Workshop - SECR no Ambiente R

"Modelo Espacialmente Explícito de Captura e Recaptura"

Efford, M. 2014. Package "secr".

PRÁTICA 3

28/05/2014

1. Componentes do modelo
2. Seleção de modelo
3. *Output*
4. Gráfico probabilidade de captura
5. Centros de atividade

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ETAPA 1

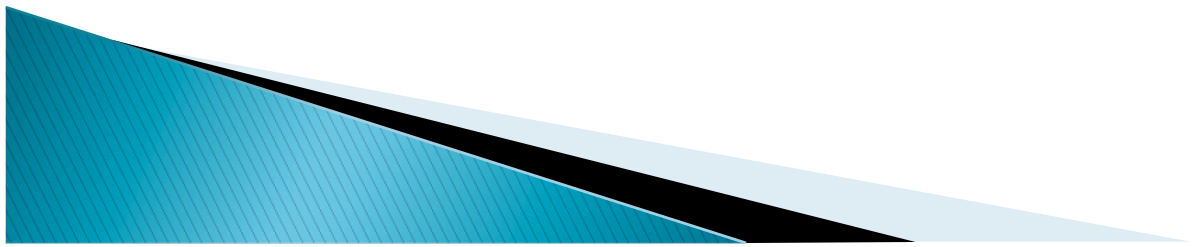
Componentes do modelo

?secr.fit

```
secr.fit (capthist, model = list(D~1, g0~1, sigma~1),
        mask = NULL, buffer = NULL, CL = FALSE, detectfn = NULL,
        binomN = NULL, start = NULL, link = list(), fixed = list(),
        timecov = NULL, sessioncov = NULL, hcov = NULL,
groups =        NULL, dframe = NULL, details = list(), method =
"Newton-        Raphson“,ve rify = TRUE, biasLimit = 0.01, trace = NULL,
        ncores  = 1, ...)
```

O modelo mais simples

```
> secr0 <-secr.fit(capthist, g0~1, sigma~1)
```



ETAPA 2

trace=TRUE *
*Retorna no output todas as avaliações da verossimilhança

Elaborando modelos simples

? secr.model.detection

Detecção constante

```
secr0<- secr.fit(capthist, model = g0 ~ 1, trace = FALSE, mask=mmask)
```

Comportamento

```
secrb <- secr.fit(capthist, model = g0 ~ b, trace = FALSE, mask=mmask)
```

Heterogeneidade individual

```
secrh2 <- secr.fit(capthist, model = g0~h2, trace = FALSE, mask=mmask)
```

Comportamento em função do tempo

```
secrbT <-secr.fit(capthist, model = g0~b+T, trace=FALSE, mask=mmask)
```

ETAPA 3

Concorrência entre os modelos

AIC(secr0, secrb, secrh2, secrbT)

	model	detectfn	npar	logLik	AIC	AICc	dAICc	AICcwt
secrh2.oce2	D~1 g0~h2 sigma~1 pmix~h2	halfnormal	5	-116.8534	243.707	250.374	0.000	0.6481
secr0.oce2	D~1 g0~1 sigma~1	halfnormal	3	-121.8832	249.766	251.948	1.574	0.2950
secrb.oce2	D~1 g0~b sigma~1	halfnormal	4	-121.8479	251.696	255.696	5.322	0.0453
secrbT.oce2	D~1 g0~b + T sigma~1	halfnormal	5	-120.8728	251.746	258.412	8.038	0.0116

ETAPA 4

Chame o modelo e gere as estimativas

secr0

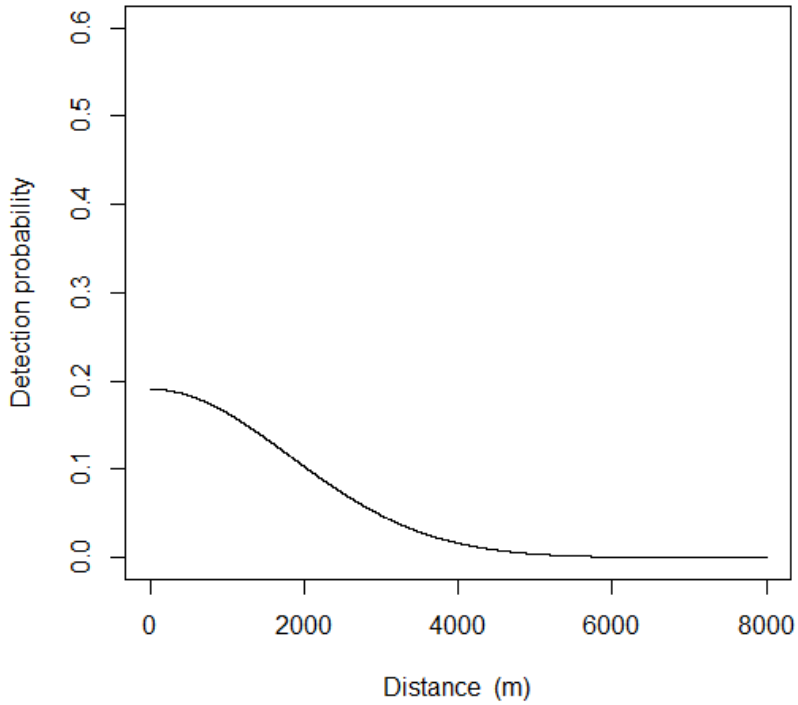
```
secr.fit(capthist = ocelot2.data, model = g0 ~ 1, buffer = 4385,
    trace = FALSE)
secr 2.7.0, 09:23:38 19 mai 2014

Detector type     proximity
Detector number   10
Average spacing   1970.541 m
x-range           357769 366270 m
y-range           8908010 8914064 m
N animals       :  15
N detections    :  37
N occasions     :  8
Mask area       :  19181.86 ha

Model           :  D~1 g0~1 sigma~1
Fixed (real)    :  none
Detection fn    :  halfnormal
Distribution    :  poisson
N parameters    :  3
Log likelihood  :  -121.8832
AIC             :  249.7663
AICc            :  251.9481
```

```
Beta parameters (coefficients)
            beta   SE.beta       lcl        ucl
D     -6.682083 0.3208967 -7.311029 -6.0531365
g0    -1.445051 0.3624854 -2.155510 -0.7345928
sigma  7.497044 0.1992063  7.106607  7.8874815

Variance-covariance matrix of beta parameters
                  D           g0       sigma
D      0.102974708  0.002001027 -0.03326261
g0     0.002001027  0.131395671 -0.03661667
sigma -0.033262613 -0.036616675  0.03968316

Fitted (real) parameters evaluated at base levels of covariates
       link     estimate  SE.estimate          lcl          ucl
D       log 1.253166e-03 4.127148e-04 6.681295e-04 2.350478e-03
g0    logit 1.907644e-01 5.595808e-02 1.038175e-01 3.241877e-01
sigma   log 1.802706e+03 3.627028e+02 1.220001e+03 2.663727e+03
```

ETAPA 5

Gráfico da probabilidade de captura

```
plot (secr0, xval = 0:8000, ylim = c(0, 0.6))
```



ETAPA 6

Centros de atividade

?fxi.contour

```
> plot(mmask)
> plot(genetacap.traps, add=TRUE)
> fxiout.genetacap<-fxi.contour (secr0, i = 1:8, sessnum = 1, border
= 7000, nx = 128, levels = NULL, p = seq(0.1,0.9,0.1), plt = TRUE, add
= TRUE, fitmode = FALSE, plotmode = TRUE, normal = TRUE)
```

Coordenadas dos centos de atividade

```
t(sapply(fxiout.genetacap, "[[", "mode"))
```