

```
> library(FSA)
```

## Lake Huron Alewife

```
> setwd("C:/aaaWork/Web/fishR/courses/MNAFS2013/CourseMaterial/")
> d <- read.csv("AlewifeLH.csv",header=TRUE)
> str(d)

'data.frame': 104 obs. of 2 variables:
 $ otoliths: int  0 0 1 1 1 1 1 1 1 1 ...
 $ scales  : int  0 0 0 1 1 1 1 1 1 1 ...
> view(d)

  otoliths scales
9         1      1
21        2      2
30        2      2
54        4      3
71        4      5
86        6      5
```

## Otolith-Scale Bias?

```
> ac1 <- ageComp(otoliths~scales,data=d,col.lab="Otolith Age",row.lab="Scale Age")
> summary(ac1,what="agreement")
```

Raw agreement table (square)

		Otolith Age										
Scale	Age	0	1	2	3	4	5	6	7	8	9	10
	0	2	1	-	-	-	-	-	-	-	-	-
	1	-	14	-	-	-	-	-	-	-	-	-
	2	-	3	16	2	-	-	-	-	-	-	-
	3	-	-	4	11	5	2	1	-	-	-	-
	4	-	-	-	-	12	4	3	1	1	-	-
	5	-	-	-	-	1	4	2	5	4	-	-
	6	-	-	-	-	-	-	2	1	-	1	2
	7	-	-	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-

```
> summary(ac1,what="symmetry",flip.table=TRUE)
```

Raw agreement table (square & flipped)

		Otolith Age										
Scale	Age	0	1	2	3	4	5	6	7	8	9	10
	10	-	-	-	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	2	1	-	1	2
	5	-	-	-	-	1	4	2	5	4	-	-
	4	-	-	-	-	12	4	3	1	1	-	-
	3	-	-	4	11	5	2	1	-	-	-	-
	2	-	3	16	2	-	-	-	-	-	-	-
	1	-	14	-	-	-	-	-	-	-	-	-
	0	2	1	-	-	-	-	-	-	-	-	-

Bowker's (Hoenig's) Test of Symmetry

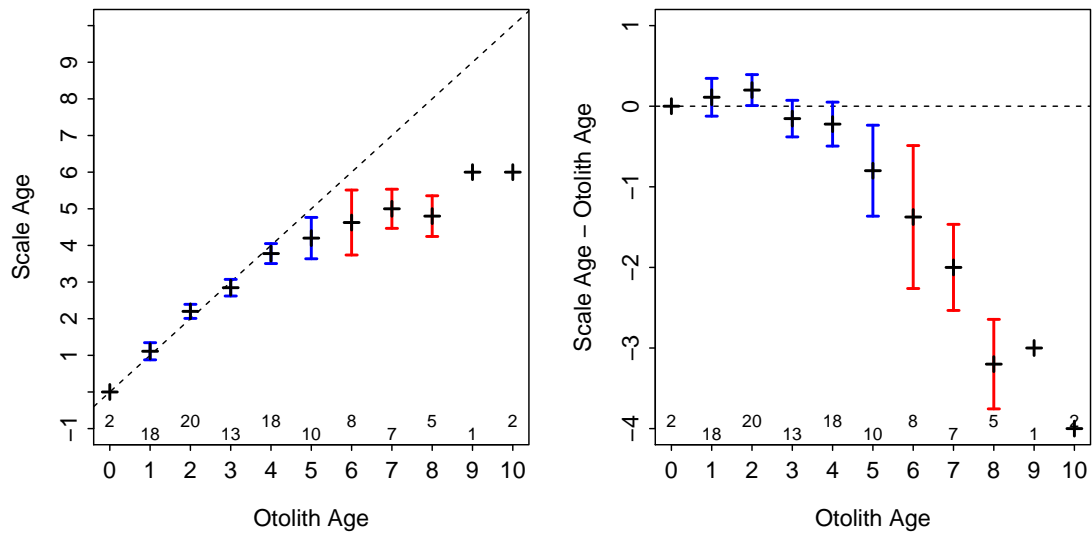
df	chi.sq	p
16	34.47	0.004698

```
> summary(ac1,what="bias")
```

Summary of Scale Age by Otolith Age

otoliths	n	min	max	mean	SE	t	adj.p	sigDiff
0	2	0	0	0.000	NA	NA	NA	
1	18	0	2	1.111	0.11111	0.9999	0.33138	
2	20	2	3	2.200	0.09177	2.1794	0.16836	
3	13	2	3	2.846	0.10414	-1.4768	0.33098	
4	18	3	5	3.778	0.12924	-1.7193	0.31112	
5	10	3	5	4.200	0.24944	-3.2072	0.05354	
6	8	3	6	4.625	0.37501	-3.6665	0.04801	yes
7	7	4	6	5.000	0.21824	-9.1644	0.00071	yes
8	5	4	5	4.800	0.19999	-16.0005	0.00071	yes
9	1	6	6	6.000	NA	NA	NA	
10	2	6	6	6.000	NA	NA	NA	

```
> plot(ac1) # LEFT
> plot(ac1,what="difference") # RIGHT
```



## Otolith-Scale Precision?

```
> summary(ac1,what="detail") #only a portion shown
```

	otoliths	scales	diff	avg	sd	APE	CV
29	2	2	0	2.0	0.0000	0	0.00
41	3	2	1	2.5	0.7071	20	28.28
43	3	3	0	3.0	0.0000	0	0.00
65	4	4	0	4.0	0.0000	0	0.00
68	4	4	0	4.0	0.0000	0	0.00
84	6	4	2	5.0	1.4142	20	28.28

```
> summary(ac1,what="prec.stats")
```

Percentage by absolute differences in age

	0	1	2	3	4
	58.654	22.115	9.615	6.731	2.885

Precision summary statistics

	n	agree	APE	CV
	104	58.65	9.044	12.79