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Description

Characteristics of a sample of West African rivers.

Format

A data frame of 39 observations on the following 6 variables:

- **river** name of the river.
- **richness** fish species richness.
- **surface** surface area in $km^2$.
- **disch** mean annual discharge in $m^3$.
- **vegdiv** terrestrial vegetation diversity (Shannon's diversity index of vegetation in drainage).
- **forperc** percentage of drainage area covered by lowland rain forest.

Topic(s)

- Other

Source


Examples

```r
data(AfricanRivers)
str(AfricanRivers)
head(AfricanRivers)
```
Description

Ages and lengths of Araucanian Herring (\textit{Strangomera bentincki}) from Chilean waters.

Format

A data frame with the following 2 variables:

- **age** Age in years.
- **len** Total length (to nearest 0.5 cm).

Topic(s)

- Growth
- Seasonal Growth
- von Bertalanffy
- Somers model

Source


Examples

```r
data(AHerringChile)
str(AHerringChile)
head(AHerringChile)
plot(len~age,data=AHerringChile)
```

---

Description

Ages of Alewife \textit{(Alosa pseudoharengus)} assessed from otoliths and scales.
AnchovetaChile

Format

A data frame of 104 observations on the following 2 variables:

- **otoliths**  Age assigned from examination of otoliths
- **scales**  Age assigned from examination of scales

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source


Examples

data(AlewifelhI)
str(AlewifelhI)
head(AlewifelhI)
plot(scales~otoliths,data=AlewifelhI)
xtabs(~otoliths+scales,data=AlewifelhI)

AnchovetaChile

Ages and lengths of Anchoveta from Chilean waters.

Description

Ages (in months) and lengths of Anchoveta (*Engraulis ringens*) from central Chilean waters.

Format

A data frame with 207 observations of the following 3 variables:

- **age.mon**  Age in months.
- **tl.cm**  Total length (cm).
- **cohort**  Year-class.
Topic(s)

- Growth
- Seasonal Growth
- von Bertalanffy
- Somers model

Source

Directly from the authors of Cubillos, L.A., D.F. Arcosa, D.A. Bucareya, M.T. Canalesa. 2001. Seasonal growth of small pelagic fish off Talcahuano, Chile (37S, 73W): a consequence of their reproductive strategy to seasonal upwelling? Aquatic Living Resources, 14:115-124. Data were in Figure 9.

Examples

data(AnchovetaChile)
str(AnchovetaChile)
head(AnchovetaChile)
AnchovetaChile$age <- AnchovetaChile$age.mon/12
plot(t1.cm=age,data=AnchovetaChile)

BassFL Catch-at-age for Suwanee and Largemouth Bass.

Description

Catch-at-age for Suwanee (Micropterus notius) and Largemouth Bass (Micropterus salmoides) collected from several lakes in Florida, 2001-2002.

Format

A data frame with 39 observations on the following 5 variables.

- species Species of bass (Suwanee and Largemouth)
- loc Location (SantaFe, Wacissa, Withlacoochee, Ochlockonee)
- year Year (2001, 2002)
- num Number of fish captured
- age Age of fish at capture

Topic(s)

- Total mortality
- Catch curve
Source


Examples

```r
data(BassFL)
str(BassFL)
head(BassFL)
op <- par(mfrow=c(3,2),mar=c(3,3,2,1),mgp=c(1.75,0.5,0),tcl=-0.2,pch=19)
plot(log(num)-age,data=BassFL,subset=(loc=="SantaFe" & year==2001 & species="Suwanee"), ylim=c(0,max(log(num))),main="Suwanee, Santa Fe")
points(log(num)-age,data=BassFL,subset=(loc=="SantaFe" & year==2002 & species="Suwanee"),col="red")
legend("topright",legend=c("2001","2002"),col=c("black","red"),pch=19)
plot(log(num)-age,data=BassFL,subset=loc=="Wacissa" & year==2002 & species="Suwanee", ylim=c(0,max(log(num))),main="Suwanee, Wacissa")
plot(log(num)-age,data=BassFL,subset=loc=="Withlacoochee" & year==2002 & species="Suwanee", ylim=c(0,max(log(num))),main="Suwanee, Withlacoochee")
plot(log(num)-age,data=BassFL,subset=(loc=="SantaFe" & year==2001 & species="Largemouth"), ylim=c(0,max(log(num))),main="Largemouth, Santa Fe")
points(log(num)-age,data=BassFL,subset=(loc=="SantaFe" & year==2002 & species="Largemouth"), ylim=c(0,max(log(num))),main="Largemouth, Santa Fe")
legend("topright",legend=c("2001","2002"),col=c("black","red"),pch=19)
plot(log(num)-age,data=BassFL,subset=(loc=="Ochlockonee" & year==2001 & species="Largemouth"), ylim=c(0,max(log(num))),main="Largemouth, Ochlockonee")
points(log(num)-age,data=BassFL,subset=(loc=="Ochlockonee" & year==2002 & species="Largemouth"), ylim=c(0,max(log(num))),main="Largemouth, Ochlockonee")
legend("topright",legend=c("2001","2002"),col=c("black","red"),pch=19)
par(op)
```

---

**BGHRfish**

*Fish information from samples collected from Big Hill Reservoir, KS, 2014.*

**Description**

Fish information from samples collected from Big Hill Reservoir, KS, in May, 2014.

**Format**

A data frame with 266 observations on the following 6 variables.

- **UID** Unique sample identification number (see BGHRsample)
- **fishID** Unique fish identification number
- **specCode** Numeric code for each species (116=“Smallmouth Bass”, 118=“Largemouth Bass”, and 122=“Bluegill”)
length  Total length (mm)
weight  Weight (g)
count   Number of fish sampled of that species and length

Topic(s)

- Data Manipulation

Note

Used in the Introductory Fisheries Analyses with R book.

Source

Obtained directly from Ben Neely.

See Also

See BGHRfish for individual fish collected in these samples.

Examples

data(BGHRfish)
str(BGHRfish)
head(BGHRfish)

---

**BGHRsample**  
Information for each electrofishing sample from Big Hill Reservoir, KS, 2014.

Description

Information for each electrofishing sample from Big Hill Reservoir, KS, in May, 2014.

Format

A data frame with 20 observations on the following 4 variables.

- **UID**  Unique sample identification number
- **date**  Data sample was collected
- **loc**   Location code for where the sample was collected
- **effort**  Effort (minutes) expended for the sample

Topic(s)

- Data Manipulation
BlackDrum2001

Note

Used in the Introductory Fisheries Analyses with R book.

Source

Obtained directly from Ben Neely.

See Also

See BGHRfish for individual fish collected in these samples.

Examples

data(BGHRsample)
str(BGHRsample)
head(BGHRsample)


Description

Biological data (lengths, weights, ages (from otoliths), and sex) for Black Drum (*Pogonias cromis*) from Virginia waters of the Atlantic Ocean, 2001.

Format

A data frame with 141 observations on the following 9 variables.

- **year** Year of capture (all 2001)
- **agid** Unique identification number
- **spname** Species name (all “Black Drum”)
- **month** Month of capture
- **day** Day of capture
- **weight** Weight (lbs) – most are missing
- **tl** Total length (mm)
- **sex** Sex (female, male, and unknown)
- **otoage** Age (yrs; from otoliths)

Topic(s)

- Growth
- von Bertalanffy
- Weight-Length
**Note**

Used in the *Introductory Fisheries Analyses with R* book.

**Source**

Obtained directly from the Virginia Marine Resources Commission via Hank Liao.

**Examples**

```r
data(BlackDrum2001)
str(BlackDrum2001)
head(BlackDrum2001)
plot(t1~otoage,data=BlackDrum2001)
```

---

**BloaterLH**  

**Description**

Egg deposition and relative abundance of age-3 Lake Huron Bloaters (*Coregonus hoyi*) by year, 1981-1996.

**Format**

A data frame of 16 observations on the following 3 variables:

- **year** Year of data (1981-1996)
- **eggs** Millions of eggs deposited
- **age3** Relative abundance of age-3 fish

**Topic(s)**

- Stock-Recruit
- Recruitment

**Source**

BlueCatfish

Examples

data(BloaterLH)
str(BloaterLH)
head(BloaterLH)
op <- par(mfrow=c(1,2),pch=19)
plot(eggs~year,data=BloaterLH,type="l")
plot(eggs~age3,data=BloaterLH)
par(op)

BlueCatfish

Ages and lengths of Blue Catfish.

Description

Ages and total lengths of Blue Catfish (*Ictalurus furcatus*) collected from the Wilson Reservoir on the Tennessee River, AL.

Format

A data frame with 119 observations on the following 2 variables.

- **age**  Age (from otoliths)
- **tl**  Total length (mm)

Topic(s)

- Growth
- von Bertalanffy

Source

From (approximately) Figure 2 of Maceina, M.J. 2007. Use of piecewise nonlinear models to estimate variable size-related mortality rates. North American Journal of Fisheries Management, 27:971-977.

Examples

data(BlueCatfish)
str(BlueCatfish)
head(BlueCatfish)
plot(tl~age,data=BlueCatfish)
BlueCrab

*Catch and effort data for male Blue Crabs.*

---

**Description**

Catch and effort data for a population of male Blue Crabs (*Callinectes sapidus*) for a 12-week period.

**Format**

A data frame with 12 observations on the following 2 variables.

- **catch**  A numeric vector of pounds of Blue Crab caught.
- **effort** A numeric vector of lines used per day to catch Blue Crab.

**Topic(s)**

- Population size
- Abundance
- Depletion
- Leslie method
- DeLury method
- Catchability

**Source**


**Examples**

data(BlueCrab)
str(BlueCrab)
BlueCrab
BluefishAge

Ages of Bluefish assigned from otoliths by two readers.

Description
Ages assigned to Bluefish (*Pomatomus saltatrix*) otoliths by two readers.

Format
A data frame with 445 observations on the following 2 variables.

- **r1** Ages assigned by the first reader
- **r2** Ages assigned by the second reader

Topic(s)
- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source
From Figure 2 in Chapter 3 (Bluefish) of the VMRC Final Report on Finfish Ageing, 2003 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

Examples
```r
data(BluefishAge)
str(BluefishAge)
head(BluefishAge)
plot(r1~r2, data=BluefishAge)
```

BluegillIL

Length-at-marking and recapture and time-at-large of Bluegill.

Description
Length-at-marking and recapture and time-at-large for Bluegill (*Lepomis macrochirus*) originally captured in Spring 2010 from Inch Lake, Wisconsin.
Format

A data frame with 61 observations on the following 5 variables:

- **tag** Unique Floy tag number.
- **lenMark** length (mm) at tagging.
- **lenRecap** Length (mm) at recapture.
- **deltaLen** Change in length (mm).
- **deltaTime** Time-at-large (yrs).

Topic(s)

- Growth
- von Bertalanffy
- Fabens method

Source

These unpublished data are from Derek H. Ogle, Northland College. **Do not use for other than educational purposes without permission from the source.**

Examples

```r
data(BluegillLM)
str(BluegillLM)
head(BluegillLM)
plot((lenRecap-lenMark)-deltaTime,data=BluegillLM)
```

---

BluegillLM  
*Lengths and weights for Bluegill from Lake Mary, MN.*

Description

Lengths (standard, fork, and total) and weights for Bluegill (*Lepomis macrochirus*) collected from Lake Mary, Minnesota.

Format

A data frame with 100 observations on the following 5 variables:

- **sernum** Unique serial number
- **sl** Standard length (mm)
- **fl** Fork length (mm)
- **tl** Total length (mm)
- **wght** Weight (g)
BluntnoseIL1

Topic(s)

- Weight-Length
- Length Conversion
- Length Frequency

See Also

lakemary in alr3 for a different sample of Bluegill from Lake Mary that has length and age.

Examples

data(BluegillLM)
str(BluegillLM)
head(BluegillLM)
op <- par(mfrow=c(3,2),pch=19)
plot(wght~sl,data=BluegillLM)
plot(wght~fl,data=BluegillLM)
plot(wght~tl,data=BluegillLM)
plot(tl~fl,data=BluegillLM)
plot(tl~sl,data=BluegillLM)
plot(fl~sl,data=BluegillLM)
par(op)

BluntnoseIL1

Subsampled lengths of Bluntnose Minnows from Inch Lake, WI.

Description

Total lengths for a subsample from 144 Bluntnose Minnows (Pimephales notatus) from Inch Lake, WI in May, 2007.

Format

A data frame of 25 observations on the following 3 variables:

- netID a netID factor (all 41)
- species species name (all Bluntnose)
- tl total length (inches to nearest 0.1)

Topic(s)

- Length Frequency
- Length Expansion
- Size Structure
- PSD
**Source**

Derek H. Ogle, personal collection

**See Also**

InchLake1, InchLake2.

**Examples**

data(BluntnoseIL1)
str(BluntnoseIL1)
head(BluntnoseIL1)

---

**Bonito**

*Ages and lengths of Australian Bonito.*

**Description**

Ages and lengths of Australian Bonito (*Sarda australis*).

**Format**

A data frame with the following 3 variables:

- **sex**  Sex (Female, Juvenile, Male).
- **age**  Age in decimal years.
- **fl**  Total length (to nearest 0.1 cm).

**Topic(s)**

- Growth
- Seasonal Growth
- von Bertalanffy
- Somers model

**Source**

**BrookTroutNC**

**Description**

Stock and recruitment data for Brook Trout (*Salvelinus fontinalis*) from Ball Creek, NC, 1991-2004.

**Format**

A data frame with 10 observations on the following 2 variables.

- **adult** a numeric vector giving autumn adult density (number per square meter)
- **yoy** a numeric vector giving autumn YOY density (number per square meter) in following year

**Topic(s)**

- Stock-Recruit
- Recruitment

**Note**

The authors fit a linear model to the stock-recruit relationship.

**Source**

From (approximately) Figure 5 in Grossman, G.D., R.E. Ratajczak, C.M. Wagner, and J.T. Petty. 2010. Dynamics and regulation of the southern brook trout (*Salvelinus fontinalis*) population in an Appalachian stream. Freshwater Biology 55:1494-1508.

**Examples**

```r
data(BrookTroutNC)
str(BrookTroutNC)
head(BrookTroutNC)
plot(adult~yoy,data=BrookTroutNC)
```
Catches in removal events for Brook Trout in the Nashwaak Experimental Watersheds Project.

Description

Catches in removal events for Brook Trout (Salvelinus fontinalis) in two streams in the Nashwaak Experimental Watersheds Project on multiple dates.

Format

A data frame of 16 observations on the following 7 variables:

- **stream** Stream (UNM=Upper Narrows Mountain Brook and Hay=Hyaden Brook).
- **section** Section of stream. See source.
- **date** Data of collections.
- **first** Catch on the first removal pass.
- **second** Catch on the second removal pass.
- **third** Catch on the third removal pass.
- **fourth** Catch on the fourth removal pass.

Topic(s)

- Population size
- Abundance
- Removal

Source

From Table 1 in Schnute, J. 1983. A new approach to estimating populations by the removal method. Canadian Journal of Fisheries and Aquatic Sciences, 40:2153-2169.

See Also

See BrookTroutNEWP1 for these data AND the results from Schnute (1983).

Examples

```r
data(BrookTroutNEWP)

## extract data for one stream, section, and date (e.g., 3rd row)
BrookTroutNEWP[3,]
```
Catches in removal events for Brook Trout in the Nashwaak Experimental Watersheds Project.

Description
Catches in removal events for Brook Trout (*Salvelinus fontinalis*) in two streams in the Nashwaak Experimental Watersheds Project on multiple dates. Includes results from Schnute (1983).

Format
A data frame of 16 observations on the following 7 variables:

- **sample** A unique identifier for the sample.
- **stream** Stream (UN=Upper Narrows Mountain Brook and Hay=Hyaden Brook).
- **section** Section of stream. See source.
- **date** Date of collections.
- **first** Catch on the first removal pass.
- **second** Catch on the second removal pass.
- **third** Catch on the third removal pass.
- **fourth** Catch on the fourth removal pass.
- **Moran.NLCI** Schnute (1983) estimate of N 95% LCI using the Moran (1951) method.
- **Moran.NUCI** Schnute (1983) estimate of N 95% UCI using the Moran (1951) method.
- **Moran.p** Schnute (1983) estimate of p using the Moran (1951) method.
- **Moran.LH** Schnute (1983) negative log likelihood using the Moran (1951) method.
- **Schnute.N** Schnute (1983) estimate of N.
- **Schnute.NLCI** Schnute (1983) estimate of N 95% LCI.
- **Schnute.NUCI** Schnute (1983) estimate of N 95% UCI.
- **Schnute.p1** Schnute (1983) estimate of p1.
- **Schnute.LH** Schnute (1983) negative log-likelihood.
- **ChiSq** Schnute (1983) chi-square from likelihood ratio comparison of Moran and Schnute methods.

Topic(s)
- Population size
- Abundance
- Removal
Source


See Also

See brooktroutnewp for only the data (note the results from Schnute (1983)).

Examples

data(BrookTroutNEWP1)

## extract data for one stream, section, and date (e.g., 3rd row)
BrookTroutNEWP1[3,]

---

BrookTroutOnt  Summary single mark-recapture data for Brook Trout across many years.

Description

The number of Brook Trout (Salvelinus fontinalis) marked, captured, and recaptured for several years on Meach Lake in central Ontario.

Format

A data frame with 7 observations on the following 5 variables.

- `year`  Year of the collection
- `mark`  Total number of fish marked on the marking run
- `catch` Total number of fish caught on the recapture run
- `recap` Total number of previously marked fish in the recapture run
- `correction` Number of age-1 fish to be added to final estimated based on mark-recapture to correct for gear selectivity of age-1 fish

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen
Source

Examples
```r
data(BrownTroutVC1)
str(BrownTroutVC1)
head(BrownTroutVC1)
```

BrownTroutVC1

`Single census mark-recapture data with lengths for Brown Trout from Valley Creek, MN.`

Description
Single census mark-recapture data for Brown Trout (*Salmo trutta*) from Valley Creek, MN captured in April, 1988. Length of trout was recorded so that abundance estimated can be made by length categories.

Format
A data frame with 1014 observations on the following 3 variables.

- `len` A numeric vector of total length measurements (cm)
- `sample` A factor variable representing the sample in which the fish was captured. The marking run is labelled with `first` and the recapture run is labelled with `second`
- `recap` A factor variable representing whether the fish was a “recap”ture in the second sample (YES) or not (NO)

Topic(s)
- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen

Source
BSkateGB  

**Description**

Stock and recruitment data for Barndoor Skate (*Dipturus laevis*) from Georges Bank for three seasons.

**Format**

A data frame with 31 observations on the following 4 variables.

- **spawners** a numeric vector giving CPUE of spawning fish
- **recruits** a numeric vector containing the CPUE of recruits
- **year** a numeric vector containing the year of the survey (recruits have been properly lagged (3 years) to match with spawners)
- **season** a factor containing the season of capture (fall, spring, winter)

**Topic(s)**

- Stock-Recruit
- Recruitment

**Note**

Only years within each season where more than one spawner and more than one recruit were captured were recorded. The authors noted that the Beverton-Holt model could NOT be fit to the winter data.

**Source**

Examples

data(BSkateGB)
str(BSkateGB)
head(BSkateGB)
op <- par(mfrow=c(3,2),pch=19)
plot(recruits~year,data=BSkateGB,subset=season=="fall",type="b",main="fall")
plot(recruits~spawners,data=BSkateGB,subset=season=="fall",main="fall")
plot(recruits~year,data=BSkateGB,subset=season=="spring",type="b",main="spring")
plot(recruits~spawners,data=BSkateGB,subset=season=="spring",main="spring")
plot(recruits~year,data=BSkateGB,subset=season=="winter",type="b",main="winter")
plot(recruits~spawners,data=BSkateGB,subset=season=="winter",main="winter")
par(op)

BullTroutRML1

Lengths and weights for Bull Trout from two Rocky Mountain lakes and two eras.

Description

Lengths and weights of Bull Trout (Salvelinus confluentis) from two Rocky Mountain lakes in Alberta, CAN and two eras.

Format

A data frame with 137 observations on the following 3 variables:

- fl Fork length (mm)
- mass Wet mass (g)
- era Era of collection (1977-79 and 2001)

Topic(s)

- Weight-Length
- Length Frequency

Note

The historical (1977-1980) era samples were from before restrictive sportfishing regulatory regimes were implemented (in the 1990s) that led to changes in abundance and population structure of bull trout.

Source

Examples

data(BullTroutRML1)
str(BullTroutRML1)
head(BullTroutRML1)
op <- par(mfrow=c(1,2), pch=19)
plot(mass~fl, data=BullTroutRML1, subset=era="1977-79", main="1977-79")
plot(mass~fl, data=BullTroutRML1, subset=era="2001", main="2001")
par(op)

BullTroutRML2  Ages and lengths of Bull Trout from two Rocky Mountain lakes at two times.

Description

Assigned ages (from otoliths) and fork lengths of Bull Trout (*Salvelinus confluentis*) from two Rocky Mountain lakes in Alberta, CAN before and after a regulation change.

Format

A data frame with 96 observations on the following 4 variables:

- **age**  Age (from otoliths).
- **fl**  Fork length (mm).
- **lake**  Lake (Harrison and Osprey).

Topic(s)

- Growth
- Von Bertalanffy growth model

Note

The historical (1977-1980) era samples were from before restrictive sportfishing regulatory regimes were implemented (in the 1990s) that led to changes in abundance and population structure of bull trout.

Source

Catch-at-age for Bull Trout in Trestle Creek, ID.

A data frame with 6 observations on the following 2 variables.

- **age**: A numeric vector of assigned ages (from otoliths).
- **carcasses**: A numeric vector of number of carcasses found in and along Trestle Creek.

Description

Catch-at-age (actually carcasses-at-age) for Bull Trout (*Salvelinus confluentis*) in Trestle Creek, ID.

Format

A data frame with 6 observations on the following 2 variables.

- **age**: A numeric vector of assigned ages (from otoliths).
- **carcasses**: A numeric vector of number of carcasses found in and along Trestle Creek.

Topic(s)

- Mortality
- Catch curve

Source


Examples

data(BullTroutTC)
str(BullTroutTC)
head(BullTroutTC)
plot(log(carcasses)-age,data=BullTroutTC)
Cabezon  

Ages, lengths, and maturity for female Cabezon from Oregon.

Description

Ages, lengths, and maturity for female Cabezon (Scorpaenichthys marmoratus) from Newport and Depoe Bay, Oregon.

Format

A data frame with 525 observations on the following 5 variables.

- **date**: Date fish was collected
- **length**: Total length (cm)
- **age**: Otolith age
- **maturity**: Maturity state (Immature or Mature)
- **stage**: Stage of maturity (1: Immature, 2: Maturing, 3: Mature, 4: Fertilized, 5: Ripe, 6: Spent, 7: Resting)

Topic(s)

- Maturity
- Growth
- von Bertalanffy

Source

Actual data obtained directly (from Bob Hanna) from Hannah, R.W, M.T.O. Blume, and J.E. Thompson. 2009. Length and age at maturity of female yelloweye rockfish (Sebastes ruberimus) and cabezon (Scorpaenichthys marmoratus) from Oregon waters based on histological evaluation of maturity. Oregon Department of Fish and Wildlife, Information Reports 2009-04. [Was (is?) from http://www.dfw.state.or.us/mrp/publications/docs/Info200904_YlwEyeRF_Maturity.pdf.]

Examples

```r
data(Cabezon)
str(Cabezon)
head(Cabezon)
op <- par(mfrow=c(2,2), pch=19)
plot(length~age, data=Cabezon, ylab="Total Length (cm)", xlab="Age")
hist(Cabezon$length, xlab="Total Length (cm)", main="")
tbl1 <- xtabs(~age+maturity, data=Cabezon)
(tab1 <- prop.table(tbl1, margin=1))
plot(ptbl1[,2]-as.numeric(row.names(ptbl1)), type="l", xlab="Age", ylab="Proportion Mature")
tbl2 <- xtabs(~length+maturity, data=Cabezon)
(tab2 <- prop.table(tbl2, margin=1))
plot(ptbl2[,2]-as.numeric(row.names(ptbl2)), type="l", xlab="Length", ylab="Proportion Mature")
par(op)
```
Instantaneous growth rates for two calcified ageing structures.

**Description**

Instantaneous growth rates (percent change per day) for body growth and two calcified ageing structures from age 1-4 female Northern Pike (*Esox lucius*) from Wickett Lake, Ontario.

**Format**

A data frame with 12 observations on the following 4 variables.

- **day** A numeric vector of days since the beginning of the study.
- **body** A numeric vector of instantaneous growth rates (percent change per day) for body growth.
- **cleithrum** A numeric vector of instantaneous growth rates (percent change per day) for cleithra.
- **scale** A numeric vector of instantaneous growth rates (percent change per day) for scales.

**Examples**

```r
data(Casselman1990)

# recreation of Casselman's (199) Figure 8.
p <- c(19,17,15); clr <- c("black","red","blue"); l <- 1
with(Casselman1990,
    matplot(day,cbind(body,cleithrum,scale),type="b",lwd=2,pch=p,col=clr,lty=l,
        ylab="Instantaneous Growth Rate",xaxt="n",xlab="")
)
axis(1,at=c(0,31,60,91,121,152,182,213,243,274,304,335,365),tick=TRUE,labels=FALSE)
axis(1,at=c(15,46,76,107,137,168,198,229,260,291,321,352),tick=FALSE,
    labels=c("Jan","Feb","Mar","Apr","May","Jun","Jul","Aug","Sep","Oct","Nov","Dec"))
legend("topleft",legend=c("Body","Cleithrum","Scale"),pch=p,col=clr,lty=l,lwd=2)
```
CCatfishNB

Catch-at-age of Channel Catfish from two sections of the Platte River, NB.

Description

Catch-at-age of Channel Catfish (*Ictalurus punctatus*) from two sections of the Platte River, NB, in 2007 and 2008.

Format

A data frame of 26 observations on the following 3 variables:

- **age**  Age (years) assigned from pectoral spines
- **catch** Number of captured fish with baited hoopnets and electrofishing
- **loc** Location of collection (Central and Lower)

Topic(s)

- Mortality
- Catch curve

Note

Used in the *Introductory Fisheries Analyses with R* book.

Source

From (approximately) Figure 3-14 in Barada, T.J. 2009. Catfish population dynamics in the Platte River, Nebraska. Master’s thesis, University of Nebraska, Lincoln, NE. [Was (is?) from http://nlc1.nlc.state.ne.us/epubs/U1500/B013-2009.pdf.]

Examples

```r
data(CCatfishNB)
str(CCatfishNB)
head(CCatfishNB)
op <- par(mfrow=c(1,2),pch=19)
plot(log(catch)~age,data=CCatfishNB,subset=loc="Central",main="Central")
plot(log(catch)~age,data=CCatfishNB,subset=loc="Lower",main="Lower")
par(op)
```

Description

Stock and recruitment data for Klamath River Chinook Salmon (*Oncorhynchus tshawytscha*), 1979-2000 brood years.

Format

A data frame with 27 observations on the following 3 variables.

- **brood.year** a numeric vector of brood years
- **spawners** a numeric vector giving number of spawning fish
- **recruits** a numeric vector containing the number of recruits

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(ChinookKR)
str(ChinookKR)
head(ChinookKR)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~brood.year,data=ChinookKR,type="l")
plot(recruits~spawners,data=ChinookKR)
par(op)
Description

Lengths, weights, and sex for Cisco (*Coregonus artedii*) from Trout Lake, WI, 1981-2006. Fish were collected with a variety of gears.

Format

A data frame of 8594 observations on the following 8 variables:

- **lakeid**: Lake name (all TR=Trout Lake)
- **year**: Year of capture
- **sampledate**: Date of capture
- **gearid**: Capture gear type
- **spname**: Species name (all CISCO)
- **length**: Total length (nearest mm) at capture
- **weight**: Weight (nearest 0.1 or 1 g) at capture
- **sex**: Sex (F=Female, I=Immature, M=Male)

Topic(s)

- Weight-Length
- Length Frequency

Source

Was (is?) available for download from http://www.limnology.wisc.edu/.

Examples

```r
data(CiscoTL)
str(CiscoTL)
head(CiscoTL)
op <- par(mfrow=c(2,2), pch=19)
plot(weight~length, data=CiscoTL, subset=sex="F", main="Female")
plot(weight~length, data=CiscoTL, subset=sex="M", main="Male")
plot(weight~length, data=CiscoTL, subset=sex="I", main="Immature")
par(op)
```
Description

Stock and recruitment data for Crappies from four reservoirs in Arkansas and Mississippi, USA.

Format

A data frame of 78 observations on the following 3 variables:

reservoir  Reservoir (Atkins, Nimrod, Okatibbee, Ross.Barnett)
stock  Number of age-1+ fish per hectare
recruits  Number of age-0 fish per hectare

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(CrappieARMS)
str(CrappieARMS)
head(CrappieARMS)
op <- par(mfrow=c(2,2),mar=c(3,3,2,1),mgp=c(1.75,0.5,0),tcl=-0.2,pch=19)
plot(recruits~stock,data=CrappieARMS,subset=(reservoir=="Atkins"),main="Atkins")
plot(recruits~stock,data=CrappieARMS,subset=(reservoir=="Nimrod"),main="Nimrod")
plot(recruits~stock,data=CrappieARMS,subset=(reservoir=="Okatibbee"),main="Okatibbee")
plot(recruits~stock,data=CrappieARMS,subset=(reservoir=="Ross.Barnett"),main="Ross Barnett")
par(op)
**Description**

Ages (subsample) and lengths (all fish) for Creek Chub (*Semotilus atromaculatus*).

**Format**

A data frame with 218 observations on the following 2 variables.

- **len**  Total length (mm)
- **age**  Assigned ages (yrs; from scales)

**Details**

As many as 10 fish per 10 mm length interval were sampled for age assignment with scales.

**Topic(s)**

- Age-Length Key
- Growth

**Note**

Used in the *Introductory Fisheries Analyses with R* book.

**Source**


**Examples**

```r
data(CreekChub)
str(CreekChub)
head(CreekChub)
xtabs(~age,data=CreekChub)
plot(len~age,data=CreekChub)
```
Results of a large number of creel surveys in Minnesota lakes.

Description

The species targeted, number of fish harvested, and number of individuals harvesting that number of that species of fish from a large number of surveys on Minnesota Lakes, 1980-1996.

Format

A data frame of 14550 observations on the following 2 variables:

- species: species of fish that was targeted.
- harvest: number of fish of that species harvested by one angler.

Topic(s)

- Other

Source


Examples

data(CreelMN)
str(CreelMN)
head(CreelMN)
levels(CreelMN$species)

```r
## ONLY RUN IN INTERACTIVE MODE

## Not run:
require(FSA)
waec <- subset(CreelMN, species=="WAE")
(waeb1 <- table(waec$harvest))
(waepb1 <- prop.table(waeb1)*100)
(waercum <- rCumsum(waepb1))
op <- par(mfrow=c(1,2),mar=c(3.5,3.5,0.5,0.5),mgp=c(2,0.5,0))
barplot(waepb1,xlab="Number of Walleye Harvested",ylab="Percentage of Individuals")
barplot(waercum,xlab="Minimum Number of Walleye Harvested",ylab="Percentage of Individuals")
par(op)
(ttlwaec <- sum(waec$harvest))
waesvd5 <- waec$harvest-5  # Used to determine the number of fish
xtabs(~svd5,data=waec)  # saved if limit was reduced to 5.
(svd5 <- sum(waesvd5[waesvd5>0]))  # Only sum positive numbers (i.e., saved)
round(svd5/ttlwaec*100,1)  # Show as a percentage

waesvd1 <- waec$harvest-1  # same but if reduced to 1 bag.
```
Ages of Atlantic Croaker assigned from otoliths by two readers.

Description

Otolith age of Atlantic croaker (Micropogonias undulatus) from two readers.

Format

A data frame of 317 observations on the following 2 variables:

reader1 Age assigned by the first reader
reader2 Age assigned by the second reader

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source

From Figure 2 in Chapter 1 (Atlantic Croaker) of the VMRC Final Report on Finfish Ageing, 1999 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

Examples

data(Croaker1)
str(Croaker1)
head(Croaker1)
plot(reader2~reader1,data=Croaker1)
xtabs(~reader1+reader2,data=Croaker1)
**Croaker2**  
*Ages, lengths, and sexes of Atlantic Croaker by sex.*

**Description**

Assigned ages (by otoliths), total lengths, and sexes of Atlantic Croaker (*Micropogonias undulatus*).

**Format**

A data frame of 318 observations on the following 3 variables:

- **age** Otolith age-at-capture (years).
- **tl** Total length (nearest mm) at capture.
- **sex** Sex of the fish (M=male and F=female).

**Topic(s)**

- Growth
- von Bertalanffy

**Source**

From Figure 4 in Chapter 1 (Atlantic Croaker) of the VMRC Final Report on Finfish Ageing, 1999 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

**Examples**

```r
data(Croaker2)
str(Croaker2)
head(Croaker2)
op <- par(mfrow=c(1,2),pch=19)
plot(tl~age,data=Croaker2,subset=sex=="F",main="Female")
plot(tl~age,data=Croaker2,subset=sex=="M",main="Male")
par(op)
```

---

**CutthroatALf**  
*Capture histories (9 samples) of Cutthroat Trout from Auke Lake.*

**Description**

Format

A data frame with 47 observations on the following 2 variables.

- **ch**: Unique capture history (as a character string)
- **freq**: Frequency of fish with that capture history

**Topic(s)**

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Jolly-Seber
- Capture History

**Source**


**See Also**

See `cutthroatAL` for the same data in “individual” fish format (i.e., the data in this file were converted using `caphistconvert` from FSA). See `mropen` from FSA for an example analysis.

**Examples**

```r
data(CutthroatALf)
str(CutthroatALf)
head(CutthroatALf)
```

---

**Description**

Catch and effort data for Fantail Darter (*Etheostoma flabellare*) from seven removal events conducted by Mahon (1980).

**Format**

A data frame with 7 observations on the following 2 variables.

- **catch**: Catch of Fantail Darter.
- **effort**: Constant electrofishing effort.
Details

Catch (number of fish) was recorded. Effort was a constant amount of electrofishing for each sampling event and is, thus, entered as a constant value of 1.

These data are used in many publications because the stream section was rotenoned following the removal surveys to determine a known population size of 1151 individuals.

Topic(s)

- Population size
- Abundance
- Depletion methods
- Leslie method
- DeLury method
- Catchability

Source


Examples

data(DarterOnt)
str(DarterOnt)
head(DarterOnt)

<table>
<thead>
<tr>
<th>DarterOnt</th>
<th>Ages and lengths of Channel Darters from two locations.</th>
</tr>
</thead>
</table>

Description

Assigned ages (from otoliths), total length, and collection location of Channel Darter (*Percina copelandi*).

Format

A data frame of 54 observations on the following 3 variables:

- **age** Otolith age-at-capture (years).
- **tl** Total length (nearest 0.1 mm) at capture.
- **river** Location of capture (Salmon or Trent Rivers).
Topic(s)
  - Growth
  - von Bertalanffy

Note
The original author used a linear model to describe the relationship between length and age.

Source
From Figure 2 of Reid, S.M. Age estimates and length distributions of Ontario channel darter (*Percina copelandi*) populations. Journal of Freshwater Ecology 19:441-444.

Examples
data(DarterOnt)
str(DarterOnt)
head(DarterOnt)
op <- par(mfrow=c(1,2),pch=19)
plot(tl~age,data=DarterOnt,subset=river=="Salmon",main="Salmon R.")
plot(tl~age,data=DarterOnt,subset=river=="Trent",main="Trent R.")
par(op)

Deckeretal1999  Catches in removal events of Cutthroat Trout and Coho Salmon in Little Stawamus Creek (British Columbia, Canada) in 1997.

Description
Catches of Coho Salmon (*Oncorhynchus kisutch*) and Cutthroat Trout (*Oncorhynchus clarki*) in consecutive removal events at various locations in Little Stawamus Creek (British Columbia, Canada) in 1997.

Format
A data frame of 26 observations on the following 10 variables:

- **reach** Reach number of sampling location.
- **habitat** Habitat type of sampling location – pool, riffle, or run.
- **strata** Stratum number of sampling location.
- **area** Area (m^2) of sampling location.
- **coho1** Coho Salmon removed on the first pass.
- **coho2** Coho Salmon removed on the second pass.
- **coho3** Coho Salmon removed on the third pass.
- **cutt1** Cutthroat Trout removed on the first pass.
- **cutt2** Cutthroat Trout removed on the second pass.
- **cutt3** Cutthroat Trout removed on the third pass.
Topic(s)

- Population size
- Abundance
- Removal

Source


Examples

```
data(Deckeretal1999)
str(Deckeretal1999)
head(Deckeretal1999)

## extract data for one sampling location (e.g., 3rd row)
Deckeretal1999[3,]
```

<table>
<thead>
<tr>
<th>EuroPerchTJ</th>
<th>Ages, lengths, and sexes of European Perch.</th>
</tr>
</thead>
</table>

Description

Assigned ages, measured fork lengths, and observed sexes for European Perch (*Perca fluviatilis*) from Lake Tjuekemeer (The Netherlands).

Format

A data frame of 69 observations on the following 3 variables:

- **fl** Fork lengths (cm).
- **age** Assigned ages.
- **sex** Sex (female, male).

Topic(s)

- Growth
- fon Bertalanffy
Source

From (approximately) Figure 2 in Mooij, W.M., J.M. Van Rooij, and S. Wijnhoven. 1999. Analysis and comparison of fish growth from small samples of length-at-age data: Detection of sexual dimorphism in Eurasian perch as an example. Transactions of the American Fisheries Society, 128:483-490.

Examples

data(EuroPerchTJ)
str(EuroPerchTJ)
head(EuroPerchTJ)
op <- par(mfrow=c(1,2),pch=19)
plot(f1~age,data=EuroPerchTJ,subset=sex=="female",main="Female")
plot(f1~age,data=EuroPerchTJ,subset=sex=="male",main="Male")
par(op)

---

FHCatfish  

Catch-at-age of Flathead Catfish from three southeastern rivers.

Description

Numbers of Flathead Catfish (Pylodictis olivaris) captured by electrofishing in three rivers – Coosa River, AL; Ocmulgee River, GA; and Satilla River, GA.

Format

A data frame of 39 observations on the following 3 variables:

- **river** Location of collection (Coosa, Ocmulgee, and Satilla)
- **age** Age (years) assigned from otolith
- **abundance** Number of captured fish with boat electrofishing

Topic(s)

- Mortality
- Catch curve

Source

Catch-at-age of Flathead Catfish from three Atlantic rivers.

Description

Catch-at-age of Flathead Catfish (*Pylodictis olivaris*) from three populations of Atlantic rivers – Lumber River, Northeast Cape Fear River (NCF), and Neuse River.

Format

A data frame of 44 observations on the following 3 variables:

- **river** Collection river (Lumber, NCF, and Neuse).
- **age** Age (yrs) assessed by otolith.
- **number** Number of captured fish.

Topic(s)

- Mortality
- Catch curve

Source


Examples

data(FHCatfishATL)
str(FHCatfishATL)
head(FHCatfishATL)
opt <- par(mfrow=c(2,2),pch=19)
plot(log(number)~age,data=FHCatfishATL,subset=river=="Lumber",main="Lumber")
plot(log(number)~age,data=FHCatfishATL,subset=river=="NCF",main="NCF")
plot(log(number)~age,data=FHCatfishATL,subset=river=="Neuse",main="Neuse")
par(opt)
FSAdatadata

Data to support the FSA package.

Description

This package contains data to support the FSA package.

Usage

FSAdatataopics

Format

An object of class character of length 16.

Details

This package contains additional data files that can be used for common fisheries stock assessment methods described in the FSA package and on the fishR website.

The help files for these datasets are embedded with topics that can be searched to find data files that can be analyzed with those topics. For example, use the following commands to find data files for the corresponding topics.

help.search("Length Expansion", package=c("FSAdata", "FSA"))
help.search("Length Conversion", package=c("FSAdata", "FSA"))
help.search("Age Comparison", package=c("FSAdata", "FSA"))
help.search("Age-Length Key", package=c("FSAdata", "FSA"))
help.search("Weight-Length", package=c("FSAdata", "FSA"))
help.search("Length Frequency", package=c("FSAdata", "FSA"))
help.search("Size Structure", package=c("FSAdata", "FSA"))
help.search("Abundance", package=c("FSAdata", "FSA"))
help.search("Capture-Recapture", package=c("FSAdata", "FSA"))
help.search("Mark-Recapture", package=c("FSAdata", "FSA"))
help.search("Capture History", package=c("FSAdata", "FSA"))
help.search("Petersen", package=c("FSAdata", "FSA"))
help.search("Schnabel", package=c("FSAdata", "FSA"))
help.search("Jolly-Seber", package=c("FSAdata", "FSA"))
help.search("Depletion", package=c("FSAdata", "FSA"))
help.search("Removal", package=c("FSAdata", "FSA"))
help.search("Mortality", package=c("FSAdata", "FSA"))
help.search("Catch curve", package=c("FSAdata", "FSA"))
help.search("Growth", package=c("FSAdata", "FSA"))
help.search("Recruitment", package=c("FSAdata", "FSA"))
help.search("Maturity", package=c("FSAdata", "FSA"))

Expand subsampled lengths.
Convert between length types.
Ageing (error, precision, or comparison).
Age-Length Key data.
Weight-length model data.
Length frequency data.
Size structure data.
Data for abundance estimates.
Mark-recapture data.
Mark-recapture data.
Capture history mark-recapture (compare to summarized data).
Petersen mark-recapture (closed population, single).
Schnabel mark-recapture (closed population, multiple).
Jolly-Seber mark-recapture (open population, multiple).
Depletion (Leslie, DeLury) methods for estimating abundance.
Removal (K-pass) methods for estimating abundance.
Data for mortality estimation.
Catch curve.
Growth model data.
Stock-recruitment and recruitment time-series data.
Maturity data.

Additional fisheries-related data sets are in the FSA and fishmethods packages.
Description

Assigned ages (from scales) and measured total lengths for each of 1577 Freshwater Drum (*Aplodinotus grunniens*) from Lake Erie.

Format

A data frame with 1577 observations on the following 2 variables.

- **age**  Assigned ages (from scales).
- **tl**   Measured total lengths (mm).

Source


See Also

-FWDrumLE2.-

Examples

```r
data(FWDrumLE1)
str(FWDrumLE1)
head(FWDrumLE1)
plot(tl~age,data=FWDrumLE1)
```
Ages (subsample) and lengths (all fish) for Freshwater Drum from Lake Erie.

Description

A total of 253 fish dispersed proportionately over 10-mm total length intervals from the `FWDrumLE1` data frame was obtained for age assignment. The remaining fish in the file were only measured for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.

Format

A data frame with 1577 observations on the following 2 variables.

- **age** Assigned ages (from scales).
- **tl** Measured total lengths (mm).

Topic(s)

- Age-Length Key

See Also

`FWDrumLE1`.

Examples

data(FWDrumLE2)
str(FWDrumLE2)
head(FWDrumLE2)
## Extract the aged sample
FWD.aged <- subset(FWDrumLE2,!is.na(age))
str(FWD.aged)
## Extract the length sample
FWD.length <- subset(FWDrumLE2,is.na(age))
str(FWD.length)
Species accumulation data for fish of the Western Ghats of India.

Description

Species accumulation data for fish of the Western Ghats of India derived from nine random samples of publications.

Format

A data frame with 350 observations on the following 2 variables.

- **unit**: a manuscript that was reviewed.
- **cumspec**: cumulative number of species described in the reviewed manuscripts.

Topic(s)

- Other

Source

From (approximately) Figure 1 in Dahanukar, N., R. Raut, and A. Bhat. 2004. Distribution, endemism and threat status of freshwater fishes in the Western Ghats of India. Journal of Biogeography 31:123-126.

Examples

data(Ghats)
str(Ghats)
head(Ghats)
plot(cumspec~unit,data=Ghats)

Catches in removal events of Coho Salmon and Dolly Varden Char at various locations near the Greens Creek (AK) Mine site.

Description

Catches in removal events of Coho Salmon (*Oncorhynchus kisutch*) and Dolly Varden Char (*Salvelinus malma*) at various locations near the Greens Creek (AK) Mine site.
Format

A data frame of 66 observations on the following 8 variables:

- **location**  Sampling location.
- **year**  Sampling year.
- **species**  Species (Coho. Salmon or Dolly. Varden).
- **set1**  Catch on the first removal pass.
- **set2**  Catch on the second removal pass.
- **set3**  Catch on the third removal pass.
- **min.FL**  Minimum observed fork length.
- **max.FL**  Maximum observed fork length.

Details

Reaches were isolated by natural features, such as shallow riffles. The sample reaches were saturated with 6.35 mm (0.25 in) minnow traps baited with whirl packs containing disinfected salmon eggs. The traps were deployed for 1.5 h and then retrieved where each fish was transferred into a plastic bucket, and the trap was re-baited and re-set for another 1.5 h soak. In between trapping events, fish were processed – measured and recorded FL to the nearest 1 mm, weight to the nearest 0.1 g, and species identified. Captured fish were retained during the sample period and returned alive after all three passes were complete.

Topic(s)

- Population size
- Abundance
- Removal

Source


Examples

```r
data(GreensCreekMine)
str(GreensCreekMine)
head(GreensCreekMine)
```
```r
## extract data for one location, year, and species (e.g., 3rd row)
GreensCreekMine[3,]
```
### Hake

**Stock and recruitment data for Hake, 1982-1996.**

#### Description

Stock and recruitment data for Hake (*Merluccius merluccius*), 1982-1996.

#### Format

A data frame with 15 observations on the following 3 variables.

- **year**: a numeric vector of years 1982-1996
- **recruits**: a numeric vector of the number of recruits in millions
- **spawn.biomass**: a numeric vector of spawning biomass in thousand tonnes

#### Topic(s)

- Stock-Recruit
- Recruitment

#### Source


#### Examples

```r
data(Hake)
str(Hake)
head(Hake)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=Hake,type="l")
plot(recruits~spawn.biomass,data=Hake)
par(op)
```

### HalibutPAC

**Stock and recruitment data for Pacific Halibut, 1929-1991.**

#### Description

Format

A data frame of 63 observations on the following 5 variables:

- **year** Year of data
- **ssb** Spawning stock biomass (tonnes)
- **rec** Recruits (thousands)
- **land** Landings (in millions of pounds)
- **fmort** Fishing related mortality

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(HalibutPAC)
str(HalibutPAC)
head(HalibutPAC)
op <- par(mfrow=c(1,2),pch=19)
plot(rec~year,data=HalibutPAC,type="l")
plot(rec~ssb,data=HalibutPAC)
par(op)

Herman

*Lengths for Walleye, Yellow Perch, Black Crappie, and Black Bullheads from Lake Herman, SD.*

Description

Total lengths of Walleye (*Sander vitreus*), Yellow Perch (*Perca flavescens*), Black Crappie (*Pomoxis nigromaculatus*), and Black Bullheads (*Ameiurus melas*) for four years in Lake Herman, SD.

Format

A data frame of 5931 observations on the following 3 variables:

- **tl** Total lengths (cm).
- **spec** Species codes (wa=walleye, yep=yellow perch, bkc=black crappie, and bbh=black bullhead).
- **yr** Capture years.
Details
Lake Herman was sampled on June 20-22, 2005 with four overnight gillnet sets and 10 overnight trapnet sets. The trapnets were constructed with 19-mm (0.75 in) bar-mesh netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gillnets were 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm (0.5, 0.75, 1, 1.25, 1.5, and 2 in) bar-mesh monofilament netting.

Topic(s)
- Length Frequency
- Size Structure
- PSD

Source
From a South Dakota Fish and Game report that was (does not appear to be there (or anywhere) now) at http://www.sdgfp.info/Wildlife/fishing/SELakes/Herman05.pdf.

Examples
data(Herman)
str(Herman)
head(Herman)
op <- par(mfrow=c(2,2),pch=19)
### Four (of 16 possible) examples
with(subset(Herman,spec="bbh" & yr==2003),hist(tl,main="Black Bullhead, 2003"))
with(subset(Herman,spec="bkc" & yr==2001),hist(tl,main="Black Crappie, 2001"))
with(subset(Herman,spec="yep" & yr==2003),hist(tl,main="Yellow Perch, 2003"))
with(subset(Herman,spec="wae" & yr==1999),hist(tl,main="Walleye, 1999"))
par(op)

HerringBWE

Description
Stock and recruitment data for Blackwater Estuary Herring (*Clupea harengus*), 1962-1997 spawning years.

Format
A data frame with 36 observations on the following 3 variables.

- **spawning.year** a numeric vector of spawning years
- **ssb** a numeric vector giving biomass of spawning fish
- **recruits** a numeric vector containing the number of recruits
HerringISS

Topic(s)
- Stock-Recruit
- Recruitment

Source

Examples
```r
data(HerringBWE)
str(HerringBWE)
head(HerringBWE)
op <- par(mfrow=c(1,2))
plot(recruits~spawning.year,data=HerringBWE,type="l")
plot(recruits~ssb,data=HerringBWE)
par(op)
```

---

**HerringISS**

Stock and recruitment data for Icelandic summer spawning Herring, 1946-1996.

**Description**

Icelandic summer spawning Herring (Clupeaformis harengus) stock, recruitment, landings, and fishing mortality by year, 1946-1996.

**Format**

A data frame of 51 observations on the following 6 variables:

- **year** Year of data
- **ssb** Spawning stock biomass (tonnes)
- **rec** Recruits – i.e., 1-year olds (thousands)
- **land** Landings (in millions of pounds)
- **fmort** Fishing related mortality

Topic(s)
- Stock-Recruit
- Recruitment
Source


Examples

data(HerringISS)
str(HerringISS)
head(HerringISS)
op <- par(mfrow=c(1,2))
plot(rec~year,data=HerringISS,type="l")
plot(rec~ssb,data=HerringISS)
par(op)

<table>
<thead>
<tr>
<th>HumpbackWFCCR</th>
<th>Capture histories (2 sample) of Humpback Whitefish.</th>
</tr>
</thead>
</table>

Description

Capture histories for Humpback Whitefish (*Coregonus pidschian*) greater than 360 mm in the Chatanika River, AK in 2012.

Format

A data frame with 1920 observations on the following 4 variables:

sectMrun  Section where the fish was captured on the marking run
Mrun  Indicator variable for the marking run (1=captured)
Rrun  Indicator variable for the recapture run (1=captured)
sectRrun  Section where the fish was captured on the recapture run

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen
- Capture History
Source


Examples

data(HumpbackWFCR)
str(HumpbackWFCR)
head(HumpbackWFCR)

-----

<table>
<thead>
<tr>
<th>InchLake1</th>
<th>Lengths for all fish captured in Inch Lake, WI, in two years</th>
</tr>
</thead>
</table>

Description

Total lengths of all fish captured in Inch Lake, WI in May, 2007 and May, 2008.

Format

A data frame of 4894 observations on the following 5 variables:

netID    A unique identifier for the sampling event
netType  gear used (angling, seine, miniWDNR fyke net, miniNC fyke net, regular fyke net)
year     year of capture
species  species name
length   total length (inches to nearest 0.1)

Topic(s)

• Length Frequency
• PSD
• Size Structure

Source

Derek H. Ogle, personal collection

See Also

See InchLake2 for a subsample that include weights.
Examples

data(InchLake1)
str(InchLake1)
head(InchLake1)

## Isolate just Bluegills
bg.il <- subset(InchLake1, species=="Bluegill")

## Isolate just largemouth bass from 2007
lmb7.il <- subset(InchLake1, species="Largemouth Bass" & year==2007)

## Isolate all fish captured in seines
seine.il <- subset(InchLake1, netType="seine")

## Lengths and weights for fish captured in Inch Lake

Description

Total lengths and weights for a subsample of fish captured in Inch Lake, WI in May, 2007 and May, 2008.

Format

A data frame of 516 observations on the following 6 variables:

- netID  A unique identifier for the sampling event
- fishID A unique identifier for the individual fish
- species Species name
- length Total length (inches to nearest 0.1)
- weight Wet weight (grams to nearest 0.1)
- year Year of capture

Topic(s)

- Weight-Length
- Condition
- Length Frequency

Source

Derek H. Ogle, personal collection

See Also

See InchLake1 for the entire sample, but without weights.
Examples

```r
data(InchLake2)
str(InchLake2)
head(InchLake2)
```

```r
## Isolate just Bluegills
bgNil <- subset(InchLake2, species=="Bluegill")

## Isolate just largemouth bass from RPPW
lmbWNil <- subset(InchLake2, species=="Largemouth Bass" & year==2007)
```

---

**JobfishSIO**

*Catch and effort data for South Indian Ocean Jobfish.*

**Description**

Catch and effort data for Jobfish (*Pristipomoides filamentosus*) from the South Indian Ocean.

**Format**

A data frame with 13 observations on the following 2 variables.

- **catch** Catches (kg).
- **effort** Effort (man-hours).

**Topic(s)**

- Population size
- Abundance
- Depletion methods
- Leslie method
- DeLury method
- Catchability

**Source**


**Examples**

```r
data(JobfishSIO)
str(JobfishSIO)
head(JobfishSIO)
```
Catches in removal events of Brown and Rainbow Trout at various locations.

Description

Catches of Brown (*Salmo trutta*) and Rainbow Trout (*Oncorhynchus mykiss*) in consecutive removal events at various locations.

Format

A data frame of 40 observations on the following 10 variables:

- **species**: Species of trout (brown or rainbow).
- **site**: Site in the watershed. See source.
- **age0**: Logical is TRUE if age-0 and FALSE if age is >0.
- **first**: Catch on the first removal pass.
- **second**: Catch on the second removal pass.
- **third**: Catch on the third removal pass.
- **pop.cs**: Population estimate by Carle-Strub method.
- **pop.sch**: Population estimate by Schnute method.
- **q.cons**: Logical is TRUE if catchability was constant.
- **rejected**: Logical is TRUE if Schnute method rejected the population estimate because the standard error was too large.

Topic(s)

- Population size
- Abundance
- Removal

Source


Examples

```r
data(JonesStockwell)
str(JonesStockwell)
head(JonesStockwell)

## extract data for one species, age, and site (e.g., 3rd row)
JonesStockwell[3,]
```
Jonubi

Ages and lengths of male Jonubi.

Description

Assigned ages and measured fork lengths for male Jonubi (*Chalcalburnus mossulensis*) from the Karasu River (Turkey).

Format

A data frame with 410 observations on the following 2 variables:

- **fl** Fork lengths (cm).
- **age** Assigned ages (years).

Topic(s)

- Growth
- von Bertalanffy

Source


See Also

- Jonubi2.

Examples

```r
data(Jonubi1)
str(Jonubi1)
head(Jonubi1)
plot(fl~age, data=Jonubi1)
```
Jonubi2

Description

Ages (subsample) and lengths (all fish) for Jonubi (*Chalcalburnus mossulensis*).

Format

A data frame with 410 observations on the following 2 variables.

- **fl**: Fork length (cm) measurements
- **age**: Assigned ages (years)

Details

A total of 50 fish dispersed proportionately over 1-cm fork length intervals from the Jonubi1 data frame was obtained for age assignment. The remaining fish in the file were only measured for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.

Topic(s)

- Age-Length Key

See Also

Jonubi1.

Examples

data(Jonubi2)
str(Jonubi2)
head(Jonubi2)
plot(fl~age, data=Jonubi2)

---

KingCrabAK

*Stock and recruitment data for Red King Crab in Alaska, 1960-2004.*

Description

Stock and recruitment data for Red King Crab (*Paralithodes camtschaticus*) from the northern Gulf of Alaska around Kodiak Island by brood year, 1960-2004.
Format

A data frame of 44 observations on the following 3 variables:

- **year**: Brood year (1960-2004)
- **recruits**: abundance (thousands) of male recruits (≥125 mm and <145 mm)
- **adults**: abundance (thousands) legal (≥145 mm carapace length) males

**Topic(s)**

- Stock-Recruit
- Recruitment

**Source**


**Examples**

data(KingCrabAK)
str(KingCrabAK)
head(KingCrabAK)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=KingCrabAK,type="l")
plot(recruits~adults,data=KingCrabAK)
par(op)

---

Biological data for Lake Trout from the Arctic LTER (AK).

**Description**

Biological data (lengths, weight, age, and sex) of Lake Trout (*Salvelinus namaycush*) sampled from Lake NE12 of the Arctic Long Term Ecological Research location.

**Format**

A data frame of 86 observations on the following 6 variables:

- **id**: A unique identification number.
- **tl**: Total Length (nearest mm) at capture.
- **fl**: Fork Length (nearest mm) at capture.
- **sl**: Standard Length (nearest mm) at capture.
- **w**: Weight (nearest g) at capture.
Lake trout were removed from Lake NE12 in the summers of 1986, 1988, and 1989 using five-panel experimental gill nets (mesh size of 0.75, 1, 1.5, 2, and 2.5 inches). Lengths, weights, and sex were recorded from the fish while otoliths, and if possible, stomachs and gonads were removed for future analysis. A check was performed on several otoliths by an independent colleague and prevents introduction of bias due to familiarity with the samples. The original file was “cleaned” in the following ways:

1. Only Lake Trout were kept in the data file.
2. All unknown sex fish were removed.
3. Fish with missing data (length, weight, age, or sex) were removed.
4. Decimals were removed from the ages.
5. The unique IDs for fish from 1989 were changed to start at 500.
6. The weight of fish number 509 was changed from 100 to 1100.

Topic(s)

- Length Frequency
- Weight-Length
- Length Conversion
- Growth
- von Bertalanffy
- Size Structure

Source

Was (does not appear to be available there now) from http://ecosystems.mbl.edu/ARC/lakes/fish/89mcne12.html. It seems like it should still be available from the Arctic LTER site at http://ecosystems.mbl.edu/ARC/lakes/fish/index.shtml.

Examples

data(LakeTroutALTER)
str(LakeTroutALTER)
head(LakeTroutALTER)
op <- par(mfrow=c(2,2),pch=19)
## Four (of many possible) examples
hist(LakeTroutALTER$t1,main="")
plot(w=t1,data=LakeTroutALTER)
plot(t1~f1,data=LakeTroutALTER)
plot(t1~age,data=LakeTroutALTER)
par(op)
LakeTroutEggs  

**Length and egg deposition of Lake Superior Lake Trout.**

**Description**

Length and egg deposition of Lake Superior Lake Trout (*Salvelinus namaycush*).

**Format**

A data frame of 101 observations on the following 2 variables:

- **tl** Total length (mm) of an individual fish.
- **eggs** Estimated number of eggs.

**Topic(s)**

- Other

**Source**

From (approximately) Figure 2 of Schram, S.T. 1993. Fecundity and egg deposition of a wild Lake Superior Lake Trout stock. Wisconsin Department of Natural Resources, Fisheries Management Report no. 149.

**Examples**

```r
data(LakeTroutEggs)
str(LakeTroutEggs)
head(LakeTroutEggs)
plot(eggs~tl,data=LakeTroutEggs)
```

LakeTroutGIS  

**Stock and recruitment data for Lake Trout from Gull Island Shoal, Lake Superior, 1964-1991.**

**Description**


**Format**

A data frame of 28 observations on the following 3 variables:

- **year** Year of data
- **stock** Mean CPE of adult female Lake Trout per 1000 m of gillnet captured in fall spawning surveys
- **recruits** Recruits (number of age-0 fish per ha) captured the following fall in bottom trawls
LakeTroutMI

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(LakeTroutGIS)
str(LakeTroutGIS)
head(LakeTroutGIS)
op <- par(mfrow=c(1,2))
plot(recruits~year,data=LakeTroutGIS,type="l")
plot(recruits~stock,data=LakeTroutGIS)
par(op)


Description


Format

A data frame of 105 observations on the following 5 variables:

- **year**  Year of data
- **recruits**  Recruit index – geometric mean number of age-7 fish/km/net-night
- **wild**  Wild fish spawning stock index – geometric mean number of wild age-8 and older fish/km/net-night
- **stocked**  Stocked fish spawning stock index – geometric mean number of stocked age-8 and older fish/km/net-night
- **area**  Lake Superior management unit

Topic(s)

- Stock-Recruit
- Recruitment
Source


Examples

data(LakeTroutMI)
LakeTroutMI$stock <- LakeTroutMI$wild+LakeTroutMI$stocked
str(LakeTroutMI)
head(LakeTroutMI)
op <- par(mfrow=c(3,2), pch=19)
plot(recruits~year, data=LakeTroutMI, subset=area=="M13", type="l", ylim=c(0, max(recruits, na.rm=TRUE)))
lines(recruits~year, data=LakeTroutMI, subset=area=="M14", col="blue")
lines(recruits~year, data=LakeTroutMI, subset=area=="M15", col="green")
lines(recruits~year, data=LakeTroutMI, subset=area=="M16", col="red")
lines(recruits~year, data=LakeTroutMI, subset=area=="M17", col="yellow")
plot(recruits~stock, data=LakeTroutMI, subset=area=="M13", main="M13")
plot(recruits~stock, data=LakeTroutMI, subset=area=="M14", col="blue", main="M14")
plot(recruits~stock, data=LakeTroutMI, subset=area=="M15", col="green", main="M15")
plot(recruits~stock, data=LakeTroutMI, subset=area=="M16", col="red", main="M16")
plot(recruits~stock, data=LakeTroutMI, subset=area=="M17", col="yellow", main="M17")
par(op)


Description

Greater Lizardfish (Saurida tumbil) stock and recruitment by year, 1955-1964.

Format

A data frame of 10 observations on the following 6 variables:

- **year**  Year of data
- **stock**  Spawning stock (in ten thousands)
- **recruits**  Recruits (in hundred thousands)

Topic(s)

- Stock-Recruit
- Recruitment
Source


Examples

```r
data(Lizardfish)
str(Lizardfish)
head(Lizardfish)
op <- par(mfrow=c(1,2))
plot(recruits~year,data=Lizardfish,type="l")
plot(recruits~stock,data=Lizardfish)
par(op)
```

<table>
<thead>
<tr>
<th>LJCisco</th>
<th>Ages and lengths of Longjaw Cisco from two locations in Lake Michigan.</th>
</tr>
</thead>
</table>

Description

Assigned age (by scales) and total length of Longjaw Cisco (*Leucichthys alpenae*) captured at two locations in Lake Michigan.

Format

A data frame with 378 observations on the following 3 variables.

- **age** Assigned age (by scales).
- **tl** Measured total length (mm).
- **loc** Capture location (NE=northeast and S=south).

Topic(s)

- Growth
- von Bertalanffy

Source

Description


Format

A data frame of 447 observations on the following 1 variable:

- **tl** measured total length (cm)

Topic(s)

- Length Frequency
- Size Structure
- PSD

Source


Examples

data(LJCisco)
str(LJCisco)
head(LJCisco)
op <- par(mfrow=c(1,2))
plot(tl~age, data=LJCisco, subset=loc=="NE", main="northeast")
plot(tl~age, data=LJCisco, subset=loc=="S", main="south")
par(op)
**LMBassLCB**

*Lengths for Largemouth Bass from Lake Carl Blackwell, OK.*

---

**Description**


**Format**

A data frame of 289 observations on the following variable:

`tl` Measured total length (cm).

**Topic(s)**

- Length Frequency
- Size Structure
- PSD

**Source**


**Examples**

```r
data(LMBassLCB)
str(LMBassLCB)
head(LMBassLCB)
hist(LMBassLCB$tl, main="")
```

---

**LobsterHI**

*Catch and effort data for Hawaiian Islands Slipper Lobster.*

---

**Description**

Catches of Slipper Lobster (*Scyllarides squammosus*) in three categories from the vicinity of Laysan Bank, Hawaiian Islands on 34 consecutive days in 1986.
Format

A data frame with 34 observations on the following 6 variables.

day  Day of the catch
legal  Number of legal lobsters caught.
sublegal  Number of sub-legal lobsters caught.
berried  Number of egg-bearing lobsters caught.
total  Total number of lobsters caught.
effort  Total daily effort expended.

Details

Catch (numbers) of lobster in three categories - legal (tail weight greater than 85g), sublegal (tail weight less than 85g), and berried (egg-bearing females). Sublegal and berried lobsters were returned to the water.

The vessel fished between 11 June and 14 July 1986 in the vicinity of Laysan Island and its associated bank. The daily operations of the vessel involved deploying and hauling 1,125 Fathom Plus lobster traps set in strings spaced at 30 m intervals. They were fished in 7 strings of about 160 traps each and baited with Pacific Mackerel, *Scomber japonicus*. Strings were soaked overnight and retrieved the following day; therefore, the standard unit of effort is the trap-haul.

Topic(s)

- Population size
- Abundance
- Depletion methods
- Leslie method
- DeLury method
- Catchability

Source


Examples

data(LobsterHI)
str(LobsterHI)
head(LobsterHI)
Catch and effort data for Prince Edward Island Lobster.

Description

Catch and effort data for Lobster from 33 days in 1944 from the Tignish area of Prince Edward Island.

Format

A data frame with 34 observations on the following 3 variables.

- **day**  Day of the catch. Day 1 is 2-May-1944.
- **catch**  Catch of Lobster in 1000s of pounds.
- **effort**  Total daily effort expended in 1000s of traps.

Details

Catch (1000s of pounds) and effort (1000s of traps) of Lobster from 33 days in 1944 from the Tignish area of Prince Edward Island. The data start on 2-May. These data are from DeLury (1947) who used the data after 22-May (i.e., day 16) to illustrate his depletion method. The data were also used in Example 7.1 of Seber (2002). DeLury (1947) noted that the weight of Lobster did not change appreciably over time so that the poundage caught is a reasonable surrogate for numbers caught.

Topic(s)

- Population size
- Abundance
- Depletion methods
- Leslie method
- DeLury method
- Catchability

Source


Examples

data(LobsterPEI)
str(LobsterPEI)
head(LobsterPEI)
**Catch-at-age for Gulf Menhaden, 1964-2004.**

**Description**

Estimated catch-at-age for Gulf Menhaden (*Brevoortia patronus*), 1964-2004 from the reduction fishery in the U.S. Gulf of Mexico.

**Format**

A data frame with 41 observations on the following 7 variables.

- **year**: Year of capture.
- **age0**: Estimated catch (millions) of age-0 fish.
- **age1**: Estimated catch (millions) of age-1 fish.
- **age2**: Estimated catch (millions) of age-2 fish.
- **age3**: Estimated catch (millions) of age-3 fish.
- **age4**: Estimated catch (millions) of age-4 fish.
- **age5**: Estimated catch (millions) of age-5 fish.
- **age6**: Estimated catch (millions) of age-6 fish.

**Topic(s)**

- Mortality
- Catch curve

**Examples**

```r
data(Menhaden1)
str(Menhaden1)
head(Menhaden1)
ages <- 0:6
# Extract one year, delete year column (the -1), and transpose to be a vector
c1t <- t(Menhaden1[Menhaden1$year==1974,-1])
plot(c1t,ages,pch=16,type="b",xlab="Age",ylab="Est. Catch (Millions)",main="year==1974")
```
Morwong1  

---  

Morwong1  

**Ages of Morwong assigned from otoliths by Reader A at two times.**

### Description

Ages assigned at two different times by Reader A to the otoliths of Jackass Morwong (*Nemadactylus macropterus*).

### Format

A data frame with 217 paired observations on the following 2 variables.

- **first**  Ages assigned on the first reading
- **second** Ages assigned on the second reading

### Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

### Source


### Examples

```r
data(Morwong1)  
str(Morwong1)  
head(Morwong1)  
plot(second~first,data=Morwong1)  
xtabs(~first+second,data=Morwong1)
```
Ages of Morwong assigned from otoliths by Reader B at two times.

Description

Ages assigned at two different times by Reader B to the otoliths of Jackass Morwong (*Nemadactylus macropterus*).

Format

A data frame with 136 observations on the following 2 variables.

- **first** Ages assigned on the first reading
- **second** Ages assigned on the second reading

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source


Examples

```r
data(Morwong2)
str(Morwong2)
head(Morwong2)
plot(second~first,data=Morwong2)
xtabs(~first+second,data=Morwong2)
```
Morwong3

Ages of Morwong assigned from otoliths by two readers.

Description

Ages assigned by two different readers to the otoliths of Jackass Morwong (Nemadactylus macropterus).

Format

A data frame with 58 paired observations on the following 2 variables.

readerA  Ages assigned by Reader A
readerB  Ages assigned by Reader B

Topic(s)

• Age Comparison
• Age Precision
• Age Bias
• Ageing Error

Source


Examples

data(Morwong3)
str(Morwong3)
head(Morwong3)
plot(readerB~readerA,data=Morwong3)
with(Morwong3,table(readerA,readerB))
Ages and lengths of Morwong.

Description

Assigned ages (from otoliths) and fork lengths of Jackass Morwong (*Nemadactylus macropterus*) from the Eastern portion of the Southern and Eastern Scalefish and Shark Fishery (SESSF) in 2000.

Format

A data frame with 392 observations on the following 2 variables:

- **fl** Measured fork lengths (cm).
- **age** Assigned ages (from otoliths).

Topic(s)

- Growth
- von Bertalanffy

Source


See Also

- Morwong4a.

Examples

```r
data(Morwong4)
str(Morwong4)
head(Morwong4)
plot(fl~age, data=Morwong4)
```
Description

A total of 104 fish dispersed proportionately over 1-cm fork length intervals from the Morwong4 data frame was obtained for age assignment. The remaining fish in the file were only measured for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.

Format

A data frame with 392 observations on the following 2 variables.

- fl  Fork lengths (cm)
- age Assigned ages

Topic(s)

- Age-Length Key

See Also

Morwong4.

Examples

data(Morwong4a)
str(Morwong4a)
head(Morwong4a)

## extract aged sample
m4a.aged <- subset(Morwong4a, !is.na(age))
str(m4a.aged)

## extract length sample
m4a.length <- subset(Morwong4a, is.na(age))
str(m4a.length)
Description

Ages and lengths of Eastern Mosquitofish (Gambusia holbrooki) from ten locations from southern France to southern Spain.

Format

A data frame with the following 8 variables:

- site  Site (as a name) of capture.
- sitenum  Site (as a number) of capture.
- day  Day of capture.
- month  Month of capture.
- year  Year of capture.
- sl  Standard length (to nearest 0.01 cm).
- age  Age in integer years.
- age2  Age in decimal years.

Topic(s)

- Growth
- Seasonal Growth
- von Bertalanffy
- Somers model

Source


Examples

data(Mosquitofish)
str(Mosquitofish)
head(Mosquitofish)
plot(sl~age2,data=Mosquitofish)
Ages assigned to whole and broken-burnt otoliths of Red Mullet (*Mullus barbatus ponticus*) sampled from the Black Sea (Samsun, Turkey).

**Format**

A data frame with 51 paired observations on the following 2 variables.

- **whole**: Ages assigned from whole otoliths
- **bb**: Ages assigned from broken/burnt otoliths

**Topic(s)**

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

**Source**

From Figure 3 of Polat, N., D. Bostanci, S. Yilmaz. 2005. Differences between whole otolith and broken-burnt otolith ages of red mullet (*Mullus barbatus ponticus* Essipov, 1927) sampled from the Black Sea (Samsun, Turkey). Turkish Journal of Veterinary and Animal Science 29:429-433.

**Examples**

```r
data(MulletBS)
str(MulletBS)
head(MulletBS)
plot(whole~bb,data=MulletBS)
xtabs(~bb+whole,data=MulletBS)
```
### Description

Ages of St. Lawrence River, ONT, Muskellunge (*Esox masquinongy*) assessed from scales and cleithra.

### Format

A data frame of 43 observations on the following 2 variables:

- **ageC**  Age assigned from examination of cleithrum
- **ageS**  Age assigned from examination of scales

### Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

### Source


### Examples

```r
data(MuskieSLR)
str(MuskieSLR)
head(MuskieSLR)
plot(ageS~ageC, data=MuskieSLR)
xtabs(~ageC+ageS, data=MuskieSLR)
```

Description

The number of Muskellunge (*Esox masquinongy*) from a variety of lakes in Wisconsin, 2006.

Format

A data frame with 40 observations on the following 7 variables:

- **county**: County of the collection
- **lake**: Lake of the collection
- **sex**: Sex of the Muskellunge (male, female, unknown, total)
- **mark**: Total number of fish marked on the marking run
- **catch**: Total number of fish caught on the recapture run
- **recap**: Total number of previously marked fish in the recapture run

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen

Source

Wisconsin Department of Natural Resources.

Examples

data(MuskieWI06MR)
str(MuskieWI06MR)
head(MuskieWI06MR)
**Pallid**

*Lengths and weights for Pallid Sturgeon from four locations in the Missouri River.*

**Description**

Lengths (standard, fork, and total) and weights for Pallid Sturgeon (*Scaphirhynchus albus*) collected at four locations in the Missouri River drainage.

**Format**

A data frame with 30 observations on the following 7 variables:

- **date** Date of collection
- **sl** Standard length (mm)
- **fl** Fork length (mm)
- **tl** Total length (mm)
- **w** Weight (g)
- **status** Living status of fish at time of collection (Frozen, Live, Dead).
- **loc** Location of fish collection (NB=Nebraska, SD=South Dakota, ND=North Dakota, MT=Montana)

**Topic(s)**

- Weight-Length
- Length Conversion

**Source**


**Examples**

```r
data(Pallid)
str(Pallid)
head(Pallid)
op <- par(mfrow=c(2,2),pch=19)
## four (of many possible) examples
plot(w~tl,data=Pallid,subset=loc=="NB",main="Nebraska")
plot(w~tl,data=Pallid,subset=loc=="SD",main="South Dakota")
plot(w~tl,data=Pallid,subset=loc=="ND",main="North Dakota")
plot(w~tl,data=Pallid,subset=loc=="MT",main="Montana")
par(op)
```
Pathfinder

**Catch and effort for three Snapper species in a depletion experiment.**

**Description**

Catch and effort for three Snapper species (*Pristipomoides zonatus*, *Pristipomoides auricilla*, and *Etelis carbunculUs*) in a depletion experiment around Pathfinder Reef in the Mariana Archipelago.

**Format**

A data frame with 13 observations on the following 5 variables.

- **date** Date (1984)
- **effort** Fishing effort (line-hours of a bottom hand-line)
- **Pzonatus** Catch of *Pristipomoides zonatus*
- **Pauricilla** Catch of *Pristipomoides auricilla*
- **Ecarbunculus** Catch of *Etelis carbunculUs*

**Topic(s)**

- Depletion methods
- Leslie method
- DeLury method
- Population size
- Abundance
- Catchability

**Source**


**Examples**

data(Pathfinder)
str(Pathfinder)
head(Pathfinder)
Capture histories (2 samples) of Northern Pike from Harding Lake.

**Description**


**Format**

A data frame with 481 observations on the following 3 variables.

- `fish` a numeric vector of unique fish identification numbers
- `first` a numeric vector of indicator variables for the first sample (1=captured)
- `second` a numeric vector of indicator variables for the second sample (1=captured)

**Topic(s)**

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen
- Capture History

**Note**

Only Northern Pike >449 mm were considered here.

**Source**


**Examples**

```r
data(PikeHL)
str(PikeHL)
head(PikeHL)
```
Description

Catch and effort data for nine removal events of Northern Pike (*Esox lucius*) from Island Lake, NB.

Format

A data frame with 9 observations on the following 3 variables:

- **date** Capture date.
- **nets** Number of fyke nets fished on that date.
- **catch** Number of captured and removed pike.

Topic(s)

- Depletion methods
- Leslie method
- DeLury method
- Population size
- Abundance
- Catchability

Source


Examples

data(PikeIL)
str(PikeIL)
head(PikeIL)
Capture histories (4 samples) of a subset of Northern Pike from Buckthorn Marsh.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the sample taken</td>
<td>Unique fish identification numbers</td>
</tr>
</tbody>
</table>

**Description**

Capture histories (4 samples), in capture-by-date format, of a subset of Northern Pike from Buckthorn Marsh.

**Format**

A data frame with 69 observations on the following 2 variables.

- **sample**: Name of the sample taken
- **id**: Unique fish identification numbers

**Details**

Each line consists of the date and unique fish identification number over four samples of northern pike (*Esox lucius*) in Buckthorn Marsh. This file contains the capture histories for only those pike captured from April 1-4.

**Topic(s)**

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer
- Capture History

**Source**


**Examples**

```r
data(PikeNYPartial2)
str(PikeNYPartial2)
head(PikeNYPartial2)
```
Stock and recruitment data for Northern Pike from Lake Windermere, 1944-1981.

Description

Stock and recruitment data for Northern Pike (*Esox lucius*) from Lake Windermere, 1944-1981.

Format

A data frame of 75 observations on the following two variables:

- **year**  Year
- **stock** Female biomass (kg)
- **recruits** Number at age-2
- **basin** Basin of Windermere (North or South)
- **tdd14** Temperature degree-days over 14C

Topic(s)

- Stock-Recruit
- Recruitment

Note

Stock values were originally reported in 1000s of kgs and recruits were originally recorded in tens of numbers. Thus, plots look very discrete.

Source


Examples

```r
data(PikeWindermere)
str(PikeWindermere)
head(PikeWindermere)
op <- par(mfrow=c(2,2), pch=19)
plot(recruits~year, data=PikeWindermere, subset=basin=="North", main="North")
plot(recruits~stock, data=PikeWindermere, subset=basin=="North", main="North")
plot(recruits~year, data=PikeWindermere, subset=basin=="South", main="South")
plot(recruits~stock, data=PikeWindermere, subset=basin=="South", main="South")
par(op)
```
Description


Format

A data frame of 34 rows on the following 5 variables:

- **year** Year of data
- **harvest** Harvest (thousands of fish)
- **escapement** Escapement (thousands of fish)
- **return** Returns (thousands of fish) as sum of harvest and escapement from two years later (lagging is for proper brood year correspondence)
- **SST** Average sea surface temperature (C) between June and November off Sitka, AK from one year latter (lagging is for matching when the salmon are actually in the ocean)

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(PSalmonAK)
str(PSalmonAK)
head(PSalmonAK)
op <- par(mfrow=c(1,2))
plot(return~year, data=PSalmonAK)
plot(return~escapement, data=PSalmonAK)
par(op)
Biological data for Pygmy Whitefish from Dina Lake #1 (British Columbia), 2000 and 2001.

Description

Biological information for Pygmy Whitefish (Prosopium coulterii) from Dina Lake #1 (British Columbia), 2000 and 2001.

Format

A data frame with 368 observations on the following 10 variables.

- **year** Year of capture (2000, 2001)
- **month** Month of capture
- **week** Week within a month of capture
- **net_no** Unique net identification number
- **fish_no** Unique fish identification number
- **fl** Fork length (mm)
- **wt** Weight (g)
- **sex** Sex code (F=Female, M=Male, Imm=immature)
- **mat** Maturity code (Imm=immature, MG=maturing, MT=mature)
- **scale_age** Scale age (in years)
- **oto_age** Otolith age (in years)

Topic(s)

- Weight-Length
- Age Comparison
- Condition
- Length Frequency

Source


Description

Format
A data frame of 20 observations on the following 2 variables:

- **year**  Year of data.
- **recruits**  Number of recruits (per hour).

Topic(s)
- Recruitment time-series

Note
Zeros were changed to 0.1 in 1984, 1987, 1991, and 1994.

Source

Examples
```r
data(RBSmeltErie)
str(RBSmeltErie)
head(RBSmeltErie)
plot(recruits~year,data=RBSmeltErie,type="l")
```
**RBSmeltLM**

*Lengths for Rainbow Smelt from Lake Michigan, 1977.*

**Description**


**Format**

A data frame of 3293 observations on the following 1 variable:

- **fl** Fork length (mm)

**Topic(s)**

- Length Frequency
- Size Structure

**Source**


**Examples**

```r
data(RBSmeltLM)
str(RBSmeltLM)
head(RBSmeltLM)
hist(RBSmeltLM$fl,main="")
```

---

**RBToutKenai**

*Length-at-marking and recapture and time-at-large of Rainbow Trout.*

**Description**

Length-at-marking and recapture and time-at-large for Rainbow Trout (*Oncorhynchus mykiss*) from the Kenai River, Alaska.

**Format**

A data frame with 102 observations on the following 3 variables:

- **Lr** Length (mm) at recapture.
- **Lm** Length (mm) at marking.
- **dt** Time-at-large (yrs).
Topic(s)

- Growth
- von Bertalanffy
- Fabens method

Source


Examples

data(RBTroutKenai)
str(RBTroutKenai)
head(RBTroutKenai)
plot((Lr-Lm)/dt,data=RBTroutKenai)

<table>
<thead>
<tr>
<th>RBTroutUNSP</th>
<th>Capture histories (2 sample) of Rainbow Trout.</th>
</tr>
</thead>
</table>

Description

Capture histories for Rainbow Trout (*Oncorhynchus mykiss*) in Upper Niagara Springs pond.

Format

A data frame with 173 observations on the following 2 variables:

- **first**  Indicator variable for the first sample (1=captured)
- **second** Indicator variable for the second sample (1=captured)

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Petersen
- Capture History
Source


Examples

data(RBTroutUNSP)
str(RBTroutUNSP)
head(RBTroutUNSP)

---

RedDrum

Ages and lengths for Red Drum from the Atlantic Coast.

Description

Assigned ages (from otoliths) and fork lengths of Red Drum (Sciaenops ocellatus) from various areas of the Atlantic Coast, 1981-1988.

Format

A data frame with 393 observations on the following 2 variables.

- **age**  Age (from otoliths to the nearest years but recorded at half-years)
- **fl**  Fork length (mm)

Topic(s)

- Growth
- von Bertalanffy

Source


Examples

data(RedDrum)
str(RedDrum)
head(RedDrum)
plot(fl~age, data=RedDrum)
Riffleshell

Summarized multiple mark-recapture data for Tan Riffleshell.

Description

Summarized multiple mark-recapture data for Tan Riffleshell.

Format

A data frame with 6 observations on the following 4 variables.

- `t` Sample number
- `caught` Total number of fish caught in the sample
- `recaps` Number of previously marked fish in the sample
- `retrmarks` Number of marked fish returned to the population

Details

The number of mussels caught in multiple samples of Tan Riffleshell (*Epioblasma florentina walkeri*) from Indian Creek, Virginia. The caught fish were examined for previous marks, marked (if previously unmarked), and then returned to the population.

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer

Source


Examples

data(Riffleshell)
str(Riffleshell)
head(Riffleshell)
Catch-at-age of Cayuga Lake Rock Bass.

Description

Catch-at-age for Cayuga Lake Rock Bass (*Ampholites rupestris*) from a single season.

Format

A data frame of 6 observations on the following 2 variables:

- **age**  Assigned age.
- **catch**  Number in catch.

Topic(s)

- Mortality
- Catch curve

Source


Examples

```r
data(RockBassCL)
str(RockBassCL)
plot(log(catch)~age,data=RockBassCL)
```

Ages and lengths of Lake Ontario Rock Bass.

Description

Assigned ages (from scales) and measured total lengths for each of 1288 Rock Bass (*Ampholites rupestris*) from Lake Ontario.

Format

A data frame with 1288 observations on the following 2 variables:

- **age**  Assigned ages (from scales).
- **tl**  Measured total lengths (mm).
Topic(s)

- Growth
- von Bertalanffy

Source


See Also

RockBassLO2.

Examples

data(RockBassLO1)
str(RockBassLO1)
head(RockBassLO1)
plot(tl~age,data=RockBassLO1)

---

RockBassLO2  Ages (subsample) and lengths (all fish) for Rock Bass from Lake Ontario.

Description

Ages (subsample) and lengths (all fish) for Rock Bass from Lake Ontario.

Format

A data frame with 1288 observations on the following 2 variables:

- **age**  Assigned ages (from scales)
- **tl**  Measured total lengths (mm)

Details

As many as 10 fish per 10-mm total length intervals from the RockBassLO1 data.frame was obtained for age assignment. The remaining fish in the file were only measure for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.

Topic(s)

- Age-Length Key

See Also

RockBassLO1.
Examples

data(RockBassL02)
str(RockBassL02)
head(RockBassL02)

## extract aged sample
rb.aged <- subset(RockBassL02, !is.na(age))

## extract length sample
rb.length <- subset(RockBassL02, is.na(age))

---

RuffeSLRH92  

Biological data for Ruffe captured from the St. Louis River in 1992.

Description


Format

A data frame of 738 observations on the following 11 variables:

- **fish.id**  A unique fish identification number (across all years, most of which are not shown in this file
- **month**  Month (numeric) of capture
- **day**  Day of capture
- **year**  Year of capture
- **indiv**  A unique fish identification number within the year
- **location**  Grid location of capture
- **length**  Total length (mm)
- **weight**  Weight (g)
- **sex**  Sex factor (female, male, or unknown)
- **maturity**  Maturity stage factor (developing, immature, mature, nearly.ripe, nearly.spent, recovering, ripe, running, spent, unknown, or yoy)
- **age**  Age (yrs) from scales

Topic(s)

- Length Frequency
- Weight-Length
- Growth
- von Bertalanffy
- Maturity
Source

personal collection by the United States Geological Survey, Lake Superior Biological Station, Ashland, WI.

Examples

data(RuffeSLRH92)
str(RuffeSLRH92)
head(RuffeSLRH92)
op <- par(mfrow=c(2,2),pch=19)
hist(RuffeSLRH92$length,main="")
hist(RuffeSLRH92$age,main="")
plot(weight~length,data=RuffeSLRH92)
plot(length~age,data=RuffeSLRH92)
par(op)
xtabs(~age,data=RuffeSLRH92)
xtabs(~sex,data=RuffeSLRH92)
tmp <- c("yoy","immature","developing","mature","nearly.ripe","ripe","running","nearly.spent","spent","recovering","unknown")
RuffeSLRH92$maturity <- ordered(RuffeSLRH92$maturity,levels=tmp)
xtabs(~maturity,data=RuffeSLRH92)
xtabs(~maturity+month+sex,data=RuffeSLRH92)

RuffeTL89

Lengths of Ruffe captured from the St. Louis River in July, 1989.

Description

Total length for Ruffe (Gymnocephalus cernuus) captured in July, 1989 (cycle 6) in the St. Louis River, Lake Superior.

Format

A data frame of 236 observations on the following 1 variable:

    tl Total length (mm).

Topic(s)

- Length Frequency
- Size Structure

Source

personal collection by the United States Geological Survey, Lake Superior Biological Station, Ashland, WI.
**Examples**

```r
data(RWhitefishAI)
str(RWhitefishAI)
head(RWhitefishAI)
hist(RWhitefishAI$t1, main="")
```

---

**RWhitefishAI**

*Ages and lengths of Round Whitefish.*

---

**Description**

Ages and total lengths of Round Whitefish (*Prosopium cylindraceum*) collected from the Apostles Islands, Lake Superior.

**Format**

A data frame with 995 observations on the following 2 variables.

- **tl** Total length (in).
- **age** Age (from scales).

**Topic(s)**

- Growth
- von Bertalanffy

**Source**

From Table 3 (a random tenths digit was added to the TL) in Bailey, M.M. 1963. Age, growth, and maturity of round whitefish of the Apostle Islands and Isle Royale Regions, Lake Superior. Fishery Bulletin, 63:63-75. [Was (is?) from http://fishbull.noaa.gov/63-1/bailey.pdf.]

**Examples**

```r
data(RWhitefishAI)
str(RWhitefishAI)
head(RWhitefishAI)
plot(tl~age, data=RWhitefishAI)
```
### Description

Ages and total lengths of Round Whitefish (*Prosopium cylindraceum*) collected from Isle Royale, Lake Superior.

### Format

A data frame with 103 observations on the following 2 variables.

- **tl** Total length (in).
- **age** Age (from scales).

### Topic(s)

- Growth
- von Bertalanffy

### Source

From Table 4 (a random tenths digit was added to the TL) in Bailey, M.M. 1963. Age, growth, and maturity of round whitefish of the Apostle Islands and Isle Royale Regions, Lake Superior. Fishery Bulletin, 63:63-75. [Was (is?) from http://fishbull.noaa.gov/63-1/bailey.pdf.]

### Examples

```r
data(RWhitefishIR)
str(RWhitefishIR)
head(RWhitefishIR)
plot(tl~age,data=RWhitefishIR)
```

### Description

Catches in removal events of salmon parr from the Afon Dulas at Pentre, 19Jun79.

### Format

A data frame with 5 observations on the following 2 variables:

- **catch** Removal event.
- **caught** Number of fish captured and removed.
SalmonidsMCCA

Topic(s)

- Population size
- Abundance
- Removal

Source

From Table 2 in Cowx, I.G. 1983. Review of the methods for estimating fish population size from survey removal data. Fisheries Management, 14:67-82.

See Also

TroutADP

Examples

data(SalmonADP)
str(SalmonADP)
SalmonADP

SalmonidsMCCA  Catches in removal events of Cutthroat Trout and Steelhead of various sizes in two reaches of McGarvey Creek (CA).

Description

Catches in removal events of Cutthroat Trout (*Oncorhynchus clarki*) and Steelhead (*Oncorhynchus mykiss*) of various sizes in two reaches of McGarvey Creek (CA).

Format

A data frame of 5 observations on the following 5 variables:

reach  Sampling location.
group  Size or species caught (*fry*=both age-0 Cutthroat Trout and Steelhead, *Steelhead*=age-1+ Steelhead, or *Cutthroat=age-1+ Cutthroat Trout).*
pass1  Catch on the first removal pass.
pass2  Catch on the second removal pass.
pass3  Catch on the third removal pass.
Details

Sampling was conducted using a Smith Root model 15-D POW electrofisher. Block nets were placed at upstream and downstream reach boundaries. Efforts were made to keep the effort consistent between passes. Fixed electrofisher settings were used to maintain capture probabilities during sampling. Index reaches were rested for at least 90 minutes between passes to allow recovery time for fish not captured. Fish were measured (fork length in mm) and weighed to the nearest 0.1 gm. Scales were collected from below the dorsal fin on both left and right sides of selected fish. After data were recorded for each pass, fish were placed in a floating live car until all sampling was completed. Fish were then released throughout the reach.

Topic(s)

- Population size
- Abundance
- Removal

Source


Examples

data(SalmonidsMCCA)
str(SalmonidsMCCA)
head(SalmonidsMCCA)

## extract data for one reach and group (e.g., 3rd row)
SalmonidsMCCA[3,]

<table>
<thead>
<tr>
<th>SardineChile</th>
<th>Ages and lengths of two year-classes of Sardine from Chilean waters.</th>
</tr>
</thead>
</table>

Description

Ages (in months) and total lengths of two year-classes of Sardine (*Strangomera bentincki*) from central Chilean waters.

Format

A data frame with 196 observations of the following 3 variables:

- **age.mon** Age in months.
- **tl.cm** Total length (cm).
- **cohort** Year-class.
Topic(s)

- Growth
- Seasonal Growth
- von Bertalanffy
- Somers model

Source

Directly from the authors of Cubillos, L.A., D.F. Arcosa, D.A. Bucareya, M.T. Canalesa. 2001. Seasonal growth of small pelagic fish off Talcahuano, Chile (37S, 73W): a consequence of their reproductive strategy to seasonal upwelling? Aquatic Living Resources, 14:115-124. Data were in Figure 9.

Examples

data(SardineChile)
str(SardineChile)
head(SardineChile)
SardineChile$age <- SardineChile$age.mon/12
plot(tl.cm~age,data=SardineChile)

SardineLK

Ages and lengths of larval Lake Tanganyika Sardine.

Description

Ages (days) and total lengths of larval Lake Tanganyika Sardine (*Limnothrissa miodon*) from Lake Kariba.

Format

A data frame with 75 observations on the following 2 variables.

days Age in days (determine from otoliths).
tl Total length (mm within 0.1).

Topic(s)

- Growth
- von Bertalanffy

Source

From (approximately) Figure 3 of Mtsambiwa, M.Z. 1992. Fitting a von Bertalanffy growth model to length at age data for larval *Limnothrissa miodon* from Lake Kariba. Paper presented at the Symposium on biology, stock assessment, and exploitation of small pelagic fish species in the African Great Lakes region. [Was (is?) from http://www.fao.org/docrep/005/v2648e/V2648E06.htm.]
Examples

```r
data(SardineLK)
str(SardineLK)
head(SardineLK)
plot(t1~days,data=SardineLK)
```

---

**SardinesPacific**  
*Stock and recruitment data for Pacific Sardines, 1935-1990.*

---

**Description**


**Format**

A data frame of 34 observations on the following 3 variables:

- **year**  Year of data
- **ssb**  Spawning stock biomass – millions of fish
- **recruits**  Recruitment index – millions of fish

**Topic(s)**

- Stock-Recruit
- Recruitment

**Source**


**Examples**

```r
data(SardinesPacific)
str(SardinesPacific)
head(SardinesPacific)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=SardinesPacific,type="l")
plot(recruits~ssb,data=SardinesPacific)
par(op)
```
Description

Biological data (length, weight, and age) for Slimy Sculpin (*Cottus cognatus*) sampled from Lake S-6 of the Arctic Long Term Ecological Research location.

Format

A data frame of 117 observations on the following 3 variables:

- **w** Weight (nearest 0.1 g) at capture
- **tl** Total length (nearest mm) at capture
- **age** Age (completed growing seasons from otoliths) at capture

Details

Slimy Sculpin were captured from Lake S-6 during the summers of 1988 and 1989. Sculpins were captured using canning jars with acetate funnels inserted in them (similar in design to some minnow traps). The sculpin traps were set by raft and placed on the bottom of the lake in a specific habitat (inshore, rocky, rock-mud interface, and mud bottom). (Roughly) every three days the traps were retrieved and the sculpins, if any, were removed. The ages of the fish were determined by counting the rings in their otoliths.

Topic(s)

- Length Frequency
- Weight-Length
- Growth
- von Bertalanffy
- Size Structure

Source

Was (does not appear to be available there now) from http://ecosystems.mbl.edu/ARC/lakes/fish/89hes6ag.html. It seems like it should still be available from the Arctic LTER site at http://ecosystems.mbl.edu/ARC/lakes/fish/index.shtml.

Examples

data(SculpinALTER)
str(SculpinALTER)
head(SculpinALTER)
op <- par(mfrow=c(2,2),pch=19)
hist(SculpinALTER$tl,main="")
hist(SculpinALTER$age,main="")
plot(w~tl,data=SculpinALTER)
ShadCR

Ages of American Shad assigned from scales by three readers at two times.

Description

Ages of American Shad (*Alosa sapidissima*) assigned from scales by three readers at two times.

Format

A data frame with 53 observations on the following 8 variables.

- **fishID** A unique fish identification number
- **trueAge** The true age of the fish
- **agerA1** Ages assigned by reader A at time 1
- **agerA2** Ages assigned by reader A at time 2
- **agerB1** Ages assigned by reader B at time 1
- **agerB2** Ages assigned by reader B at time 2
- **agerC1** Ages assigned by reader C at time 1
- **agerC2** Ages assigned by reader C at time 2

Details

The true ages for fish in their sample were known because the Shad had been marked prior to being stocked. Additionally, 13 biologists twice (independently) estimated the age from scales for each fish. The known age of the fish (**trueAge**) and the age estimates from three of the 13 biologists are available in this data frame. The estimated age variables are labeled with **ager**, a letter for the three biologists (A, B, or C) and a number for which time the scale was interpreted (1 or 2). Some biologists chose not to assign an age to some scales and, thus, those data are missing (shown as **NA** values).

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Note

Used in the *Introductory Fisheries Analyses with R* book.
Source


Examples

data(ShadCR)
str(ShadCR)
head(ShadCR)

op <- par(mfrow=c(2,2),pch=19)
plot(agerA1~agerA2,data=ShadCR)
plot(agerB1~agerB2,data=ShadCR)
plot(agerC1~agerC2,data=ShadCR)
plot(agerA1~agerB1,data=ShadCR)
par(op)

ShrimpGuam

Catch and effort data for Deepwater Caridean Shrimp.  

Description

Catch and effort data for Deepwater Caridean Shrimp (*Heterocarpus laevigatus*) from 15 days in 1984 from near Alamagan Islan in the Marian Archipelago (near Guam).

Format

A data frame with 15 observations on the following 4 variables.

- **day**  Day of the catch. Day 9 is 9-Jan-1984.
- **standard**  Catch (kg) of Shrimp in the standard traps.
- **pyramid**  Catch (kg) of Shrimp in the pyramid traps.
- **effort**  Total effort (trap-nights) for the standard traps.

Details

Catch (kg) and effort (trap-nights) of Deepwater Caridean Shrimp (*Heterocarpus laevigatus*) from 15 days in 1984 from near Alamagan Islan in the Marian Archipelago (near Guam). The data start on 9-Jan-1984. Catches were recorded separately for standard traps and in pyramid traps.

The original authors estimated populations size using the Leslie method with the cumulative catch from the combined catch in the standard and pyramid traps, but with a CPE computed from just the catch in standard traps.
Topic(s)

- Population size
- Abundance
- Depletion methods
- Leslie method
- DeLury method
- Catchability

Source


Examples

data(ShrimpGuam)
str(ShrimpGuam)
head(ShrimpGuam)

```r
## Computations by the original authors
# CPE for just the standard traps
ShrimpGuam$CPE <- ShrimpGuam$standard/ShrimpGuam$effort
# Total catch in both traps
ShrimpGuam$total <- ShrimpGuam$standard+ShrimpGuam$pyramid
# Cumulative catch in both traps (with the Ricker modification)
ShrimpGuam$cumCatch <- cumsum(ShrimpGuam$total)-ShrimpGuam$total/2
```

Description

Catches of various species in consecutive removal events at various locations.

Format

A data frame of 58 observations on the following 7 variables:

- `species` Species of fish.
- `stream` Stream name.
- `first` Catch on the first removal pass.
- `second` Catch on the second removal pass.
- `third` Catch on the third removal pass.
- `fourth` Catch on the fourth removal pass.
- `pop.cs` Population estimate by Carle-Strub method.
Topic(s)

- Population size
- Abundance
- Removal

Source


Examples

data(SimonsonLyons)
str(SimonsonLyons)
head(SimonsonLyons)

## extract data for one species and stream (e.g., 3rd row)
SimonsonLyons[3,]

| SiscowetMI2004 | Ages (subsample) and lengths (all fish) for male and female Siscowet Lake Trout captured at four locations in Michigan waters of Lake Superior. |

Description

Ages (subsample) and lengths (all fish) for male and female Siscowet Lake Trout captured at four locations in Michigan waters of Lake Superior.

Format

A data frame with 780 observations on the following 8 variables.

- **locID**  Locations (Blind Sucker, Deer Park, Grand Marais, Little Lake Harbor)
- **pnldep**  Depth of gillnet panel in which the fish was captured
- **mesh**  Gillnet stretch mesh measure
- **fishID**  Unique fish identification code
- **sex**  Sex (F and M)
- **age**  Assigned ages (yrs; from otoliths)
- **len**  Total length (mm)
- **wgt**  Weight (g)
**Topic(s)**

- Age-Length Key
- Growth

**Note**

Used in the *Introductory Fisheries Analyses with R* book.

**Source**

Obtained directly from the U.S. Fish and Wildlife Service via Michael Seider.

**Examples**

```r
data(SiscowetMI2004)
str(SiscowetMI2004)
head(SiscowetMI2004)
xtabs(~age+locID, data=SiscowetMI2004)
op <- par(mfrow=c(2,2), pch=19)
plot(len~age, data=SiscowetMI2004, subset=locID=="Blind Sucker", main="Blind Sucker")
plot(len~age, data=SiscowetMI2004, subset=locID=="Grand Marais", main="Grand Marais")
plot(len~age, data=SiscowetMI2004, subset=locID=="Little Lake Harbor", main="Little Lake Harbor")
par(op)
```

---

**SLampreyGL**


**Description**


**Format**

A data frame of 76 observations on the following two variables:

- **stock**  Female spawners per 100 square meters.
- **recruits**  Yearlings per 100 square meters.

**Topic(s)**

- Stock-Recruit
- Recruitment
Snapper

Source


Examples

```r
data(SLampreyGL)
str(SLampreyGL)
head(SLampreyGL)
plot(recruits~stock,data=SLampreyGL)
```

<table>
<thead>
<tr>
<th>Snapper</th>
<th>Lengths for Snapper from Australia.</th>
</tr>
</thead>
</table>

Description

Lengths of Australian Snapper (*Chrysophrys auratus*) taken by trawl.

Format

A data frame of 256 observations on the following 1 variable:

- **len** Length in inches

Topic(s)

- Length Frequency
- Size Structure

Source


Examples

```r
data(Snapper)
str(Snapper)
head(Snapper)
hist(Snapper$len, main="")
```
SnapperHG1

Age (subsample) and length (all fish) of Snapper from two survey locations.

Description

A large sample (not random or proportional) of Snapper (Pagrus auratus) were aged from otoliths, with the remainder of the fish just measured for length. Note that age-20 is actually age 19+.

Format

A data frame of 18421 observations on the following 3 variables:

- **len** Measured lengths (cm)
- **age** Ages assigned from examination of otoliths
- **survey** Survey location (KAH8810 or KAH0012)

Topic(s)

- Age-Length Key

Note

the unaged fish were simulated from Table 5 assuming that the total number of fish was large enough that at least one fish was observed in each cell where a proportion was listed.

Source


Examples

```r
data(SnapperHG1)
str(SnapperHG1)
head(SnapperHG1)

## Extract one of the sample surveys
sn1 <- subset(SnapperHG1,survey=="KAH8810")

## Extract the aged sample
sn1.aged <- subset(sn1,!is.na(age))
str(sn1.aged)

## Extract the length sample
sn1.length <- subset(sn1,is.na(age))
str(sn1.length)
```
A large sample (approximately fixed sample size per length interval) of Snapper (*Pagrus auratus*) were aged, with the remainder of the fish just measured for length. Note that age-16 is actually age 16+ and length 60 is for 60-64 cm and 65 is for 65+ cm.

### Format

A data frame of 6724 observations on the following 2 variables:

- **len** Measured lengths (cm)
- **age** Ages assigned

### Topic(s)

- Age-Length Key

### Source


### See Also

See the same data in summarized format as `alkdata` in `fishmethods`.

### Examples

```r
data(SnapperHG2)
str(SnapperHG2)
head(SnapperHG2)

## Extract the aged sample
sn2-aged <- subset(SnapperHG2, !is.na(age))
str(sn2-aged)

## Extract the length sample
sn2-length <- subset(SnapperHG2, is.na(age))
str(sn2-length)
```
Description

Sockeye Salmon (*Oncorhynchus nerka*) stock and recruitment in Karluk Lake, AK, by year, 1921-1948.

Format

A data frame of 28 observations on the following 3 variables:

- **year** Year of data.
- **stock** Upstream escapement.
- **recruits** Recruits.

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(SockeyeKL)
str(SockeyeKL)
head(SockeyeKL)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=SockeyeKL,type="b")
plot(recruits~stock,data=SockeyeKL)
par(op)
SockeyeSR

\documentclass{article}
\usepackage{natbib}
\begin{document}

\begin{tabular}{ll}
SockeyeSR & \textit{Stock and recruitment data for Skeena River Sockeye Salmon, 1940-1967.} \\
\end{tabular}

\section*{Description}
Stock and recruitment data for Skeena River Sockeye Salmon (\textit{Oncorhynchus nerka}), 1940-1967.

\section*{Format}
A data frame with 28 observations on the following 3 variables.

- \textbf{year} a numeric vector of years
- \textbf{spawners} a numeric vector giving number of spawning fish (in thousands)
- \textbf{recruits} a numeric vector containing the recruitment (thousands)

\section*{Details}
The dataset is usually analysed without case 12 because a rockslide occurred that year.

\section*{Topic(s)}
- Stock-Recruit
- Recruitment

\section*{Source}

\section*{Examples}
\begin{verbatim}
data(SockeyeSR) str(SockeyeSR) head(SockeyeSR) SockeyeSR1 <- SockeyeSR[-12,] op <- par(mfrow=c(1,2),pch=19) plot(recruits~year,data=SockeyeSR1,type="b") plot(recruits~spawners,data=SockeyeSR1) par(op)
\end{verbatim}

\end{document}
Ages and total lengths of Spotted Sucker (*Minytrema melanops*) collected from the Apalachicola River, Florida.

### Format
A data frame with 96 observations on the following 2 variables.

- **tl** Total length (mm).
- **age** Age (from scales).

### Source

### Examples
```r
data(SpottedSucker1)
str(SpottedSucker1)
head(SpottedSucker1)
plot(tl~age, data=SpottedSucker1)
```

As many as 10 fish per 1-inch total length intervals from the *SpotVA1* data frame were obtained for age assignment. The remaining fish in the file were only measured for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.
StripedBass1

Format
A data frame of 403 observations on the following 2 variables:

- tl Measured total lengths (in inches)
- age Ages assigned from examination of otoliths

Topic(s)
- Age-Length Key

Source
From Table 1 in Chapter 8 (Spot) of the VMRC Final Report on Finfish Ageing, 2002 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

See Also
SpotVA1 in FSA.

Examples
```r
data(SpotVA2)
str(SpotVA2)
head(SpotVA2)

# Extract the aged sample
spot.aged <- subset(SpotVA2, !is.na(age))
str(spot.aged)

# Extract the length sample
spot.length <- subset(SpotVA2, is.na(age))
str(spot.length)
```

stripedbass1

**Striped Bass assigned from scales and otoliths.**

Description
Ages of Striped Bass (*Morone saxatilis*) assessed from heat-pressed scales and cracked-and-burnt otoliths.

Format
A data frame of 343 observations on the following 2 variables:

- ageO Age assigned from examination of otoliths
- ageS Age assigned from examination of scales
Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source

From Figure 6 in Chapter 10 (Striped Bass) of the VMRC Final Report on Finfish Ageing, 2000 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

Examples

data(StripedBass1)
str(StripedBass1)
head(StripedBass1)
plot(age~age0,data=StripedBass1)
xtabs(~age0+ageS,data=StripedBass1)

Description

Assigned ages (from otoliths) and measured total lengths for each of 1201 Striped Bass (*Morone saxatilis*) from the Atlantic Ocean.

Format

A data frame of 1201 observations on the following 2 variables:

- **age**  Assigned ages (from scales).
- **tl**  Measured total lengths (in inches).

Topic(s)

- Growth
- von Bertalanffy

Source

From Table 1 in Chapter 10 (Striped Bass) of the VMRC Final Report on Finfish Ageing, 2003 by the Center for Quantitative Fisheries Ecology at Old Dominion University.
See Also

StripedBass3.

Examples

data(StripedBass2)
str(StripedBass2)
head(StripedBass2)
plot(tl-age, data=StripedBass2)

Description

As many as 10 fish per 1-inch total length intervals from the StripedBass2 data frame were obtained for age assignment. The remaining fish in the file were only measured for length (i.e., the ages were deleted). This data file can be used to demonstrate the use of age-length keys.

Format

A data frame of 1201 observations on the following 2 variables:

- **tl** Measured total lengths (in inches).
- **age** Ages assigned from examination of otoliths.

Topic(s)

- Age-Length Key

See Also

StripedBass2.

Examples

data(StripedBass3)
str(StripedBass3)
head(StripedBass3)

```r
# Extract the aged sample
sb.aged <- subset(StripedBass3, !is.na(age))
str(sb.aged)
```

```r
# Extract the length sample
sb.length <- subset(StripedBass3, is.na(age))
str(sb.length)
```
StripedBass4

Description

Ages assigned by two different readers to the scales of Striped Bass (*Morone saxatilis*).

Format

A data frame of 1202 observations on the following 2 variables:

- reader1  Ages assigned by the first reader
- reader2  Ages assigned by the second reader

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source

From Figure 3 in Chapter 10 (Striped Bass) of the VMRC Final Report on Finfish Ageing, 2003 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

See Also


Examples

data(StripedBass4)
str(StripedBass4)
head(StripedBass4)
plot(reader2~reader1,data=StripedBass4)
xtabs(~reader1+reader2,data=StripedBass4)
Striped Bass 5

Ages of Striped Bass assigned from otoliths by two readers.

Description

Ages assigned by two different readers to the otoliths of Striped Bass (*Morone saxatilis*).

Format

A data frame of 458 observations on the following 2 variables:

- **reader1** Ages assigned by the first reader
- **reader2** Ages assigned by the second reader

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source

From Figure 5 in Chapter 10 (Striped Bass) of the VMRC Final Report on Finfish Ageing, 2003 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

See Also


Examples

```r
data(StripedBass5)
str(StripedBass5)
head(StripedBass5)
plot(reader2~reader1,data=StripedBass5)
xtabs(~reader1+reader2,data=StripedBass5)
```
StripedBass6

Ages of Striped Bass assigned from scales and otoliths.

Description

Ages assigned to the scales and otoliths of Striped Bass (*Morone saxatilis*).

Format

A data frame of 451 observations on the following 2 variables:

- **scale**  Ages assigned to scales
- **otolith**  Ages assigned to otoliths

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source

From Figure 6 in Chapter 10 (Striped Bass) of the VMRC Final Report on Finfish Ageing, 2003 by the Center for Quantitative Fisheries Ecology at Old Dominion University.

See Also

*StripedBass4* and *StripedBass5*.

Examples

```r
data(StripedBass6)
str(StripedBass6)
head(StripedBass6)
plot(scale~otolith,data=StripedBass6)
xtabs(~otolith+scale,data=StripedBass6)
```
Description

The number of Lake Sturgeon (*Acipenser fulvescens*) caught in multiple samples from Black Lake, MI in 1997. The caught fish were examined for previous marks, marked (if previously unmarked), and then returned to the population.

Format

A data frame with 6 observations on the following 4 variables:

- **t**  Sample number
- **caught**  Total number of fish caught in the sample
- **recaptures**  Number of previously marked fish in the sample
- **retnarks**  Number of marked fish (previously and newly marked) returned to the population

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer

Source


Examples

```r
data(SturgeonBL)
str(SturgeonBL)
head(SturgeonBL)
```
Pratt et al. (2014) recorded the capture years and ages for Lake Sturgeon captured in multiple gillnet sets in Goulais Bay, Lake Superior (Ontario) in July 2010-2012.

Format

A data frame with 436 observations on the following 2 variables.

- **year** Year of capture
- **age** Age (yrs; from pectoral fin ray)

Topic(s)

- Year-class Strength

Note

Used in the Introductory Fisheries Analyses with R book.

Source


Examples

```r
data(SturgeonGB)
str(SturgeonGB)
head(SturgeonGB)
plot(age~year,data=SturgeonGB)
```
Summary: Multiple mark-recapture data for Redear Sunfish.

Description

The number of Redear Sunfish (*Lepomis microlophus*) caught in multiple samples from Gordy Lake, IN. The caught fish were examined for previous marks, marked (if previously unmarked), and then returned to the population.

Format

A data frame with 6 observations on the following 4 variables:

- **t** Sample number
- **caught** Total number of fish caught in the sample
- **recaps** Number of previously marked fish in the sample
- **retmarks** Number of marked fish returned to the population

Topic(s)

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer

Source

Originally from


But also found in Table 2.4 of


and Table 4.4 of


Examples

```r
data(SunfishIN)
str(SunfishIN)
SunfishIN```
SunfishLP  
*Catch-at-age for Bluegill and Redear Sunfish in Florida.*

**Description**

The percent frequency of Bluegill (*Lepomis macrochirus*) and Redear Sunfish (*Lepomis microlophus*) caught in Lake Panasoffkee, FL.

**Format**

A data frame with 12 observations on the following 3 variables:

- **species**  Species of sunfish (bluegill or readear)
- **age**  Age (yrs from otoliths)
- **perc.freq**  Percent frequency of fish collected in 1998

**Topic(s)**

- Mortality
- Catch curve

**Source**

From (approximately) Figure 2 in Crawford, S. and M.S. Allen. 2006. Fishing and natural mortality of bluegills and readear sunfish at Lake Panasoffkee, Florida: Implications for size limits. North American Journal of Fisheries Management 26:42-51. Note that I added a percentage for age-1 fish (the difference in percentages from Fig. 2).

**Examples**

```r
data(SunfishLP)
str(SunfishLP)
head(SunfishLP)
plot(log(perc.freq)-age, data=SunfishLP)
```

---

TPrawnsEG  
*Stock and recruitment data for Exmouth Gulf Tiger Prawn, 1970-83.*

**Description**

TroutADP

Format

A data frame with 14 observations on the following 5 variables.

- **year** a numeric vector of years
- **stock** a numeric vector giving the index of spawning stock fish
- **recruits** a numeric vector containing the index of recruits
- **cycloneJan** a numeric vector containing the relative rainfall in January as an index of cyclonic activity
- **cycloneFeb** a numeric vector containing the relative rainfall in February as an index of cyclonic activity

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(TPrawnsEG)
str(TPrawnsEG)
head(TPrawnsEG)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=TPrawnsEG,type="l")
plot(recruits~stock,data=TPrawnsEG)
par(op)

---

TroutADP

*Catches in removal events of trout.*

Description

Catches of trout on five successive removal events from the Afon Dulas at Pentre, 19Jun79.

Format

A data frame with 5 observations on the following 2 variables:

- **catch** Removal event.
- **caught** Number of fish captured and removed.
**Topic(s)**
- Population size
- Abundance
- Removal

**Source**
From Table 1 in Cowx, I.G. 1983. Review of the methods for estimating fish population size from survey removal data. Fisheries Management, 14:67-82.

**See Also**
SalmonADP

**Examples**
```r
data(TrotADP)
str(TrotADP)
TrotADP
```

---

**TroutBR**

*Ages and lengths of migratory Brown and Rainbow Trout.*

**Description**
Total lengths (inches) and ages (from scales) of Brown Trout (*Salmo trutta*) and Rainbow Trout (*Oncorhynchus mykiss*) migrating upstream on the Bois Brule River, WI in 1978 and 1979.

**Format**
A data frame with 851 observations on the following 3 variables:

- `tl` Measured total length (inches).
- `age` Assigned age (from scales).
- `species` Species (Brown and Rainbow).

**Topic(s)**
- Growth
- von Bertalanffy

**Source**
TroutperchLM1

Ages, lengths, and sexes of Troutperch.

Description

The assigned ages (by scales), total lengths (mm), and sexes of Troutperch (Percopsis omiscomaycus) captured in southeastern Lake Michigan.

Format

A data frame with 431 observations on the following 3 variables:

- **age**: Assigned ages (by scales).
- **tl**: Measured total length (mm).
- **sex**: Sex (f=female and m=male).

Topic(s)

- Growth
- von Bertalanffy

Source


Examples

```r
data(TROUTBR)
str(TROUTBR)
head(TROUTBR)
op <- par(mfrow=c(1,2),pch=19)
plot(tl~age,data=TROUTBR,subset=species="Brown",main="Brown Trout")
plot(tl~age,data=TROUTBR,subset=species="Rainbow",main="Rainbow Trout")
par(op)
```
Description


Format

A data frame of 3385 observations on the following 1 variable:

- fl fork length (mm)

Topic(s)

- Length Frequency
- Size Structure

Source


Examples

data(TrouperLM2)
str(TrouperLM2)
head(TrouperLM2)
hist(TrouperLM2$fl, main="")

Description

Subsampled lengths of Troutperch from Lake Michigan, 1977.

Format

A data frame of 300 observations on the following 1 variable:

- fl Fork length (mm)
Details

A random subsample of the lengths in the TroutperchLM2 data frame.

Topic(s)

- Length Frequency
- Length Expansion
- Size Structure

See Also

TroutperchLM2.

Examples

data(HtroutperchLM3)
str(HtroutperchLM3)
head(HtroutperchLM3)

---

VendaceLP:

Stock and recruitment data for Vendace from Lake Puulavesi, 1982-1996.

Description

Vendace (Coregonus albula) recruitment by year in Lake Puulavesi, 1982-1996.

Format

A data frame of 15 observations on the following 3 variables:

- **year**: Year of data
- **stock**: Spawning stock index – autumn biomass (kg/ha) of age-1+ fish
- **recruits**: Recruit index – density (indivs/ha) of age-0+ fish in first autumn

Topic(s)

- Stock-Recruit
- Recruitment

Source

From (approximately) Figure 1 and 2 of Marjomaki, T.J. 2004. Analysis of the spawning stock-recruitment relationship of vendace (Coregonus albula (L.)) with evaluation of alternative models, additional variables, biases and errors. Ecology of Freshwater Fish 13:46-60.
Examples

data(VendaceLP)
str(VendaceLP)
head(VendaceLP)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=VendaceLP,type="1")
plot(recruits~stock,data=VendaceLP)
par(op)

<table>
<thead>
<tr>
<th>VendaceLP2</th>
<th>Stock and recruitment data for Vendace from Lake Pyhajarvi.</th>
</tr>
</thead>
</table>

Description

Vendace (*Coregonus albula*) recruitment in Lake Pyhajarvi.

Format

A data frame of 9 observations on the following 2 variables:

- **fecundity**  Total fecundity (10^9 eggs) of spawning stock
- **recruits**  Number of recruits (10^6 fish) in Autumn after hatching

Topics

- Stock-Recruit
- Recruitment

Note

Original authors fit an exponential curve to the fecundity-recruits relationship.

Source

From (approximately) Figure 6 in Helminen, H. and J. Sarvala. 1994. Population regulation of vendance (*Coregonus albula*) in Lake Pyhajarvi, southwest Finland. Journal of Fish Biology 45:387-400.

Examples

data(VendaceLP2)
str(VendaceLP2)
head(VendaceLP2)
plot(recruits~fecundity,data=VendaceLP2)
WalleyeConsumption  

Description

Consumption of prey by Walleye (*Sander vitreus*) at different prey densities.

Format

A data frame of 23 observations on the following 2 variables:

*PreyDensity*  Density of prey (mg per g per day).

*FoodConsump*  Food consumption by predator (mg per cubic meter)

Topic(s)

• Nonlinear modeling

Source


Examples

data(WalleyeConsumption)
str(WalleyeConsumption)
head(WalleyeConsumption)
plot(FoodConsump~PreyDensity,data=WalleyeConsumption,pch=16)

WalleyeEL  


Description

**WalleyeErie**

**Format**

A data frame of 39 observations on the following 5 variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>yrclass</td>
<td>Year-class of the data</td>
</tr>
<tr>
<td>age0</td>
<td>Abundance of age-0 Walleye (recruits)</td>
</tr>
<tr>
<td>age5</td>
<td>Abundance of age-5 and older Walleye (stock)</td>
</tr>
<tr>
<td>maycv</td>
<td>Coefficient of variation of May temperatures in birth year</td>
</tr>
<tr>
<td>yep</td>
<td>Abundance of adult (larger than 152.4 mm) Yellow Perch</td>
</tr>
</tbody>
</table>

**Topic(s)**

- Stock-Recruit
- Recruitment

**Source**


**Examples**

```r
data(WalleyeEL)
str(WalleyeEL)
head(WalleyeEL)
op <- par(mfrow=c(1,2),pch=19)
plot(age0~yrclass,data=WalleyeEL,type="l")
plot(age0~age5,data=WalleyeEL)
par(op)
```

---

**WalleyeErie**


**Description**


**Format**

A data frame of 14 observations on the following 6 variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>year</td>
<td>Year of data.</td>
</tr>
<tr>
<td>recruits</td>
<td>Number of recruits (per 1000 ft of net).</td>
</tr>
</tbody>
</table>
Walleye Erie

Topic(s)

- Recruitment time-series

Source


Examples

data(WalleyeErie)
str(WalleyeErie)
head(WalleyeErie)
plot(recruits~year,data=WalleyeErie,type="l")

---

Walleye Erie2

Biological data for Walleye from Lake Erie, 2003-2014.

Description

Walleye (Sander vitreus) biological data (length, weight, sex, maturity, and age) from several locations in Lake Erie, October-November of 2003-2014.

Format

A data frame of 33734 observations on the following 10 variables:

setID Unique gear (multifilament gill net kegged 6 ft below surface) set identification number.
loc Regional location (1=Toledo to Huron, 2=Huron to Fairport Harbor, 3=Fairport Harbor to Conneaut).
grid 2.5-minute sampling grid location.
year Year of data.
tl Total length (mm).
w Weight (g). There are several missing values.
sex Sex (female, male).
mat Maturity (immature, mature).
age Age (yrs) from otoliths.
Topic(s)

- Growth
- von Bertalanffy
- Weight-Length
- Catch curve
- Mortality
- Maturity
- Size Structure
- Length Frequency
- Condition

Source

These unpublished data are from the Ohio Department of Natural Resources, Division of Wildlife (via Christopher Vandergoot). Do not use for other than educational purposes without permission from the source.

Examples

data(WalleyeErie2)
str(WalleyeErie2)
head(WalleyeErie2)
xtabs(~year+loc+sex,data=WalleyeErie2)

---

Catch-at-age for Walleye from eight Kansas reservoirs.

Description


Format

A data frame with 66 observations on the following 3 variables.

- **reservoir** Reservoir (Cedar.Bluff, Cheney, Glen.Elder, Kirwin, Lovewell, Marion, Webster, Wilson)
- **age** Age of fish at capture
- **catch** Number of fish captured

Topic(s)

- Mortality
- Catch curve
WalleyeML

Note

The authors used all age-2 and older Walleye to construct the catch curves.

Source


Examples

data(WalleyeKS)
str(WalleyeKS)
head(WalleyeKS)

```r
op <- par(mfrow=c(2,2),mar=c(3,3,2,1),mgp=c(1.75,0.5,0),tcl=-0.2,pch=19)
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Cedar Bluff"),main="Cedar Bluff")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Cheney"),main="Cheney")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Glen Elder"),main="Glen Elder")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Kirwin"),main="Kirwin")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Lovewell"),main="Lovewell")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Marion"),main="Marion")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Webster"),main="Webster")
plot(log(catch)-age,data=WalleyeKS,subset=(reservoir="Wilson"),main="Wilson")
par(op)
```

---

WalleyeML

**Back-calculated lengths-at-age for Walleye from Lake Mille Lacs, 2000-2011.**

Description

Back-calculated lengths-at-age for Walleye (*Sander vitreus*) from Lake Mille Lacs. Walleye were captured by Minnesota Department of Natural Resources personnel in fishery-independent gillnets (five multifilament nylon mesh panels with each panel measuring 15.2 m wide and 1.8 m high; bar-measure mesh sizes of the panels were 19.1, 25.4, 31.7, 38.1, and 50.8 mm) set in the fall (mid September to early October) from 2000 to 2011.

Format

A data frame of 14583 observations on the following 9 variables:

- **ID** A unique fish identification number.
- **Year** Year of data.
- **Sex** Sex (female, male).
- **Est.Age** Estimated (from otoliths) age (yrs) at capture.
- **TL** Total length (mm).
**Scale.Rad**  Total scale radius (mm) at capture.

**Dist.Ann**  Scale radius (mm) to annulus given in BC.Age.

**BC.Age**  Annulus or previous age.

**BC.Len**  Back-calculated length at BC.Age. Lengths were back-calculated using the Scale-Proportional Hypothesis method.

**Topic(s)**
- Growth
- von Bertalanffy
- Back-calculation

**Source**
These unpublished data are from the Minnesota Department of Natural Resources, Section of Fisheries (via Melissa Treml). Do not use for other than educational purposes without permission from the source.

**Examples**
```r
data(WalleyeMN)
str(WalleyeMN)
head(WalleyeMN)
xtabs(~Year+Est.Age+Sex,data=WalleyeMN)
```

---

**WalleyeMN06a**  Catch-at-age for Walleye.

**Description**
Catch-at-age for Walleye (*Sander vitreus*) collected from four lakes in Northern Minnesota, USA.

**Format**
A data frame with 52 observations on the following 3 variables.

- **lake**  A factor vector of collection lake (Crooked, Fourmile, Island, Tom)
- **age**  A numeric vector of assigned ages (from dorsal spines)
- **number**  A numeric vector of number of fish

**Topic(s)**
- Mortality
- Catch curve
**Source**


**Examples**

```r
data(WalleyeMN06a)
str(WalleyeMN06a)
head(WalleyeMN06a)
op <- par(mfrow=c(2,2),pch=19)
plot(log(number)-age,data=WalleyeMN06a,subset=lake=="Crooked")
plot(log(number)-age,data=WalleyeMN06a,subset=lake=="Fourmile")
plot(log(number)-age,data=WalleyeMN06a,subset=lake=="Island")
plot(log(number)-age,data=WalleyeMN06a,subset=lake=="Tom")
par(op)
```

---

**Summarized multiple mark-recapture data for Walleye from four lakes in Northern Minnesota.**

**Description**

Summary results of capture histories (number captured, number of recaptured fish, and number of unmarked fish that were marked) for Walleye (*Sander vitreus*) collected from four lakes in Northern Minnesota, USA.

**Format**

A data frame with 20 observations on the following 5 variables.

- **lake** Studied lake (Crooked, Fourmile, Island, Tom)
- **date** Capture date
- **catch** Total fish captured in each sample
- **recap** Marked fish captured in each sample
- **retMark** Marked fish returned to the population

**Topic(s)**

- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer
Source

Examples
```
data(WalleyeMN06b)
str(WalleyeMN06b)
head(WalleyeMN06b)
```

<table>
<thead>
<tr>
<th>WalleyePL</th>
<th>Summarized multiple mark-recapture data for YOY walleye.</th>
</tr>
</thead>
</table>

Description
The numbers of young-of-year walleye (*Sander vitreus*) that were captured, found to have previous marks (i.e., recaptured), and were newly marked on several sampling occasions in 1959, 1960, 1961, and 1962 in Pike Lake, Wisconsin.

Format
A data frame with 33 observations on the following 5 variables:

- **year** Sampling year
- **t** Sampling occasion within each year
- **caught** Number of walleye captured
- **recaptures** Number of marked walleyes captured
- **newmarks** Number of unmarked walleyes that were captured, marked, and returned to the population

Topic(s)
- Population Size
- Abundance
- Mark-Recapture
- Capture-Recapture
- Schnabel
- Schumacher-Eschmeyer

Source
Examples

```r
data(WalleyePL)
str(WalleyePL)
subset(WalleyePL, year==1960)
```

---

### WalleyePS

*Ages of Walleye assigned from otoliths, scales, and spines.*

---

**Description**

Age of Pymatuning Sanctuary (PA) Walleye (*Sander vitreus*) assessed from three calcified structures – sectioned otoliths, sectioned dorsal spines, and scale impressions.

**Format**

A data frame with 61 observations on the following 4 variables:

- **otolith** Age (years) assigned from broken, ground, and polished otolith sections
- **spine** Age (years) assigned from dorsal spine sections
- **scale** Age (years) assigned from scale impressions
- **sex** Sex of fish (female and male)

**Topic(s)**

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

**Note**

Relationships between otoliths and spines and otoliths and scales are exact according to Figure 2. Relationship between spines and scales is approximate as Figure 2 did not show this exact relationship.

**Source**

Examples

data(WalleyePS)
str(WalleyePS)
head(WalleyePS)
op <- par(mfrow=c(3,2),pch=19)
plot(scale~otolith,data=WalleyePS,subset=sex=="female",main="Female")
plot(scale~otolith,data=WalleyePS,subset=sex=="male",main="Male")
plot(scale~spine,data=WalleyePS,subset=sex=="female",main="Female")
plot(scale~spine,data=WalleyePS,subset=sex=="male",main="Male")
plot(spine~otolith,data=WalleyePS,subset=sex=="female",main="Female")
plot(spine~otolith,data=WalleyePS,subset=sex=="male",main="Male")
par(op)

---

WalleyeRL  Growth increment data for Red Lakes Walleye.

Description

Growth increment data for Red Lakes Walleye (*Sander vitreus*) in one-fish-per-line format.

Format

A data frame with 1543 observations on the following 13 variables.

- **fish**: A fish identification number. Unique within a year but not across years.
- **yearcap**: Year the fish was captured.
- **ce**: A factor denoting capture gear (C=commercial and E=experimental nets).
- **agecap**: Age of fish at capture.
- **lencap**: Length of fish at capture.
- **inc1**: Scale measurement to first annulus.
- **inc2**: Scale measurement between first and second annulus.
- **inc3**: Scale measurement between second and third annulus.
- **inc4**: Scale measurement between third and fourth annulus.
- **inc5**: Scale measurement between fourth and fifth annulus.
- **inc6**: Scale measurement between fifth and sixth annulus.
- **inc7**: Scale measurement between sixth and seventh annulus.
- **radcap**: Scale radius at time of capture

Topic(s)

- Growth increment analysis
- Weisberg linear growth model
Note

Data is in one-fish-per-line format.

Source


Examples

data(WalleyeWad)
str(WalleyeWad)
head(WalleyeWad)

---

WalleyeWad

Catches-at-age for male and female Walleye from Lake Winnebago, WI, 2010.

Description

Catches-at-age for male and female Walleye from Lake Winnebago, WI, 2010.

Format

A data frame with 18 observations on the following 3 variables.

- **age**: Age (yrs; from pectoral fin ray)
- **numF**: Number of captured females
- **numM**: Number of captured males

Details

Koenigs et al. (2015) captured adult Walleye from Lake Winnebago during spawning assessments in 2010. The sex was recorded and ages were estimated from sectioned otoliths for each fish. Koenigs et al. (2015) fit separate catch curves to female and male Walleye.

Topic(s)

- Mortality
- Catch Curve

Note

Used in the Introductory Fisheries Analyses with R book.
### WalleyeWyrlng

#### Source

#### Examples
```
data(WalleyeWad)
str(WalleyeWad)
head(WalleyeWad)
plot(num~age,data=WalleyeWad)
points(num~age,data=WalleyeWad,pch=19)
```

---

**WalleyeWyrlng**  
Annual catches of yearling Walleye in bottom trawls from Lake Winnebago, WI, 1986-2010.

---

#### Description
Annual catches of yearling Walleye (*Sander vitreus*) in bottom trawls from Lake Winnebago, WI, 1986-2010.

#### Format
A data frame with 35 observations on the following 4 variables.

- **tows** Number of trawl tows (i.e., effort)
- **year** Year of capture
- **yearlings** Number of yearling Walleye captured
- **yrclass** Year-class of the captured yearlings (capture year minus 1)

#### Details
The catch of yearling Walleye and number of trawl tows by year are in this data frame. The CPE is catch divided by number of tows. Koenigs et al. (2015) rescaled the CPE values to have a mean of 0 and a standard deviation of 1.

#### Topic(s)
- Year-class Strength
- Recruitment

#### Note
Used in the *Introductory Fisheries Analyses with R* book.
Source

Examples
data(WalleyeWyrlng)
str(WalleyeWyrlng)
head(WalleyeWyrlng)
plot(yearlings~yrclass,data=WalleyeWyrlng)

---

**WhitefishGSL**

_Catch-at-age of Great Slave Lake Whitefish (commercial) by area._

Description
Age composition of commercial Whitefish (*Coregonus clupeaformis*) catches for five areas of Great Slave Lake.

Format
A data frame with 16 observations on the following 6 variables:

- **age**  Assigned ages.
- **area.IE**  Catches for area IE.
- **area.II**  Catches for area II.
- **area.IV**  Catches for area IV.
- **area.V**  Catches for area V.
- **area.IW**  Catches for area IW.

Topic(s)
- Mortality
- Catch curve

Note
All data are from summer samples except for Area.IW which is a winter sample

Source
Examples

```r
data(WhitefishGSL)
str(WhitefishGSL)
head(WhitefishGSL)
op <- par(mfrow=c(3,2),pch=19)
plot(log(area.IE)-age,data=WhitefishGSL)
plot(log(area.II)-age,data=WhitefishGSL)
plot(log(area.IV)-age,data=WhitefishGSL)
plot(log(area.V)-age,data=WhitefishGSL)
plot(log(area.IW)-age,data=WhitefishGSL)
par(op)

# can be reshaped to 'long' format with
## Not run:
library(reshape)
WhitefishGSL1 <- melt(WhitefishGSL,id.vars="age")
names(WhitefishGSL1) <- c("age","area","number")

## End(Not run)
```

---

**WhitefishLS**

*Landings and value of Lake Superior Lake Whitefish.*

Description


Format

A data frame with 12 observations on the following 4 variables:

- **year** Year of catch.
- **state** State of catch (MI, MN, or WI).
- **catch** Catch in lbs.
- **value** Value of catch in dollars.

Topic(s)

- Other

Source

Results from a query in 2006 to the NMFS Great Lakes Commercial Fishery Landings database which was (is?) at http://www.st.nmfs.noaa.gov/pls/webpls/webst1.MF_GL_SPECIES_HELP.SPECIES.
**Examples**

```r
data(WhitefishMB)
str(WhitefishMB)
head(WhitefishMB)
```

<table>
<thead>
<tr>
<th>WhitefishMB</th>
<th>Ages of Lake Whitefish from four lakes assigned from scales and fin-rays.</th>
</tr>
</thead>
</table>

**Description**

Ages of Lake Whitefish (*Coregonus clupeaformis*) from four lakes as determined by scales and fin-rays.

**Format**

A data frame with 859 observations on the following 3 variables:

- `fin`: Ages assigned from fin-ray sections
- `scale`: Ages assigned from scales
- `lake`: Lake from which the fish was captured (L122, L226, Huron, or Dezadeash)

**Topic(s)**

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

**Source**

From (approximately) Figure 1 of Mills, K.H., and R.J. Beamish. 1980. Comparison of fin-ray and scale age determinations for lake whitefish (*Coregonus clupeaformis*) and their implications for estimates of growth and annual survival. Canadian Journal of Fisheries and Aquatic Sciences, 37:534-544.

**Examples**

```r
data(WhitefishMB)
str(WhitefishMB)
head(WhitefishMB)
op <- par(mfrow=c(2,2),pch=19)
plot(scale~fin,data=WhitefishMB,subset=lake=="L122",main="Lake L122")
plot(scale~fin,data=WhitefishMB,subset=lake=="L226",main="Lake L226")
plot(scale~fin,data=WhitefishMB,subset=lake=="Huron",main="Huron")
plot(scale~fin,data=WhitefishMB,subset=lake=="Dezadeash",main="Dezadeash")
par(op)
```
Description


Format

A data frame of 14 observations on the following 5 variables:

- **year**: Year of data
- **ssb**: Spawning stock biomass (in tonnes)
- **rec**: Recruits (in thousands)
- **land**: Landings (in tonnes)
- **fmort**: Fishing related mortality (natural mortality was assumed to be 0.3)

Topic(s)

- Stock-Recruit
- Recruitment

Source

From Petzold, M. 1995. An historical analysis of the Lake Whitefish fisheries of Thunder Bay (Zone 1) and Whitefish Bay (Zone 34), Lake Superior. Ontario Min. of Nat. Res. unpubl. manuscript. Obtained from Ransom Myers online database which was (is?) at http://ram.biology.dal.ca/~myers/data.html.

Examples

```r
data(WhitefishTB)
str(WhitefishTB)
head(WhitefishTB)
op <- par(mfrow=c(1,2),pch=19)
plot(rec~year,data=WhitefishTB,type="b")
plot(rec~ssb,data=WhitefishTB)
par(op)
```
**WhiteGrunt1**

*Catch-at-age for White Grunt.*

**Description**

Catch-at-age for White Grunt (*Haemulon plumierii*) collected from the central coast of Brazil.

**Format**

A data frame with 25 observations on the following 2 variables.

- **age** A numeric vector of assigned ages (from otoliths).
- **catch** A numeric vector of number of fish.

**Topic(s)**

- Mortality
- Catch curve

**Source**

From Figure 7 of Araujo, J.N. and A.S. Martins. 2007. Age, growth and mortality of white grunt (*Haemulon plumierii*) from the central coast of Brazil. Scientia Marina 71:793-800.

**Examples**

```r
data(WhiteGrunt1)
str(WhiteGrunt1)
head(WhiteGrunt1)
plot(log(catch)-age, data=WhiteGrunt1)
```

---

**WhiteGrunt2**

*Ages, lengths, and sexes of White Grunt.*

**Description**

Ages, lengths, and sexes of White Grunt (*Haemulon plumierii*) collected from the central coast of Brazil.

**Format**

A data frame with 465 observations on the following 3 variables.

- **age** Age (from otoliths to the nearest 0.1 years)
- **tl** Total length (mm)
- **sex** Sex (male and female)
Stock and recruitment data for White Shrimp off the coast of Georgia (USA), 1979-2000.

Description

White Shrimp (*Litopenaeus setiferus*) stock and recruitment data from off the coast of Georgia (USA), 1979-2000.

Format

A data frame with 22 observations on the following 3 variables:

- **year**  Year of data
- **stock**  Spawning stock index – CPUE in June assessment surveys
- **recruits**  Recruitment index – commercial landings in pounds from Aug-Jan
- **yrconf**  A code of confidence for whether or not the stock value is known to come from the year shown (see the note)

Topic(s)

- Stock-Recruit
- Recruitment

Note

No graph was shown for stock values vs. year so some stock values had to be haphazardly paired with recruit values – especially for stock values between 2.5 and 3.0.
**Source**


**Examples**

data(WShrimpGA)
str(WShrimpGA)
head(WShrimpGA)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=WShrimpGA,type="b")
plot(recruits~stock,data=WShrimpGA)
par(op)

---

**YERockfish**  
*Ages, lengths, and maturity for Yelloweye Rockfish.*

---

**Description**

Ages, lengths, and maturity for female Yelloweye Rockfish (*Sebastes ruberimus*) from Oregon.

**Format**

A data frame with 159 observations on the following 5 variables.

- **date** Date fish was collected
- **length** Total length (cm)
- **age** Otolith age
- **maturity** Maturity state (Immature or Mature)
- **stage** Stage of maturity (1:Immature, 2:Maturing, 3:Mature, 4:Fertilized, 5:Ripe, 6:Spent, 7:Resting)

**Topic(s)**

- Growth
- Maturity
- von Bertalanffy

**Source**

Obtained directly (from Bob Hannah). Date were used in Hannah, R.W, M.T.O. Blume, and J.E. Thompson. 2009. Length and age at maturity of female yelloweye rockfish (*Sebastes ruberimus*) and cabezon (*Scorpaenichthys marmoratus*) from Oregon waters based on histological evaluation of maturity. Oregon Department of Fish and Wildlife, Information Reports 2009-04. [Was (is?) from http://www.dfw.state.or.us/mrp/publications/docs/Info200904_YlwEyeRF_Maturity.pdf]
Examples

data(YERockfish)
str(YERockfish)
head(YERockfish)
op <- par(mfrow=c(2,2),pch=19)
plot(length~age,data=YERockfish,ylab="Total Length (cm)",xlab="Age")
hist(YERockfish$length,xlab="Total Length (cm)",main="")
tbl1 <- with(YERockfish,table(age,maturity))
(ptbl1 <- prop.table(tbl1,margin=1))
plot(ptbl1[,2]-as.numeric(row.names(ptbl1)),type="l",xlab="Age",ylab="Proportion Mature")
tbl2 <- with(YERockfish,table(length,maturity))
(ptbl2 <- prop.table(tbl2,margin=1))
plot(ptbl2[,2]-as.numeric(row.names(ptbl2)),type="l",xlab="Age",ylab="Proportion Mature")
par(op)

YPercbcb1

Catch-at-age for Yellow Perch from Chequamegon Bay, Lake Superior.

Description


Format

A data frame with 39 observations on the following 5 variables.

age  Age in that capture year (1973-1988).
year73  Number of fish at each age in capture year 1973.
year74  Number of fish at each age in capture year 1974.
year75  Number of fish at each age in capture year 1975.
year76  Number of fish at each age in capture year 1976.
year77  Number of fish at each age in capture year 1977.
year78  Number of fish at each age in capture year 1978.
year79  Number of fish at each age in capture year 1979.
year80  Number of fish at each age in capture year 1980.
year81  Number of fish at each age in capture year 1981.
year82  Number of fish at each age in capture year 1982.
year83  Number of fish at each age in capture year 1983.
year84  Number of fish at each age in capture year 1984.
year85  Number of fish at each age in capture year 1985.
year86  Number of fish at each age in capture year 1986.
year87  Number of fish at each age in capture year 1987.
year88  Number of fish at each age in capture year 1988.
YPerchCB2

Topic(s)

• Mortality
• Catch curve

Source


Examples

data(YPerchCB1)
str(YPerchCB1)
head(YPerchCB1)
max.n <- max(YPerchCB1[,1])  # maximum catch
op <- par(mfrow=c(4,4),mar=c(3.5,3.5,1,1),mgp=c(2,0.75,0))
plot(log(year73)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1973")
plot(log(year74)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1974")
plot(log(year75)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1975")
plot(log(year76)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1976")
plot(log(year77)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1977")
plot(log(year78)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1978")
plot(log(year79)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1979")
plot(log(year80)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1980")
plot(log(year81)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1981")
plot(log(year82)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1982")
plot(log(year83)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1983")
plot(log(year84)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1984")
plot(log(year85)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1985")
plot(log(year86)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1986")
plot(log(year87)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1987")
plot(log(year88)-age,data=YPerchCB1,ylim=c(0,log(max.n)),main="1988")
par(op)
# plot for 1973 and 1982 year-classes (be very careful)
# get 1973 year-class as diagonal for ages 0-9 and years 1973-1982
yc73 <- diag(as.matrix(YPerchCB1[,2:11]))
plot(log(yc73)-YPerchCB1$age,main="1973 Year-Class")
yc82 <- diag(as.matrix(YPerchCB1[1:7,11:17]))
plot(log(yc82)-YPerchCB1$age[1:7],main="1982 Year-Class")

---

Description


Format

A data frame with 12 observations on the following 2 variables:

- **yrclass** Year-class (see below)
- **stock** Estimated numbers of mature females caught the year prior to the origin of the 1975-1986 year classes
- **recruits** Catches of age-2 fish (when the year-class is formed)

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

data(YPerchCB2)
str(YPerchCB2)
head(YPerchCB2)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~yrclass,data=YPerchCB2,type="b")
plot(recruits~stock,data=YPerchCB2)
par(op)

---

YPerchGB


Description


Format

A data frame with 15 observations on the following 2 variables:

- **year** Year of data.
- **recruits** Number of recruits (thousands per hour).
**YPerchGL**

**Topic(s)**

- Recruitment time-series

**Source**


**Examples**

```r
data(YPerchGL)
str(YPerchGL)
head(YPerchGL)
plot(recruits~year, data=YPerchGL)
```

---

**Description**

Yellow Perch (*Perca flavescens*) fork lengths and weights separated by year.

**Format**

A data frame with 100 observations on the following 3 variables:

- **t** Fork Length (nearest mm) at capture
- **w** Weight (nearest 0.1 g) at capture
- **year** Year of capture (1994 or 2000)

**Topic(s)**

- Weight-Length
- Length Frequency

**Source**

Examples

```r
data(YPerchRL)
str(YPerchRL)
head(YPerchRL)
op <- par(mfrow=c(1,2),pch=19)
plot(w=1, data=YPerchRL, subset=year==1994, main="1994")
plot(w=1, data=YPerchRL, subset=year==2000, main="2000")
par(op)
```

YPerchRL


Description


Format

a data.frame with:

- **year** Year of data.
- **recruits** CPUE of recruits (relative to a mean).

Topic(s)

- Recruitment time-series

Source


Examples

```r
data(YPerchRL)
str(YPerchRL)
head(YPerchRL)
plot(recruits~year, data=YPerchRL)
```
**YPerchSB**

Stock and recruitment data for Yellow Perch from South Bay, Lake Huron, 1950-1983.

Description


Format

A data frame with 15 observations on the following 3 variables:

- **year**: Year of data
- **stock**: Spawning stock (number per set)
- **recruits**: Recruits (number per set)

Topic(s)

- Stock-Recruit
- Recruitment

Source


Examples

```r
data(YPerchSB)
str(YPerchSB)
head(YPerchSB)
op <- par(mfrow=c(1,2),pch=19)
plot(recruits~year,data=YPerchSB,type="b")
plot(recruits~stock,data=YPerchSB)
par(op)
```
Description

Length measurements for Yellow Perch (*Perca flavescens*) from two locations – inner and outer bay – in Saginaw Bay, Lake Michigan.

Format

A data frame with 2074 observations on the following 2 variables:

- `tl` Measured total length (cm).
- `loc` Location of capture (inner or outer).

Topic(s)

- Length Frequency
- Size Structure
- PSD

Source

Simulated (uniform distribution of values within length bin) from summarized length frequencies in Figure 2 (top) in Diana, J.S. and R. Salz. 1990. Energy storage, growth, and maturation of yellow perch from different locations in Saginaw Bay, Michigan. Transactions of the American Fisheries Society 119:976-984.

Examples

data(YPerchSB1)
str(YPerchSB1)
head(YPerchSB1)
op <- par(mfrow=c(1,2),pch=19)
with(subset(YPerchSB1,loc=="inner"),hist(tl,main="Inner"))
with(subset(YPerchSB1,loc=="outer"),hist(tl,main="Outer"))
par(op)
Lengths and weights for Yellow Perch from Trout Lake, WI.

Description

Lengths and weights for Yellow Perch (*Perca flavescens*) from Trout Lake, WI, 1981-2006. Fish were collected with a variety of gears.

Format

A data frame with 7238 observations on the following 7 variables:

- **lakeid**: Lake name (all TR=Trout Lake)
- **year4**: Year of capture
- **sampledate**: Date of capture
- **gearid**: Capture gear type – beach seine (BSEINE), crayfish trap (CRAYTR), electrofishing (ELFISH), fyke net (FYKNET), trammel net (TRAMML), vertical gillnets of different mesh sizes (VBN0XX), and different types of fyke nets (FYKNE0 and FYKNE1)
- **spname**: Species name (all YELLOWPERCH)
- **length**: Total Length (nearest mm) at capture
- **weight**: Weight (nearest 0.1 or 1 g) at capture

Topic(s)

- Weight-Length
- Length Frequency
- Size Structure
- PSD

Source

From a query to the North Temperate Lakes Long Term Ecological Research, Fish Lengths and Weights Database which was (is?) at https://lter.limnology.wisc.edu/dataset/north-temperate-lakes-lter-fish-lengths-and-weights-1981-current.

Examples

```r
data(YPerchTL)
str(YPerchTL)
head(YPerchTL)
plot(weight~length,data=YPerchTL)
```
YTFlounder

Ages of Yellowtail Flounder assigned from scales and otoliths.

Description

Ages of commercially caught Georges Bank Yellowtail Flounder (Limanda ferruginea) as determined by scales, whole otoliths, or otolith cross-sections.

Format

A data frame with 27 paired observations on the following 3 variables.

- **scale**: Ages assigned from scales
- **whole**: Ages assigned from whole otoliths
- **cross**: Ages assigned from cross-sections of otoliths

Topic(s)

- Age Comparison
- Age Precision
- Age Bias
- Ageing Error

Source


Examples

data(YTFlounder)
str(YTFlounder)
head(YTFlounder)
op <- par(mfrow=c(2,2),pch=19)
plot(scale~whole,data=YTFlounder)
plot(scale~cross,data=YTFlounder)
plot(whole~cross,data=YTFlounder)
par(op)
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