```r
# predictions from GDistsamp 2014

library(unmarked)
```

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

```r
#read in the sora observations
#read in the sora observations

sora <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2014_sora.csv', header=T)
sora <- sora[!(sora$impound=="ccmsu12"|sora$impound=="ccmsu2"|sora$impound=="ccmsu1"|sora$impound=="ts2

sora <- sora[!(sora$impound=="dc18"&sora$round==1),]

#read in the covariate data #organized by impoundment.
cov <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2014_cov_stan.csv', header=T)
cov <- cov[!(cov$impound=="ccmsu12"|cov$impound=="ccmsu2"|cov$impound=="ccmsu1"|cov$impound=="ts2a"|cov

cov <- cov[!(cov$impound=="dc18"&cov$round==1),]
#subset covaraites we need

cov <- cov[,c("region","length","impound","jdate","hectares","area", "treat","short","awater")]

# #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")
```

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

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

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

```
list  = fitList(fits=model)
(models = modSel(list))
```

```
##         nPars    AIC  delta   AICwt cumltvWt
## r_w         9 516.46   0.00 8.9e-01     0.89
## r_w_i      12 520.93   4.46 9.6e-02     0.99
## global     16 525.31   8.84 1.1e-02     1.00
## null        5 529.24  12.77 1.5e-03     1.00
## r           8 533.59  17.13 1.7e-04     1.00
## s_r         9 535.51  19.04 6.5e-05     1.00
## s_r_i      12 536.33  19.87 4.3e-05     1.00
```

```
## s_w        6 677.27 160.81 1.1e-35     1.00
## s_w_i      7 678.97 162.50 4.6e-36     1.00
## s          5 710.02 193.56 8.3e-43     1.00
```