```r
# predictions from GDistsamp 2013
#setwd("C:/Users/avanderlaar/Documents/GitHub/data")
library(unmarked)
```

```
## Loading required package: methods
## Loading required package: reshape
## Loading required package: lattice
## Loading required package: Rcpp
```

```r
#read in the sora observations
sora <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2013_sora.csv', header=T)
sora <- sora[!(sora$impound=="ccmsu12"|sora$impound=="ccmsu2"|sora$impound=="ccmsu1"|sora$impound=="ts2
#read in the covariate data #organized by impoundment.
cov <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2013_cov_stan.csv', header=T)
cov <- cov[!(cov$impound=="ccmsu12"|cov$impound=="ccmsu2"|cov$impound=="ccmsu1"|cov$impound=="ts2a"|cov
#subset covaraites we need
#subset covaraites we need
cov <- cov[,c("region","length","impound","jdate","area", "int","short","water")]
# #the distance bins

sora <- sora[order(sora$impound),]
cov <- cov[order(cov$impound),]

sora <- sora[,3:80]
cutpt = as.numeric(c(0,1,2,3,4,5,6,7,8,9,10,11,12,13))
#Unmarked Data Frame
umf = unmarkedFrameGDS(y=sora,
                           numPrimary=6,
                           siteCovs = cov,
                           survey="line",
                           dist.breaks=cutpt,
                           unitsIn="m",
                           tlength=cov$length,
)
```

```r
model <- list()
model$null = gdistsamp(lambdaformula = ~1,
                       phiformula = ~1,
                       pformula = ~1,
                       data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")

model$r = gdistsamp(lambdaformula = ~region-1,
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
```

```r
model$r_w =gdistsamp(lambdaformula = ~region+water-1,
                       phiformula = ~1,
                       pformula = ~ 1,
                       data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")

model$r_w_i =gdistsamp(lambdaformula = ~region+water+region*water-1,
```

```
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
```

```
model$s_r =gdistsamp(lambdaformula = ~short+region-1,
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
model$s_r_i =gdistsamp(lambdaformula = ~short+region+short*region-1,
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
```

```
model$s =gdistsamp(lambdaformula = ~short-1,
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")

model$s_w =gdistsamp(lambdaformula = ~short+water-1,
                       phiformula = ~1,
                       pformula = ~ 1,
                       data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")

model$s_w_i =gdistsamp(lambdaformula = ~short+water+short*water-1,
                       phiformula = ~1,
                       pformula = ~ 1,
                       data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
```

```
model$global =gdistsamp(lambdaformula = ~region+water+short+region*water+region*short-1,
                      phiformula = ~1,
                      pformula = ~ 1,
                      data = umf, keyfun = "hazard", mixture="NB",se = T, output="abund")
```

```
list  = fitList(model)
```

```
model = modSel(list)
model
```

```
##        nPars     AIC  delta   AICwt cumltvWt
## global    16  813.25   0.00 5.6e-01     0.56
## r_w_i     12  814.88   1.62 2.5e-01     0.80
## null       5  817.21   3.96 7.7e-02     0.88
## r_w        9  817.51   4.26 6.6e-02     0.95
## s_r_i     12  818.74   5.49 3.6e-02     0.98
## r          8  820.90   7.65 1.2e-02     0.99
## s_r        9  822.60   9.34 5.2e-03     1.00
## s_w        6 1005.90 192.65 8.2e-43     1.00
## s_w_i      7 1007.08 193.83 4.5e-43     1.00
## s          5 1017.81 204.55 2.1e-45     1.00
```