Apply An Age-Length Key

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Preliminaries

```
> library(FSA)                              # for ... alkIndivAge(), Summarize(), fact2num()
> library(dplyr)
> library(nnet)
```

Sourcing the Previous Script

```
> source("scripts/02_ALKConstruction.R")   # appropriately set the working directory before this
> ls()
 [1] "ALK.obs"    "ALK.sm"     "hook1"      "lens"       "mlr"        "raw"        "sp"
 [8] "sp.age"     "sp.age.mod" "sp.len"     "tmp"

> headtail(sp.len)
     tl age
1   9.6  NA
2   9.4  NA
3   9.1  NA
329 9.6  NA
330 7.5  NA
331 7.4  NA
```

Apply ALK using Isermann-Knight Method

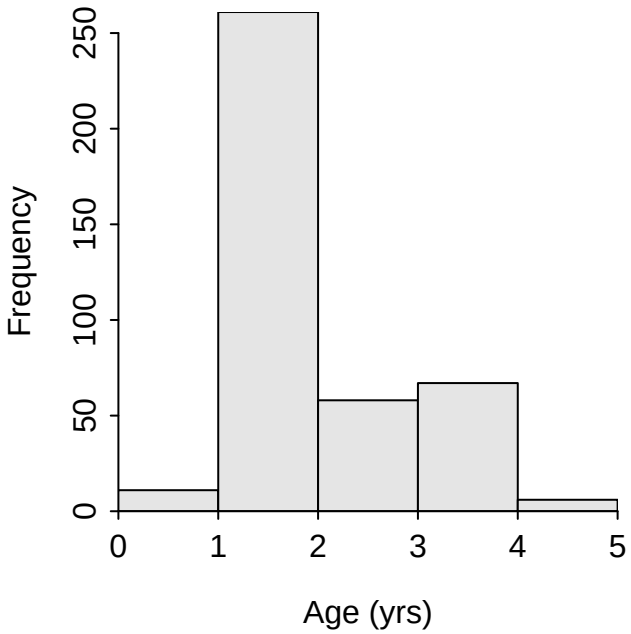
```
> sp.len.mod <- alkIndivAge(ALK.obs,age~tl,data=sp.len)
> headtail(sp.len.mod)
     tl age
1   9.6   1
2   9.4   1
3   9.1   1
329 9.6   1
330 7.5   1
331 7.4   1
```

Summarize Final Results

```
> sp.comb <- rbind(sp.age,sp.len.mod)
> str(sp.comb)
'data.frame':   403 obs. of  2 variables:
 $ tl : num  10.6 7.1 12.3 9.7 11.2 8.9 12.6 7.6 10 7 ...
 $ age: num  1 1 3 2 3 1 3 1 1 1 ...

> agefreq <- xtabs(~age,data=sp.comb)
> prop.table(agefreq)
age
         0          1          2          3          4
0.02729529 0.64764268 0.14392060 0.16625310 0.01488834
```

```
> hist(~age,data=sp.comb,breaks=0:5,xlab="Age (yrs)")
```




```
> ( sp.sum <- Summarize(tl~age,data=sp.comb,digits=2) )
Warning: Variable(s) on RHS of 'formula' converted to a factor.
  age   n  mean   sd  min    Q1 median    Q3  max percZero
1   0  11  7.99 0.82  6.3  8.05   8.20  8.50  8.7        0
2   1 261  9.07 1.17  7.0  8.20   8.90  9.90 12.8        0
3   2  58 11.01 1.14  9.1  9.82  11.25 11.98 12.9        0
4   3  67 12.08 0.86 11.0 11.40  11.80 12.85 13.9        0
5   4   6 13.05 0.64 12.2 12.60  13.10 13.45 13.9        0
```

```
> plot(tl~age,data=sp.comb,ylab="Total Length (mm)",xlab="Age (yrs)",pch=16,col=rgb(0,0,0,0.1))
> lines(mean~fact2num(age),data=sp.sum,col="blue",lwd=2)
```