCEDATA

SOURCEORIG SOURCEORIG

SOURCEFEAT SOURCEFEAT

LOADDATE LOADDATE

GNIS_ID GNIS_ID

SubRegion SubRegion.

AREAACRES AREAACRES.

AREASQKM AREASQKM

STATES STATES

HUC10 HUC10

HUTYPE HUTYPE

HUMOD HUMOD

GLOBALID GLOBALID

SHAPE_Leng SHAPE_Leng

SHAPE_Area SHAPE_Area

geometry Shapefile polygon coordinates.

Credit

This shapefile was created by Flow West, Rose et al. 2013, and Peterson et al. 2019. Peterson, J., E. McCreless, A. Duarte, S. Hamilton, and J. Medellin-Azuara. 2019. Structured Decision Making for Scientific Management in the San Francisco Bay-Delta. Draft progress report, US Bureau of Reclamation, Sacramento, CA. Data available on: https://github.com/CSAMP/delta-secchi-temperature-data. Rose, K. A., W. J. Kimmerer, K. P. Edwards, and W. A. Bennett. 2013. Individual-Based Modeling of Delta Smelt Population Dynamics in the Upper San Francisco Estuary: I. Model Description and Baseline Results. Transactions of the American Fisheries Society 142:1238–1259.

`R_EDSM_Regions` *EDSM Regions*

Description

Region polygons from the Enhanced Delta Smelt Monitoring Program

Usage

```
R_EDSM_Regions_1617P1

R_EDSM_Regions_1718P1

R_EDSM_Regions_18P23

R_EDSM_Regions_1819P1

R_EDSM_Regions_19P3
```

Format

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

Naming

Files are named with the year(s) then phase(s). So `R_EDSM_Regions_1617P1` refers to the 2016-2017 Phase 1 regions, while `R_EDSM_Regions_18P23` refers to the 2018 Phase 2 and Phase 3 regions.

Duplication

Sometimes the same regions were used in multiple years. In this case, only the first year that set of regions appeared is made available and all years and phases that dataset applies to are listed below.

R_EDSM_Regions_1617P1 Equivalent to 2017 Phases 2&3 Regions

R_EDSM_Regions_18P23 Equivalent to 2019 Phase 2 and 2020 Phase 2-3 Regions

R_EDSM_Regions_1819P1 Equivalent to 2019-2020 Phase 1 Regions

Credit

These datasets were created by the United States Fish and Wildlife Service for the Enhanced Delta Smelt Monitoring Program.

See Also

`R_EDSM_Strata`, `R_EDSM_Subregions`

R_EDSM_Strata *EDSM Strata*

Description

Strata polygons from the Enhanced Delta Smelt Monitoring Program

Usage

```
R_EDSM_Strata_1617P1

R_EDSM_Strata_17P2

R_EDSM_Strata_17P3

R_EDSM_Strata_1718P1

R_EDSM_Strata_18P23

R_EDSM_Strata_1819P1

R_EDSM_Strata_19P3
```

Format

An object of class `sf` (inherits from `data.frame`) with 5 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 4 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 8 rows and 5 columns.

An object of class `sf` (inherits from `data.frame`) with 10 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 6 rows and 2 columns.

An object of class `sf` (inherits from `data.frame`) with 8 rows and 3 columns.

An object of class `sf` (inherits from `data.frame`) with 7 rows and 3 columns.

Naming

Files are named with the year(s) then phase(s). So `R_EDSM_Strata_1617P1` refers to the 2016-2017 Phase 1 strata, while `R_EDSM_Strata_18P23` refers to the 2018 Phase 2 and Phase 3 strata.

Duplication

Sometimes the same strata were used in multiple years. In this case, only the first year that set of strata appeared is made available and all years and phases that dataset applies to are listed below.

R_EDSM_Strata_18P23 Equivalent to 2019 Phase 2 and 2020 Phase 2-3 Strata

R_EDSM_Strata_1819P1 Equivalent to 2019-2020 Phase 1 Strata

Credit

These datasets were created by the United States Fish and Wildlife Service for the Enhanced Delta Smelt Monitoring Program.

See Also

R_EDSM_Regions, R_EDSM_Subregions

R_EDSM_Subregions *EDSM Subregions*

Description

Strata polygons from the Enhanced Delta Smelt Monitoring Program

Usage

```
R_EDSM_Subregions_1617P1

R_EDSM_Subregions_17P2

R_EDSM_Subregions_1718P1

R_EDSM_Subregions_18P23

R_EDSM_Subregions_1819P1

R_EDSM_Subregions_19P3
```

Format

An object of class sf (inherits from data.frame) with 29 rows and 11 columns.

An object of class sf (inherits from data.frame) with 29 rows and 11 columns.

An object of class sf (inherits from data.frame) with 32 rows and 4 columns.

An object of class sf (inherits from data.frame) with 14 rows and 6 columns.

An object of class sf (inherits from data.frame) with 26 rows and 4 columns.

An object of class sf (inherits from data.frame) with 18 rows and 4 columns.

Naming

Files are named with the year(s) then phase(s). So R_EDSM_Subregions_1617P1 refers to the 2016-2017 Phase 1 subregions, while R_EDSM_Subregions_18P23 refers to the 2018 Phase 2 and Phase 3 subregions.

Duplication

Sometimes the same subregions were used in multiple years. In this case, only the first year that set of subregions appeared is made available and all years and phases that dataset applies to are listed below.

R_EDSM_Subregions_1617P1 Equivalent to 2017 Phase 3 Subregions

R_EDSM_Subregions_18P23 Equivalent to 2019 Phase 2 and 2020 Phase 2-3 Subregions

R_EDSM_Subregions_1819P1 Equivalent to 2019-2020 Phase 1 Subregions

Credit

These datasets were created by the United States Fish and Wildlife Service for the Enhanced Delta Smelt Monitoring Program.

See Also

R_EDSM_Regions, R_EDSM_Strata, R_EDSM_Subregions_Mahardja, R_EDSM_Subregions_Mahardja_FLOAT

R_EDSM_Subregions_Mahardja

Bay-Delta regions

Description

EDSM regions modified by Brian Mahardja (USFWS)

Usage

```
R_EDSM_Subregions_Mahardja
```

Format

a sf tibble with 41 rows and 4 columns.

Region Region

SubRegion SubRegion.

SQM Area of subregion in square miles.

geometry Shapefile polygon coordinates.

Credit

This shapefile was created by the United States Fish and Wildlife Service for the Enhanced Delta Smelt Monitoring Program and modified by Brian Mahardja. This version was created in 2019 by taking most complete EDSM subregions and adding 3 regions downstream: San Pablo Bay, San Francisco Bay, and South Bay. Note that the delineations of these new 3 bay regions were drawn somewhat arbitrarily. This version also included minor fixes of the original EDSM subregion. For example, the lower Ship Channel subregion originally extended west to include the Yolo Bypass Toe Drain and was moved to the east to include only the ship channel.

See Also

R_EDSM_Subregions, R_EDSM_Regions, R_EDSM_Strata, R_EDSM_Subregions_Mahardja_FLOAT

R_EDSM_Subregions_Mahardja_FLOAT

Bay-Delta regions

Description

A modified version of R_EDSM_Subregions_Mahardja with the "Georgiana Slough" and "Sacramento River near Ryde" SubRegions merged, retaining the "Sacramento River near Ryde" name. This version was built for the IEP FLOAT/Drought MAST analyses in 2021

Usage

```
R_EDSM_Subregions_Mahardja_FLOAT
```

Format

a sf tibble with 40 rows and 4 columns.

Region Region

SubRegion SubRegion.

SQM Area of subregion in square miles.

geometry Shapefile polygon coordinates.

Credit

This shapefile was created by the United States Fish and Wildlife Service for the Enhanced Delta Smelt Monitoring Program, modified by Brian Mahardja, then modified by Sam Bashevkin. This version was created for use by the IEP FLOAT/Drought MAST analyses in 2021. Starting with R_EDSM_Subregions_Mahardja, the "Georgiana Slough" and "Sacramento River near Ryde" SubRegions were merged, retaining the "Sacramento River near Ryde" name.

See Also

R_EDSM_Subregions, R_EDSM_Regions, R_EDSM_Strata, R_EDSM_Subregions_Mahardja

R_Suisun *Suisun Marsh Boundary*

Description

Boundary of Suisun Marsh

Usage

```
R_Suisun
```

Format

a sf tibble with 1 row and 9 columns.

OBJECTID OBJECTID

LOCATION LOCATION

GlobalID GlobalID

Shape__Are Shape__Are

Shape__Len Shape__Len

geometry Shapefile polygon coordinates.

Credit

This shapefile was published by the California Department of Water Resources and can be found along with metadata in the data publication.

WW_Canals *Canals*

Description

Shapefile of canals run by the State Water Project, Bureau of Reclamation, and local water agencies.

Usage

```
WW_Canals
```

Format

a sf tibble with 509 rows and 7 columns.

Name Name of canal or aquaduct

Operator Agency responsible for canal or aquaduct

Conv_Type Type of conveyance. Either 'pipeline', 'tunnel', 'canal', or 'pool'. Only available for SWP and Reclamation datasets.

Conv_Sub Name of subdivision of canal (SWP only)

Comments Comments or additional information provided about the data

Shape_Leng Shape Length

geometry Shapefile polygon coordinates.

Credit

This shapefile was produced by the California Department of Water Resources.

WW_DBW *DBW waterways*

Description

Shapefile of waterways in the San Francisco Estuary extending into the Southern Central Valley from the California State Parks Division of Boating and Waterways.

Usage

```
WW_DBW
```

Format

a sf tibble with 321 rows and 16 columns.

Credit

This shapefile was produced by the California State Parks Division of Boating and Waterways.

WW_Delta *Delta waterways*

Description

Shapefile of delta waterways

Usage

```
WW_Delta
```

Format

a sf tibble with 282 rows and 10 columns.

AREA Area.

PERIMETER Perimeter.

HYDRO_POLY HYDRO_POLY.

HYDRO_PO_1 HYDRO_PO_1.

HYDRO_24K_ HYDRO_24K_.

HNAME HNAME.

Shape_Leng Shape_Length

Shape_Area Shape_Area.

geometry Shapefile polygon coordinates.

Credit

This shapefile was supplied by the California Department of Fish and Wildlife and created by the USBR MPGIS Service Center via digitizing from 7.5 minute USGS quat sheets.

WW_Watershed *Full watershed waterways*

Description

Shapefile of waterways in the San Francisco Estuary and its watershed

Usage

```
WW_Watershed
```

Format

a sf tibble with 439 rows and 28 columns.

Credit

This shapefile includes data from CH2M Hill, and Wetland and Water Resources, CDFG Ecosystem Restoration Program as a part of ERP Stage 2 conservation strategy, and Dan Gillenwater.

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