R Handout - R Catch Curve

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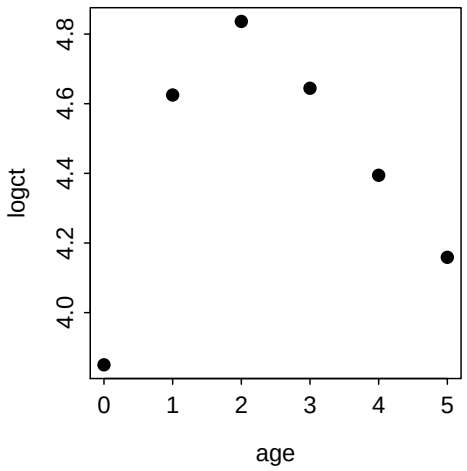
```
> library(FSA)      # Subset, fitPlot, catchCurve
```

0.1 Tobin Harbor Brook Trout Data

```
> df <- data.frame(age=0:5,catch=c(47,102,126,104,81,64))
> df$logct <- log(df$catch)
> df
  age catch logct
1   0    47 3.850
2   1   102 4.625
3   2   126 4.836
4   3   104 4.644
5   4    81 4.394
6   5    64 4.159
```

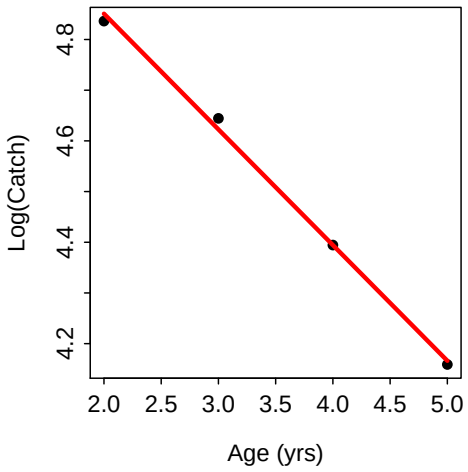
0.2 Linear Model Method

```
> plot(logct~age,data=df,pch=16,cex=1.25)
```



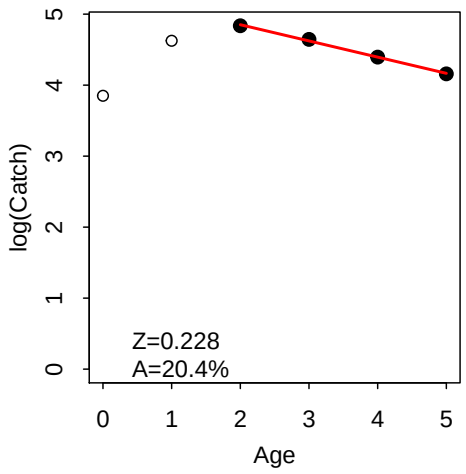

```
> ( df1 <- Subset(df,age>=2) )
  age catch logct
3   2   126 4.836
4   3   104 4.644
5   4    81 4.394
6   5    64 4.159
> lm1 <- lm(logct~age,data=df1)
> coef(lm1)
(Intercept)         age
     5.3072     -0.2282
```

```
> summary(lm1)

Call:
lm(formula = logct ~ age, data = df1)

Residuals:
        3         4         5         6
-1.45e-02  2.18e-02  5.48e-05 -7.30e-03

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   5.3072     0.0316   168.0  3.5e-05
age          -0.2282     0.0086   -26.5   0.0014

Residual standard error: 0.0192 on 2 degrees of freedom
Multiple R-squared:  0.997,Adjusted R-squared:  0.996
F-statistic:  705 on 1 and 2 DF,  p-value: 0.00142

> confint(lm1)
              2.5 %  97.5 %
(Intercept)  5.1713  5.4432
age         -0.2652 -0.1912

> fitPlot(lm1,main="",xlab="Age (yrs)",ylab="Log(Catch)")
```



0.3 Convenience Function Method

```
> cc1 <- catchCurve(catch~age,data=df,ages=2:5)
> summary(cc1)

  Estimate Std. Error t value Pr(>|t|)
Z   0.2282   0.008597   26.54 0.001416
A  20.4046         NA      NA       NA

> confint(cc1)

  95% LCI 95% UCI
Z  0.1912  0.2652
A 17.4051 23.2952

> plot(cc1)
```


log(Catch)
0
1
2
3
4
5
Z=0.228
A=20.4%
0
1
2
3
4
5
Age