

```
# predictions from GDistsamp 2012
```

```
library(unmarked)
```

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

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

```
sora <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2012_sora.csv', header=T)
```

```
#read in the covariate data #organized by impoundment.
```

```
cov <- read.csv('C:/Users/avanderlaar/Documents/GitHub/data/2012_cov_stan.csv', header=T)
```

```
#subset covaraites we need
```

```
cov <- cov[,c("region", "length", "impound", "jdate", "area", "int", "short", "water")]
```

```
# #the distance bins
```

```
cov <- cov[!(cov$impound=="ccmsu12"|cov$impound=="ccmsu2"|cov$impound=="ccmsu1"|cov$impound=="ts2a"|cov$
```

```
sora <- sora[!(sora$impound=="ccmsu12"|sora$impound=="ccmsu2"|sora$impound=="ccmsu1"|sora$impound=="ts2
```

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

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

```
sora <- sora[,3:41]
```

```
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=3,  
                        siteCovs = cov,  
                        survey="line",  
                        dist.breaks=cutpt,  
                        unitsIn="m",  
                        tlength=cov$length,  
)
```

```
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+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="P",se = T, output="abund")
```

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

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

##	nPars	AIC	delta	AICwt	cumltvWt
## r_w	9	-911.82	0.00	4.1e-01	0.41
## s_r_i	12	-910.89	0.94	2.6e-01	0.67
## r_w_i	12	-910.79	1.03	2.5e-01	0.91
## r	8	-907.71	4.11	5.3e-02	0.97
## s_r	9	-906.68	5.14	3.1e-02	1.00
## null	5	-901.05	10.77	1.9e-03	1.00
## s_w_i	7	-638.32	273.50	1.7e-60	1.00
## s	5	-630.63	281.19	3.6e-62	1.00
## s_w	6	-628.84	282.99	1.5e-62	1.00
## global	15	-490.05	421.77	1.1e-92	1.00