

Package: LTMRdata (via r-universe)

August 27, 2024

Title Data for the IEP Long Term Monitoring Survey Review

Version 2.1.0

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Description Integration of the Fall Midwater Trawl, Bay Study, and Suisun Marsh Fish Study data for use in the IEP long-term monitoring survey review.

License GPL-3

Encoding UTF-8

LazyData true

LazyDataCompression xz

Depends R (>= 3.5.0)

URL <https://github.com/sbashevkin/LTMRdata>

BugReports <https://github.com/sbashevkin/LTMRdata/issues>

Suggests archive, dbplyr, odbc, ps, readr, lubridate, readxl, wql, testthat, covr, stringr, tibble, spelling, deltafish (>= 1.0.0)

RoxygenNote 7.3.2

Imports dplyr, tidyselect, magrittr, rlang, tidyr, utils

Language en-US

Remotes delta-stewardship-council/deltafish

Repository <https://sbashevkin.r-universe.dev>

RemoteUrl <https://github.com/sbashevkin/LTMRdata>

RemoteRef HEAD

RemoteSha 4d7b76f4900c21220ac30de1e8eac12a8ef918b8

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Baystudy

Bay study dataset

Description

California Department of Fish and Wildlife Bay Study data.

Usage

Baystudy

Format

a tibble with 805,858 rows and 23 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude May not be accurate, see details.

Longitude May not be accurate, see details.

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

Secchi Secchi depth (cm).

Tow_duration Duration of tow (minutes).

Tow_area Area towed (m^2).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Taxa Scientific name.

Length Fork length, total length if there's no fork or heterocercal tail (sturgeon, shark). Bat Ray wing widths starting around 1989-1992 to present. (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Notes_tow Notes or comments on the trawl.

@details Some station locations have moved over time due to shoals filling in, trees, etc.

Baystudy_measured_lengths

Baystudy measured lengths

Description

Only measured lengths from the Baystudy data

Usage

Baystudy_measured_lengths

Format

a tibble with 802,128 rows and 5 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Size_group When two different size groups of a species are collected, Bay study may split them into size groups and subsample from each size group separately for fish to measure.

Length Fork length, total length if there's no fork or heterocercal tail (sturgeon, shark). Bat Ray wing widths starting around 1989-1992 to present. (mm).

Count Number of fish measured to this length.

data_integrate	<i>Integrate fish data</i>
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Description

Integrate datasets, add zeroes, divide into fish and survey tables, and export to csv and/or rda.

Usage

```
data_integrate(  
  data_path,  
  sources = c("Baystudy", "Suisun", "FMWT", "SKT", "DJFMP", "EDSM", "TMM", "SLS", "STN",  
             "Salvage"),  
  format = "rda",  
  write = TRUE,  
  quiet = FALSE  
)
```

Arguments

data_path	Path to the folder where you wish the csv/rda files to be saved.
sources	Character vector of data sources to include
format	Should the fish and survey tables be saved as a csv alone, a combined .rda file, or both? Defaults to 'rda' and other options are 'csv' or 'both'.
write	Logical. Should the files be written to disk, or would you just like them returned as an R object? Defaults to TRUE.
quiet	Logical. Set to TRUE if you wish to hide all status messages.

Value

Invisibly returns a list with the survey and fish tables.

Examples

```
## Not run:  
data_integrate(data_path=file.path("data-raw", "EDI", "data_objects"))  
  
## End(Not run)
```

DJFMP

DJFMP dataset

Description

US Fish and Wildlife Service Delta Juvenile Fish Monitoring Program data.

Usage

DJFMP

Format

a tibble with 2,248,199 rows and 19 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

Secchi Secchi depth (cm).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Details

Some station locations have moved over time due to shoals filling in, trees, etc. More metadata and information on methods are available [here](#).

EDSM

*EDSM dataset***Description**

US Fish and Wildlife Service Enhanced Delta Smelt Monitoring (EDSM) data.

Usage

EDSM

Format

a tibble with 190,055 rows and 20 number of variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Average of start and end Latitude.

Longitude Average of start and end Longitude.

Date Date sample was collected.

Datetime Date and time sample was collected.

Depth Bottom depth (m). Start depth as noted in survey.

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

Secchi Secchi depth (cm).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Taxa Scientific name.

Length Fish fork length from point of mouth to fork of the caudal fin.

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

@details Stations change randomly due to random stratified sampling. More metadata and information on methods are available [here](#).

FMWT

FMWT dataset

Description

California Department of Fish and Wildlife Fall Midwater Trawl data.

Usage

FMWT

Format

a tibble with 266,694 rows and 23 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

Secchi Secchi depth (cm).

Secchi_estimated Was Secchi depth estimated?

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Cable_length Length of cable released when net deployed (m).

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Details

More metadata and information on methods are available [here](#).

FMWT_measured_lengths *FMWT measured lengths*

Description

Only measured lengths from the FMWT data

Usage

FMWT_measured_lengths

Format

a tibble with 233,902 rows and 4 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Length Sampling survey (loosely corresponds to month).

Count Number of fish measured to this length.

Length_conversions *Length conversions*

Description

Intercepts and slopes for equations to convert Standard Length to Fork Length (or Total Length if no fork). Equations derived from the CDFW length-weight study (2005) and Jereme Gaeta, unpublished.

Usage

Length_conversions

Format

a tibble with 20 rows and 3 variables

Species Scientific name.

Intercept Intercept in the equation $FL = \text{Intercept} + \text{Slope} * SL$.

Slope Slope in the equation $FL = \text{Intercept} + \text{Slope} * SL$.

LTMRdata	<i>LTMRdata: A package for integrating long-term monitoring datasets for the IEP long-term monitoring program review.</i>
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Description

This package contains internal datasets and a function ([data_integrate](#)) to bind them all together.

Author(s)

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See Also

Useful links:

- <https://github.com/sbashevkin/LTMRdata>
- Report bugs at <https://github.com/sbashevkin/LTMRdata/issues>

Salvage	<i>Salvage dataset</i>
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Description

California Department of Fish and Wildlife Fish Salvage dataset.

Usage

Salvage

Format

a tibble with 2,602,069 rows and 15 variables

Source Name of source dataset.

Station State or federal facility buildings (of the SWP or CVP).

Latitude Latitude (decimal degrees) of the full facility.

Longitude Longitude (decimal degrees) of the full facility.

Date Date sample was collected.

Datetime Date and time sample was collected.

SampleID Unique sample identifier.

Method Sampling period (0000 = Normal count, 9999 = Second flush)

Tow_volume Daily export volume for the sampled facility(m^3).

Temp_surf Surface temperature in °C.

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm) or total length for species without a forked tail.

Count Estimated count for each sample, taxa, and length.

Notes_tow Comments or notes of the sampling period.

Length_NA_flag Why is the length NA?

Details

More metadata and information on methods are available [here](#).

Salvage_measured_lengths

Salvage measured lengths

Description

Only measured lengths from the Salvage data

Usage

Salvage_measured_lengths

Format

a tibble with 1,812,466 rows and 4 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm) or total length for species without a forked tail.

Count Number of fish measured to this length.

SKT	<i>SKT dataset</i>
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Description

California Department of Fish and Wildlife Spring Kodiak Trawl (SKT) data.

Usage

SKT

Format

a tibble with 42,909 rows and 22 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude of Station

Longitude Longitude of Station

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

TurbidityFNU Turbidity (FNU).

Secchi Secchi depth (cm).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Taxa Scientific name.

Length Fork length, total length if there's no fork or heterocercal tail (sturgeon, shark).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Details

More metadata and information on methods are available [here](#).

SKT_measured_lengths *SKT measured lengths*

Description

Only measured lengths from the SKT data

Usage

SKT_measured_lengths

Format

a tibble with 41,295 rows and 4 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Length Fork length, total length if there's no fork or heterocercal tail (sturgeon, shark).

Count Estimated count for each sample, taxa, and length.

SLS

SLS dataset

Description

California Department of Fish and Wildlife Smelt Larva Survey data.

Usage

SLS

Format

a tibble with 27,851 rows and 26 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.
Method Sampling method.
Tide Tidal stage.
Sal_surf Surface salinity.
Sal_bot Bottom salinity.
Temp_surf Surface temperature in °C.
Secchi Secchi depth (cm).
TurbidityNTU Turbidity (NTU).
TurbidityFNU Turbidity (FNU).
Tow_volume Volume towed (m^3).
Cable_length Length of cable released when net deployed (m).
Tow_duration Duration of tow (minutes).
Taxa Scientific name.
Length Fork length (mm).
Count Estimated count for each sample, taxa, and length.
Length_NA_flag Why is the length NA?
Notes_tow Notes or comments on the trawl.
Notes_flowmeter Notes or comments on the flowmeter reading.

Details

More metadata and information on methods are available [here](#).

Species	Species codes
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Description

Crosswalk table of species codes to common and scientific names

Usage

Species

Format

a tibble with 288 rows and 13 variables

ScientificName Scientific Name.
Baystudy_Code Bay Study code.
CommonName Common name.
USFWS_Code EDSM and DJFMP codes.

SKT_Code Spring Kodiak Trawl code.
STN_Code Summer Towntnet Survey code.
SMF_Code Suisun Marsh Fish Study code.
FMWT_Code Fall Midwater Trawl code.
TMM_Code 20-mm Survey code.
SLS_Code SLS Survey code.
Salvage_Code Salvage Survey code.
Lifestage Lifestage if specified.
Taxa Scientific name and life stage.

 STN

STN dataset

Description

California Department of Fish and Wildlife Summer Towntnet Survey (STN) data.

Usage

STN

Format

a tibble with 191,547 rows and 22 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (STN trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

Secchi Secchi depth (cm).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current.

Cable_length Length of cable released when net deployed (feet).

Taxa Scientific name.

Length Fork length from the most anterior part of the fish to the median caudal fin rays (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Details

More metadata and information on methods are available [here](#).

STN_measured_lengths *STN measured lengths*

Description

Only measured lengths from the STN data

Usage

STN_measured_lengths

Format

a tibble with 173,981 rows and 4 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Length Fork length from the most anterior part of the fish to the median caudal fin rays (mm).

Count Number of fish measured to this length.

Suisun *Suisun Marsh dataset*

Description

UC Davis Suisun Marsh Fish Study data.

Usage

Suisun

Format

a tibble with 202,676 rows and 21 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (Otter Trawl or Midwater Trawl).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

Secchi Secchi depth (cm).

Tow_duration Duration of tow (minutes).

Tow_area Area towed (m^2).

Taxa Scientific name.

Length Standard length for all species except sturgeon, which are fork length (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Notes_catch Notes or comments on the fish catch.

Notes_tow Notes or comments on the trawl.

Suisun_measured_lengths

Suisun measured lengths

Description

Only measured lengths from the Suisun data

Usage

Suisun_measured_lengths

Format

a tibble with 173,209 rows and 5 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Dead Was fish dead?

Length Standard length for all species except sturgeon, which are fork length (mm).

Count Number of fish measured to this length.

TMM

20mm dataset

Description

California Department of Fish and Wildlife 20-mm Survey data.

Usage

TMM

Format

a tibble with 355,228 rows and 23 variables

Source Name of source dataset.

Station Station where sample was collected.

Latitude Latitude (decimal degrees).

Longitude Longitude (decimal degrees).

Date Date sample was collected.

Datetime Date and time sample was collected.

Survey Survey number, roughly corresponding to month.

Depth Bottom depth (m).

SampleID Unique sample identifier.

Method Sampling method (20mm Net).

Tide Tidal stage.

Sal_surf Surface salinity.

Temp_surf Surface temperature in °C.

TurbidityNTU Turbidity (NTU).

TurbidityFNU Turbidity (FNU).

Secchi Secchi depth (cm).

Tow_volume Volume towed (m^3).

Tow_direction Tow direction relative to current. Not recorded but field is included here for consistency.

Cable_length Length of cable released when net deployed (m).

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm).

Count Estimated count for each sample, taxa, and length.

Length_NA_flag Why is the length NA?

Details

More metadata and information on methods are available [here](#).

TMM_measured_lengths *20mm measured lengths*

Description

Only measured lengths from the 20-mm Survey data

Usage

TMM_measured_lengths

Format

a tibble with 351,699 rows and 4 variables

SampleID Unique sample identifier.

Taxa Scientific name.

Length Fork length from tip of the snout to a point at the fork of the caudal fin (mm).

Count Number of fish measured to this length.

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